UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 20-F

(Mark One)

o **REGISTRATION STATEMENT PURSUANT TO SECTION 12(b) OR (g) OF THE SECURITIES EXCHANGE ACT OF 1934**

OR

x **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended December 31, 2022

OR

o **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

for the transition period from _____ to

OR

o **SHELL COMPANY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

Date of event requiring this shell company report

Commission file number: 001-38547

Autolus Therapeutics plc

(Exact name of Registrant as specified in its charter)

N/A

(Translation of Registrant's name into English)

England and Wales
(Jurisdiction of incorporation)

The Mediaworks
191 Wood Lane
London W12 7FP United Kingdom
(Address of principal executive offices)

Christian Itin
Chief Executive Officer
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(Name, Telephone, E-mail and/or Facsimile number and Address of Company Contact Person)

Securities registered or to be registered, pursuant to Section 12(b) of the Act

Title of each class	Trading Symbol	Name of each exchange on which registered
American Depository Shares, each representing one ordinary share, nominal value $0.000042 per share	**AUTL**	**The Nasdaq Stock Market LLC**

Securities registered or to be registered pursuant to Section 12(g) of the Act: None

Securities for which there is a reporting obligation pursuant to Section 15(d) of the Act: None

Indicate the number of outstanding shares of each of the issuer's classes of capital stock or common stock as of the close of business covered by the annual report.

Ordinary shares, nominal value $0.000042 per share: 173,074,510 as of December 31, 2022

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes o No x

If this report is an annual or transition report, indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934. Yes o No x

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes x No o
Indicate by check mark whether the registrant has submitted every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes x No o

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer o Accelerated filer x Non-accelerated filer o Emerging growth company x

If an emerging growth company that prepares its financial statements in accordance with U.S. GAAP, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards † provided pursuant to Section 13(a) of the Exchange Act. x

† The term "new or revised financial accounting standard" refers to any update issued by the Financial Accounting Standards Board to its Accounting Standards Codification after April 5, 2012.

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. o

If securities are registered pursuant to Section 12(b) of the Act, indicate by check mark whether the financial statements of the registrant included in the filing reflect the correction of an error to previously issued financial statements. o

Indicate by check mark whether any of those error corrections are restatements that require a recovery analysis of incentive-based compensation received by any of the registrant's executive officers during the relevant recovery period pursuant to § 240.10D-1(b). o

Indicate by check mark which basis of accounting the registrant has used to prepare the financial statements included in this filing:

U.S. GAAP x International Financial Reporting Standards as issued by the International Accounting Standards Board o Other o

If "Other" has been checked in response to the previous question indicate by check mark which financial statement item the registrant has elected to follow. Item 17 o Item 18 o

If this is an annual report, indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes o No x

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GENERAL INFORMATION

All references in this Annual Report on Form 20-F, or the Annual Report, to “Autolus,” the “company,” “we,” “us” and “our” refer to Autolus Therapeutics plc and its consolidated subsidiaries, except where the context otherwise requires.

"AUTOLUS" is our registered trademark. All other brand names and service marks, trademarks and other trade names appearing in this Annual Report are the property of their respective owners.

PRESENTATION OF FINANCIAL AND OTHER INFORMATION

The consolidated financial statement data as of December 31, 2022 and 2021 and for the years ended December 31, 2022, 2021 and 2020 have been derived from our consolidated financial statements, as presented elsewhere in this Annual Report, which have been prepared in accordance with generally accepted accounting principles in the United States, or U.S. GAAP, as issued by the Financial Accounting Standards Board, or FASB.

All references in this Annual Report to “$” are to U.S. dollars and all references to “£” are to pounds sterling. Solely for the convenience of the reader, unless otherwise indicated, all pounds sterling amounts as of December 31, 2022 have been translated into U.S. dollars on the last business day of our fiscal year ended December 31, 2022, using the exchange rate of £1.00 = $1.2090. All pound sterling amounts for the year ended December 31, 2022 have been translated into U.S. dollars using the average annual exchange rate £1.00 = $1.2374. These translations should not be considered representations that any such amounts have been, could have been or could be converted into U.S. dollars at that or any other exchange rate as at that or any other date.

CAUTIONARY STATEMENT REGARDING FORWARD-LOOKING STATEMENTS

This Annual Report contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, or the Securities Act, and Section 21E of the Securities Exchange Act of 1934, as amended, or the Exchange Act, that involve substantial risks and uncertainties. The forward-looking statements are contained principally in Part I, Item 4.B “Business Overview,” Part I, Item 3.D. “Risk Factors,” and Part I, Item 5. “Operating and Financial Review and Prospects,” but are also contained elsewhere in this Annual Report. In some cases, you can identify forward-looking statements by the words “may,” “might,” “will,” “could,” “would,” “should,” “expect,” “intend,” “plan,” “objective,” “anticipate,” “believe,” “estimate,” “predict,” “potential,” “continue” and “ongoing,” or the negative of these terms, or other comparable terminology intended to identify statements about the future. These statements involve known and unknown risks, uncertainties and other important factors that may cause our actual results, levels of activity, performance or achievements to be materially different from the information expressed or implied by these forward-looking statements. The forward-looking statements contained in this Annual Report are based upon information available to us as of the date of this Annual Report and, while we believe we have a reasonable basis for each forward-looking statement contained in this Annual Report, we caution you that these statements are based on a combination of facts and factors currently known by us and our expectations of the future, about which we cannot be certain. Forward-looking statements include statements about:

- the development of our product candidates, including statements regarding the initiation, timing, progress and the results of clinical studies or trials and related preparatory work, the period during which the results of the trials will become available and our research and development programs;
- our estimates regarding expenses, future revenue, capital requirements and needs for additional financing;
- our ability to advance our product candidates into, and successfully complete, clinical trials;
- our ability to obtain and maintain regulatory approval of our product candidates in the indications for which we plan to develop them, and any related restrictions, limitations or warnings in the label of an approved drug or therapy;
- the impacts of public health crises like the coronavirus 2019, or COVID-19, and its effects on our operations and business, including interruption of key clinical trial activities, such as clinical trial site monitoring, access to capital, and potential disruption in the operations and business of third-party manufacturers, clinical sites, contract research organizations, or CROs, other service providers and collaborators with whom we conduct business;
- the impact of the ongoing war between Ukraine and Russia;
- our ability to license additional intellectual property relating to our product candidates from third parties and to comply with our existing license agreement;
- our plans to research, develop, manufacture and commercialize our product candidates;
- the potential benefits of our product candidates;
- the timing or likelihood of regulatory filings and approvals for our product candidates, along with regulatory developments in the United States, European Union, the United Kingdom and other foreign countries;
- the size and growth potential of the markets for our product candidates, if approved, and the rate and degree of market acceptance of our product candidates, including reimbursement that may be received from payors;
- our ability to raise additional capital;
- our commercialization, marketing and manufacturing capabilities and strategy;
- our plans to collaborate, or statements regarding our current collaborations;
- our ability to attract collaborators with development, regulatory and commercialization expertise;
- our expectations regarding our ability to obtain and maintain intellectual property protection;
- our ability to identify, recruit and retain qualified employees and key personnel;
- our ability to contract with third-party suppliers and manufacturers and their ability to perform adequately;
- the scalability and commercial viability of our manufacturing methods and processes;
- the success of competing therapies that are or may become available;
- whether we are classified as a Passive Foreign Investment Company, "PFIC", for current and future periods; and
- any other factors which may impact our financial results or future trading prices of our American Depositary Shares, or ADSs, and the impact of securities analysts’ reports on these prices.

You should refer to Item 3.D. "Risk Factors" for a discussion of important factors that may cause our actual results to differ materially from those expressed or implied by our forward-looking statements. As a result of these factors, we cannot assure you that the forward-looking statements in this Annual Report will prove to be accurate. Furthermore, if our forward-looking statements prove to be inaccurate, the inaccuracy may be material. In light of the significant uncertainties in these forward-looking statements, you should not regard these statements as a representation or warranty by us or any other person that we will achieve our objectives and plans in any specified time frame, or at all. We undertake no obligation to publicly update any forward-looking statements, whether as a result of new information, future events or otherwise, except as required by law. You should, therefore, not rely on these forward-looking statements as representing our views as of any date subsequent to the date of this Annual Report.

PART I

Item 1. Identity of Directors, Senior Management and Advisers.

Not applicable.

Item 2. Offer Statistics and Expected Timetable.

Not applicable.

Item 3. Key Information.

A. [Reserved]

B. Capitalization and indebtedness.

Not applicable.

C. Reasons for the offer and use of proceeds.

Not applicable.

D. Risk factors.

An investment in our ADSs involves a high degree of risk. You should carefully consider the risks described below, and all other information appearing elsewhere in this Annual Report, including our consolidated financial statements and the related notes hereto, before making an investment decision regarding our securities. The occurrence of any of the events or developments described below could harm our business, financial condition, results of operations and growth prospects.

RISK FACTORS SUMMARY

Our business is subject to a number of risks and uncertainties, including those risks discussed at-length in the section below titled “Risk Factors.” These risks include, among others, the following:

- We have incurred significant losses in every year since our inception. We expect to continue to incur losses over the next several years and may never achieve or maintain profitability.
- Our limited operating history may make it difficult for you to evaluate the success of our business to date and to assess our future viability.
- We will need additional funding to complete the development of our product candidates, which may not be available on acceptable terms, if at all.
- All of our product candidates are in clinical development or in preclinical development. If we are unable to advance our product candidates through clinical development, obtain regulatory approval and ultimately commercialize our product candidates, or experience significant delays in doing so, our business will be materially harmed.
- Our proprietary, next-generation T cell programming technologies, our modular approach for engineering T cells and our manufacturing platform for our programmed T cell product candidates, represent emerging approaches to cancer treatment that face significant challenges and hurdles.

- Our future success is highly dependent on the regulatory approval of our current clinical-stage programmed T cell product candidates and our preclinical programs. All of our product candidates will require significant clinical or preclinical testing before we can seek regulatory approval for and launch a product commercially.
- Adverse side effects or other safety risks associated with our product candidates could delay or preclude approval, cause us to suspend or discontinue clinical trials, cause us to abandon product candidates, could limit the commercial profile of an approved label, or could result in significant negative consequences following any potential marketing approval.
- If the clinical trials of any of our product candidates fail to demonstrate safety and efficacy to the satisfaction of the FDA, the EMA or other comparable regulatory authorities, or do not otherwise produce favorable results, we may incur additional costs or experience delays in completing, or ultimately be unable to complete, the development and commercialization of our product candidates.
- We may not be able to successfully create our own manufacturing infrastructure for supply of our requirements of programmed T cell product candidates for use in clinical trials and for commercial sale.
- Our product candidates are biologics and the manufacture of our product candidates is complex and we may encounter difficulties in production, particularly with respect to process development or scaling-out of our manufacturing capabilities. If we encounter such difficulties, our ability to provide supply of our product candidates for clinical trials or our products for patients, if approved, could be delayed or stopped.
- We operate in a rapidly changing industry and face significant competition, which may result in others discovering, developing or commercializing products before or more successfully than we do.
- If we are unable to obtain and maintain patent protection for our T cell programming technologies and product candidates, or if the scope of the patent protection obtained is not sufficiently broad, our competitors could develop and commercialize technology and biologics similar or identical to ours, and our ability to successfully commercialize our technology and product candidates may be impaired.
- As an English public limited company, certain capital structure decisions will require shareholder approval, which may limit our flexibility to manage our capital structure.
- General market conditions and macroeconomic trends, including those driven by geopolitical tension, supply chain disruptions, market volatility, inflation, and fluctuations in foreign currency exchange rates, among other factors, could materially and adversely affect our business, results of operations and financial condition.
- Failure or perceived failure to comply with existing or future laws, regulations, contracts, self-regulatory schemes, standards, and other obligations related to data privacy and security (including security incidents) could harm our business. Compliance or the actual or perceived failure to comply with such obligations could increase the costs of our products, limit their use or adoption, and otherwise negatively affect our operating results and business.

Risks Related to Our Financial Position and Need For Capital

We have incurred significant losses in every year since our inception. We expect to continue to incur losses over the next several years and may never achieve or maintain profitability.

We are a clinical-stage biopharmaceutical company with a limited operating history, and we have incurred significant net losses since our inception in 2014. We have incurred losses of $148.8 million, $142.1 million and $142.1 million for the years ended December 31, 2022, 2021 and 2020, respectively. As of December 31, 2022, we had an accumulated deficit of $670.2 million. We have funded our operations to date primarily with proceeds from the sale of our equity securities, including American Depositary Shares, or ADSs, and strategic financing.

We have no products approved for commercial sale, and while we have generated a small amount of revenue from licensing, we are devoting substantially all of our financial resources and efforts to research and development of our programmed T cell product candidates as well as to building out our manufacturing infrastructure and T cell programming technologies. Investment in biopharmaceutical product development is highly speculative because it entails substantial upfront capital expenditures and significant risk that any potential product candidate will fail to demonstrate adequate effect or an acceptable safety profile, gain regulatory approval and become commercially viable.

We expect that it could take several years until any of our product candidates receive marketing approval and are commercialized, and we may never be successful in obtaining marketing approval and commercializing product candidates. We expect to continue to incur significant expenses and increasing operating losses for the foreseeable future. These net losses will adversely impact our shareholders' equity and net assets and may fluctuate significantly from quarter to quarter and year to year. We anticipate that our expenses will increase substantially as we:

- continue our ongoing and planned research and development of our current programmed T cell product candidates for the treatment of hematological cancers and solid tumors;
- initiate preclinical studies and clinical trials for any additional product candidates that we may pursue in the future, including our planned development of additional T cell therapies for the treatment of hematological cancers and solid tumors;
- seek to discover and develop additional product candidates and further expand our clinical product pipeline;
- seek regulatory approvals for any product candidates that successfully complete clinical trials;
- continue to scale up internal and external manufacturing capacity with the aim of securing sufficient quantities to meet our capacity requirements for clinical trials and potential commercialization;
- establish sales, marketing and distribution infrastructure to commercialize any product candidate for which we may obtain regulatory approval;
- make required milestone and royalty payments to UCL Business Ltd., or UCLB, the technology-transfer company of University College London, or UCL, or other third parties, under license agreements pursuant to which we were granted some of our intellectual property rights;
- make required milestone payments to Adaptive Biotechnologies Corporation, or Adaptive, under our agreement relating to the use of a proprietary assay to analyze patient samples;
- make required sales milestone and royalty payments to BXLS V - Autobahn LP, or Blackstone, under our collaboration and financing agreement relating to obe-cel, our lead product, and other collaboration products for B cell malignancies;
- develop, maintain, expand and protect our intellectual property portfolio;
- acquire or in-license other product candidates and technologies;
- hire additional clinical, quality control and manufacturing personnel;
- add clinical, operational, financial and management information systems and personnel, including personnel to support our product development and planned future commercialization efforts;
- expand our operations in the United States, Europe and other geographies; and
- incur additional legal, accounting and other expenses associated with operating as a public company.

To become and remain profitable, we must succeed in developing and eventually commercializing products that generate significant revenue. This will require us to be successful in a range of challenging activities, including completing preclinical studies and clinical trials of our product candidates, preparing a satisfactory filing package for regulatory authorities, obtaining regulatory approval, manufacturing, marketing and selling any products for which we may obtain regulatory approval, as well as discovering and developing additional product candidates. We may never succeed in these activities and, even if we do, may never generate revenues that are significant enough to achieve profitability.

Because of the numerous risks and uncertainties associated with the development, manufacturing, delivery and commercialization of complex autologous cell therapies, we are unable to accurately predict the timing or amount of expenses or when, or if, we will be able to achieve profitability. If we are required by regulatory authorities to perform studies in addition to those currently expected, or if there are any delays in the initiation and completion of our clinical trials or the development of any of our product candidates, our expenses could increase and profitability could be further delayed.

Even if we achieve profitability, we may not be able to sustain or increase profitability on a quarterly or annual basis. Our failure to become and remain profitable would depress the value of our ADSs and could impair our ability to raise capital, expand our business, maintain our research and development efforts or continue our operations. A decline in the value of our ADSs could also cause you to lose all or part of your investment.

Our limited operating history may make it difficult for you to evaluate the success of our business to date and to assess our future viability.

We are a clinical-stage biopharmaceutical company with a limited operating history. As an organization, we have not demonstrated an ability to successfully complete late-stage clinical trials, obtain regulatory approvals, manufacture our product candidates at commercial scale or arrange for a third party to do so on our behalf, conduct sales and marketing activities necessary for successful commercialization, or obtain reimbursement in the countries of sale. We may encounter unforeseen expenses, difficulties, complications, and delays in achieving our business objectives. Our limited history as an operating company makes any assessment of our future success or viability subject to significant uncertainty. If we do not address these risks successfully or are unable to transition at some point from a company with a research and development focus to a company capable of supporting commercial activities, then our business will suffer.

We will need additional funding to complete the development of our product candidates, which may not be available on acceptable terms, if at all.

We will require substantial additional funding to meet our financial needs and to pursue our business objectives. If we are unable to raise capital when needed, we could be forced to delay, reduce or altogether cease our product development programs or commercialization efforts.

Since our inception, we have devoted substantially all of our resources to fund the operating expenses and capital expenditure requirements associated with the research and development of our product candidates. These programs are described in greater detail under the heading “Our Pipeline” in the section titled “Business Overview” of this Annual Report. Our current funding may only be sufficient to fund obe-cel through initial commercial launch, assuming certain timelines on successful regulatory approval, and we will need to raise additional capital to reach profitability as well as to complete the development and commercialization of our other programmed T cell product candidates, and in connection with our continuing operations, strategy and other planned activities. Our future capital requirements will depend on many factors, including:

- the progress, results and costs of laboratory testing, manufacturing, and preclinical and clinical development of our current and future product candidates;
- the timing and amounts of any milestone or royalty payments we may be required to make under current or future license or collaboration agreements;
- the costs of leasing, building out, equipping, and operating the facilities necessary to research, develop, manufacture and commercialize our product candidates, as well as to support our continuing operations;
- the costs of hiring additional clinical, quality control and manufacturing personnel;
- the costs, timing and outcome of regulatory review of our product candidates;
- the costs and timing of future commercialization activities, including product manufacturing, marketing, sales and distribution, for any of our product candidates for which we receive marketing approval;
- the revenue, if any, received from commercial sales of our product candidates for which we receive marketing approval;
- the costs and timing of preparing, filing and prosecuting patent applications, maintaining and enforcing our intellectual property rights and defending any intellectual property-related claims; and
- the costs of operating as a public company.

Identifying potential product candidates and conducting preclinical testing and clinical trials is a time-consuming, expensive and uncertain process that takes years to complete, and we may never generate the necessary data or results required to obtain regulatory approval and achieve product sales. In addition, our product candidates, if approved, may not achieve commercial success. Our product revenues, if any, will be derived from sales of product candidates that we do not expect to be commercially available for up to two years in the case of our existing lead program and, with respect to other pipeline programs, up to several years, if at all. Accordingly, we will need to continue to rely on additional financing to achieve our business objectives. Adequate additional financing may not be available to us on acceptable terms, or at all. In addition, we may seek additional capital due to favorable market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating plans.

To the extent that we raise additional capital through the sale of equity or convertible debt securities, your ownership interest will be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect your rights as a shareholder. For example, in December 2022, we issued approximately 81.9 million ADSs in an underwritten public offering. Although these securities did not include preferential terms, they resulted in dilution for existing shareholders. Debt financing and preferred equity financing, if available, could result in fixed payment obligations, and we may be required to accept terms that restrict our ability to incur additional indebtedness, force us to maintain specified liquidity or other ratios or restrict our ability to pay dividends or make acquisitions.

If we raise additional funds through collaborations, strategic alliances or marketing, distribution or licensing arrangements with third parties, we may be required to relinquish valuable rights to our technologies, future revenue streams, research programs or product candidates or to grant licenses on terms that may not be favorable to us. In addition, we could also be required to seek funds through arrangements with collaborators or others at an earlier stage than otherwise would be desirable. If we raise funds through research grants, we may be subject to certain requirements, which may limit our ability to use the funds or require us to share information from our research and development. If we are unable to raise additional funds through equity or debt financings when needed, we may be required to delay, limit, reduce or terminate our product development or future commercialization efforts or grant rights to a third party to develop and market product candidates that we would otherwise prefer to develop and market ourselves. Raising additional capital through any of these or other means could adversely affect our business and the holdings or rights of our shareholders and may cause the market price of our ADSs to decline.

Risks Related to the Development of Our Product Candidates

All of our product candidates are in clinical development or in preclinical development. If we are unable to advance our product candidates through clinical development, obtain regulatory approval and ultimately commercialize our product candidates, or experience significant delays in doing so, our business will be materially harmed.

We have established clinical proof-of-concept for only one of our product candidates. There is no assurance that our current or any other future clinical trials of our product candidates will be successful or will generate positive clinical data, and we may not receive marketing approval from the U.S. Food and Drug Administration, or FDA, or other regulatory agencies, including the European Medicines Agency, or EMA, for any of our product candidates. In order to commence a clinical trial in the United States, we must submit an Investigational New Drug application, or IND, to the FDA and have the IND application go into effect. Trials in the United States must be conducted pursuant to an active IND. An investigator may not administer an investigational new drug to human subjects until the IND application goes into effect. Similar requirements apply to our conduct of trials in the United Kingdom and European Union. We are sponsoring active, recruiting clinical trials for two of our product candidates, obe-cel (AUTO1), and AUTO4. We are also collaborating with our academic partner University College London to support clinical trials sponsored by them of our product candidates (AUTO1/22, AUTO6NG and AUTO8). In addition, patients who have received an investigational product developed by us will be evaluated for long-term safety and disease response in a long-term follow-up protocol. There can be no assurance that the FDA, EMA or other regulatory agencies will permit any future clinical trial application to go into effect in a timely manner or at all.

U.S. and EU regulations require parties seeking regulatory approval for product candidates in adult indications to define a development plan for such candidate in pediatric indications, commonly referred to as a Pediatric Study Plan, or PSP, in the U.S. and a Pediatric Investigational Plan, or PIP, in the European Union. Similar requirements apply in other jurisdictions. If these requirements are not met, a submission for marketing authorization cannot be submitted. A pediatric development plan must be approved by U.S., EU and other regulators, and the conduct of the respective pediatric studies, typically in parallel with the adult clinical development, must be conducted in the time frame described in the plan. Failure to comply with these requirements can lead to penalties and reputational damage. There can be no assurance that the FDA, EMA or other regulatory agencies will permit a pediatric development plan to go into effect in a timely manner, or at all. If we are unable to agree upon appropriate pediatric development plans with these regulatory agencies, or if we are unable to perform the activities described in an agreed plan, we could experience significant delays or an inability to successfully commercialize our product candidates, which would materially harm our business.

Biopharmaceutical development is a long, expensive and uncertain process, and delay or failure can occur at any stage of any of our clinical trials. Failure to obtain regulatory approval for our product candidates will prevent us from commercializing and marketing our product candidates.

The success in the development of our programmed T cell product candidates will depend on many factors, including:

- completing preclinical studies and receiving regulatory approvals or clearance for conducting clinical trials for our preclinical-stage programs;
- obtaining positive results in our clinical trials demonstrating efficacy, safety, and durability of effect of our product candidates;
- establishing pediatric development plans with respect to product candidates for which we seek regulatory approval;
- receiving approvals for commercialization of our product candidates from regulatory authorities;
- manufacturing our product candidates at an acceptable cost; and
- maintaining and growing an organization of scientists, medical professionals and business people who can develop and commercialize our products and technology.

Many of these factors are beyond our control, including the time needed to adequately complete clinical testing and the regulatory submission process. It is possible that none of our product candidates will ever obtain regulatory approval, even if we expend substantial time and resources seeking such approval. If we do not achieve one or more of these factors in a timely manner or at all, or any other factors impacting the successful development of biopharmaceutical products, we could experience significant delays or an inability to successfully develop our product candidates, which would materially harm our business.

Our proprietary, next-generation T cell programming technologies, our modular approach for engineering T cells and our manufacturing platform for our programmed T cell product candidates, represent emerging approaches to cancer treatment that face significant challenges and hurdles.

We have concentrated our research and development efforts on our T cell technology platform using our expertise in tumor biology and cell programming, and our future success is highly dependent on the successful development and manufacture of our programmed T cell product candidates. We do not currently have any approved or commercialized products. Some of our product candidates employ a dual-targeting mechanism. By targeting two separate antigens on the cancer cell surface, we believe these product candidates have the potential to improve durability of treatment response and reduce the frequency of cancer relapse as compared to other currently available single-targeting T cell therapies. AUTO4, our product candidate for the treatment of T-cell lymphoma, employs a novel approach to killing malignant T cells that aims to preserve approximately half of the normal, healthy T cells. Some of our product candidates include a “safety switch” that is designed to allow for the elimination of the engineered T cells if a patient experiences severe adverse side effects from the treatment. However, this “safety switch” technology has not been activated to date in our clinical studies, and we do not know whether it would have the intended effect if used. Additionally, as with other targeted therapies, off-tumor or off-target activity could delay development or require us to re-engineer or abandon a particular product candidate. Because programmed T cell therapies represent a relatively new field of cellular immunotherapy and cancer treatment generally, developing and commercializing our product candidates subjects us to a number of risks and challenges, including:

- obtaining regulatory approval for our product candidates, as the FDA, the EMA and other regulatory authorities have limited experience with programmed T cell therapies for cancer;
- sourcing clinical and, if approved, commercial supplies of the materials used to manufacture our product candidates;
- developing programming modules with the desired properties, while avoiding adverse reactions;
- creating viral vectors capable of delivering multiple programming modules;
- developing a reliable and consistent vector and cell manufacturing process;
- establishing manufacturing capacity suitable for the manufacture of our product candidates in line with expanding enrollment in our clinical studies and our projected commercial requirements;
- achieving cost efficiencies in the scale-up of our manufacturing capacity;
- developing protocols for the safe administration of our product candidates;
- educating medical personnel regarding our programmed T cell therapies and the potential side effect profile of each of our product candidates, such as potential adverse side effects related to cytokine release syndrome;
- establishing integrated solutions in collaboration with specialty treatment centers in order to reduce the burdens and complex logistics commonly associated with the administration of T cell therapies;
- establishing sales and marketing capabilities to successfully launch and commercialize our product candidates if and when we obtain any required regulatory approvals, and risks associated with gaining market acceptance of a novel therapy if we receive approval; and
- obtaining coverage and adequate reimbursement from third-party payors for our novel and personalized therapies in connection with commercialization of any approved product candidates.

We may not be able to successfully develop our programmed T cell product candidates or our T cell programming technologies in a manner that will yield products that are safe and effective, scalable or profitable.

Additionally, because our technology involves the genetic modification of patient cells *ex vivo*, we are subject to additional regulatory challenges and risks, including regulatory requirements governing genetically modified organisms that have changed frequently and will likely continue to change in the future, and that may limit or delay our ability to import our product candidates into certain countries for use in clinical trials or for commercial sale even if we receive applicable marketing approvals.

Moreover, public perception and awareness of T cell therapy safety issues may adversely influence the willingness of subjects to participate in clinical trials of our product candidates, or if approved, of physicians to prescribe our products. Physicians, hospitals and third-party payors often are slow to adopt new products, technologies and treatment practices that require additional upfront costs and training. Treatment centers may not be willing or able to devote the personnel and establish other infrastructure required for the administration of programmed T cell therapies. Physicians may not be willing to undergo training to adopt this novel and personalized therapy, may decide the therapy is too complex to adopt without appropriate training and may choose not to administer the therapy. Based on these and other factors, hospitals and payors may decide that the benefits of this new therapy do not or will not outweigh its costs.

Our future success is highly dependent on the regulatory approval of our current clinical-stage programmed T cell product candidates and our preclinical programs. All of our product candidates will require significant clinical or preclinical testing before we can seek regulatory approval for and launch a product commercially.

We do not have any products that have gained regulatory approval. Our business is substantially dependent on our ability to obtain regulatory approval for, and, if approved, to successfully commercialize our programmed T cell product candidates. We cannot commercialize product candidates in the United States without first obtaining regulatory approval for the product from the FDA; similarly, we cannot commercialize product candidates in countries outside of the United States without obtaining regulatory approval from comparable regulatory authorities in relevant jurisdictions, such as the European Commission in Europe (granted on the basis of a positive opinion from the Committee for Medicinal Products for Human Use of the EMA and commonly referred to as EMA approval). Additionally, to file for licensure in any jurisdiction outside of the UK we must first receive GMP certification from the MHRA. Before obtaining regulatory approvals for the commercial sale of any product candidate for a particular indication, we must demonstrate with substantial evidence gathered in preclinical and clinical studies, that the product candidate is safe and effective for that indication and that the manufacturing facilities, processes and controls are adequate with respect to such product candidate. The obe-cel Regenerative Medicine Advanced Therapy (RMAT) designation was submitted to FDA in February 2022 and was granted in April 2022. Similarly, in the UK, Autolus utilized the MHRA Innovative Licensing and Access Pathway (ILAP) and applied for ‘innovative medicine’ designation (Innovation Passport) which allows for fast track regulatory approval. The UK ILAP designation in r/r adult B-ALL was granted in June 2021. Additionally, EMA PRIME designation in r/r B-ALL was obtained in March 2021. Moreover, Orphan Designation in B-ALL was granted by the FDA in November 2019 and by the EMA in March 2022. To date, we have had only limited interaction with the FDA, MHRA and the EMA regarding our product candidates. Prior to seeking approval for any of our product candidates, we will need to confer with the FDA, MHRA, the EMA and other regulatory authorities regarding the design of our clinical trials and the type and amount of clinical data necessary to seek and gain approval for our product candidates.

The time required to obtain approval by the FDA, MHRA, the EMA and other regulatory authorities is unpredictable but typically takes many years following the commencement of preclinical studies and clinical trials and depends upon numerous factors, including the substantial discretion of the regulatory authorities. In addition, approval policies, regulations, or the type and amount of clinical data necessary to gain approval may change during the course of a product candidate’s clinical development and may vary among jurisdictions. It is possible that none of our existing product candidates or any future product candidates will ever obtain regulatory approval.

Our product candidates could fail to receive regulatory approval from the FDA, MHRA, the EMA or other regulatory authorities and, consequently, fail to achieve suitable commercial success for many reasons, including:

- disagreement with the design, protocol or conduct of our clinical trials;
- failure to demonstrate that a product candidate is safe and effective for its proposed indication;
- failure of clinical trials to meet the level of statistical significance required for approval;
- failure to demonstrate that a product candidate’s clinical and other benefits outweigh its safety risks;
- disagreement with our interpretation of data from preclinical studies or clinical trials;
- insufficiency of data collected from clinical trials of our product candidates to support the submission and filing of a Biologics License Application, or BLA, or other submission or to obtain regulatory approval;
- failure to obtain approval of the manufacturing processes or our facilities;
- failure to receive timely handover of our planned commercial launch facility to enable on-time completion of all operational qualification activities;
- failure to achieve timely acceptance of Technical Transfer and Performance Qualification of our commercial manufacturing facility;
- augmentation of the requirements to satisfy facility qualification or licensure submission by the regulating authorities, thus delaying time to submission and licensure of;

- failure to achieve a competitive value proposition in terms of product release specifications and our vein-to-vein delivery time;
- failure to achieve approval of state of the art in-process and release assays critical to optimizing intent to treat and achieving a competitive vein to vein time;
- failure to have adequate funding to sustain the full complement of staff required to facilitate targeted product launch volumes;
- changes in the approval policies or regulations that render our preclinical and clinical data insufficient for approval; or
- lack of adequate funding to complete a clinical trial in a manner that is satisfactory to the applicable regulatory authority.

The FDA, the EMA or a comparable regulatory authority may require more information, including additional preclinical or clinical data to support approval, including data that would require us to perform additional clinical trials or modify our manufacturing processes, which may delay or prevent approval and our commercialization plans, or we may decide to abandon the development program. If we change our manufacturing processes or manufacturing facilities, we may be required to conduct additional clinical trials or other studies, which also could delay or prevent approval of our product candidates. If we were to obtain approval, regulatory authorities may approve any of our product candidates for fewer indications than we request (including failing to approve the most commercially promising indications) or for different indications from those obtained in other territories, may limit indications, may grant approval contingent on the performance of costly post-marketing clinical trials or other post-marketing commitments, or may approve a product candidate with a label that does not include the labeling claims necessary or desirable for the successful commercialization of that product candidate. Furthermore, the indication granted by health authorities may vary from region to region, which may impair our commercialization plans. Finally, even with licensures in the relevant regions we initially do not have production redundancy. Due to this, we are at higher risk of supply disruptions to regional factors that could impair our supply chains. Examples of this could be expanding conflict in Eastern Europe and volcanic eruption in Iceland which has the potential to ground air traffic for weeks.

Even if a product candidate were to successfully obtain approval from the FDA, the EMA or other comparable regulatory authorities in other jurisdictions, any approval might contain significant limitations related to use restrictions for specified age groups, warnings, precautions or contraindications, or may be subject to burdensome post-approval study or risk management requirements. If we are unable to obtain regulatory approval for one of our product candidates in one or more jurisdictions, or any approval contains significant limitations, we may not be able to obtain sufficient funding to continue the development of that product or generate revenues attributable to that product candidate. Also, any regulatory approval of our current or future product candidates, once obtained, may be withdrawn. See the risk factor titled “—Even if we complete the necessary preclinical studies and clinical trials, the regulatory approval process is expensive, time-consuming and uncertain and may prevent us from obtaining approvals for the commercialization of some or all of our product candidates. As a result, we cannot predict when or if, and in which territories, we will obtain marketing approval to commercialize a product candidate.”

We may not be successful in our efforts to build a pipeline of product candidates.

A key element of our strategy is to use our expertise in tumor biology and cell programming and our proprietary and modular T cell programming technologies to develop what we believe are safer and more effective T cell therapies. Our initial focus is on the development of a pipeline of product candidates for the treatment of hematological cancers and the progression of these product candidates through clinical development. We also intend to develop follow-on, or next-generation, product candidates with additional elements of programming built into the programmed T cell product candidate to offer enhanced characteristics as compared to the earlier product generation, such as pharmacological control or insensitivity to checkpoint inhibition. However, we may not be able to develop product candidates that are safe and effective, or which compare favorably with our existing product candidates.

Even if we are successful in continuing to build our pipeline and developing next-generation product candidates or expanding into solid tumor indications, the potential product candidates that we identify may not be suitable for clinical development, including as a result of lack of safety, lack of tolerability, lack of anti-tumor activity, or other characteristics that indicate that they are unlikely to be products that will receive marketing approval, achieve market acceptance or obtain reimbursements from third-party payors. If we do not successfully develop and commercialize product candidates or collaborate with others to do so, we will not be able to obtain product revenue in future periods, which could significantly harm our financial position and adversely affect the trading price of our ADSs.

Our preclinical programs may experience delays or may never advance to clinical trials, which would adversely affect our ability to obtain regulatory approvals or to commercialize these programs on a timely basis or at all, which would have an adverse effect on our business.

Many of our product candidates are in the preclinical development stage. The risk of failure of preclinical programs is high. Before we can commence clinical trials for a product candidate, we must complete extensive preclinical testing and studies to obtain regulatory clearance to initiate human clinical trials, including based on IND applications in effect in the United States and clinical trial applications, or CTAs, in Europe. We cannot be certain of the timely completion or outcome of our preclinical testing and studies and cannot predict if the FDA, the EMA or other regulatory authorities will accept our proposed clinical programs or if the outcome of our preclinical testing and studies will ultimately support the further development of our programs. As a result, we cannot be sure that we will be able to submit INDs or similar applications for our preclinical programs on the timelines we expect, if at all, and we cannot be sure that submission of INDs or similar applications will result in the FDA, the EMA or other regulatory authorities allowing clinical trials to begin.

Clinical trials are difficult to design and implement, involve uncertain outcomes and may not be successful.

Human clinical trials are difficult to design and implement, in part because they are subject to rigorous regulatory requirements. The design of a clinical trial can determine whether its results will support approval of a product, and flaws in the design of a clinical trial may not become apparent until the clinical trial is well advanced. As an organization, we have limited experience designing clinical trials and may be unable to design and execute a clinical trial to support regulatory approval. There is a high failure rate for biologic products proceeding through clinical trials, which may be higher for our product candidates because they are based on new technology and engineered on a patient-by-patient basis. Many companies in the pharmaceutical and biotechnology industries have suffered significant setbacks in late-stage clinical trials even after achieving promising results in preclinical testing and earlier-stage clinical trials. Data obtained from preclinical and clinical activities are subject to varying interpretations, which may delay, limit or prevent regulatory approval. In addition, we may experience regulatory delays or rejections as a result of many factors, including changes in regulatory policy during the period of our product candidate development. Any such delays could negatively impact our business, financial condition, results of operations and prospects.

Success in preclinical studies or clinical trials may not be indicative of results in future clinical trials.

Results from preclinical studies are not necessarily predictive of future clinical trial results, and interim results of a clinical trial are not necessarily indicative of final results. For example, we have treated only a small number of patients in some of our ongoing clinical trials. For that reason, we do not know whether these candidates will be effective for the intended indications or safe in humans. Our product candidates may fail to show the desired safety and efficacy in clinical development despite positive results in preclinical studies or having successfully advanced through initial clinical trials. This failure to establish sufficient efficacy and safety could cause us to abandon clinical development of our product candidates.

We depend on enrollment of patients in our clinical trials for our product candidates. If we encounter difficulties enrolling patients in our clinical trials, our clinical development activities could be delayed or otherwise adversely affected.

Identifying and qualifying patients to participate in clinical trials of our product candidates is critical to our success. We may experience difficulties in patient enrollment in our clinical trials for a variety of reasons. The timely completion of clinical trials in accordance with their protocols depends, among other things, on our ability to enroll a sufficient number of patients who remain in the study until its conclusion. The enrollment of patients depends on many factors, including:

- the patient eligibility criteria defined in the protocol;
- the number of patients with the disease or condition being studied;
- the perceived risks and benefits of the product candidate in the trial;
- clinicians' and patients' perceptions as to the potential advantages of the product candidate being studied in relation to other available therapies, including any new drugs that may be approved for the indications we are investigating or drugs that may be used off-label for these indications;
- the size and nature of the patient population required for analysis of the trial's primary and secondary endpoints;
- the proximity of patients to study sites;
- the design of the clinical trial;
- our ability to recruit clinical trial investigators with the appropriate competencies and experience;
- competing clinical trials for similar therapies or other new therapeutics not involving T cell-based immunotherapy;
- our ability to obtain and maintain patient consents;

- disruptions to health care systems caused by the coronavirus pandemic;
- the risk that patients enrolled in clinical trials will drop out of the clinical trials before completion of their treatment; and
- other public health factors, including the coronavirus pandemic or outbreaks of Respiratory Syncytial Virus infections.

In particular, some of our clinical trials will look to enroll patients with characteristics which are found in a very small population. For example, our clinical trial for AUTO4 seeks to enroll patients with peripheral T-cell lymphoma, a rare and heterogeneous form of non-Hodgkin lymphoma, or NHL. Other companies are conducting clinical trials with their redirected T cell therapies in multiple myeloma, pediatric or adult relapsed or refractory acute B lymphoblastic leukemia (B-ALL), or pediatric or adult ALL, and relapsed or refractory diffuse large B-cell lymphoma, or DLBCL, relapsed or refractory mantle cell lymphoma or MCL and seek to enroll patients in their studies that may otherwise be eligible for our clinical trials, which could lead to slow recruitment and delays in our clinical programs. In addition, since the number of qualified clinical investigators is limited, we expect to conduct some of our clinical trials at the same clinical trial sites that some of our competitors use, which could further reduce the number of patients who are available for our clinical trials in these clinical trial sites.

Moreover, because our product candidates represent a departure from more commonly used methods for cancer treatment, potential study participants and their doctors may be inclined to use conventional therapies, such as chemotherapy and antibody therapy, rather than participate in our clinical trials.

Delays in patient enrollment may result in increased costs or may affect the timing or outcome of the planned clinical trials, which could prevent completion of these clinical trials and adversely affect our ability to advance the development of our product candidates. In addition, many of the factors that may lead to a delay in the commencement or completion of clinical trials may also ultimately lead to the denial of regulatory approval of our product candidates.

The market opportunities for certain of our product candidates may be limited to those patients who are ineligible for or have failed prior treatments and may be small, and our projections regarding the size of the addressable market may be incorrect.

Cancer therapies are sometimes characterized as first line, second line or later lines, and the FDA often approves new therapies initially only for later line use. When blood cancers are detected, they are treated with the first line of therapy with the intention of curing the cancer. This generally consists of chemotherapy, radiation, antibody drugs, tumor-targeted small molecules, or a combination of these. In addition, sometimes a bone marrow transplantation can be added to the first line therapy after the combination chemotherapy is given. If the patient's cancer relapses, e.g. a B-cell malignancy, then they are given salvage therapies which can consist of more chemotherapy, radiation, CAR T cell products, antibody drug conjugates, tumor-targeted small molecules, or a combination of these, or a bone marrow transplant. Generally, the higher the line of therapy, the lower the chance of a cure. With third or higher line, the goal of the therapy in the treatment of lymphoma and myeloma is to control the growth of the tumor and extend the life of the patient, as a cure is unlikely to happen. Patients are generally referred to clinical trials in these situations.

We are currently developing obe-cel for treatment of relapsed / refractory adult patients with B-ALL. As a next step, obe-cel could be developed in newly diagnosed patients with B-ALL as a consolidation strategy in first complete remission in order to replace or avoid allogeneic transplantation. AUTO4 is currently being developed as a treatment option for relapsed / refractory TRBC1-positive T-cell lymphoma patients. If AUTO4 is eventually approved as a second line therapy, we may seek to initiate a trial to position it as a consolidation therapy after first line chemotherapy in T-cell lymphoma. There is no guarantee that any of our product candidates, even if approved in later lines, would be approved for an earlier line of therapy. In addition, we may have to conduct additional large randomized clinical trials prior to gaining approval for the earlier line of therapy.

Our projections of both the number of people who have the cancers we are targeting, as well as the size of the patient population subset of people with these cancers in a position to receive first, second, third and fourth line therapy and who have the potential to benefit from treatment with our product candidates, are based on our beliefs and estimates. These estimates have been derived from a variety of sources, including scientific literature, surveys of clinics, patient foundations, or market research and may prove to be incorrect. Further, new studies may change the estimated incidence or prevalence of these cancers.

The number of patients may turn out to be fewer than expected. Additionally, the potentially addressable patient population for our product candidates may be limited or may not be amenable to treatment with our product candidates. For instance, in our clinical trial for AUTO4, we are initially targeting a small patient population that suffers from peripheral T-cell lymphoma, a rare and heterogeneous form of NHL. Even if we obtain significant market share for our product candidates, because the potential target populations are small, we may never achieve significant revenues without obtaining regulatory approval for additional indications or as part of earlier lines of therapy.

Adverse side effects or other safety risks associated with our product candidates could delay or preclude approval, cause us to suspend or discontinue clinical trials, cause us to abandon product candidates, limit the commercial profile of an approved label, or result in significant negative consequences following any potential marketing approval.

In clinical trials conducted by other companies involving CAR T cells, the most prominent acute toxicities included symptoms thought to be associated with cytokine release syndrome, or CRS, such as fever, low blood pressure and kidney dysfunction. Some patients also experienced toxicity of the central nervous system, or neurotoxicity, such as confusion, tremor, cranial nerve dysfunction, seizures and speech impairment. CAR T cell associated neurotoxicity is also known as immune effector cell-associated neurotoxicity syndrome, or ICANS. Adverse events with the worst grades and attributed to CAR T cells were severe and life threatening in some patients. The life threatening events were related to cardiac dysfunction, kidney dysfunction and neurotoxicity. Severe and life threatening toxicities occurred mostly in the first two weeks after cell infusion and generally resolved within three - four weeks, but several patients died in clinical trials involving CAR T cells developed by other companies and academic institutions. For example, as of the most recent data cut-off date of November 2, 2022, 20 patients with relapsed or refractory ALL have received obe-cel in the ALLCAR19 clinical trial. Of those 20 patients, three patients (15%) experienced Grade 3 neurotoxicity that resolved swiftly within 1-3 days with steroids. We also observed Grade 2 CRS in 40% of patients, but none of the 20 patients experienced Grade 3 or higher CRS. We also observed Grade 3 or higher cytopenias (neutropenias and thrombocytopenias) which is a common finding in patients with r/r ALL treated with CAR T-cells. The median time to recovery to grade 2 or less neutropenia was 28 days in the ALLCAR19 study.

Of the 20 patients, ten patients died while enrolled in the ALLCAR19 clinical trial, of which two deaths were determined to be due to progression of the leukemia, one death occurred post progression and post-transplant, and the four remaining deaths were determined to be due to infectious complications in patients with prolonged cytopenias (a common complication of advanced ALL).

On December 8, 2022, we announced safety data from a pre-planned interim analysis of 92 patients treated in the pivotal FELIX trial, where we observed that 3% of patients (three patients), had equal to or greater than Grade 3 CRS and that 8% of patients (seven patients), had equal to or greater than Grade 3 ICANS.

There can be no assurance that patients in ongoing or future trials of obe-cel, AUTO4 or any of our other product candidates will not experience more severe CRS, unacceptable levels of neurotoxicity or other serious adverse events.

Our clinical trials include cancer patients who are very sick and whose health is deteriorating, and we expect that additional clinical trials of our other product candidates will include similar patients with deteriorating health. It is possible that some of these patients may experience similar adverse side effects as were observed in clinical trials conducted by other companies and academic institutions involving CAR T cells, and that additional patients may die during our clinical trials for various reasons, including as a result of receiving our product candidates, because the patient's disease is too advanced, or because the patient experiences medical problems that may not be related to our product candidate. Even if the deaths are not related to our product candidate, the deaths could affect perceptions regarding the safety of our product candidate.

Patient deaths and severe side effects caused by our product candidates, or by products or product candidates of other companies that are thought to have similarities with our therapeutic candidates, could result in the delay, suspension, clinical hold or termination of clinical trials by us, the FDA, the EMA or other regulatory authorities for a number of reasons. If we elect or are required to delay, suspend or terminate any clinical trial of any product candidates that we develop, the commercial prospects of such product candidates will be harmed and our ability to generate product revenues from any of these product candidates would be delayed or eliminated. Serious adverse events observed in clinical trials could hinder or prevent market acceptance of the product candidate at issue. Any of these occurrences may harm our business, prospects, financial condition and results of operations significantly.

If the clinical trials of any of our product candidates fail to demonstrate safety and efficacy to the satisfaction of the FDA, the EMA or other comparable regulatory authorities, or do not otherwise produce favorable results, we may incur additional costs or experience delays in completing, or ultimately be unable to complete, the development and commercialization of our product candidates.

We may not commercialize, market, promote or sell any product candidate without obtaining marketing approval from the FDA, the EMA or other comparable regulatory authority, and we may never receive such approvals. It is impossible to predict accurately when or if any of our product candidates will prove effective or safe in humans and will receive regulatory approval. Before obtaining marketing approval from regulatory authorities for the commercial sale of any of our product candidates, we must demonstrate through lengthy, complex and expensive preclinical testing and clinical trials that our product candidates are both safe and effective for use in each target indication. The potential label for the same product may differ in different territories based on the approval by different health authorities. Clinical testing is expensive, difficult to design and implement, can take many years to complete and is uncertain as to outcome. A failure of one or more clinical trials can occur at any stage of testing.

We may experience numerous unforeseen events prior to, during, or as a result of, clinical trials that could delay or prevent our ability to receive marketing approval or commercialize any of our product candidates, including:

- the FDA, the EMA or other comparable regulatory authority may disagree as to the number, design or implementation of our clinical trials, or may not interpret the results from clinical trials as we do;
- regulators or institutional review boards may not authorize us or our investigators to commence a clinical trial or conduct a clinical trial at a prospective trial site;
- we may not reach agreement on acceptable terms with prospective clinical trial sites, the terms of which can be subject to extensive negotiation and may vary significantly among different clinical trial sites;
- clinical trials of our product candidates may produce negative or inconclusive results;
- we may decide, or regulators may require us, to conduct additional clinical trials or abandon product development programs;
- the number of patients required for clinical trials of our product candidates may be larger than we anticipate, enrollment in these clinical trials may be slower than we anticipate, participants may drop out of these clinical trials at a higher rate than we anticipate or we may fail to recruit suitable patients to participate in a trial;
- our third-party contractors may fail to comply with regulatory requirements or meet their contractual obligations to us in a timely manner, or at all;
- regulators may issue a clinical hold, or regulators or institutional review boards may require that we or our investigators suspend or terminate clinical research for various reasons, including noncompliance with regulatory requirements or a finding that the participants are being exposed to unacceptable health risks;
- the cost of clinical development of our product candidates may be greater than we anticipate;
- the FDA, the EMA or other comparable regulatory authorities may fail to approve our manufacturing processes or facilities;
- the supply or quality of our product candidates or other materials necessary to conduct clinical trials of our product candidates may be insufficient or inadequate;
- our product candidates may have undesirable side effects or other unexpected characteristics, particularly given their novel, first-in-human application, such as cytokine-induced toxicity and T cell aplasia, causing us or our investigators, regulators or institutional review boards to suspend or terminate the clinical trials; and
- the approval policies or regulations of the FDA, the EMA or other comparable regulatory authorities may significantly change in a manner rendering our clinical data insufficient for approval.

To the extent that the results of the trials are not satisfactory for the FDA, the EMA or regulatory authorities in other countries or jurisdiction to approve our BLA, Marketing Approval Application, or MAA, or other comparable application, the commercialization of our product candidates may be significantly delayed, or we may be required to expend significant additional resources, which may not be available to us, to conduct additional trials in support of potential approval of our product candidates.

We may not be able to successfully create our own manufacturing infrastructure for supply of our requirements of programmed T cell product candidates for use in clinical trials and for commercial sale.

Our manufacturing and commercialization strategy is based on establishing a fully integrated vein-to-vein product delivery cycle. At present, we do not have our own facility ready for use as our clinical-scale manufacturing and processing facility, and we currently use facilities and equipment at the Cell and Gene Therapy Catapult, as well as third party vendors, for vector and cell manufacturing. We have entered into an arrangement for the construction of a new facility (which we call the Nucleus) in Stevenage, United Kingdom which we believe will support our clinical manufacturing capacity and potential commercial manufacturing needs. This facility is yet to be completed and will require approval and licensure from Health Authorities to enter into operations; such approvals may not be granted.

We have established our viral vector and cell manufacturing capacity for clinical study supply by taking occupancy of manufacturing suites at the Cell and Gene Therapy Catapult manufacturing center in Stevenage, United Kingdom, as well as several smaller facilities in the Stevenage, United Kingdom area. The Cell and Gene Therapy Catapult manufacturing center provides shared infrastructure to collaborators working in segregated manufacturing suites. We have little to no control over the actions of other collaborators and their actions could inadvertently damage or delay our ability to manufacture our product candidates. In addition, we rely on external vendors to manufacture viral vector for certain of our product candidates. We are currently establishing a new commercial manufacturing facility in Stevenage, United Kingdom, which we have named “The Nucleus”, and over time we can add additional manufacturing sites in the United States and in Europe as needed. The implementation of this plan is subject to many risks. For example, the establishment of a cell-therapy manufacturing facility is a complex endeavor requiring knowledgeable individuals. Creating an internal manufacturing infrastructure will rely upon finding personnel with an appropriate background and training to staff and operate the facility. Should we be unable to find these individuals, we may need to rely on external contractors or train additional personnel to fill the needed roles. There are a small number of individuals with experience in cell therapy and the competition for these individuals is high.

We expect that the establishment of our own commercial cell manufacturing facilities will provide us with enhanced control of product supply for both clinical trials and the commercial market, enable the more rapid implementation of process changes, and allow for better long-term cost margins. However, we have limited experience as a company in designing and operating a commercial cell therapy or vector manufacturing facility and may never be successful in developing our own manufacturing facility or capability. We may establish additional manufacturing sites as we expand our commercial footprint to multiple geographies, which may lead to regulatory delays or prove costly. Even if we are successful, our manufacturing operations could be affected by cost-overruns, unexpected delays, equipment failures, labor shortages, natural disasters, power failures and numerous other factors, or we may not be successful in establishing sufficient capacity to produce our product candidates in sufficient quantities to meet the requirements for the potential launch or to meet potential future demand, all of which could prevent us from realizing the intended benefits of our manufacturing strategy and have a material adverse effect on our business.

We may not be successful in achieving cost of goods at commercial scale that provide for an attractive margin.

We believe that our current, enclosed manufacturing processes are fit for commercial scale and we anticipate they will enable commercial supply at an economical cost. However, we have not yet established manufacturing capacity at commercial scale and may underestimate the cost and time required to do so, or overestimate cost reductions from economies of scale that can be realized with our manufacturing processes. We may ultimately be unable to manage the cost of goods for our product candidates to levels that will allow for a margin in line with our expectations and return on investment if and when those product candidates are commercialized.

Our product candidates are biologics and the manufacture of our product candidates is complex and we may encounter difficulties in production, particularly with respect to process development or scaling-out of our manufacturing capabilities. If we encounter such difficulties, our ability to provide supply of our product candidates for clinical trials or our products for patients, if approved, could be delayed or stopped.

We have developed a process for manufacturing programmed T cells in a fully enclosed system designed to minimize the risk of contamination, and we have improved the viral transduction process to help eliminate processing inconsistencies. We believe that our current processes are suitable for commercialization. While we have established a process which we believe is scalable for commercial production, each manufacturing process must be validated through the performance of process validation runs to guarantee that the facility, personnel, equipment, and process work as designed. We have not yet manufactured or processed our product candidates on a commercial scale and may not be able to do so for any of our product candidates.

We, like other manufacturers of biologic products, may encounter difficulties in production, particularly in scaling up or out, validating the production process, and assuring high reliability of the manufacturing process. These problems include delays or break-downs in logistics and shipping, difficulties with production costs and yields, quality control, and product testing, operator error, lack of availability of qualified personnel, as well as failure to comply with strictly enforced federal, state and foreign regulations, which are updated regularly.

Furthermore, if microbial, viral or other contaminants are discovered in our supply of product candidates or in the manufacturing facilities, such manufacturing facilities may need to be closed for an extended period of time to investigate and remedy the contamination. We cannot assure you that any of these or other issues relating to the manufacture of our product candidates will not occur in the future. Any delay or interruption in the supply of clinical trial supplies could delay the completion of clinical trials, increase the costs associated with maintaining clinical trial programs and, depending upon the period of delay, require us to begin new clinical trials at additional expense or terminate clinical trials completely.

The manufacture and delivery of programmed T cell therapies to patients involves complex, integrated processes, including harvesting T cells from patients, programming the T cells *ex vivo*, multiplying the T cells to obtain the desired dose, and ultimately infusing the T cells back into a patient's body. As a result of the complexities, the cost to manufacture biologics in general, and our programmed T cell product candidates in particular, is higher than traditional small molecule chemical compounds, and the manufacturing process is less reliable and is more difficult and costly to reproduce. In addition, our manufacturing process will be susceptible to product loss or failure due to logistical issues associated with the collection of white blood cells from the patient, shipping such patient material to the manufacturing site, storing and processing such patient material, shipping the patient material with the programmed T cells back to the patient, and infusing the patient with the final product. Other manufacturing issues include the differences in patient starting materials, inconsistency in cell growth, variability in product characteristics, interruptions in the manufacturing process, equipment or reagent failure, improper installation or operation of equipment, and vendor or operator error. Even minor deviations from normal manufacturing processes could result in reduced production yields, product defects, and other supply disruptions. For example, in clinical trials of obe-cel conducted by UCL using a manufacturing process that differs from our semi-automated manufacturing process, UCL experienced product failures for three patients enrolled in the CARPALL trial and produced only a partial dose for one patient in the ALLCAR19 trial. If we lose, destroy or otherwise impair the patient materials at any point in the vein-to-vein supply chain, the manufacturing process for that patient will need to be restarted and the resulting delay may adversely affect that patient's outcome due to the risk of disease progression.

In addition, because our product candidates are manufactured for each particular patient, we will be required to maintain a chain of identity with respect to materials as they move from the patient to the manufacturing facility, through the manufacturing process, and back to the patient. Maintaining such a chain of identity is difficult and complex, and failure to do so could result in adverse patient outcomes, loss of product, or regulatory action including withdrawal of our products from the market. Further, as product candidates are developed through preclinical to late-stage clinical trials towards approval and commercialization, it is common that various aspects of the development program, such as manufacturing methods, are altered along the way in an effort to optimize processes and results. Such changes carry the risk that they will not achieve these intended objectives, and any of these changes could cause our product candidates to perform differently and affect the results of planned clinical trials or other future clinical trials.

Our manufacturing facilities also require commissioning and validation activities to demonstrate that they operate as designed, and are subject to government inspections by the FDA, the MHRA, the EMA and other comparable regulatory authorities. If we are unable to reliably produce products to specifications acceptable to the regulatory authorities, we may not obtain or maintain the approvals we need to manufacture our products. Further, our facilities may fail to pass government inspections prior to or after the commercial launch of our product candidates, which would cause significant delays and additional costs required to remediate any deficiencies identified by the regulatory authorities. Any of these challenges could delay completion of clinical trials, require bridging clinical trials or the repetition of one or more clinical trials, increase clinical trial costs, delay approval of our product candidate, impair commercialization efforts, increase our cost of goods, and have an adverse effect on our business, financial condition, results of operations and growth prospects.

Prior treatments can alter the cancer and negatively impact chances for achieving clinical activity with our programmed T cells.

Patients with hematological cancers receive highly toxic lympho-depleting chemotherapy as their initial treatments. These therapies can impact the viability of the T cells collected from the patient and can contribute to highly variable responses to programmed T cell therapies. Patients could also have received prior therapies that target the same target antigen on the cancer cells as our intended programmed T cell product candidate and thereby lead to a selection of cancer cells with low or no expression of the target. As a result, our programmed T cell product candidates may not recognize the cancer cell and may fail to achieve clinical activity. Our most advanced product candidate, obe-cel, may face this challenge. For example, ALL patients could have received currently approved therapies such as Blincyto or Kymriah or Tecartus, or a CD19 ADC, or a CD22 targeting CAR T, or CD22 ADC, like Besponsa, or similar products or product candidates prior to receiving obe-cel. If any of our product candidates do not achieve a sufficient level of clinical activity, we may discontinue the development of that product candidate, which could have an adverse effect on the value of our ADSs.

We may expend our resources to pursue a particular product candidate or indication and fail to capitalize on product candidates or indications that may be more profitable or have a greater likelihood of success.

Because we have limited financial and management resources, we focus on research programs and product candidates that we identify for specific indications. As a result, we may forego or delay pursuit of opportunities with other product candidates or for other indications that later prove to have greater commercial potential. Our resource allocation decisions may cause us to fail to capitalize on viable commercial products or profitable market opportunities. Our spending on current and future research and development programs and product candidates for specific indications may not yield any commercially viable products. If we do not accurately evaluate the commercial potential or target market for a particular product candidate, we may relinquish valuable rights to that product candidate through collaboration, licensing or other royalty arrangements in cases in which it would have been more advantageous for us to retain sole development and commercialization rights to such product candidate.

We plan to seek, but may fail to obtain "breakthrough therapy" designation or "regenerative medicine advanced therapy" (RMAT) designation from the FDA and "PRIME" designation from the EMA, and may pursue accelerated approval for some or all of our programmed T cell product candidates, which may prolong the regulatory approval process for our product candidates.

In 2012, the FDA established a breakthrough therapy designation which is intended to expedite the development and review of product candidates that treat serious or life-threatening diseases when "preliminary clinical evidence indicates that the drug may demonstrate substantial improvement over existing therapies on one or more clinically significant endpoints, such as substantial treatment effects observed early in clinical development." The designation of a product candidate as a breakthrough therapy provides potential benefits that include more frequent meetings with FDA to discuss the development plan for the product candidate and ensure collection of appropriate data needed to support approval; more frequent written correspondence from the FDA about such things as the design of the proposed clinical trials and use of biomarkers; guidance on an efficient drug development program, beginning as early as Phase 1; organizational commitment involving senior managers; and eligibility for rolling review and priority review. The frequency of communication from the FDA is intended to allow for questions and issues to be resolved quickly, which often leads to earlier drug approval and access by patients.

RMAT was introduced as a new designation under the 21st Century Cures Act for the development and review of certain regenerative medicine therapies. To receive RMAT designation, a regenerative medicine product candidate must be intended to treat, modify, reverse, or cure a serious or life-threatening disease or condition with preliminary clinical evidence indicating that the drug has the potential to address unmet medical need. RMAT designation does not require evidence to indicate that the drug may offer a substantial improvement over available therapies, as breakthrough designation requires. In February 2019, the FDA released guidance that clarified that gene therapies, including genetically modified cells, that lead to a durable modification of cells or tissues, may meet the definition of a regenerative medicine therapy for RMAT designation. Similar to breakthrough designation, an RMAT product candidate receives: intensive guidance on an efficient drug development program; intensive involvement of senior managers and experienced staff on a proactive, collaborative and cross-disciplinary review; and a rolling review. Regenerative medicine therapies that qualify for RMAT designation may also qualify for other FDA expedited programs, if they meet the criteria for such programs.

Similarly, the EMA has established the PRIME scheme to expedite the development and review of product candidates that show a potential to address to a significant extent an unmet medical need, based on early clinical data.

Similarly, the MHRA has established the ILAP scheme to expedite the development and review of product candidates that show a potential to address to a significant extent an unmet medical need, based on early clinical data.

We intend to seek breakthrough therapy designation, RMAT designation, ILAP or PRIME designation for some or all of our programmed T cell product candidates that may qualify. There is no assurance that we will obtain breakthrough therapy designation or RMAT designation, or that we will obtain access to PRIME or ILAP for any of our product candidates.

Breakthrough therapy designation, RMAT designation ILAP and PRIME eligibility do not change the standards for product approval, and there is no assurance that such designation or eligibility will result in expedited review or approval. Additionally, breakthrough therapy designation, RMAT designation and access to PRIME or ILAP can each be revoked if the criteria for eligibility cease to be met as clinical data emerges.

We may also seek accelerated approval for certain of our product candidates. Under the FDA's fast track and accelerated approval programs, the FDA may approve a drug or biologic for a serious or life-threatening illness that provides meaningful therapeutic benefit to patients over existing treatments based upon a surrogate endpoint that is reasonably likely to predict clinical benefit, or on a clinical endpoint that can be measured earlier than irreversible morbidity or mortality, that is reasonably likely to predict an effect on irreversible morbidity or mortality or other clinical benefit, taking into account the severity, rarity, or prevalence of the condition and the availability or lack of alternative treatments. For drugs granted accelerated approval, post-marketing confirmatory trials have been required to describe the anticipated effect on irreversible morbidity or mortality or other clinical benefit. These confirmatory trials must be completed with due diligence.

Moreover, the FDA may withdraw approval of our indication approved under the accelerated approval pathway if, for example:

- the trial or trials required to verify the predicted clinical benefit of our product candidates fail to verify such benefit or do not demonstrate sufficient clinical benefit to justify the risks associated with the drug;
- other evidence demonstrates that our product candidates are not shown to be safe or effective under the conditions of use;
- we fail to conduct any required post-approval trial of our product candidates with due diligence; or
- we disseminate false or misleading promotional materials relating to the relevant product candidate.

Risks Related to our Business Operations

The effects of health epidemics, including the ongoing global coronavirus COVID-19 pandemic, in regions where we, or the third parties on which we rely, have business operations could adversely impact our business, including our clinical trials, preclinical studies and supply chains, depending on the location, duration and severity of disruptions to the systems affecting our business.

Our business could be adversely affected by health epidemics in regions where we have concentrations of clinical trial sites or other business operations, and could cause significant disruption in the operations of third party manufacturers and CROs upon whom we rely. The COVID-19 pandemic had a modest impact on our business operations. While it is not possible at this time to predict the duration and extent of the impact that COVID-19 will continue to have on worldwide economic activity and our business in particular, COVID-19 could adversely impact our business and ongoing and planning clinical trials, including as a result of delays or difficulties in clinical site initiation, difficulties in recruiting and retaining clinical site investigators and clinical site staff and interruption of our clinical supply chain or key clinical trial activities, such as clinical trial site monitoring, and supply chain interruptions caused by ongoing restrictions for the supply of materials for product candidates or other materials necessary to manufacture product to conduct preclinical tests.

In addition, the trading price for our ADSs as well as trading price for the publicly traded securities of other biopharmaceutical companies, as well as the broader global financial markets, have been highly volatile as a result of the COVID-19 pandemic and the resulting impact on U.K. and U.S. economic activities. As a result, we may face difficulties raising capital when needed, and any such sales may be on unfavorable terms to us. Further, to the extent we raise additional capital through the sale of equity or convertible debt securities, the ownership interest of existing shareholders will be diluted.

The extent to which the COVID-19 coronavirus or any future outbreaks of contagious disease may impact our business operations is highly uncertain and subject to change and will depend on future developments which are difficult to predict, including the duration of the COVID-19 pandemic, the ultimate geographic spread of the disease, additional or modified government actions, new information that will emerge concerning the severity and impact of COVID-19 and other actions taken to contain or address its impact in the short and long term, among others.

As a company based outside of the United States, our business is subject to economic, political, regulatory and other risks associated with international operations.

Our business is subject to risks associated with conducting business outside of the United States, as our company is based in the United Kingdom and conducts operations internationally. Many of our suppliers and clinical trial relationships are located outside the United States. Accordingly, our future results could be harmed by a variety of factors, including:

- economic weakness, including inflation, or political instability in particular non-U.S. economies and markets;
- differing and changing regulatory requirements for product approvals;
- differing jurisdictions could present different issues for securing, maintaining or obtaining freedom to operate in such jurisdictions;
- potentially reduced protection for intellectual property rights;
- difficulties in compliance with different, complex and changing laws, regulations and court systems of multiple jurisdictions and compliance with a wide variety of foreign laws, treaties and regulations;
- changes in non-U.S. regulations and customs, tariffs and trade barriers;
- changes in non-U.S. currency exchange rates of the pound sterling, U.S. dollar, euro and currency controls;
- changes in a specific country’s or region’s political or economic environment, including the implications of the United Kingdom's withdrawal from the European Union;
- trade protection measures, import or export licensing requirements or other restrictive actions by governments;
- differing reimbursement regimes and price controls in certain non-U.S. markets;
- negative consequences from changes in tax laws;
- compliance with tax, employment, immigration and labor laws for employees living or traveling abroad, including, for example, the variable tax treatment in different jurisdictions of options granted under our share option schemes or equity incentive plans;
- workforce uncertainty in countries where labor unrest is more common than in the United States;
- litigation or administrative actions resulting from claims against us by current or former employees or consultants individually or as part of class actions, including claims of wrongful terminations, discrimination, misclassification or other violations of labor law or other alleged conduct;
- difficulties associated with staffing and managing international operations, including differing labor relations;
- production shortages resulting from any events affecting raw material supply or manufacturing capabilities abroad; and
- business interruptions resulting from geopolitical actions, including war and terrorism, natural disasters--including earthquakes, typhoons, floods and fires--or health epidemics, such as the coronavirus pandemic.

Exchange rate fluctuations may materially affect our results of operations and financial condition.

Our functional currency and that of our subsidiaries is the pound sterling and our reporting currency is the U.S. dollar. Given that our functional currency and that of our subsidiaries is the pound sterling, but our reporting currency is the U.S. dollar, fluctuations in currency exchange rates between the U.S. dollar and the pound sterling could materially and adversely affect our business. There may be instances in which costs and revenue will not be matched with respect to currency denomination. Currently, we do not have any exchange rate hedging arrangements in place.

Additionally, although we are based in the United Kingdom, we source research and development, manufacturing, consulting and other services from the United States and other countries. Further, potential future revenue may be derived from the United States, countries within the euro zone, and various other countries around the world. As a result, our business and the price of our ADSs may be affected by fluctuations in foreign exchange rates not only between the pound sterling and the U.S. dollar, but also the euro and other currencies, which may have a significant impact on our results of operations and cash flows from period to period. As a result, to the extent we continue our expansion on a global basis, we expect that increasing portions of our revenue, cost of revenue, assets and liabilities will be subject to fluctuations in currency valuations. We may experience economic loss and a negative impact on earnings or net assets solely as a result of currency exchange rate fluctuations.

We will need to manage the size of our organization, and we may experience difficulties.

As of December 31, 2022, we had 404 employees, 399 of whom are full-time. As our development and commercialization plans and strategies develop, and as we further develop as a public company, we may need additional managerial, operational, financial and other personnel, including personnel to support our product development and planned future commercialization efforts. Future growth will impose significant added responsibilities on members of management, including:

- identifying, recruiting, integrating, maintaining and motivating additional employees;
- managing our internal development efforts effectively, including the clinical, FDA and EMA review processes for our product candidates; and
- improving our operational, financial and management controls, reporting systems and procedures.

There are a small number of individuals with experience in cell therapy and the competition for these individuals is high. Our future financial performance and our ability to commercialize our product candidates will depend, in part, on our ability to effectively manage any future growth, and our management may also have to divert a disproportionate amount of its attention away from day-to-day activities in order to devote a substantial amount of time to managing these growth activities.

If we are not able to effectively manage the size of our organization, we may not be able to successfully implement the tasks necessary to further develop and commercialize our product candidates and, accordingly, may not achieve our research, development and commercialization goals.

In addition to expanding our organization, we are building out our development and manufacturing capabilities, which requires significant capital expenditures. If these capital expenditures are higher than expected, it may adversely affect our financial condition and capital resources. In addition, if the availability of manufacturing capacity is delayed, it may limit our ability to rapidly expand the size of our organization in order to meet our corporate goals.

Our future success depends on our ability to retain key members of senior management and to attract, retain and motivate qualified personnel.

Our ability to compete in the highly competitive biopharmaceutical industry depends upon our ability to attract and retain highly qualified management, research and development, clinical, financial and business development personnel. We are highly dependent on our management, scientific and medical personnel. Each member of our senior management may terminate their employment with us at any time. We do not maintain ‘‘key person’’ insurance for any of our employees.

Recruiting and retaining qualified scientific and clinical personnel and, if we progress the development of any of our product candidates, commercialization, manufacturing and sales and marketing personnel, will be critical to our success. The loss of the services of members of our senior management or other key employees could impede the achievement of our research, development and commercialization objectives and seriously harm our ability to successfully implement our business strategy. Furthermore, replacing members of our senior management and key employees may be difficult and may take an extended period of time because of the limited number of individuals in our industry with the breadth of skills and experience required to successfully develop, gain regulatory approval of and commercialize our product candidates. Our success also depends on our ability to continue to attract, retain and motivate highly skilled junior, mid-level and senior managers, as well as junior, mid-level and senior scientific and medical personnel. Competition to hire from this limited candidate pool is intense, and we may be unable to hire, train, retain or motivate these key personnel on acceptable terms given the competition among numerous pharmaceutical and biotechnology companies for similar personnel. We also experience competition for the hiring of scientific and clinical personnel from universities and research institutions. In addition, we rely on consultants and advisors, including scientific and clinical advisors, to assist us in formulating our research and development and commercialization strategy. Our consultants and advisors may have commitments under consulting or advisory contracts with other entities that may limit their availability to us. If we are unable to continue to attract and retain high-quality personnel, our ability to pursue our growth strategy will be limited.

We will require additional funding to continue our planned operations. If we engage in future acquisitions or strategic collaborations, this may increase our capital requirements, dilute our shareholders, cause us to incur debt or assume contingent liabilities and subject us to other risks.

We will need additional capital in the future to continue our planned operations. To the extent we raise additional capital by issuing equity securities, our shareholders may experience substantial dilution. We may sell ordinary shares or ADSs, convertible securities or other equity securities in one or more transactions at prices and in a manner we determine from time to time. If we sell ordinary shares or ADSs, convertible securities or other equity securities in more than one transaction, investors may be materially diluted by subsequent sales. These sales may also result in material dilution to our existing shareholders, and new investors could gain rights superior to our existing shareholders. For example, pursuant to our December 2022 underwritten public offering, we sold 81,927,012 ADSs representing 81,927,012 ordinary shares, at a price to the public of $2.00 per ADS resulting in gross proceeds of $163.9 million. In 2021, we also granted Blackstone a warrant to purchase 3,265,306 ADSs representing 3,265,306 of our ordinary shares, at an exercise price of $7.35 per ADS. If we raise additional capital through our public or private equity offerings, the ownership interest of our existing shareholders will be diluted and may cause the market price of our ADSs to decline. Furthermore, new investors purchasing securities that we may issue and sell in the future could obtain rights superior to the rights of our existing shareholders.

From time to time, we may also evaluate various acquisitions and strategic collaborations, including collaborating with respect to our product candidates, or licensing or acquiring complementary products, intellectual property rights, technologies or businesses, as we may deem appropriate to carry out our business plan. Any potential acquisition or strategic collaboration, including our Collaboration and Financing Agreement with Blackstone, or the Collaboration Agreement, may entail numerous risks, including:

- increased operating expenses and cash requirements;
- the assumption of additional indebtedness or contingent liabilities;
- negative covenants that may affect our ability to develop and commercialize our product candidates;
- assimilation of operations, intellectual property and products of an acquired company, including difficulties associated with integrating new personnel;
- the diversion of our management's attention from our existing programs and initiatives in pursuing such a strategic partnership, merger or acquisition;
- retention of key employees, the loss of key personnel and uncertainties in our ability to maintain key business relationships;
- risks and uncertainties associated with the other party to such a transaction, including the prospects of that party and their existing products or product candidates and regulatory approvals; and
- our inability to generate revenue from acquired technology sufficient to meet our objectives in undertaking the acquisition or even to offset the associated acquisition and maintenance costs.

Additionally, if we undertake acquisitions, we may issue dilutive securities, assume or incur debt obligations, incur large one-time expenses and acquire intangible assets that could result in significant future amortization expenses. Moreover, we may not be able to locate suitable acquisition opportunities and this inability could impair our ability to grow or obtain access to technology or products that may be important to the development of our business.

We have incurred substantial obligations under the Collaboration Agreement with Blackstone, which could impair our flexibility and access to other capital and adversely affect our financial position, and our business would be adversely affected if we were unable to meet our obligations under the Collaboration Agreement.

In November 2021, we entered into the Collaboration Agreement pursuant to which Blackstone has agreed to pay us up to $150 million to support the continued development and, following approval, commercialization of our CD19 CAR T cell investigational therapy product candidate, obecabtagene autoleucel ("obe-cel," previously known as AUTO1) as well as our next generation product candidates of obe-cel (obe-cel and such next generation products, collectively, the "Collaboration Products") in exchange for our agreement to make substantial payments to Blackstone following approval of such products. These payments include a single-digit percentage royalty on worldwide net sales of (i) the Collaboration Products in any indication and (ii) AUTO3 for the treatment of B-cell leukemias and lymphomas, by us and any of our licensees, as well as sales milestone payments relating to such net sales. Such payments to Blackstone could increase our cash requirements and could impair our liquidity. As of December 31, 2022, Blackstone has paid $120 million to us under the terms of the Collaboration Agreement.

In connection with the Collaboration Agreement, Blackstone was granted a security interest in substantially all of our assets. The Collaboration Agreement also contains negative covenants that restrict us from (a) granting liens on certain of our assets, including liens on the intellectual property relating to the Collaboration Products, except for certain permitted liens, (b) making distributions or dividends, except for certain permitted distributions, (c) entering into development or commercialization license transactions with respect to the Collaboration Products, except that we are permitted to enter into any such development or commercialization license transactions with certain pharmaceutical companies, including those companies that have annual sales in excess of an agreed threshold, (d) consummating certain change in control transactions, (e) selling royalties or entering into similar financials transactions involving the sale of revenues or royalties, or (f) acquiring subsidiaries without joining such subsidiary as a party to the Collaboration Agreement. These restrictions could inhibit our ability to pursue our business strategies and may limit our ability to, among other things, incur secured indebtedness, encumber assets, pay dividends or make other distributions to holders of our capital stock, license-out the Collaboration Products, complete mergers or acquisitions, or sell royalties.

If we default under our obligations under the Collaboration Agreement, we will be obligated to pay Blackstone liquidated damage payments in excess of the development payment paid by Blackstone. If we fail to make such payments, Blackstone could elect to exercise its remedies in respect of the security interest, which would seriously harm our business and ability to continue as a going concern.

If our information technology systems or data, or those of third parties upon which we rely, are or were compromised, we could experience adverse consequences resulting from such compromise, including but not limited to regulatory investigations or actions; litigation; fines and penalties; disruptions of our business operations; reputational harm; loss of revenue or profits; and other adverse consequences.

In the ordinary course of our business, we and the third parties upon which we rely, process personal data and other sensitive information, including proprietary and confidential business data, trade secrets, intellectual property, data we collect about trial participants in connection with clinical trials and sensitive third-party data (collectively, sensitive data), and, as a result, we and the third parties upon which we rely face a variety of evolving threats, including but not limited to ransomware attacks, which could cause security incidents.

Cyber-attacks, malicious internet-based activity, online and offline fraud, and other similar activities threaten the confidentiality, integrity, and availability of our sensitive data and information technology systems, and those of the third parties upon which we rely. Such threats are prevalent and continue to rise, are increasingly difficult to detect, and come from a variety of sources, including traditional computer “hackers,” threat actors, “hacktivists,” organized criminal threat actors, personnel (such as through theft or misuse), sophisticated nation states, and nation-state-supported actors.

Some actors now engage and are expected to continue to engage in cyber-attacks, including without limitation nation-state actors for geopolitical reasons and in conjunction with military conflicts and defense activities. During times of war and other major conflicts, we, and the third parties upon which we rely, may be vulnerable to a heightened risk of these attacks, including retaliatory cyber-attacks, that could materially disrupt our systems and operations, supply chain, and ability to produce, sell and distribute our products and services.

We and the third parties upon which we rely are subject to a variety of evolving threats, including but not limited to social-engineering attacks (including through phishing attacks), malicious code (such as viruses and worms), malware (including as a result of advanced persistent threat intrusions), denial-of-service attacks (such as credential stuffing), credential harvesting, personnel misconduct or error, ransomware attacks, supply-chain attacks, software bugs, server malfunctions, software or hardware failures, loss of data or other information technology assets, adware, telecommunications failures, earthquakes, fires, floods, and other similar threats.

In particular, severe ransomware attacks are becoming increasingly prevalent and can lead to significant interruptions in our operations, loss of sensitive data and income, reputational harm, and diversion of funds. Extortion payments may alleviate the negative impact of a ransomware attack, but we may be unwilling or unable to make such payments due to, for example, applicable laws or regulations prohibiting such payments. Future or past business transactions (such as acquisitions or integrations) could expose us to additional cybersecurity risks and vulnerabilities, as our systems could be negatively affected by vulnerabilities present in acquired or integrated entities’ systems and technologies. Furthermore, we may discover security issues that were not found during due diligence of such acquired or integrated entities, and it may be difficult to integrate companies into our information technology environment and security program.

Remote work has become more common and has increased risks to our information technology systems and data, as more of our employees utilize network connections, computers, and devices outside our premises or network, including working at home, while in transit and in public locations. Additionally, future or past business transactions (such as acquisitions or integrations) could expose us to additional cybersecurity risks and vulnerabilities, as our systems could be negatively affected by vulnerabilities present in acquired or integrated entities’ systems and technologies. Furthermore, we may discover security issues that were not found during due diligence of such acquired or integrated entities, and it may be difficult to integrate companies into our information technology environment and security program.

We are increasingly dependent on critical, complex, and interdependent information technology systems (IT systems), including cloud based software and external servers, some of which are managed or hosted by third parties, to support business processes as well as internal and external communications. The information and data processed and stored in our IT systems, and those of our research collaborators, CROs, contract manufacturers, suppliers, or other third parties on which we depend to operate our business, may be vulnerable to security incidents from unauthorized activity by our employees, contractors or malware, hacking, business email compromise, phishing or other cyberattacks directed by other parties.Our ability to monitor these third parties' information security practices is limited, and these third parties may not have adequate information security measures in place. If our third-party service providers experience a security incident or other interruption, we could experience adverse consequences. While we may be entitled to damages if our third-party service providers fail to satisfy their privacy or security-related obligations to us, any award may be insufficient to cover our damages, or we may be unable to recover such award. In addition, supply-chain attacks have increased in frequency and severity, and we cannot guarantee that third parties' infrastructure in our supply chain or our third-party partners' supply chains have not been compromised.

Any of the previously identified or similar threats could cause a security incident or other interruption that could result in unauthorized, unlawful, or accidental acquisition, modification, destruction, loss, alteration, encryption, disclosure of, or access to our sensitive data or our information technology systems, or those of the third parties upon whom we rely. A security incident or other interruption could disrupt our ability (and that of third parties upon whom we rely) to provide our products and services.

We may expend significant resources or modify our business activities (including our clinical trial activities) to try to protect against security incidents. Additionally, certain data privacy and security obligations may require us to implement and maintain specific security measures or industry-standard or reasonable security measures to protect our information technology systems and sensitive data.

While we have implemented security measures designed to protect against security incidents, there can be no assurance that these measures will be effective. We take steps to detect and remediate vulnerabilities, but we may not be able to detect and remediate all vulnerabilities because the threats and techniques used to exploit the vulnerability change frequently and are often sophisticated in nature. Therefore, such vulnerabilities could be exploited but may not be detected until after a security incident has occurred. These vulnerabilities pose material risks to our business. Further, we may experience delays in developing and deploying remedial measures designed to address any such identified vulnerabilities.

Our contracts may not contain limitations of liability, and even where they do, there can be no assurance that limitations of liability in our contracts are sufficient to protect us from liabilities, damages, or claims related to our data privacy and security obligations. We cannot be sure that our insurance coverage will be adequate or sufficient to protect us from or to mitigate liabilities arising out of our privacy and security practices, that such coverage will continue to be available on commercially reasonable terms or at all, or that such coverage will pay future claims.

In addition to experiencing a security incident, third parties may gather, collect, or infer sensitive information about us from public sources, data brokers, or other means that reveals competitively sensitive details about our organization and could be used to undermine our competitive advantage or market position.

We are subject to stringent and evolving U.S., European, and foreign laws, regulations, rules, contractual obligations, policies and other obligations related to data privacy and security. Our actual or perceived failure to comply with such obligations could lead to regulatory investigations or actions; litigation; fines and penalties; disruptions of our business operations; reputational harm; loss of revenue or profits; and other adverse business consequences.

In the ordinary course of business, we collect, receive, store, process, generate, use, transfer, disclose, make accessible, protect, secure, dispose of, transmit, and share (collectively, processing) personal data and other sensitive data. Our data processing activities may subject us to numerous data privacy and security obligations, such as various laws, regulations, guidance, industry standards, external and internal privacy and security policies, contractual requirements, and other obligations relating to data privacy and security.

An increasing number of laws, regulations, and industry standards may govern data privacy and security. For example, the European Union's General Data Protection Regulation ("EU GDPR") and the United Kingdom's GDPR ("UK GDPR") impose strict requirements for processing personal data.

The processing of "special category personal data", such as health information, may also impose heightened compliance burdens under the EU GDPR and the UK GDPR and is a topic of active interest among relevant regulators.

The EU GDPR provides that EEA Member States may make their own further laws and regulations to introduce specific requirements related to the processing of "special categories of personal data", including personal data related to health, biometric data used for unique identification purposes and genetic information; as well as personal data related to criminal offenses or convictions.

This fact may lead to greater divergence on the law that applies to the processing of such data types across the EEA and/or UK, compliance with which, as and where applicable, may increase our costs and could increase our overall compliance risk. Such country-specific regulations could also limit our ability to collect, use and share data in the context of our EEA and/or UK operations, and/or could cause our compliance costs to increase, ultimately having an adverse impact on our business, and harming our business and financial condition.

The EU GDPR and UK GDPR also provides for more robust regulatory enforcement and greater penalties for noncompliance than previous data protection laws. In particular, under the EU GDPR, companies may face temporary or definitive bans on data processing and other corrective actions; fines of up to 20 million Euros or 4% of annual global revenue, whichever is greater; or private litigation related to processing of personal data brought by classes of data subjects or consumer protection organizations authorized at law to represent their interests.

In the ordinary course of business, we may transfer personal data from Europe and other jurisdictions to the United States. Europe and other jurisdictions have enacted laws requiring data to be localized or limiting the transfer of personal data to other countries. In particular, the European Economic Area (EEA) and the United Kingdom (UK) have significantly restricted the transfer of personal data to the United States and other countries whose privacy laws it believes are inadequate. Other jurisdictions may adopt similarly stringent interpretations of their data localization and cross-border data transfer laws. Although there are currently various mechanisms that may be used to transfer personal data from the EEA and UK to the United States in compliance with law, such as the EEA standard contractual clauses and UK's International Data Transfer Addendum, these mechanisms are subject to legal challenges, and there is no assurance that we can satisfy or rely on these measures to lawfully transfer personal data to the United States. If there is no lawful manner for us to transfer personal data from the EEA, the UK or other jurisdictions to the United States, or if the requirements for a legally-compliant transfer are too onerous, we could face significant adverse consequences, including the interruption or degradation of our operations, the need to relocate part of or all of our business or data processing activities to other jurisdictions at significant expense, increased exposure to regulatory actions, substantial fines and penalties, the inability to transfer data and work with partners, vendors and other third parties, and injunctions against our processing or transferring of personal data necessary to operate our business. Additionally, companies that transfer personal data out of the EEA and UK to other jurisdictions, particularly to the United States, are subject to increased scrutiny from regulators, individual litigants, and activist groups. Some European regulators have ordered certain companies to suspend or permanently cease certain transfers out of Europe for allegedly violating the GDPR's cross-border data transfer limitations.

In the United States, federal, state and local governments have enacted numerous data privacy and security laws, including data breach notification laws, data privacy laws, consumer protection laws (e.g., Section 5 of the Federal Trade Commission Act), and other similar laws (e.g., wiretapping laws). For example, the U.S. federal Health Insurance Portability and Accountability Act of 1996, or HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act of 2009, or HITECH, imposes specific requirements relating to the privacy, security and transmission of protected health information. In addition, the California Consumer Privacy Act of 2018, as amended by the California Privacy Rights Act of 2020, or the CPRA (collectively, the "CCPA"), applies to personal data of consumers, business representatives, and employees, and requires businesses to provide specific disclosures in privacy notices and honor requests of California residents to exercise certain privacy rights related to their personal data. The CCPA provides for administrative fines for noncompliance (up to $7,500 per violation) and allows private litigants affected by certain data breaches to recover significant statutory damages. Although the CCPA exempts some data processed in the context of clinical trials, the CCPA increases compliance costs and potential liability with respect to other personal data we maintain about California residents. Further, the CPRA's recent amendments expanded the CCPA's requirements, including by adding a new right for individuals to correct their personal data and establishing a new regulatory agency to implement and enforce the law. Other states, such as Virginia and Colorado, have also passed comprehensive privacy laws, and similar laws are being considered in several other states, as well as at the federal and local levels. While some of these state laws also exempt data processed in the context of clinical trials, these developments may nonetheless further complicate compliance efforts, and increase legal risk and compliance costs for us and the third parties upon whom we rely.

In addition to data privacy and security laws, we are subject to industry standards adopted by industry groups and may become subject to such obligations in the future. We are also bound by other contractual obligations related to data privacy and security, and our efforts to comply with such obligations may not be successful.

We publish privacy policies, marketing materials, and other statements, such as compliance with certain certifications or self-regulatory principles, regarding data privacy and security. If these policies, materials or statements are found to be deficient, lacking in transparency, deceptive, unfair, or misrepresentative of our practices, we may be subject to investigation, enforcement actions by regulators, or other adverse consequences.

Obligations related to data privacy and security are quickly changing, becoming increasingly stringent, and creating regulatory uncertainty. Additionally, these obligations may be subject to differing applications and interpretations, which may be inconsistent or conflict among jurisdictions. Preparing for and complying with these obligations requires us to devote significant resources, which may necessitate changes to our services, information technologies, systems, and practices and to those of any third parties that process personal data on our behalf.

We may at times fail (or be perceived to have failed) in our efforts to comply with our data privacy and security obligations. Moreover, despite our efforts, our personnel or third parties on whom we rely may fail to comply with such obligations, which could negatively impact our business operations. If we or the third parties on which we rely fail, or are perceived to have failed, to address or comply with applicable data privacy and security obligations, we could face significant consequences, including but not limited to: government enforcement actions (e.g., investigations, fines, penalties, audits, inspections, and similar); litigation (including class-action claims); additional reporting requirements and/or oversight; bans on processing personal data; orders to destroy or not use personal data; and imprisonment of company officials. Any of these events could have a material adverse effect on our reputation, business, or financial condition, including but not limited to: loss of customers; interruptions or stoppages in our business operations (including, as relevant, clinical trials); inability to process personal data or to operate in certain jurisdictions; limited ability to develop or commercialize our products; expenditure of time and resources to defend any claim or inquiry; adverse publicity; or substantial changes to our business model or operations.

Business disruptions, including those caused by the ongoing Russian invasion of Ukraine, could seriously harm our future revenue and financial condition and increase our costs and expenses.

Our operations, and those of our vendors and suppliers, could be subject to earthquakes, power shortages, telecommunications failures, water shortages, floods, hurricanes, typhoons, fires, extreme weather conditions, medical epidemics and other natural or man-made disasters, geopolitical conflict or business interruptions, for which we are predominantly self-insured. The occurrence of any of these business disruptions could seriously harm our operations and financial condition and increase our costs and expenses. We currently rely on third-party suppliers to produce and process our product candidates on a patient-by-patient basis. Our ability to obtain clinical supplies of our product candidates could be disrupted if the operations of these suppliers are affected by a man-made or natural disaster or other business interruption.

For example, in February 2022, Russian military forces launched significant military action against Ukraine, and sustained conflict and disruption in the region is likely. The war in Ukraine and the surrounding region could lead to disruption, instability, and volatility in global markets, increase inflation and further disrupt supply chains, which may materially and adversely affect our business by increasing our energy costs, or otherwise. As a result of actions taken by Russia in Ukraine, actions have been taken by other countries and organizations, including new and stricter sanctions by the United Kingdom, Israel, Canada, the European Union and the United States against officials, individuals, regions, and industries in Russia, Ukraine and Belarus. While we have no operations in, and do not rely on raw materials or revenue generated by, Russia or Ukraine, and it is difficult to anticipate the effect the sanctions announced to date may have on us, and any further sanctions imposed or actions taken by the United Kingdom or other countries, the effect of current or further economic sanctions may reduce our sales and earnings or otherwise have an adverse effect on our operations.

As a public company with operations in the European Union, we may be subject to the sustainability disclosure requirements set out in the EU Corporate Sustainability Reporting Directive.

A growing number of investors, regulators, self-regulatory organizations and other stakeholders have expressed an interest in setting Environmental, Social and Corporate Governance, or ESG, goals and requiring the provision of new and more robust disclosure of steps taken to implement such goals. The related legislative landscape in the EU has been evolving accordingly. For example, in December 2022, Directive No 2464/2022 on Corporate Sustainability Reporting (CSRD) was adopted and entered into force on January 5, 2023. This new Directive strengthens the rules governing the social and environmental information that companies are required to report. The new rules expand the number of companies that are required to report ESG information and broaden the amount of ESG information that companies must report. The CSRD also requires a "double materiality" analysis. This means that companies will have to report on how sustainability issues might create financial risks for the company and on the company's own impacts on people and the environment. The CSRD will apply to large EU companies, EU parents of a "large group", and to listed EU small or medium-sized companies. It will also apply to non-EU companies that have a certain threshold of EU-generated turnover and an EU branch or subsidiary. The specific information that will be subject to reporting will be detailed in the European Sustainability Reporting Standards, or ESRS to be adopted by the European Commission. The first set of ESRS are expected be adopted by June 30, 2023. Companies subject to the CSRD will be required to fulfil their reporting obligations in accordance with a staggered timeline depending on the category of company. The first reports is expected in 2025 for the 2024 financial year.

In response to new ESG initiatives and regulations we may voluntarily elect, or be required, to adopt strategies, policies, or procedures related to ESG matters. Reporting on ESG goals and objectives may cause us to expend significant capital and human resources, and could divert management’s attention from central operational matters. Reports could also lead to the disclosure of information that which may have a negative impact on our operations and reputation which may lead to additional exposure. Failure to accurately comply with any ESG reporting obligations may result in enforcement actions, sanctions, reputational harm or private litigation.

Risks Related to Our Dependence on Third Parties

We are dependent on intellectual property obtained or licensed from third parties, and if we were to fail to comply with our obligations under our existing and any future intellectual property licenses with third parties, we could lose intellectual property rights that are important to our business and we may not be able to continue developing or commercializing our product candidates, if approved.

We are party to an exclusive intellectual property license agreement with UCL Business Ltd., or UCLB, the technology-transfer company of University College London, or UCL, which is important to our business and under which we have acquired or licensed patent rights related to 25 patent families and other intellectual property related to our business. We expect to enter into additional license agreements in the future. Our existing license agreement with UCLB imposes, and we expect that future license agreements will impose, various due diligence, milestone payment, royalty, insurance and other obligations on us. Any uncured, material breach under the UCLB license agreement could result in our loss of rights to practice the patent rights (including those that have been assigned to us from UCLB) and other intellectual property licensed to us, and could compromise our development and commercialization efforts for our current or any future product candidates.

Licensing of intellectual property is of critical importance to our business and involves complex legal, business and scientific issues. For example, under our license agreement with UCLB, our exclusive rights under certain of the patents is subject to specified exclusions. Our right to enforce any patents that may issue from such patent rights similarly excludes enforcing them in such excluded fields, and obligates us to coordinate our enforcement efforts with a third-party licensee, if any, with rights in that excluded field. If a third party-licensee has the right to enforce those patents in their field, it could put a patent that may issue from this family at risk of being invalidated or construed narrowly, in which case we would no longer have the benefit of the patents for our own exclusivity.

Disputes may arise between us and our licensors regarding intellectual property subject to a license agreement, including disputes regarding:

- the scope of rights granted under the license agreement and other interpretation-related issues;
- whether and the extent to which our technology and processes infringe on intellectual property of the licensor that is not subject to the licensing agreement;
- our obligations to third parties;
- our diligence obligations with respect to the use of the licensed technology in relation to our development and commercialization of our product candidates, and what activities satisfy those diligence obligations;
- the ownership of inventions and know-how resulting from the joint creation or use of intellectual property by our licensors and us;
- our right to transfer or assign the license; and
- the effects of termination.

If disputes over intellectual property that we have licensed prevent or impair our ability to maintain our current licensing arrangement on acceptable terms, we may be unable to successfully develop and commercialize the affected product candidates. See the section of this Annual Report titled “Business Overview - Our License Agreement with UCL Business Ltd.” for a more detailed description of our license agreement with UCLB, as well as our rights and obligations under the agreement.

We rely, and expect to continue to rely, on third parties to conduct the preclinical and clinical trials for our product candidates, and those third parties may not perform satisfactorily, including failing to meet deadlines for the completion of such trials or failing to comply with applicable regulatory requirements.

We depend and will continue to depend upon independent investigators and collaborators, such as universities, medical institutions, and strategic partners to conduct our preclinical and clinical trials. Agreements with such third parties might terminate for a variety of reasons, including a failure to perform by the third parties. If we need to enter into alternative arrangements, our product development activities would be delayed.

Our reliance on these third parties for research and development activities will reduce our control over these activities but will not relieve us of our responsibilities. For example, we will remain responsible for ensuring that each of our clinical trials is conducted in accordance with the general investigational plan and protocols for the trial. Moreover, the FDA requires us to comply with regulatory standards, commonly referred to as good laboratory practices, or GLP, and good clinical practices, or GCP, for conducting, recording and reporting the results of preclinical and clinical trials to assure that data and reported results are credible and accurate and that the rights, integrity and confidentiality of trial participants are protected. Similar regulatory requirements apply outside the United States, including the International Council for Harmonisation of Technical Requirements for the Registration of Pharmaceuticals for Human Use, or ICH.

Furthermore, these third parties may also have relationships with other entities, some of which may be our competitors. If these third parties do not successfully carry out their contractual duties, meet expected deadlines or conduct our clinical trials in accordance with regulatory requirements or our stated protocols, we will not be able to obtain, or may be delayed in obtaining, marketing approvals for our product candidates and will not be able to, or may be delayed in our efforts to, successfully commercialize our product candidates.

In addition, principal investigators for our clinical trials may serve as scientific advisors or consultants to us from time to time and may receive cash or equity compensation in connection with such services. If these relationships and any related compensation result in perceived or actual conflicts of interest, or the FDA concludes that the financial relationship may have affected the interpretation of the trial, the integrity of the data generated at the applicable clinical trial site may be questioned and the utility of the clinical trial itself may be jeopardized, which could result in the delay or rejection by the FDA. Any such delay or rejection could prevent us from commercializing our clinical-stage product candidates or any future product candidates.

We are also required to register certain ongoing clinical trials and post the results of certain completed clinical trials on a government-sponsored database, ClinicalTrials.gov, within specified timeframes. Failure to do so by us or third parties can result in FDA refusal to approve applications based on the clinical data, enforcement actions, adverse publicity and civil and criminal sanctions.

Cell-based therapies rely on the availability of reagents, specialized equipment, and other specialty materials, which may not be available to us on acceptable terms or at all. For some of these reagents, equipment, and materials, we rely or may rely on sole source vendors or a limited number of vendors, which could impair our ability to manufacture and supply our products.

Manufacturing our product candidates will require many reagents, which are substances used in our manufacturing processes to bring about chemical or biological reactions, and other specialty materials and equipment, some of which are manufactured or supplied by small companies with limited resources and experience to support commercial biologics production. We currently depend on a limited number of vendors for access to facilities and supply of certain materials and equipment used in the manufacture of our product candidates. For example, we currently use facilities and equipment at the Cell and Gene Therapy Catapult, as well as third party vendors, for vector and cell manufacturing. In addition, we purchase equipment and reagents critical for the manufacture of our product candidates from Miltenyi Biotec GmbH and other suppliers on a purchase order basis. Some of our suppliers may not have the capacity to support commercial products manufactured under cGMP by biopharmaceutical firms or may otherwise be ill-equipped to support our needs. We also do not have supply contracts with many of these suppliers, and may not be able to obtain supply contracts with them on acceptable terms or at all. Accordingly, we may not be able to obtain key materials and equipment to support clinical or commercial manufacturing.

For some of these reagents, equipment, and materials, we rely and may in the future rely on sole source vendors or a limited number of vendors. An inability to continue to source product from any of these suppliers, which could be due to regulatory actions or requirements affecting the supplier, adverse financial or other strategic developments experienced by a supplier, labor disputes or shortages, unexpected demands, or quality issues, could adversely affect our ability to satisfy demand for our product candidates, which could adversely and materially affect our product sales and operating results or our ability to conduct clinical trials, either of which could significantly harm our business.

As we continue to develop and scale our manufacturing process, we may need to obtain rights to and supplies of certain materials and equipment to be used as part of that process. We may not be able to obtain rights to such materials on commercially reasonable terms, or at all, and if we are unable to alter our process in a commercially viable manner to avoid the use of such materials or find a suitable substitute, it would have a material adverse effect on our business.

Risks Related to Regulatory Approval of Our Product Candidates and Other Legal Compliance Matters

Even if we complete the necessary preclinical studies and clinical trials, the regulatory approval process is expensive, time-consuming and uncertain and may prevent us from obtaining approvals for the commercialization of some or all of our product candidates. As a result, we cannot predict when or if, and in which territories, we will obtain marketing approval to commercialize a product candidate.

Our product candidates and the activities associated with their development and commercialization, including their design, research, testing, manufacture, safety, efficacy, quality control, recordkeeping, labeling, packaging, storage, approval, advertising, promotion, sale, distribution, import, export, and reporting of safety and other post-market information, are subject to comprehensive regulation by the FDA, the EMA and other comparable regulatory authorities in other jurisdictions. Failure to obtain marketing approval for a product candidate will prevent us from commercializing the product candidate. We have not received approval to market any of our product candidates from regulatory authorities in any jurisdiction.

We have only limited experience in filing and supporting the applications necessary to gain marketing approvals and may rely on third-party contract research organizations, or CROs, to assist us in this process. Securing marketing approval requires the submission of extensive preclinical and clinical data and supporting information to regulatory authorities for each therapeutic indication to establish the product candidate's safety and efficacy. Securing marketing approval also requires the submission of information about the product manufacturing process to, and inspection of manufacturing facilities by, the regulatory authorities. Our product candidates may not be effective, may be only moderately effective or may prove to have undesirable or unintended side effects, toxicities or other characteristics that may preclude our obtaining marketing approval or prevent or limit commercial use. If any of our product candidates receives marketing approval, the accompanying label may limit its approved use, which could limit sales of the product.

The process of obtaining marketing approvals, both in the United States and abroad, is expensive and may take many years, if approval is obtained at all, and can vary substantially based upon a variety of factors, including the type, complexity and novelty of the product candidates involved. Securing marketing approval requires the submission of extensive preclinical and clinical data and supporting information to regulatory authorities for each therapeutic indication to establish the product candidate's safety and efficacy.

Securing marketing approval also requires the submission of information about the product manufacturing process demonstrating the products quality to, and inspection of manufacturing facilities by, the regulatory authorities. The FDA, the EMA or other regulatory authorities may determine that our product candidates are not safe and effective, only moderately effective or have undesirable or unintended side effects, toxicities or other characteristics that preclude our obtaining marketing approval or prevent or limit commercial use.

In addition, changes in marketing approval policies during the development period, changes in or the enactment of additional statutes or regulations, or changes in regulatory review for each submitted product application, may cause delays in the approval or rejection of an application. Regulatory authorities have substantial discretion in the approval process and may refuse to accept any application or may decide that our data is insufficient for approval and require additional preclinical, clinical or other studies including further manufacturing process or quality control data. In addition, varying interpretations of the data obtained from manufacturing procedures, quality control, preclinical and clinical testing could delay, limit or prevent marketing approval of a product candidate. Any marketing approval we ultimately obtain may be limited or subject to restrictions or post-approval commitments that render the approved product not commercially viable.

If we experience delays in obtaining approval or if we fail to obtain approval of our product candidates, the commercial prospects for our product candidates may be harmed and our ability to generate revenues will be impaired.

In order to market and sell our products in the European Union and any other jurisdictions, we must obtain separate marketing approvals and comply with numerous and varying regulatory requirements. The approval procedure varies among countries and can involve additional testing. The time required to obtain approval may differ substantially from that required to obtain approval from the FDA. The regulatory approval process outside the United States generally includes all of the risks associated with obtaining approval from the FDA. In addition, in many countries outside the United States, it is required that the product be approved for reimbursement before the product can be approved for sale in that country. We may not obtain approvals from regulatory authorities outside the United States on a timely basis, if at all.

Approval by the FDA does not ensure approval by regulatory authorities in other countries or jurisdictions, and approval by one regulatory authority outside the United States does not ensure approval by regulatory authorities in other countries or jurisdictions or by the FDA. However, failure to obtain approval in one jurisdiction may impact our ability to obtain approval elsewhere. We may not be able to file for marketing approvals and may not receive necessary approvals to commercialize our products in any market.

Obtaining and maintaining regulatory approval of our product candidates in one jurisdiction does not mean that we will be successful in obtaining regulatory approval of our product candidates in other jurisdictions.

Obtaining and maintaining regulatory approval of our product candidates in one jurisdiction does not guarantee that we will be able to obtain or maintain regulatory approval in any other jurisdiction, but a failure or delay in obtaining regulatory approval in one jurisdiction may have a negative effect on the regulatory approval process in others. For example, even if the FDA grants marketing approval of a product candidate, comparable regulatory authorities in other jurisdictions must also approve the manufacturing, marketing and promotion of the product candidate in those countries. Approval procedures vary among jurisdictions and can involve requirements and administrative review periods different from those in the United States, including additional manufacturing quality controls, or additional preclinical studies or clinical trials, as clinical studies conducted in one jurisdiction may not be accepted by regulatory authorities in other jurisdictions. In many jurisdictions outside the United States, a product candidate must be approved for reimbursement before it can be approved for sale in that jurisdiction. In some cases, the price that we intend to charge for our products is also subject to approval.

Obtaining foreign regulatory approvals and compliance with foreign regulatory requirements could result in significant delays, difficulties and costs for us and could delay or prevent the introduction of our products in certain countries. If we fail to comply with the regulatory requirements in international markets and/or to receive applicable marketing approvals, our target market will be reduced and our ability to realize the full market potential of our product candidates will be harmed.

Even if we obtain marketing approvals for our product candidates, the terms of approvals and ongoing regulation of our products may limit how we manufacture and market our products and compliance with such requirements may involve substantial resources, which could materially impair our ability to generate revenue.

Even if marketing approval of a product candidate is granted, an approved product and its manufacturer and marketer are subject to ongoing review and extensive regulatory requirements for manufacturing processes, labeling, packaging, distribution, adverse event reporting, pharmacovigilance oversight, storage, advertising, promotion, sampling, and recordkeeping, including the potential requirements to implement a risk evaluation and mitigation strategy, or REMS, program in the U.S., or a Risk Management Plan (RMP) in the EU, or to conduct costly post-marketing studies or clinical trials and surveillance to monitor the safety or efficacy of the product. We must also comply with requirements concerning advertising and promotion for any of our product candidates for which we obtain marketing approval. Promotional communications with respect to prescription drugs are subject to a variety of legal and regulatory restrictions and must be consistent with the information in the product's approved labeling. Thus, we will not be able to promote any products we develop for indications or uses for which they are not approved. In addition, manufacturers of approved products and those manufacturers' facilities are required to comply with extensive regulatory requirements of the FDA, the EMA and other regulatory authorities, including ensuring that quality control and manufacturing procedures conform to cGMP and other comparable regulations and standards, which include requirements relating to quality control and quality assurance as well as the corresponding maintenance of records and documentation and reporting requirements. We or our suppliers could be subject to periodic unannounced inspections by the FDA, the EMA, or other regulatory authorities to monitor and ensure compliance with cGMP.

Accordingly, assuming we receive marketing approval for one or more of our product candidates, we and suppliers will continue to expend time, money and effort in all areas of regulatory compliance, including manufacturing, production, product surveillance and quality control. If we are not able to comply with post-approval regulatory requirements, we could have the marketing approvals for our products withdrawn by regulatory authorities and our ability to market any future products could be limited, which could adversely affect our ability to achieve or sustain profitability. Thus, the cost of compliance with post-approval regulations may have a negative effect on our operating results and financial condition.

Any product candidate for which we obtain marketing approval could be subject to post-marketing restrictions or recall or withdrawal from the market, and we may be subject to penalties if we fail to comply with regulatory requirements or if we experience unanticipated problems with our product candidates, when and if any of them are approved.

The FDA and other federal and state agencies, including the U.S. Department of Justice, or DOJ, closely regulate compliance with all requirements governing prescription drug products, including requirements pertaining to marketing and promotion of products in accordance with the provisions of the approved labeling and manufacturing of products in accordance with cGMP requirements. Similar legislation or provisions may also apply in other jurisdictions. The FDA and DOJ impose stringent restrictions on manufacturers' communications regarding off-label use and if we do not market our products for their approved indications, or if other of our marketing claims are deemed false or misleading, we may be subject to enforcement action. Physicians, on the other hand, may prescribe products for off-label uses. The FDA and other regulatory agencies do not regulate a physician's choice of drug treatment made in the physician's independent medical judgment. However, companies may only share truthful and not misleading information that is otherwise consistent with a product's FDA approved labeling.

Violations of such requirements may lead to investigations alleging violations of the Food, Drug and Cosmetic Act, or FDCA, and other statutes, including the U.S. federal False Claims Act and other federal and state healthcare fraud and abuse laws as well as state consumer protection laws. Similar legislation or provisions may also apply in other jurisdictions.

Our failure to comply with all regulatory requirements, and later discovery of previously unknown adverse events or other problems with our products, manufacturers or manufacturing processes, may yield various results, including:

- litigation involving patients taking our products;
- restrictions on such products, manufacturers or manufacturing processes;
- restrictions on the labeling or marketing of a product;
- restrictions on product distribution or use;
- requirements to conduct post-marketing studies or clinical trials;
- warning or untitled letters;
- withdrawal of the products from the market;
- refusal to approve pending applications or supplements to approved applications that we submit;
- recall of products;
- fines, restitution or disgorgement of profits or revenues;
- suspension or withdrawal of marketing approvals;
- suspension of any ongoing clinical trials;
- damage to relationships with any potential collaborators;
- unfavorable press coverage and damage to our reputation;
- refusal to permit the import or export of our products;
- product seizure; or
- injunctions or the imposition of civil or criminal penalties.

Non-compliance by us or any future collaborator with regulatory requirements regarding safety monitoring or pharmacovigilance, and with requirements related to the development of products for the pediatric population, can also result in significant financial penalties and reputational damage. Similarly, failure to comply with regulatory requirements regarding the protection of personal data can also lead to significant penalties and sanctions.

Non-compliance with EU requirements regarding safety monitoring or pharmacovigilance, and with requirements related to the development of products for the pediatric population, also can result in significant financial penalties. Similarly, failure to comply with the European Union's requirements regarding the protection of personal data can also lead to significant penalties and sanctions.

If any of these events occurs, our ability to sell such product may be impaired, and we may incur substantial additional expense to comply with regulatory requirements, which could adversely affect our business, financial condition and results of operations.

Our employees, independent contractors, principal investigators, consultants, commercial partners and vendors may engage in misconduct or other improper activities, including non-compliance with regulatory standards and requirements.

We are exposed to the risk of employee fraud or other misconduct or failure to comply with applicable regulatory requirements. Misconduct by employees and independent contractors, such as principal investigators, consultants, commercial partners, and vendors, could include failures to comply with regulations of the FDA, the EMA and other comparable regulatory authorities, to provide accurate information to such regulators, to comply with manufacturing standards we have established, to comply with healthcare fraud and abuse laws, to report financial information or data accurately or to disclose unauthorized activities to us. In particular, sales, marketing and other business arrangements in the healthcare industry are subject to extensive laws and regulations intended to prevent fraud, misconduct, kickbacks, self-dealing and other abusive practices. These laws and regulations may restrict or prohibit a wide range of business activities, including, but not limited to, research, manufacturing, distribution, pricing, discounting, marketing and promotion, sales commission, customer incentive programs and other business arrangements. Employee and independent contractor misconduct could also involve the improper use of individually identifiable information, including, without limitation, information obtained in the course of clinical trials, which could result in regulatory sanctions and serious harm to our reputation. In addition, federal procurement laws impose substantial penalties for misconduct in connection with government contracts and require certain contractors to maintain a code of business ethics and conduct.

It is not always possible to identify and deter employee and independent contractor misconduct, and any precautions we take to detect and prevent improper activities may not be effective in controlling unknown or unmanaged risks or losses or in protecting us from governmental investigations or other actions or lawsuits stemming from a failure to be in compliance with such laws. If any such actions are instituted against us, those actions could have a significant impact on our business, including the imposition of civil, criminal and administrative penalties, damages, monetary fines, disgorgement of profits, possible exclusion from participation in Medicare, Medicaid and other federal healthcare programs, National Health Service in the United Kingdom, or other government supported healthcare in other jurisdictions, contractual damages, reputational harm, diminished profits and future earnings, additional reporting or oversight obligations if we become subject to a corporate integrity agreement or other agreement to resolve allegations of non-compliance with the law and curtailment or restructuring of our operations, any of which could adversely affect our ability to operate.

Our business operations and current and future relationships with healthcare professionals, principal investigators, consultants, customers and third-party payors in the United States and elsewhere may be subject, directly or indirectly, to applicable anti-kickback, fraud and abuse, false claims, physician payment transparency, health information privacy and security and other healthcare laws and regulations, which could expose us to substantial penalties.

Healthcare providers, physicians and third-party payors in the United States and elsewhere will play a primary role in the recommendation and prescription of any product candidates for which we obtain marketing approval. Our current and future arrangements with healthcare professionals, principal investigators, consultants, customers and third-party payors may expose us to broadly applicable fraud and abuse and other healthcare laws, including, without limitation, the U.S. federal Anti-Kickback Statute and the U.S. federal False Claims Act, that may constrain the business or financial arrangements and relationships through which we sell, market and distribute any product candidates for which we obtain marketing approval. In addition, we may be subject to physician payment transparency laws and patient privacy and security regulation by the U.S. federal government and by the states and foreign jurisdictions in which we conduct our business. The applicable federal, state and foreign healthcare laws that may affect our ability to operate include the following:

- the U.S. federal Anti-Kickback Statute, which prohibits, among other things, persons or entities from knowingly and willfully soliciting, offering, receiving or providing remuneration, directly or indirectly, in cash or in kind, to induce or reward, or in return for, either the referral of an individual for, or the purchase, lease, order or recommendation of, any good, facility, item or service, for which payment may be made, in whole or in part, under federal and state healthcare programs such as Medicare and Medicaid. The term ‘‘remuneration’’ has been broadly interpreted to include anything of value. This statute has been interpreted to apply to arrangements between pharmaceutical manufacturers on the one hand and prescribers, purchasers and formulary managers on the other hand. Although there are a number of statutory exceptions and regulatory safe harbors protecting certain common activities from prosecution or other regulatory sanctions, the exceptions and safe harbors are drawn narrowly, and practices that involve remuneration that are alleged to be intended to induce prescribing, purchases or recommendations may be subject to scrutiny if they do not qualify for an exception or safe harbor. Failure to meet all of the requirements of a particular applicable statutory exception or regulatory safe harbor does not make the conduct per se illegal under the U.S. federal Anti-Kickback Statute. Instead, the legality of the arrangement will be evaluated on a case-by-case basis based on a cumulative review of all its facts and circumstances. Several courts have interpreted the statute’s intent requirement to mean that if any one purpose of an arrangement involving remuneration is to induce referrals of federal healthcare covered business, the U.S. federal Anti-Kickback Statute has been violated;

- U.S. federal civil and criminal false claims laws, including the U.S. federal False Claims Act, which can be enforced though civil whistleblower or qui tam actions, and civil monetary penalty laws, which prohibit, among other things, individuals or entities from knowingly presenting, or causing to be presented, to the federal government, including the Medicare and Medicaid programs, claims for payment that are false or fraudulent or making a false statement to avoid, decrease or conceal an obligation to pay money to the federal government. Pharmaceutical and other healthcare companies have been prosecuted under these laws for, among other things, allegedly inflating drug prices they report to pricing services, which in turn were used by the government to set Medicare and Medicaid reimbursement rates, and for allegedly providing free product to customers with the expectation that the customers would bill federal programs for the product. In addition, certain marketing practices, including off-label promotion, may also violate false claims laws. Further, pharmaceutical manufacturers can be held liable under the U.S. federal False Claims Act even when they do not submit claims directly to government payors if they are deemed to “cause” the submission of false or fraudulent claims;

- HIPAA, which created new federal criminal statutes that prohibit knowingly and willfully executing, or attempting to execute, a scheme to defraud any healthcare benefit program or obtain, by means of false or fraudulent pretenses, representations or promises, any of the money or property owned by, or under the custody or control of, any healthcare benefit program, regardless of whether the payor is public or private, knowingly and willfully embezzling or stealing from a healthcare benefit program, willfully obstructing a criminal investigation of a healthcare offense and knowingly and willfully falsifying, concealing or covering up by any trick or device a material fact or making any materially false statements in connection with the delivery of, or payment for, healthcare benefits, items or services relating to healthcare matters;

- HIPAA, as amended by HITECH, and their respective implementing regulations, which impose obligations on “covered entities,” including certain healthcare providers, health plans, and healthcare clearinghouses, as well as their respective “business associates” that create, receive, maintain or transmit individually identifiable health information for or on behalf of a covered entity, and their covered subcontractors, with respect to safeguarding the privacy, security and transmission of individually identifiable health information. Additionally, HITECH also created four new tiers of civil monetary penalties, amended HIPAA to make civil and criminal penalties directly applicable to business associates, and gave state attorneys general new authority to file civil actions for damages or injunctions in U.S. federal courts to enforce HIPAA and seek attorneys’ fees and costs associated with pursuing federal civil actions;
- the FDCA, which prohibits, among other things, the adulteration or misbranding of drugs, biologics and medical devices;
- the U.S. federal Physician Payments Sunshine Act, created under Section 6002 of Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act, or collectively, the ACA, and its implementing regulations, created annual reporting requirements for certain manufacturers of drugs, devices, biologicals and medical supplies for which payment is available under Medicare, Medicaid or the Children’s Health Insurance Program (with certain exceptions), to annually report to the Centers for Medicare and Medicaid Services, or CMS, information related to certain payments and “transfers of value” provided to physicians (defined to include doctors, dentists, optometrists, podiatrists and chiropractors), certain other health care professionals (such as physicians assistants and nurse practitioners) and teaching hospitals, as well as ownership and investment interests held by physicians and their immediate family members;
- analogous state laws and regulations and foreign laws, such as state anti-kickback and false claims laws, which may apply to sales or marketing arrangements and claims involving healthcare items or services reimbursed by non-governmental third-party payors, including private insurers; state and foreign laws that require pharmaceutical companies to comply with the pharmaceutical industry’s voluntary compliance guidelines and the relevant compliance guidance promulgated by the federal government or to adopt compliance programs as prescribed by state laws and regulations, or that otherwise restrict payments that may be made to healthcare providers; state and foreign laws that require drug manufacturers to report information related to payments and other transfers of value to physicians and other healthcare providers or marketing expenditures; state and local laws that require the registration of pharmaceutical sales representatives; and state and foreign laws governing the privacy and security of health information in certain circumstances, many of which differ from each other in significant ways and often are not preempted by HIPAA, thus complicating compliance efforts; and
- similar healthcare laws and regulations in the European Union and other jurisdictions, including reporting requirements detailing interactions with and payments to healthcare providers and laws governing the data privacy and security of certain protected information, such as the EU GDPR and UK GDPR, which imposes obligations and restrictions on the collection and use of personal data relating to individuals located in the European Union and United Kingdom (including health data).

Further, the ACA, among other things, amended the intent requirement of the U.S. federal Anti-Kickback Statute and certain criminal statutes governing healthcare fraud. A person or entity no longer needs to have actual knowledge of the statute or specific intent to violate it in order to have committed a violation. In addition, the ACA provided that the government may assert that a claim including items or services resulting from a violation of the U.S. federal Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the U.S. federal False Claims Act.

Because of the breadth of these laws and the narrowness of their exceptions and safe harbors, it is possible that our business activities can be subject to challenge under one or more of such laws. The scope and enforcement of each of these laws is uncertain and subject to rapid change in the current environment of healthcare reform. Federal and state enforcement bodies have continued their scrutiny of interactions between healthcare companies and healthcare providers, which has led to a number of significant investigations, prosecutions, convictions and settlements in the healthcare industry.

Efforts to ensure that our internal operations and future business arrangements with third parties will comply with applicable healthcare laws and regulations will involve substantial costs. If our operations are found to be in violation of any of these laws or any other governmental regulations that may apply to us, we may be subject to significant civil, criminal and administrative penalties, including, without limitation, damages, monetary fines, imprisonment, disgorgement of profits, possible exclusion from participation in Medicare, Medicaid and other federal healthcare programs, contractual damages, reputational harm, diminished profits and future earnings, additional reporting or oversight obligations if we become subject to a corporate integrity agreement or other agreement to resolve allegations of non-compliance with the law and curtailment or restructuring of our operations, any of which could adversely affect our ability to operate our business and pursue our strategy. If any of the physicians or other healthcare providers or entities with whom we expect to do business, including future collaborators, are found not to be in compliance with applicable laws, they may be subject to criminal, civil or administrative sanctions, including exclusions from participation in government healthcare programs, which could also affect our business.

Our product candidates are subject to government price controls in certain jurisdictions that may affect our revenue.

There has been heightened governmental scrutiny in the United Kingdom, United States, European Union and other jurisdictions of pharmaceutical pricing practices in light of the rising cost of prescription drugs and biologics. In the United States, such scrutiny has resulted in several recent Congressional inquiries and proposed and enacted federal and state legislation designed to, among other things, bring more transparency to product pricing, review the relationship between pricing and manufacturer patient programs, and reform government program reimbursement methodologies for products. In the United States, at the federal level, the Trump administration used several means to propose or implement drug pricing reform, including through federal budget proposals, executive orders and policy initiatives. More recently, in July 2021, the Biden administration released an executive order, "Promoting Competition in the American Economy," with multiple provisions aimed at prescription drugs. In response to Biden's executive order, on September 9, 2021, the U.S. Department of Health and Human Services, or HHS, released a Comprehensive Plan for Addressing High Drug Prices that outlines principles for drug pricing reform and sets out a variety of potential legislative policies that Congress could pursue to advance these principles. Further, on August 16, 2022, President Biden signed the Inflation Reduction Act of 2022, or IRA, into law, which among other things (i) directs HHS to negotiate the price of certain high-expenditure, single-source drugs and biologics covered under Medicare and (ii) imposes rebates under Medicare Part B and Medicare Part D to penalize price increases that outpace inflation. These provisions will take effect progressively starting in fiscal year 2023, although they may be subject to legal challenges. Additionally, the Biden administration released an additional executive order on October 14, 2022, directing HHS to report on how the Center for Medicare and Medicaid Innovation can be further leveraged to test new models for lowering drug costs for Medicare and Medicaid beneficiaries. ''

At the state level, legislatures have increasingly enacted legislation and implemented regulations designed to control pharmaceutical and biological product pricing, including price or patient reimbursement constraints, discounts, restrictions on certain product access and marketing cost disclosure and transparency measures, and, in some cases, designed to encourage importation from other countries and bulk purchasing.

Outside of the United States, particularly in the United Kingdom and European Union, the pricing of prescription pharmaceuticals is subject to governmental control by individual Member States. In these countries, pricing negotiations with governmental authorities can take considerable time after the receipt of marketing approval for a product. To obtain coverage and reimbursement or pricing approval in some countries, we may be required to conduct a clinical trial that compares the cost-effectiveness of our product candidate to other available therapies. If reimbursement of our products is unavailable or limited in scope or amount, or if pricing is set at unsatisfactory levels, our business could be harmed.

Current and future legislation in the United States and other countries may affect the prices we may obtain for our product candidates and increase the difficulty and cost for us to commercialize our product candidates.

In the United States and many other countries, rising healthcare costs have been a concern for governments, patients and the health insurance sector, which has resulted in a number of changes to laws and regulations, and may result in further legislative and regulatory action regarding the healthcare and health insurance systems that could affect our ability to profitably sell any product candidates for which we obtain marketing approval.

For example, the ACA was enacted in the United States in March 2010 with the stated goals of containing healthcare costs, improving quality and expanding access to healthcare, and includes measures to change healthcare delivery, increase the number of individuals with insurance, ensure access to certain basic healthcare services, and contain the rising cost of care. There have been executive, judicial and Congressional challenges to certain aspects of the ACA. While Congress has not passed repeal legislation, several bills affecting the implementation of certain taxes under the ACA have been signed into law. The Tax Cuts and Jobs Act of 2017, includes a provision repealing, effective January 1, 2019, the tax-based shared responsibility payment imposed by the ACA on certain individuals who fail to maintain qualifying health coverage for all or part of a year that is commonly referred to as the "individual mandate". Additionally, the 2020 federal spending package permanently eliminated, effective January 1, 2020, the ACA-mandated "Cadillac" tax on high-cost employer-sponsored health coverage and medical device tax and, effective January 1, 2021, also eliminated the health insurer tax. Further, the Bipartisan Budget Act of 2018, among other things, amended the ACA, effective January 1, 2019, to increase from 50% to 70% the point-of-sale discount that is owed by pharmaceutical manufacturers who participate in Medicare Part D and to close the coverage gap in most Medicare drug plans, commonly referred to as the "donut hole". On June 17, 2021, the U.S. Supreme Court dismissed a challenge on procedural grounds that argued the Affordable Care Act is unconstitutional in its entirety because the "individual mandate" was repealed by Congress. Further, the IRA, among other things, extends enhanced subsidies for individuals purchasing health insurance coverage in ACA marketplaces through plan year 2025. The IRA also eliminates the "donut hole" under the Medicare Part D program beginning in 2025 by significantly lowering the beneficiary maximum out-of-pocket cost and creating a new manufacturer discount program. It is unclear how additional changes, other such litigation, and the healthcare reform measures of the Biden administration will impact the ACA and our business.

In addition, other federal health reform measures have been proposed and adopted in the United States. For example, as a result of the Budget Control Act of 2011, providers are subject to Medicare payment reductions of 2% per fiscal year until 2031 unless additional Congressional action is taken. Under current legislation, the actual reduction in Medicare payments will vary from 1% in 2022 to up to 4% in the final fiscal year of this sequester. Further, the American Taxpayer Relief Act of 2012 reduced Medicare payments to several providers and increased the statute of limitations period for the government to recover overpayments from providers from three to five years. The Medicare Access and CHIP Reauthorization Act of 2015 also introduced a quality payment program, or Quality Payment Program, under which certain individual Medicare providers will be subject to certain incentives or penalties based on new program quality standards. The Quality Payment Program provides clinicians with two ways to participate, including through the Advanced Alternative Payment Models, or APMs, and the Merit-based Incentive Payment System, or MIPS. At this time, it is unclear how the introduction of the Quality Payment Program impacts overall physician reimbursement under the Medicare program. Any reduction in reimbursement from Medicare or other government programs may result in a similar reduction in payments from private payors.

The combination of healthcare cost containment measures, increased health insurance costs, reduction of the number of people with health insurance coverage, as well as future legislation and regulations focused on reducing healthcare costs by reducing the cost of or reimbursement and access to pharmaceutical products, may limit or delay our ability to generate revenue, attain profitability, or commercialize our products.

We are subject to the U.K. Bribery Act 2010, or the Bribery Act, the U.S. Foreign Corrupt Practices Act of 1977, as amended, or the FCPA, and other anti-corruption laws, as well as export control laws, import and customs laws, trade and economic sanctions laws and other laws governing our operations.

Our operations are subject to anti-corruption laws, including the Bribery Act, the FCPA, the U.S. domestic bribery statute contained in 18 U.S.C. §201, the U.S. Travel Act, and other anti-corruption laws that apply in countries where we do business. The Bribery Act, the FCPA and these other laws generally prohibit us and our employees and intermediaries from authorizing, promising, offering, or providing, directly or indirectly, improper or prohibited payments, or anything else of value, to government officials or other persons to obtain or retain business or gain some other business advantage.

Under the Bribery Act, we may also be liable for failing to prevent a person associated with us from committing a bribery offense. We and those acting on our behalf operate in a number of jurisdictions that pose a high risk of potential Bribery Act or FCPA violations, and we participate in collaborations and relationships with third parties whose corrupt or illegal activities could potentially subject us to liability under the Bribery Act, FCPA or local anticorruption laws, even if we do not explicitly authorize or have actual knowledge of such activities. In addition, we cannot predict the nature, scope or effect of future regulatory requirements to which our international operations might be subject or the manner in which existing laws might be administered or interpreted.

Compliance with the Bribery Act, the FCPA and these other laws is expensive and difficult, particularly in countries in which corruption is a recognized problem. In addition, anti-corruption laws present particular challenges in the pharmaceutical industry, because, in many countries, hospitals are operated by the government, and doctors and other hospital employees are considered foreign officials. Certain payments to hospitals in connection with clinical trials and other work have been deemed to be improper payments to government officials and have led to enforcement actions.

We are also subject to other laws and regulations governing our international operations, including regulations administered by the governments of the United States and the United Kingdom, and authorities in the European Union, including applicable export control regulations, economic sanctions and embargoes on certain countries and persons, anti-money laundering laws, import and customs requirements and currency exchange regulations, collectively referred to as the Trade Control laws.

There is no assurance that we will be completely effective in ensuring our compliance with all applicable anti-corruption laws, including the Bribery Act, the FCPA or other legal requirements, including Trade Control laws. If we are not in compliance with the Bribery Act, the FCPA and other anti-corruption laws or Trade Control laws, we may be subject to criminal and civil penalties, disgorgement and other sanctions and remedial measures, and legal expenses, which could have an adverse impact on our business, financial condition, results of operations and liquidity. Likewise, any investigation of any potential violations of the Bribery Act, the FCPA, other anti-corruption laws or Trade Control laws by United States, United Kingdom or other authorities could also have an adverse impact on our reputation, our business, results of operations and financial condition. Further, the failure to comply with laws governing international business practices may result in substantial civil and criminal penalties and suspension or debarment from government contracting.

If we fail to comply with environmental, health and safety laws and regulations, we could become subject to fines or penalties or incur costs that could harm our business.

We are subject to numerous environmental, health and safety laws and regulations, including those governing laboratory procedures and the handling, use, storage, treatment and disposal of hazardous materials and wastes. Our operations involve the use of hazardous materials, including chemicals and biological materials. Our operations also produce hazardous waste products. We generally contract with third parties for the disposal of these materials and wastes. We cannot eliminate the risk of contamination or injury from these materials. In the event of contamination or injury resulting from our use of hazardous materials, we could be held liable for any resulting damages, and any liability could exceed our resources. We also could incur significant costs associated with civil or criminal fines and penalties for failure to comply with such laws and regulations.

Although we maintain insurance to cover us for costs and expenses we may incur due to injuries to our employees resulting from the use of hazardous materials, this insurance may not provide adequate coverage against potential liabilities. We do not maintain insurance for environmental liability or toxic tort claims that may be asserted against us in connection with our storage or disposal of biological or hazardous materials.

In addition, we may incur substantial costs in order to comply with current or future environmental, health and safety laws and regulations. These current or future laws and regulations may impair our research, development or production efforts. Our failure to comply with these laws and regulations also may result in substantial fines, penalties or other sanctions.

Risks Related to the Commercialization of Our Product Candidates

If we are unable to establish sales, marketing and distribution capabilities for our product candidates, or enter into sales, marketing and distribution agreements with third parties, we may not be successful in commercializing our product candidates, if and when they are approved.

We currently plan to work to build our global commercialization capabilities internally over time such that we are able to commercialize any product candidate for which we may obtain regulatory approval. However, we currently have no sales, marketing or distribution capabilities and have no experience in marketing or distributing pharmaceutical products. To achieve commercial success for any product candidate for which we may obtain marketing approval, we will need to establish a sales and marketing organization and establish logistics and distribution processes to commercialize and deliver our product candidates to patients and healthcare providers. The development of sales, marketing and distribution capabilities will require substantial resources, will be time-consuming and could delay any product launch.

If we are unable or decide not to establish internal sales, marketing and distribution capabilities, we would have to pursue collaborative arrangements regarding the sales and marketing of our products. However, we may not be successful in entering into arrangements with third parties to sell, market and distribute our product candidates or may be unable to do so on terms that are favorable to us, or if we are able to do so, that they would be effective and successful in commercializing our products. Our product revenues and our profitability, if any, would likely to be lower than if we were to sell, market and distribute any product candidates that we develop ourselves. In addition, we would have limited control over such third parties, and any of them may fail to devote the necessary resources and attention to sell and market our product candidates effectively.

If we do not establish sales, marketing and distribution capabilities successfully, either on our own or in collaboration with third parties, we will not be successful in commercializing our product candidates in the United States or elsewhere.

We operate in a rapidly changing industry and face significant competition, which may result in others discovering, developing or commercializing products before or more successfully than we do.

The development and commercialization of new biopharmaceutical products is highly competitive and subject to rapid and significant technological advancements. We face competition from major multi-national pharmaceutical companies, biotechnology companies and specialty pharmaceutical companies with respect to our current and future product candidates that we may develop and commercialize in the future. There are a number of large pharmaceutical and biotechnology companies that currently market and sell products or are pursuing the development of product candidates for the treatment of cancer. Smaller or early-stage companies may also prove to be significant competitors, particularly through collaborative arrangements with large, established companies. Potential competitors also include academic institutions, government agencies and other public and private research organizations. Due to their promising clinical therapeutic effect in clinical exploratory trials, engineered T cell therapies, redirected T cell therapies in general and antibody-drug conjugates are being pursued by multiple biotechnology and pharmaceutical companies, including Novartis AG, or Novartis, Gilead Sciences, Inc., or Gilead, Bristol-Myers Squibb, or BMS, Janssen Biotech Inc., Bluebird bio, Inc., or Bluebird bio, Roche Holding AG, Seattle Genetics, and Amgen Inc. Our competitors may succeed in developing, acquiring or licensing technologies and products that are more effective, more effectively marketed and sold or less costly than any product candidates that we may develop, which could render our product candidates non-competitive and obsolete.

We are developing our lead program, obe-cel, a CD19-targeting programmed T cell product candidate for the treatment of adult ALL. Novartis, Gilead and BMS have received marketing approval for anti-CD19 CAR T cell therapies. Gilead's therapy was approved for the treatment of adult ALL in October 2021. Obe-cel is expected to compete directly with these companies and therapies. In addition, some companies, such as Cellectis, Inc., Les Laboratoires Servier SAS and Allogene Therapeutics Inc., are pursuing allogenic T cell products that could compete with our programmed T cell product candidates.

Novartis, Gilead and BMS may be successful in establishing a strong market position for their CD19-targeted CAR T cell products, and we may not be able to compete effectively against these therapies once they have been established.

In addition, our competitors with development-stage programs may obtain marketing approval from the FDA, the EMA or other comparable regulatory authorities for their product candidates more rapidly than we do, and they could establish a strong market position before we are able to enter the market.

Many of our competitors, either alone or with their strategic collaborators, have substantially greater financial, technical and human resources than we do. Accordingly, our competitors may be more successful than we are in obtaining approval for treatments and achieving widespread market acceptance, which may render our treatments obsolete or non-competitive. Mergers and acquisitions in the biotechnology and pharmaceutical industries may result in even more resources being concentrated among a smaller number of our competitors.

These competitors also compete with us in recruiting and retaining qualified scientific and management personnel and establishing clinical study sites and patient registration for clinical studies, as well as in acquiring technologies complementary to, or necessary for, our programs. Smaller or early-stage companies may also prove to be significant competitors, particularly through collaborative arrangements with large and established companies.

Our commercial opportunity could be reduced or eliminated if our competitors develop and commercialize products that are safer, more effective, have fewer or less severe side effects, are more convenient or are less expensive or better reimbursed than any products that we may commercialize. Our competitors also may obtain FDA, EMA or other regulatory approval for their products more rapidly than we may obtain approval for ours, which could result in our competitors establishing a strong market position for either the product or a specific indication before we are able to enter the market.

Even if any of our product candidates receives marketing approval, it may fail to achieve the degree of market acceptance by physicians, patients, third-party payors and others in the medical community necessary for commercial success.

Even if we obtain approvals from the FDA, the EMA or other comparable regulatory agencies and are able to initiate commercialization of our clinical-stage product candidates or any other product candidates we develop, the product candidate may not achieve market acceptance among physicians, patients, hospitals, including pharmacy directors, and third-party payors and, ultimately, may not be commercially successful. The degree of market acceptance of our product candidates, if approved for commercial sale, will depend on a number of factors, including:

- the clinical indications for which our product candidates are approved;
- physicians, hospitals, cancer treatment centers, and patients considering our product candidates as a safe and effective treatment;
- hospitals and cancer treatment centers establishing the infrastructure required for the administration of redirected T cell therapies;
- the potential and perceived advantages of our product candidates over alternative treatments;
- the prevalence and severity of any side effects;
- product labeling or product insert requirements of the FDA, the EMA or other regulatory authorities;
- limitations or warnings contained in the labeling approved by the FDA or the EMA;
- the timing of market introduction of our product candidates as well as competitive products;
- the cost of treatment in relation to alternative treatments;
- the amount of upfront costs or training required for physicians to administer our product candidates;
- the availability of coverage, adequate reimbursement, and pricing by third-party payors and government authorities;
- the willingness of patients to pay out-of-pocket in the absence of comprehensive coverage and adequate reimbursement by third-party payors and government authorities;
- relative convenience and ease of administration, including as compared to alternative treatments and competitive therapies; and
- the effectiveness of our sales and marketing efforts and distribution support.

Our efforts to educate physicians, patients, third-party payors and others in the medical community on the benefits of our products, if approved, may require significant resources and may never be successful. Such efforts may require more resources than are typically required due to the complexity and uniqueness of our product candidates. Because we expect sales of our product candidates, if approved, to generate substantially all of our product revenue for the foreseeable future, the failure of our product candidates to find market acceptance would harm our business and could require us to seek additional financing.

In addition, although we are not utilizing embryonic stem cells or replication competent vectors, adverse publicity due to the ethical and social controversies surrounding the therapeutic use of such technologies, and reported side effects from any clinical trials using these technologies or the failure of such trials to demonstrate that these therapies are safe and effective, may limit market acceptance our product candidates. If our product candidates are approved but fail to achieve market acceptance among physicians, patients, hospitals, cancer treatment centers or others in the medical community, we will not be able to generate significant revenue.

Even if our products achieve market acceptance, we may not be able to maintain that market acceptance over time if new products or technologies are introduced that are more favorably received than our products, are more cost effective or render our products obsolete.

Coverage and adequate reimbursement may not be available for our current or any future product candidates, which could make it difficult for us to sell profitably, if approved.

Market acceptance and sales of any product candidates that we commercialize, if approved, will depend in part on the extent to which reimbursement for these products and related treatments will be available from third-party payors, including government health administration authorities, managed care organizations and private health insurers. Third-party payors decide which therapies they will pay for and establish reimbursement levels. Third-party payors in the United States often rely upon Medicare coverage policy and payment limitations in setting their own coverage and reimbursement policies. However, decisions regarding the extent of coverage and amount of reimbursement to be provided for any product candidates that we develop will be made on a payor-by-payor basis. One payor's determination to provide coverage for a drug does not assure that other payors will also provide coverage for the drug. Additionally, a third-party payor's decision to provide coverage for a therapy does not imply that an adequate reimbursement rate will be approved. Third-party payors are increasingly challenging the price, examining the medical necessity and reviewing the cost-effectiveness of medical products, therapies and services, in addition to questioning their safety and efficacy. We may incur significant costs to conduct expensive pharmaco-economic studies in order to demonstrate the medical necessity and cost-effectiveness of our product candidates, in addition to the costs required to obtain FDA approvals. Our product candidates may not be considered medically necessary or cost-effective.

Each payor determines whether or not it will provide coverage for a therapy, what amount it will pay the manufacturer for the therapy, and on what tier of its list of covered drugs, or formulary, it will be placed. The position on a payor's formulary, generally determines the co-payment that a patient will need to make to obtain the therapy and can strongly influence the adoption of such therapy by patients and physicians. Patients who are prescribed treatments for their conditions and providers prescribing such services generally rely on third-party payors to reimburse all or part of the associated healthcare costs. Patients are unlikely to use our products, and providers are unlikely to prescribe our products, unless coverage is provided and reimbursement is adequate to cover a significant portion of the cost of our products and their administration. Therefore, coverage and adequate reimbursement is critical to new medical product acceptance.

A primary trend in the U.S. healthcare industry and elsewhere is cost containment. Third-party payors have attempted to control costs by limiting coverage and the amount of reimbursement for particular medications. We cannot be sure that coverage and reimbursement will be available for any drug that we commercialize and, if reimbursement is available, what the level of reimbursement will be. Even if favorable coverage and reimbursement status is attained for one or more product candidates for which we receive regulatory approval, less favorable coverage policies and reimbursement rates may be implemented in the future. Inadequate coverage and reimbursement may impact the demand for, or the price of, any drug for which we obtain marketing approval. If coverage and adequate reimbursement are not available, or are available only to limited levels, we may not be able to successfully commercialize our current and any future product candidates that we develop.

Additionally, we are developing a proprietary diagnostic test for use with certain of our product candidates. We will be required to obtain coverage and reimbursement for this test separate and apart from the coverage and reimbursement we seek for our product candidates, if approved. There is significant uncertainty regarding our ability to obtain coverage and adequate reimbursement for this proprietary diagnostic test for reasons similar to those applicable to our product candidates.

Product liability lawsuits against us could cause us to incur substantial liabilities and to limit commercialization of any products that we may develop.

We face an inherent risk of product liability exposure related to the testing of our product candidates in human clinical trials and will face an even greater risk if we commercially sell any products that we may develop. If we cannot successfully defend ourselves against claims that our product candidates or products caused injuries, we will incur substantial liabilities. Regardless of merit or eventual outcome, liability claims may result in:

- reduced resources of our management to pursue our business strategy;
- decreased demand for any product candidates or products that we may develop;
- injury to our reputation and significant negative media attention;
- withdrawal of clinical trial participants;
- initiation of investigations by regulators;
- product recalls, withdrawals or labeling, marketing or promotional restrictions;
- significant costs to defend the resulting litigation;
- substantial monetary awards paid to clinical trial participants or patients;
- loss of revenue; and
- the inability to commercialize any products that we may develop.

We currently hold £1.0 million in product liability insurance coverage in the aggregate, with a per incident limit of £1.0 million, which may not be adequate to cover all liabilities that we may incur. We may need to increase our insurance coverage as we expand our clinical trials or if we commence commercialization of our product candidates. Insurance coverage is increasingly expensive. We may not be able to maintain insurance coverage at a reasonable cost or in an amount adequate to satisfy any liability that may arise.

Risks Related to Our Intellectual Property

If we are unable to obtain and maintain patent protection for our T cell programming technologies and product candidates, or if the scope of the patent protection obtained is not sufficiently broad, our competitors could develop and commercialize technology and biologics similar or identical to ours, and our ability to successfully commercialize our technology and product candidates may be impaired.

Our success depends, in large part, on our ability to obtain and maintain patent protection in the United States, the European Union, the United Kingdom and other countries with respect to our product candidates. We seek to protect our proprietary position by filing patent applications related to our technology and product candidates in the major pharmaceutical markets, including the United States, major countries in Europe and Japan. If we do not adequately protect our intellectual property, competitors may be able to use our technologies and erode or negate any competitive advantage that we may have, which could harm our business and ability to achieve profitability.

To protect our proprietary positions, we file patent applications in the United States and other countries related to our novel technologies and product candidates that are important to our business. The patent application and prosecution process is expensive and time-consuming. We may not be able to file and prosecute all necessary or desirable patent applications at a reasonable cost or in a timely manner. We may also fail to identify patentable aspects of our research and development before it is too late to obtain patent protection. It is possible that defects of form in the preparation or filing of our patents or patent applications may exist, or may arise in the future, such as with respect to proper priority claims, inventorship, claim scope or patent term adjustments. If any current or future licensors or licensees are not fully cooperative or disagree with us as to the prosecution, maintenance or enforcement of any patent rights, such patent rights could be compromised and we might not be able to prevent third parties from making, using and selling competing products. If there are material defects in the form or preparation of our patents or patent applications, such patents or applications may be invalid and unenforceable. Moreover, our competitors may independently develop equivalent knowledge, methods and know-how. Any of these outcomes could impair our ability to prevent competition from third parties.

Prosecution of our owned and in-licensed patent portfolio is at an early stage for the majority of our patent families. We currently have thirty patents that have been issued from our pending applications in the United States, and seventeen patents that have been issued from our pending applications in Europe. Some of our patent portfolio consists of pending priority applications that are not examined and pending applications under the Patent Cooperation Treaty, or PCT.

Neither priority applications nor PCT applications can themselves give rise to issued patents. Rather, protection for the inventions disclosed in these applications must be further pursued by applicable deadlines via applications that are subject to examination. As applicable deadlines for the priority and PCT applications become due, we will need to decide whether and in which countries or jurisdictions to pursue patent protection for the various inventions claimed in these applications, and we will only have the opportunity to pursue and obtain patents in those jurisdictions where we pursue protection.

It is also possible that we will fail to identify patentable aspects of our research and development output before it is too late to obtain patent protection. The patent applications that we own or in-license may fail to result in issued patents with claims that cover our current and future product candidates in the United States or in other foreign countries. Our patent applications cannot be enforced against third parties practicing the technology claimed in such applications unless, and until, a patent issues from such applications, and then only to the extent the issued claims cover the technology.

If the patent applications we hold or have in-licensed with respect to our development programs and product candidates fail to issue, if their breadth or strength of protection is threatened, or if they fail to provide meaningful exclusivity for our current and future product candidates, it could threaten our ability to commercialize our product candidates. Any such outcome could have a negative effect on our business.

The patent position of biotechnology and pharmaceutical companies generally is highly uncertain. Changes in either the patent laws or interpretation of the patent laws in the United States and other countries may diminish the value of our patents or narrow the scope of our patent protection. In addition, the protections offered by laws of different countries vary. No consistent policy regarding the breadth of claims allowed in biotechnology and pharmaceutical patents has emerged to date in the United States or in many foreign jurisdictions. In addition, the determination of patent rights with respect to pharmaceutical compounds and technologies commonly involves complex legal and factual questions, which has in recent years been the subject of much litigation.

As a result, the issuance, scope, validity, enforceability and commercial value of our patent rights, whether owned or in-licensed, are highly uncertain. Furthermore, recent changes in patent laws in the United States, may affect the scope, strength and enforceability of our patent rights or the nature of proceedings that may be brought by or against us related to our patent rights. Additionally, the U.S. Supreme Court has ruled on several patent cases in recent years either narrowing the scope of patent protection available in certain circumstances or weakening the rights of patent owners in certain situations. In addition to increasing uncertainty with regard to our ability to obtain patents in the future, this combination of events has created uncertainty with respect to the value of patents, once obtained. Depending on decisions by the U.S. Congress, the U.S. federal courts, and the USPTO, the laws and regulations governing patents could change in unpredictable ways that could weaken our ability to obtain patents or to enforce any patents that we might obtain in the future.

We may not be aware of all third-party intellectual property rights potentially relating to our current and future our product candidates. Publications of discoveries in the scientific literature often lag behind the actual discoveries, and patent applications in the United States and other jurisdictions are typically not published until 18 months after filing, or in some cases not at all. Therefore, we cannot be certain that we or our licensors were the first to make the inventions claimed in our patents or pending patent applications, or that we or our licensors were the first to file for patent protection of such inventions. Similarly, should we own or in-license any patents or patent applications in the future, we may not be certain that we or the applicable licensor were the first to file for patent protection for the inventions claimed in such patents or patent applications. As a result, the issuance, scope, validity and commercial value of our patent rights cannot be predicted with any certainty. Moreover, we may be subject to a third-party pre-issuance submission of prior art to the U.S. Patent and Trademark Office, or USPTO, or become involved in opposition, derivation, reexamination, *inter partes* review or interference proceedings, in the United States or elsewhere, challenging our patent rights or the patent rights of others. An adverse determination in any such submission, proceeding or litigation could reduce the scope of, or invalidate, our patent rights, allow third parties to commercialize our technology or product candidates and compete directly with us, without payment to us, or result in our inability to manufacture or commercialize products without infringing third-party patent rights, which could significantly harm our business and results of operations.

Our pending and future patent applications, whether owned or in-licensed, may not result in patents being issued that protect our technology or product candidates, in whole or in part, or which effectively prevent others from commercializing competitive technologies and products. Even if our patent applications issue as patents, they may not issue in a form that will provide us with any meaningful protection against competing products or processes sufficient to achieve our business objectives, prevent competitors from competing with us or otherwise provide us with any competitive advantage. Our competitors may be able to circumvent our owned or licensed patents, should they issue, by developing similar or alternative technologies or products in a non-infringing manner. Our competitors may seek approval to market their own products similar to or otherwise competitive with our products. In these circumstances, we may need to defend and/or assert our patents, including by filing lawsuits alleging patent infringement. In any of these types of proceedings, a court or other agency with jurisdiction may find our patents invalid and/or unenforceable.

The issuance of a patent is not conclusive as to its inventorship, scope, validity or enforceability, and our owned and licensed patents may be challenged in the courts or patent offices in the United States and abroad. Such challenges may result in loss of exclusivity or freedom to operate or in patent claims being narrowed, invalidated or held unenforceable, in whole or in part, which could limit our ability to stop others from using or commercializing similar or identical technology and products, or limit the duration of the patent protection of our technology and products. In addition, given the amount of time required for the development, testing and regulatory review of new product candidates, patents protecting such candidates might expire before or shortly after such candidates are commercialized.

Third parties may initiate legal proceedings alleging that we are infringing their intellectual property rights, the outcome of which would be uncertain and could significantly harm our business.

Our commercial success depends, in part, on our ability to develop, manufacture, market and sell our product candidates and use our proprietary and modular T cell programming technology without infringing the intellectual property and other proprietary rights of third parties. Numerous third-party U.S. and non-U.S. issued patents exist in the area of biotechnology, including in the area of programmed T cell therapies and including patents held by our competitors. If any third-party patents cover our product candidates or technologies, we may not be free to manufacture or commercialize our product candidates as planned.

There is a substantial amount of intellectual property litigation in the biotechnology and pharmaceutical industries, and we may become party to, or threatened with, litigation or other adversarial proceedings regarding intellectual property rights with respect to our technology or product candidates, including interference proceedings before the USPTO. Intellectual property disputes arise in a number of areas including with respect to patents, use of other proprietary rights and the contractual terms of license arrangements. Third parties may assert claims against us based on existing or future intellectual property rights and claims may also come from competitors against whom our own patent portfolio may have no deterrent effect. The outcome of intellectual property litigation is subject to uncertainties that cannot be adequately quantified in advance. Other parties may allege that our product candidates or the use of our technologies infringes patent claims or other intellectual property rights held by them or that we are employing their proprietary technology without authorization. As we continue to develop and, if approved, commercialize our current and future product candidates, competitors may claim that our technology infringes their intellectual property rights as part of business strategies designed to impede our successful commercialization. There are and may in the future be additional third-party patents or patent applications with claims to, for example, materials, compositions, formulations, methods of manufacture or methods for treatment related to the use or manufacture of any one or more of our product candidates. For example, we are aware of third-party U.S. patents that claim technology related to obe-cel. These U.S. patents will expire between 2023 and 2025, and there are no counterpart patents in Europe or the rest of the world that extend beyond the earliest expected regulatory approval date of obe-cel. If regulatory approval is received for obe-cel, unless we are able to obtain a license or licenses to the third-party U.S. patent or patents on commercially reasonable terms or any applicable patent or patents are invalidated, held to be unenforceable, or deemed uninfringed by our activities, we currently intend to launch obe-cel outside the United States first, and delay the commercial launch of obe-cel in the United States until the expiration of any applicable third-party patent or patents covering obe-cel. As a result, the future commercial opportunity of obe-cel in the United States could be adversely impacted. Moreover, we may fail to identify relevant third party patents or patent applications, or we may incorrectly conclude that the claims of an issued patent are invalid or are not infringed by our activities. Because patent applications can take many years to issue, third parties may have currently pending patent applications which may later result in issued patents that any of our product candidates may infringe, or which such third parties claim are infringed by our technologies.

If we are found to infringe a third party's intellectual property rights, we could be forced, including by court order, to cease developing, manufacturing or commercializing the infringing product candidate or product. Alternatively, we may be required or may choose to obtain a license from such third party in order to use the infringing technology and continue developing, manufacturing or marketing the infringing product candidate. However, we may not be able to obtain any required license on commercially reasonable terms or at all. Even if we were able to obtain a license, it could be non-exclusive, thereby giving our competitors access to the same technologies licensed to us. In addition, we could be found liable for monetary damages, including treble damages and attorneys' fees if we are found to have willfully infringed a patent. A finding of infringement could prevent us from commercializing our product candidates or force us to cease some of our business operations. Claims that we have misappropriated the confidential information or trade secrets of third parties could have a similar negative effect on our business. Even if successful, the defense of any claim of infringement or misappropriation is time-consuming, expensive and diverts the attention of our management from our ongoing business operations.

We may need to license intellectual property from third parties, and such licenses may not be available or may not be available on commercially reasonable terms.

A third party may hold intellectual property rights, including patent rights, that are important or necessary to the development or manufacture of our product candidates. It may be necessary for us to use the patented or proprietary technology of third parties to commercialize our product candidates, in which case we would be required to obtain a license from these third parties. Such a license may not be available on commercially reasonable terms, or at all, and we could be forced to accept unfavorable contractual terms. If we are unable to obtain such licenses on commercially reasonable terms, our business could be harmed.

We may become involved in lawsuits to protect or enforce our intellectual property, which could be expensive, time-consuming and unsuccessful.

Competitors may infringe our patents, if issued, trademarks, copyrights or other intellectual property. To counter infringement or unauthorized use, we may be required to file infringement claims, which can be expensive and time-consuming and divert the time and attention of our management and scientific personnel. Any claims we assert against perceived infringers could provoke these parties to assert counterclaims against us alleging that we infringe their patents, trademarks, copyrights or other intellectual property. In addition, in a patent infringement proceeding, there is a risk that a court will decide that a patent of ours is invalid or unenforceable, in whole or in part, and that we do not have the right to stop the other party from using the invention at issue. There is also a risk that, even if the validity of such patents is upheld, the court will construe the patent's claims narrowly or decide that we do not have the right to stop the other party from using the invention at issue on the grounds that our patents do not cover the invention. An adverse outcome in a litigation or proceeding involving our patents could limit our ability to assert our patents against those parties or other competitors and may curtail or preclude our ability to exclude third parties from making and selling similar or competitive products.

Similarly, if we assert trademark infringement claims, a court may determine that the marks we have asserted are invalid or unenforceable, or that the party against whom we have asserted trademark infringement has superior rights to the marks in question. In this case, we could ultimately be forced to cease use of such trademarks.

In any infringement litigation, any award of monetary damages we receive may not be commercially valuable. Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation, there is a risk that some of our confidential information could be compromised by disclosure during litigation. In addition, there could be public announcements of the results of hearings, motions or other interim proceedings or developments and if securities analysts or investors perceive these results to be negative, it could have a substantial adverse effect on the price of our ADSs. Moreover, there can be no assurance that we will have sufficient financial or other resources to file and pursue such infringement claims, which typically last for years before they are concluded. Some of our competitors may be able to sustain the costs of such litigation or proceedings more effectively than we can because of their greater financial resources and more mature and developed intellectual property portfolios. Even if we ultimately prevail in such claims, the monetary cost of such litigation and the diversion of the attention of our management and scientific personnel could outweigh any benefit we receive as a result of the proceedings. Accordingly, despite our efforts, we may not be able to prevent third parties from infringing, misappropriating or successfully challenging our intellectual property rights. Uncertainties resulting from the initiation and continuation of patent litigation or other proceedings could have a negative impact on our ability to compete in the marketplace.

We may be subject to claims by third parties asserting that we or our employees have misappropriated their intellectual property, or claiming ownership of what we regard as our own intellectual property.

Many of our employees were previously employed at universities or other biotechnology or pharmaceutical companies, and our founder and Chief Scientific Officer, Dr. Martin Pulé, is currently employed both by us and UCL. Although we try to ensure that our employees do not use the proprietary information or know-how of third parties in their work for us, we may be subject to claims that these employees or we have inadvertently or otherwise used intellectual property, including trade secrets or other proprietary information, of any such employee's former employer. We may also in the future be subject to claims that we have caused an employee to breach the terms of his or her non-competition or non-solicitation agreement. Litigation may be necessary to defend against these potential claims.

In addition, while it is our policy to require our employees and contractors who may be involved in the development of intellectual property to execute agreements assigning such intellectual property to us, such employees and contractors may breach the agreement and claim the developed intellectual property as their own.

As of December 31, 2022, our patent portfolio is comprised of 83 patent families, of which 19 patent families originated from UCLB, the technology-transfer company of UCL, 3 patent families are in-licensed from Noile-Immune Biotech, Inc., 1 patent family is in-licenced from Oxford University Innovation Limited and 60 patent families we own and have originated from our own research. Of the 19 live patent families that were originally in-licensed from UCL, 18 have now been assigned to Autolus under a Deed of Assignment dated 15 October 2020. Because we have acquired or licensed certain of our patents from UCLB, Noile-Immune Biotech, Inc, and Oxford University Innovation Limited we must rely on their prior practices with regard to the assignment of such intellectual property. Our and their assignment agreements may not be self-executing or may be breached, and we may be forced to bring claims against third parties or defend claims they may bring against us, to determine the ownership of what we regard as our intellectual property.

If we fail in prosecuting or defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights or personnel. A court could prohibit us from using technologies or features that are essential to our products if such technologies or features are found to incorporate or be derived from the trade secrets or other proprietary information of the former employers. Even if we are successful in prosecuting or defending against such claims, litigation could result in substantial costs and could be a distraction to management. In addition, any litigation or threat thereof may adversely affect our ability to hire employees or contract with independent service providers. Moreover, a loss of key personnel or their work product could hamper or prevent our ability to commercialize our products.

We may be subject to claims challenging the inventorship or ownership of our owned or in-licensed patent rights and other intellectual property.

We generally enter into confidentiality and intellectual property assignment agreements with our employees, consultants, outside scientific collaborators, sponsored researchers and other advisors. However, these agreements may not be honored and may not effectively assign intellectual property rights to us. For example, disputes may arise from conflicting obligations of consultants or others who are involved in developing our technology and product candidates. Litigation may be necessary to defend against these and other claims challenging inventorship or ownership. The owners of intellectual property in-licensed to us could also face such claims. If we or our licensors fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights, such as exclusive ownership of, or right to use, valuable intellectual property.

Such an outcome could have a material adverse effect on our business. Even if we or our licensors are successful in defending against such claims, litigation could result in substantial costs and be a distraction to management and other employees.

Any trademarks we may obtain may be infringed or successfully challenged, resulting in harm to our business.

We expect to rely on trademarks as one means to distinguish any of our product candidates that are approved for marketing from the products of our competitors. We have not yet selected trademarks for our product candidates. For each selected trademark, we will need to apply to register them and our trademark applications may not be approved. Third parties may oppose our trademark applications, or otherwise challenge our use of the trademarks. In the event that our trademarks are successfully challenged, we could be forced to rebrand our products, which could result in loss of brand recognition and could require us to devote resources to advertising and marketing new brands. Our competitors may infringe our trademarks and we may not have adequate resources to enforce our trademarks.

In addition, any proprietary name we propose to use with our clinical-stage product candidates or any other product candidate in the United States must be approved by the FDA, regardless of whether we have registered it, or applied to register it, as a trademark. The FDA typically conducts a review of proposed product names, including an evaluation of the potential for confusion with other product names. If the FDA objects to any of our proposed proprietary product names, we may be required to expend significant additional resources in an effort to identify a suitable proprietary product name that would qualify under applicable trademark laws, not infringe the existing rights of third parties and be acceptable to the FDA.

If we are unable to protect the confidentiality of our trade secrets, our business and competitive position would be harmed.

In addition to seeking patent and trademark protection for our product candidates, we also rely on trade secrets, including unpatented know-how, technology and other proprietary information, to maintain our competitive position. We seek to protect our trade secrets, in part, by entering into non-disclosure and confidentiality agreements with parties who have access to them, such as our employees, consultants, advisors and other third parties. We also enter into confidentiality and invention or patent assignment agreements with our employees and consultants. Despite these efforts, any of these parties may breach the agreements and disclose our proprietary information, including our trade secrets. Monitoring unauthorized uses and disclosures of our intellectual property is difficult, and we do not know whether the steps we have taken to protect our intellectual property will be effective. In addition, we may not be able to obtain adequate remedies for any such breaches. Enforcing a claim that a party illegally disclosed or misappropriated a trade secret is difficult, expensive and time-consuming, and the outcome is unpredictable. In addition, some courts inside and outside the United States are less willing or unwilling to protect trade secrets.

Moreover, our competitors may independently develop knowledge, methods and know-how equivalent to our trade secrets. Competitors could purchase our products and replicate some or all of the competitive advantages we derive from our development efforts for technologies on which we do not have patent protection. If any of our trade secrets were to be lawfully obtained or independently developed by a competitor, we would have no right to prevent them, or those to whom they communicate it, from using that technology or information to compete with us. If any of our trade secrets were to be disclosed to or independently developed by a competitor, our competitive position would be harmed.

We may not be able to protect our intellectual property rights throughout the world.

Filing, prosecuting and defending patents on product candidates in all countries throughout the world would be prohibitively expensive, and our intellectual property rights in some countries outside the United States could be less extensive than those in the United States. In some cases, we may not be able to obtain patent protection for certain technology outside the United States. In addition, the laws of some foreign countries do not protect intellectual property rights to the same extent as federal and state laws in the United States, even in jurisdictions where we do pursue patent protection. Consequently, we may not be able to prevent third parties from practicing our inventions in all countries outside the United States, even in jurisdictions where we do pursue patent protection or from selling or importing products made using our inventions in and into the United States or other jurisdictions.

Competitors may use our technologies in jurisdictions where we have not pursued and obtained patent protection to develop their own products and, further, may export otherwise infringing products to territories where we have patent protection, but enforcement is not as strong as that in the United States. These products may compete with our product candidates and preclinical programs and our patents or other intellectual property rights may not be effective or sufficient to prevent them from competing.

Many companies have encountered significant problems in protecting and defending intellectual property rights in foreign jurisdictions. The legal systems of certain countries, particularly certain developing countries, do not favor the enforcement of patents, trade secrets and other intellectual property protection, particularly those relating to biotechnology products, which could make it difficult for us to stop the infringement of our patents, if pursued and obtained, or marketing of competing products in violation of our proprietary rights generally. Proceedings to enforce our patent rights in foreign jurisdictions could result in substantial costs and divert our efforts and attention from other aspects of our business, could put our patents at risk of being invalidated or interpreted narrowly and our patent applications at risk of not issuing and could provoke third parties to assert claims against us. We may not prevail in any lawsuits that we initiate, and the damages or other remedies awarded, if any, may not be commercially meaningful. Accordingly, our efforts to enforce our intellectual property rights around the world may be inadequate to obtain a significant commercial advantage from the intellectual property that we develop or license.

Obtaining and maintaining our patent protection depends on compliance with various procedural, document submission, fee payment and other requirements imposed by governmental patent agencies, and our patent protection could be reduced or eliminated for non-compliance with these requirements.

Periodic maintenance and annuity fees on any issued patent are due to be paid to the USPTO and patent agencies outside the United States in several stages over the lifetime of the patent. The USPTO and various foreign governmental patent agencies require compliance with a number of procedural, documentary, fee payment and other similar provisions during the patent application process. While an inadvertent lapse can in many cases be cured by payment of a late fee or by other means in accordance with the applicable rules, there are situations in which noncompliance can result in abandonment or lapse of the patent or patent application, resulting in partial or complete loss of patent rights in the relevant jurisdiction. Non-compliance events that could result in abandonment or lapse of a patent or patent application include failure to respond to official actions within prescribed time limits, non-payment of fees and failure to properly legalize and submit formal documents. If we or our licensors fail to maintain the patents and patent applications covering our products or product candidates, our competitors might be able to enter the market, which would harm our business. In addition, to the extent that we have responsibility for taking any action related to the prosecution or maintenance of patents or patent application in-licensed from a third party, any failure on our part to maintain the in-licensed rights could jeopardize our rights under the relevant license and may expose us to liability.

Risks Related to Ownership of Our Securities and Our Status as a Public Company

The trading price of our ADSs has been and may continue to be highly volatile and may fluctuate due to factors beyond our control.

The trading price of our ADSs continues to be volatile. The stock market in general, and the market for biopharmaceutical and pharmaceutical companies in particular, has experienced extreme price and volume fluctuations that have often been unrelated or disproportionate to the operating performance of these companies, including the impacts of the COVID-19 pandemic, which has resulted in decreased stock prices for many companies notwithstanding the lack of a fundamental change in their underlying business models or prospects. Broad market and industry factors, including potentially worsening economic conditions and other adverse effects or developments relating to the COVID-19 pandemic or geopolitical instability, may negatively affect the market price of our ADSs, regardless of our actual operating performance.

As a result of this volatility, you may not be able to sell your ADSs at or above the price paid for the ADSs. In addition to the factors discussed in this “Risk Factors” section and elsewhere in this Annual Report, the trading price for our ADSs may be influenced by the following:

- the commencement, enrollment or results of our planned or future clinical trials of obe-cel and any other product candidates;
- the clinical or commercial success of competitive drugs, therapies or technologies;
- positive or negative results from, or delays in, testing and clinical trials by us, collaborators or competitors;
- the loss of any of our key scientific or management personnel;
- regulatory or legal developments in the United States, United Kingdom and other countries;
- adverse actions taken by regulatory agencies with respect to our clinical trials or manufacturers;
- changes or developments in laws or regulations applicable to our product candidates and preclinical program;
- changes to our relationships with collaborators, manufacturers or suppliers;
- concerns regarding the safety of our product candidates or programmed T cells in general;
- announcements concerning our competitors or the pharmaceutical industry in general;
- actual or anticipated fluctuations in our operating results;
- changes in financial estimates or recommendations by securities analysts;
- potential acquisitions, financing, collaborations or other corporate transactions;
- the results of our efforts to discover, develop, acquire or in-license additional product candidates;
- the trading volume of our ADSs on The Nasdaq Global Select Market;
- sales of our ADSs or ordinary shares by us, members of our senior management and directors or our shareholders or the anticipation that such sales may occur in the future;
- general economic, political, and market conditions and overall fluctuations in the financial markets in the United States or the United Kingdom;
- price and volume fluctuations of the listed securities comparable companies and, in particular, those that operate in the biopharmaceutical industry;
- investors’ general perception of us and our business; and
- other events and factors, many of which are beyond our control.

These and other market and industry factors may cause the market price and demand for our ADSs to fluctuate substantially, regardless of our actual operating performance, which may limit or prevent investors from selling their ADSs and may otherwise negatively affect the liquidity of our ADSs. In addition, the stock market in general, and biopharmaceutical companies in particular, have experienced extreme price and volume fluctuations that have often been unrelated or disproportionate to the operating performance of these companies.

Some companies that have experienced volatility in the trading price of their securities have been the subject of securities class action litigation. Any lawsuit to which we are a party, with or without merit, may result in an unfavorable judgment. We also may decide to settle lawsuits on unfavorable terms. Any such negative outcome could result in payments of substantial damages or fines, damage to our reputation or adverse changes to our business practices. Defending against litigation is costly and time-consuming, and could divert our management’s attention and our resources. Furthermore, during the course of litigation, there could be negative public announcements of the results of hearings, motions or other interim proceedings or developments, which could have a negative effect on the market price of our ADSs.

Our ADSs are thinly traded and our shareholders may be unable to sell their ADSs quickly or at market price.

Although we have had periods of high volume daily trading in our ADSs, generally our ADSs are thinly traded. As a consequence of this lack of liquidity, the trading of relatively small quantities of ADSs by our shareholders may disproportionately influence the price of those ADSs in either direction. The price for our ADSs could, for example, decline significantly in the event that a large number of ADSs are sold on the market without commensurate demand, as compared to a seasoned issuer that could better absorb those sales without adverse impact on the price of the security.

Future sales of our ADSs in the public market could cause our share price to decline

As of March 6, 2023, approximately 173.1 million of our ordinary shares (including ordinary shares in the form of ADSs) were issued and outstanding. Sales of a substantial number of shares of our ADSs in the public market, or the perception that these sales might occur, could depress the market price of our ADSs and could impair our ability to raise capital through the sale of additional equity securities.

We previously filed a registration statement on Form S-8 under the Securities Act to register ordinary shares (including in the form of ADSs) subject to options or other equity awards issued or reserved for future issuance under our equity incentive plans, and we have also filed a "shelf" registration statement on Form F-3 under the Securities Act to register securities having an aggregate offering price not to exceed $300 million, which has approximately $150 million remaining after our December 2022 offering. In addition, in the future, we may issue ordinary shares, ADS or other securities if we need to raise additional capital. The number of new ordinary shares or ADSs, or securities convertible into our ordinary shares or ADSs, issued in connection with raising additional capital could represent a material portion of our then-outstanding ordinary shares. For example, in December 2022, the Company completed an underwritten public offering of 81,927,012 ADSs representing 81,927,012 ordinary shares, which includes the partial exercise by the underwriters to purchase an additional 6,927,012 ADSs, at a public offering price of $2.00 per ADS. Aggregate net proceeds to the Company, after underwriting discounts and offering expenses, were $152.4 million.

Additionally, in 2022, we filed two "resale" registration statements on Form F-3 under the Securities Act to register a total of approximately 33.4 million of our ordinary shares, or securities convertible into our ordinary shares, held by certain of our investors, allowing these shares or ADSs to be sold in the public market. If these shares or ADSs are sold, or if it is perceived that they will be sold, in the public market, the trading price of our ADSs could decline.

If we fail to implement and maintain effective internal controls over financial reporting, our ability to produce accurate financial statements on a timely basis could be impaired.

The Sarbanes-Oxley Act requires, among other things, that we maintain effective internal controls for financial reporting and disclosure controls and procedures. We are required, under Section 404 of the Sarbanes-Oxley Act of 2002, to include a report by management on, among other things, the effectiveness of our internal control over financial reporting. This assessment will need to include disclosure of any material weaknesses identified by our management in our internal control over financial reporting. A material weakness is a deficiency, or combination of deficiencies, in internal control over financial reporting that results in more than a reasonable possibility that a material misstatement of annual or interim financial statements will not be prevented or detected on a timely basis. Section 404b of the Sarbanes-Oxley Act of 2002 also generally requires an attestation from our independent registered public accounting firm on the effectiveness of our internal control over financial reporting. However, for as long as we remain an emerging growth company, we intend to take advantage of the exemption permitting us not to comply with the independent registered public accounting firm attestation requirement.

During the evaluation and testing process, if we identify one or more material weaknesses in our internal control over financial reporting, we will be unable to assert that our internal control over financial reporting is effective. We cannot assure you that there will not be material weaknesses or significant deficiencies in our internal control over financial reporting in the future. Any failure to maintain internal control over financial reporting could severely inhibit our ability to accurately report our financial condition, results of operations or cash flows. If we are unable to conclude that our internal control over financial reporting is effective, or if our independent registered public accounting firm determines we have a material weakness or significant deficiency in our internal control over financial reporting once that firm begins its Section 404 reviews, we could lose investor confidence in the accuracy and completeness of our financial reports, the market price of our ADSs could decline, and we could be subject to sanctions or investigations by The Nasdaq Stock Market LLC, the SEC or other regulatory authorities. Failure to remedy any material weakness in our internal control over financial reporting, or to implement or maintain other effective control systems required of public companies, could also restrict our future access to the capital markets.

Our senior management, directors and principal shareholders, if they choose to act together, have the ability to control or significantly influence all matters submitted to our shareholders for approval.

As of December 31, 2022, members of our senior management, directors and current beneficial owners of 5% or more of our ordinary shares and their respective affiliates beneficially owned, in the aggregate, approximately 65% of our outstanding ordinary shares (including ordinary shares in the form of ADSs). As a result, if these shareholders were to choose to act together, they would be able to control or significantly influence all matters submitted to our shareholders for approval, as well as our management and affairs. For example, these persons, if they choose to act together, would control or significantly influence the election of directors and approval of any merger, consolidation or sale of all or substantially all of our assets.

This concentration of ownership control may harm the market price of our ADSs by:

- delaying, deferring, or preventing a change in control;
- entrenching our management and/or the board of directors;
- impeding a merger, scheme of arrangement, consolidation, takeover, or other business combination involving us; or
- discouraging a potential acquirer from making a tender offer or otherwise attempting to obtain control of us.

In addition, some of these persons or entities may have interests different than yours. For example, because many of these shareholders purchased their shares at prices substantially lower than our current trading price and have held their shares for a longer period, they may be more interested in selling our company to an acquirer than other investors, or they may want us to pursue strategies that deviate from the interests of other shareholders.

The rights of our shareholders may differ from the rights typically offered to shareholders of a U.S. corporation.

We are incorporated under English law. The rights of holders of ordinary shares and, therefore, certain of the rights of holders of our ADSs, are governed by English law, including the provisions of the U.K. Companies Act 2006, or the Companies Act, and by our Articles of Association. These rights differ in certain respects from the rights of shareholders in typical U.S. corporations. See the section titled “Differences in Corporate Law” set below for a description of the principal differences between the provisions of the Companies Act applicable to us and, for example, the Delaware General Corporation Law relating to shareholders’ rights and protections.

Holders of our ADSs may not have the same voting rights as the holders of our ordinary shares and may not receive voting materials in time to be able to exercise their right to vote.

Holders of the ADSs do not have the same rights as our shareholders and in accordance with the provisions of the deposit agreement, will not be able to exercise voting rights attaching to the ordinary shares evidenced by the ADSs on an individual basis. The Depositary or its nominee will act as the representative for the holders of the ADSs and will exercise the voting rights attached to the ordinary shares represented by the ADSs. Holders of our ADSs may not receive voting materials in time to instruct the Depositary to vote, and it is possible that they, or persons who hold their ADSs through brokers, dealers or other third parties, will not have the opportunity to exercise a right to vote. Furthermore, the Depositary will not be liable for any failure to carry out any instructions to vote, for the manner in which any vote is cast or for the effect of any such vote. As a result, holders of our ADSs may not be able to exercise voting rights and may lack recourse if their ADSs are not voted as requested. In addition, holders of our ADSs will not be able to call a shareholders’ meeting.

Holders of our ADSs may not receive distributions on our ordinary shares represented by the ADSs or any value for them if it is illegal or impractical to make them available to holders of ADSs.

Although we do not have any present plans to declare or pay any dividends, in the event we declare and pay any dividend, the Depositary for the ADSs has agreed to pay to holders of our ADSs the cash dividends or other distributions it or the custodian receives on our ordinary shares or other deposited securities after deducting its fees and expenses. Holders of our ADSs will receive these distributions in proportion to the number of our ordinary shares their ADSs represent. However, in accordance with the limitations set forth in the deposit agreement, it may be unlawful or impractical to make a distribution available to holders of the ADSs. We have no obligation to take any other action to permit distribution on the ADSs, ordinary shares, rights or anything else to holders of the ADSs. This means that holders of our ADSs may not receive the distributions we make on our ordinary shares or any value from them if it is unlawful or impractical to make them available to you. These restrictions may have an adverse effect on the value of the ADSs.

Because we do not anticipate paying any cash dividends on our ADSs in the foreseeable future, capital appreciation, if any, will be our ADS holders’ and shareholders’ sole source of gains and they may never receive a return on their investment.

Under current English law, a company’s accumulated realized profits must exceed its accumulated realized losses (on a non-consolidated basis) before dividends can be paid. Therefore, we must have distributable profits before issuing a dividend. We have never declared or paid a dividend on our ordinary shares in the past, and we currently intend to retain our future earnings, if any, to fund the development and growth of our business. As a result, capital appreciation, if any, on our ADSs will be our ADS holders’ sole source of gains for the foreseeable future, and they will suffer a loss on their investment if they are unable to sell their ADSs at or above the price at which they purchased the ADSs.

If we are a passive foreign investment company, there could be adverse U.S. federal income tax consequences to U.S. Holders.

Under the Internal Revenue Code of 1986, as amended, or the Code, we will be a passive foreign investment company, or PFIC, for any taxable year in which (1) 75% or more of our gross income consists of passive income or (2) 50% or more of the average quarterly value of our assets consists of assets that produce, or are held for the production of, passive income, including cash. For purposes of these tests, passive income includes dividends, interest, gains from the sale or exchange of investment property and certain rents and royalties. In addition, for purposes of the above calculations, a non-U.S. corporation that directly or indirectly owns at least 25% by value of the shares of another corporation is treated as if it held its proportionate share of the assets and received directly its proportionate share of the income of such other corporation. If we are a PFIC for any taxable year during which a U.S. Holder (as defined in Item 10.E. “Taxation - Material U.S. Federal Income Tax Considerations for U.S. Holders”) holds our ADSs, the U.S. Holder may be subject to adverse tax consequences regardless of whether we continue to qualify as a PFIC, including ineligibility for any preferred tax rates on capital gains or on actual or deemed dividends, interest charges on certain taxes treated as deferred, and additional reporting requirements.

We believe we were a PFIC for our taxable year ended December 31, 2022 and may be a PFIC in future taxable years. U.S. Holders should consult with their tax advisors regarding the implications of owning stock in a PFIC. No assurances regarding our PFIC status can be provided for any past, current or future taxable years. The determination of whether we are a PFIC is a fact-intensive determination made on an annual basis and the applicable law is subject to varying interpretation. In particular, the characterization of our assets as active or passive may depend in part on our current and intended future business plans, which are subject to change. In addition, for our current and future taxable years, the total value of our assets for PFIC testing purposes may be determined in part by reference to the market price of our ordinary shares or ADSs from time to time, which may fluctuate considerably. Under the income test, our status as a PFIC depends on the composition of our income which will depend on the transactions we enter into in the future and our corporate structure. The composition of our income and assets is also affected by how, and how quickly, we spend the cash we raise in any offering. Our U.S. counsel expresses no opinion with respect to our PFIC status for our taxable year ended December 31, 2022, or any future taxable year.

If we are a PFIC, U.S. Holders (as defined in Item 10.E. “Taxation - Material U.S. Federal Income Tax Considerations for U.S. Holders) of our ADSs would be subject to adverse U.S. federal income tax consequences, such as ineligibility for any preferred tax rates on capital gains or on actual or deemed dividends, interest charges on certain taxes treated as deferred, and additional reporting requirements under U.S. federal income tax laws and regulations. For further discussion of the PFIC rules and the adverse U.S. federal income tax consequences in the event we are classified as a PFIC, see Item 10.E. “Taxation - Material U.S. Federal Income Tax Considerations for U.S. Holders” in this Annual Report.

If a United States person is treated as owning at least 10% of our ordinary shares, including ordinary shares represented by ADSs, such holder may be subject to adverse U.S. federal income tax consequences.

If a U.S. Holder is treated as owning (directly, indirectly or constructively through the application of attribution rules) at least 10% of the value or voting power of our ordinary shares, including ordinary shares represented by ADSs, such U.S. Holder may be treated as a “United States shareholder” with respect to each “controlled foreign corporation” in our group (if any). Because our group includes at least one U.S. subsidiary (Autolus Inc.), certain of our non-U.S. subsidiaries may be treated as controlled foreign corporations (regardless of whether Autolus Therapeutics plc is treated as a controlled foreign corporation). A United States shareholder of a controlled foreign corporation may be required to annually report and include in its U.S. taxable income its pro rata share of “Subpart F income,” “global intangible low-taxed income” and investments in U.S. property by controlled foreign corporations, regardless of whether we make any distributions. An individual that is a United States shareholder with respect to a controlled foreign corporation generally would not be allowed certain tax deductions or foreign tax credits that would be allowed to a United States shareholder that is a U.S. corporation. We cannot provide any assurances that we will assist investors in determining whether any of our non-U.S. subsidiaries, if any, are treated as a controlled foreign corporation or whether such investor is treated as a United States shareholder with respect to any of such controlled foreign corporations.

Further, we cannot provide any assurances that we will furnish to any U.S. shareholder information that may be necessary to comply with the reporting and tax paying obligations discussed above. Failure to comply with these reporting obligations may subject you to significant monetary penalties and may prevent the statute of limitations with respect to your U.S. federal income tax return for the year for which reporting was due from starting. U.S. Holders should consult their tax advisors regarding the potential application of these rules to their investment in our ADSs.

Future changes to tax laws could materially adversely affect our company and reduce net returns to our shareholders.

The tax treatment of the company is, and our ADSs and ordinary shares are, subject to changes in tax laws, regulations and treaties, or the interpretation thereof, tax policy initiatives and reforms under consideration and the practices of tax authorities in jurisdictions in which we operate, as well as tax policy initiatives and reforms related to the Organization for Economic Co-Operation and Development's, or OECD, Base Erosion and Profit Shifting, or BEPS, Project, the European Commission's state aid investigations and other initiatives.

Such changes may include (but are not limited to) the taxation of operating income, investment income, dividends received or (in the specific context of withholding tax) dividends paid, or the stamp duty or stamp duty reserve tax treatment of our ADSs or ordinary shares. We are unable to predict what tax reform may be proposed or enacted in the future or what effect such changes would have on our business, but such changes, to the extent they are brought into tax legislation, regulations, policies or practices, could affect our financial position and overall or effective tax rates in the future in countries where we have operations, reduce post-tax returns to our shareholders, and increase the complexity, burden and cost of tax compliance.

The Inflation Reduction Act recently enacted in the United States introduced, among other changes, a 15% corporate minimum tax on certain United States corporations and a 1% excise tax on certain stock redemptions by United States corporations (which the U.S. Treasury indicated may also apply to certain stock redemptions by a foreign corporation funded (or deemed funded) by certain United States affiliates. In addition, effective in 2022, the Tax Cuts and Jobs Act of 2017 eliminates the option to deduct research and development expenditures in the current period and requires taxpayers to capitalize and amortize them over five or fifteen years pursuant to Internal Revenue Code Section 174.

A Bill is currently proceeding through the U.K. parliament (the Retained EU Law (Revocation and Reform) Bill) which provides for the revocation of EU laws and rights which, notwithstanding Brexit, currently remain effective in the U.K., except where the U.K. Government and/or parliament take active steps to preserve the EU law position within U.K. law. Certain aspects of the stamp duty and stamp duty reserve tax treatment of our ordinary shares and ADSs are based on EU law which could be affected by this Bill. Accordingly, if this Bill is enacted, and steps are not taken by the U.K. Government and/or parliament to preserve the current position, this could, in particular, result in a charge to stamp duty reserve tax on the issuance of new ADSs, at the rate of 1.5% of the issue price, potentially with effect from December 31, 2023, which would represent an additional cost if we seek to raise further capital in this way.

Tax authorities may disagree with our positions and conclusions regarding certain tax positions, or may apply existing rules in an unforeseen manner, resulting in unanticipated costs, taxes or non-realization of expected benefits.

A tax authority may disagree with tax positions that we have taken, which could result in increased tax liabilities. For example, His Majesty's Revenue & Customs, or HMRC, the U.S. Internal Revenue Service or another tax authority could challenge our allocation of income by tax jurisdiction and the amounts paid between our affiliated companies pursuant to our intercompany arrangements and transfer pricing policies, including amounts paid with respect to our intellectual property development. Similarly, a tax authority could assert that we are subject to tax in a jurisdiction where we believe we have not established a taxable connection, often referred to as a ''permanent establishment'' under international tax treaties, and such an assertion, if successful, could increase our expected tax liability in one or more jurisdictions. A tax authority may take the position that material income tax liabilities, interest and penalties are payable by us, in which case, we expect that we might contest such assessment. Contesting such an assessment may be lengthy and costly and if we were unsuccessful in disputing the assessment, the implications could increase our anticipated effective tax rate, where applicable.

We may be unable to use net operating loss and tax credit carryforwards and certain built-in losses to reduce future tax payments or benefits from favorable U.K. tax legislation.

As a U.K. resident trading entity, we are subject to U.K. corporate taxation. Due to the nature of our business, we have generated losses since inception. As of December 31, 2022, we had cumulative carryforward tax losses of $320.8 million. Subject to any relevant utilization criteria and restrictions (including those that limit the percentage of profits that can be reduced by carried forward losses and those that can restrict the use of carried forward losses where there is a change of ownership of more than half the ordinary shares of the company and a major change in the nature, conduct or scale of the trade), we expect these to be eligible for carry forward and utilization against future operating profits.

As a company that carries out extensive research and development, or R&D, activities, we benefit from the U.K. research and development tax relief programs, being the Small and Medium-sized Enterprises R&D tax relief program, or SME Program, and, for certain specific categories of expenditure, the Research and Development Expenditure Credit program, or RDEC Program. The SME Program may be particularly beneficial to us, as under such program the trading losses that arise from our qualifying R&D activities can be surrendered for a cash rebate of up to 33.35% of qualifying expenditure.

However, amendments to the U.K. R&D tax credit regime that have recently been enacted, or proposed (amongst other things) (i) will reduce the cash rebate that may be claimed under the SME Program to 18.6% of qualifying expenditure, and (ii) may (unless limited exceptions apply) introduce restrictions on the tax relief that can be claimed for expenditure incurred on sub-contracted R&D activities or externally provided workers, where such sub-contracted activities are not carried out in the U.K. or such workers are not subject to U.K. payroll taxes. These amendments are expected to take effect from April 2023. In addition, the U.K. Government has recently launched a consultation on its proposal to merge the SME Program and the RDEC Program into a single scheme with effect from April 2024; if such proposal is implemented, it may be the case that we are no longer able to make claims in respect of sub-contracted R&D activities, and that different (and potentially lower) caps are imposed on the amount of tax relief that we can claim. These and other potential future changes to the U.K. R&D tax relief programs may mean we no longer qualify or have a material impact on the extent to which we can make claims.

We may benefit in the future from the United Kingdom's "patent box" regime, which allows certain profits attributable to revenues from patented products (and other qualifying income) to be taxed at an effective rate of 10% by giving an additional tax deduction.

We are the exclusive licensee or owner of one patent and several patent applications which, if issued, would cover our product candidates, and accordingly, future upfront fees, milestone fees, product revenues and royalties could be eligible for this deduction. When taken in combination with the enhanced relief available on R&D expenditures, we expect a long-term rate of corporation tax lower than statutory to apply to us. If, however, there are unexpected adverse changes to the U.K. R&D tax credit regime or the "patent box" regime, or for any reason we are unable to qualify for such advantageous tax legislation, or we are unable to use net operating loss and tax credit carryforwards and certain built-in losses to reduce future tax payments then our business, results of operations and financial condition may be adversely affected. This may impact our ongoing requirement for investment and the timeframes within which additional investment is required.

To date, Autolus Ltd has recovered all of the VAT incurred on its expenditure in the UK on the basis of having an intention to solely make taxable supplies. In recent months we have been working with our advisers in relation to the appropriate VAT treatment that should be applied in the UK in relation to Autolus Ltd's primary income stream. Our advisors are still finalizing their understanding of the full facts which underpin our CAR-T therapy and will provide a more conclusive VAT opinion in due course but it has been mentioned during initial discussion that some products which include human blood can be exempt from a UK VAT perspective. If the conclusion is that this activity is exempt from a UK VAT perspective, this may result in a retrospective restriction in terms of VAT recovered on a proportion of our UK expenditure (with this restriction likely being based on the UK market turnover as a percentage of global turnover). We currently expect revenue from UK customers to only represent a small proportion of our overall activity.

We will incur significantly increased costs and demands upon management as a result of being a public company, and our management will be required to devote substantial time to new compliance initiatives.

As a public company listed in the United States, we have and will continue to incur significant legal, accounting and other expenses that we did not incur previously. These expenses will likely be even more significant after we no longer qualify as an emerging growth company. The Sarbanes-Oxley Act, the Dodd-Frank Wall Street Reform and Consumer Protection Act, the listing requirements of Nasdaq and other applicable securities rules and regulations impose various requirements on public companies in the United States, including the establishment and maintenance of effective disclosure and financial controls and corporate governance practices. Our senior management and other personnel will need to devote a substantial amount of time to these compliance initiatives. Moreover, these rules and regulations will increase our legal and financial compliance costs and will make some activities more time-consuming and costly. For example, we expect that these rules and regulations may make it more difficult and more expensive for us to maintain director and officer liability insurance, which in turn could make it more difficult for us to attract and retain qualified senior management personnel or members for our board of directors.

We are an "emerging growth company" and as a result of the reduced disclosure and governance requirements applicable to emerging growth companies, our ADSs may be less attractive to investors.

We are an "emerging growth company" as defined in the Jumpstart Our Business Startups Act of 2012, or the JOBS Act. For as long as we continue to be an emerging growth company, we may take advantage of exemptions from various reporting requirements that are applicable to other public companies that are not emerging growth companies, including not being required to comply with the auditor attestation requirements of Section 404, exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and shareholder approval of any golden parachute payments not previously approved. As an emerging growth company, we are able to report only two years of financial results and selected financial data compared to three and five years, respectively, for comparable data reported by other public companies. We may take advantage of these exemptions until we are no longer an emerging growth company.

We will remain an emerging growth company company until the earliest of (i) the last day of the fiscal year in which we have total annual gross revenue of $1.07 billion or more; (ii) December 31, 2023, which is the last day of our fiscal year following the fifth anniversary of the date of the completion of our initial public offering; (iii) the date on which we have issued more than $1.0 billion in nonconvertible debt during the previous three years; and (iv) the date on which we are deemed to be a large accelerated filer under the rules of the SEC. We cannot predict if investors will find our ADSs less attractive because we may rely on these exemptions. If some investors find our ADSs less attractive as a result, there may be a less active trading market for our ADSs and the price of our ADSs may be more volatile.

Under Section 107(b) of the JOBS Act, emerging growth companies can delay adopting new or revised accounting standards until such time as those standards apply to private companies. We have irrevocably elected not to avail ourselves of this exemption from new or revised accounting standards and, therefore, we are subject to the same new or revised accounting standards as other public companies that are not emerging growth companies.

As a foreign private issuer, we are permitted to and follow certain home country practices in relation to corporate governance matters that differ significantly from Nasdaq corporate governance listing standards applicable to public companies organized in the United States. These practices may afford less protection to shareholders than they would enjoy if we complied fully with Nasdaq corporate governance listing standards.

We are entitled to rely on a provision in Nasdaq's corporate governance rules that allows us to follow English corporate law with regard to certain aspects of corporate governance. This allows us to follow certain corporate governance practices that differ in significant respects from the corporate governance requirements applicable to domestic issuers listed on Nasdaq.

We are not subject to Nasdaq Listing Rule 5605(b)(2) because English law does not require that independent directors regularly have scheduled meetings at which only independent directors are present. Similarly, we have adopted a compensation committee, but English law does not require that we adopt a compensation committee or that such committee be fully independent. As a result, our practice varies from the requirements of Nasdaq Listing Rule 5605(d), which sets forth certain requirements as to the responsibilities, composition and independence of compensation committees. English law requires that we disclose information regarding compensation of our directors for services as a director of an undertaking that is our subsidiary undertaking and as a director of any other undertaking of which a director is appointed by virtue of our nomination (directly or indirectly) but not other third-party compensation of our directors or director nominees. As a result, our practice varies from the third-party compensation disclosure requirements of Nasdaq Listing Rule 5250(b)(3). In addition, while we have a compensation committee, English law does not require that we adopt a compensation committee or that such committee be fully independent. Additionally, we are not subject to Nasdaq Listing Rule 5605(e) because, under English law, director nominees are not required to be selected or recommended for selection by either a majority of the independent directors or a nominations committee comprised solely of independent directors.

Furthermore, English law does not have a regulatory regime for the solicitation of proxies applicable to us, thus our practice varies from the requirement of Nasdaq Listing Rule 5620(b), which sets forth certain requirements regarding the solicitation of proxies. In addition, we have opted out of shareholder approval requirements for the issuance of securities in connection with certain events such as the acquisition of stock or assets of another company, the establishment of or amendments to equity-based compensation plans for employees, a change of control of us and certain private placements.

To this extent, our practice will vary from the requirements of Nasdaq Listing Rule 5635, which generally requires an issuer to obtain shareholder approval for the issuance of securities in connection with such events. In addition, while we have adopted a code of business conduct and ethics, English law does not require us to publicly disclose waivers from this code that have been approved by our board within four business days. We expect to report any such waivers in a subsequent Annual Report on Form 20-F. Moreover, we are not required to comply with Regulation FD, which restricts the selective disclosure of material information, although we have voluntarily adopted a corporate disclosure policy substantially similar to Regulation FD. These exemptions and leniencies will reduce the frequency and scope of information and protections to which you may otherwise have been eligible in relation to a U.S. domestic issuer.

As a result, our practice varies from the requirements for domestic issuers pursuant to Nasdaq Listing Rule 5610.

In accordance with our Nasdaq listing, our audit committee is required to comply with the provisions of Section 301 of the Sarbanes-Oxley Act of 2002, or the Sarbanes-Oxley Act, and Rule 10A-3 of the Exchange Act, both of which are also applicable to Nasdaq listed U.S. companies. Because we are a foreign private issuer, however, our audit committee is not subject to additional requirements applicable to Nasdaq listed U.S. companies, including an affirmative determination that all members of the audit committee are "independent," using more stringent criteria than those applicable to us as a foreign private issuer, subject to certain phase-in requirements permitted by Rule 10A-3 of the Exchange Act.

We may lose our foreign private issuer status in the future, which could result in significant additional costs and expenses.

As discussed above, we are a foreign private issuer, and therefore, we are not required to comply with all of the periodic disclosure and current reporting requirements of the Exchange Act. The determination of foreign private issuer status is made annually on the last business day of an issuer's most recently completed second fiscal quarter, and, accordingly, the next determination will be made with respect to us on June 30, 2023. We would lose our foreign private issuer status if, for example, more than 50% of our ordinary shares are directly or indirectly held by residents of the United States and we fail to meet additional requirements necessary to maintain our foreign private issuer status.

If we lose our foreign private issuer status on this determination date, we will be required to file with the SEC periodic reports and registration statements on U.S. domestic issuer forms beginning on January 1, 2024, which are more detailed and extensive than the forms available to a foreign private issuer. We will also have to comply with U.S. federal proxy requirements, and our officers, directors and principal shareholders will become subject to the short-swing profit disclosure and recovery provisions of Section 16 of the Exchange Act. In addition, we will lose our ability to rely upon exemptions from certain corporate governance requirements under the Nasdaq listing rules. As a U.S. listed public company that is not a foreign private issuer, we would incur significant additional legal, accounting and other expenses that we do not currently incur as a foreign private issuer, as well as increased accounting, reporting and other expenses in order to maintain a listing on a U.S. securities exchange. If we lose our foreign private issuer status and are unable to devote adequate funding and the resources needed to maintain compliance with U.S. securities laws, while continuing our operations, we could be forced to deregister with the SEC. A deregistration would substantially reduce or effectively terminate the trading of our securities in the United States. We also expect that if we were required to comply with the rules and regulations applicable to U.S. domestic issuers, it would make it more difficult and expensive for us to obtain director and officer liability insurance, and we may be required to accept reduced coverage or incur substantially higher costs to obtain coverage. These rules and regulations could also make it more difficult for us to attract and retain qualified members of our board of directors.

Provisions in the U.K. City Code on Takeovers and Mergers that may have anti-takeover effects do not currently apply to us.

The U.K. City Code on Takeovers and Mergers, or the Takeover Code, applies to an offer for, among other things, a public company whose registered office is in the United Kingdom if the company is considered by the Panel on Takeovers and Mergers, or the Takeover Panel, to have its place of central management and control in the United Kingdom (or the Channel Islands or the Isle of Man). This is known as the "residency test." The test for central management and control under the Takeover Code is different from that used by the U.K. tax authorities.

Under the Takeover Code, the Takeover Panel will determine whether we have our place of central management and control in the United Kingdom by looking at various factors, primarily where the directors are resident.

In June 2019, the Takeover Panel Executive confirmed that, based on our current circumstances, we are not subject to the Takeover Code. As a result, our shareholders are not entitled to the benefit of certain takeover offer protections provided under the Takeover Code. We believe that this position is unlikely to change at any time in the near future but, in accordance with good practice, we will review the situation on a regular basis and consult with the Takeover Panel if there is any change in our circumstances which may have a bearing on whether the Takeover Panel would determine our place of central management and control to be in the United Kingdom.

You may face difficulties in protecting your interests, and your ability to protect your rights through the U.S. federal courts may be limited, because we are incorporated under the laws of England and Wales, conduct most of our operations outside the United States and most of our directors and senior management reside outside the United States.

We are incorporated and have our registered office in, and are currently existing under the laws of, England and Wales. In addition, most of our tangible assets are located, and most of our senior management and directors reside, outside of the United States. As a result, it may not be possible to serve process within the United States on certain directors or us or to enforce judgments obtained in U.S. courts against such directors or us based on civil liability provisions of the securities laws of the United States. As a result, it may not be possible for investors to effect service of process within the United States upon such persons or to enforce judgments obtained in U.S. courts against them or us, including judgments predicated upon the civil liability provisions of the U.S. federal securities laws.

The United States and the United Kingdom do not currently have a treaty providing for recognition and enforcement of judgments (other than arbitration awards) in civil and commercial matters. Consequently, a final judgment for payment given by a court in the United States, whether or not predicated solely upon U.S. securities laws, would not automatically be recognized or enforceable in the United Kingdom. In addition, uncertainty exists as to whether English courts would entertain original actions brought in the United Kingdom against us or our directors or senior management predicated upon the securities laws of the United States or any state in the United States. Any final and conclusive monetary judgment for a definite sum obtained against us in U.S. courts would be treated by English courts as a cause of action in itself and sued upon as a debt at common law so that no retrial of the issues would be necessary, provided that certain requirements are met.

Whether these requirements are met in respect of a judgment based upon the civil liability provisions of the U.S. securities laws, including whether the award of monetary damages under such laws would constitute a penalty, is subject to determination by the court making such decision. If an English court gives judgment for the sum payable under a U.S. judgment, the English judgment will be enforceable by methods generally available for this purpose. These methods generally permit the English court discretion to prescribe the manner of enforcement.

As a result, U.S. investors may not be able to enforce against us or certain of our directors any judgments obtained in U.S. courts in civil and commercial matters, including judgments under the U.S. federal securities laws.

As an English public limited company, certain capital structure decisions will require shareholder approval, which may limit our flexibility to manage our capital structure.

On June 18, 2018, we altered the legal status of our company under English law from a private limited company by re-registering as a public limited company and changing our name from Autolus Therapeutics Limited to Autolus Therapeutics plc. English law provides that a board of directors may only allot shares (or rights to subscribe for or convertible into shares) with the prior authorization of shareholders, such authorization stating the aggregate nominal amount of shares that it covers and valid for a maximum period of five years, each as specified in the articles of association or relevant shareholder resolution.

We obtained authority from our shareholders at our Annual General Meeting held on June 28, 2022 to allot additional shares in the Company (or to grant rights to subscribe for or to convert any security into shares in the Company) for a period of five years from June 28, 2022, up to a maximum nominal amount of $8,400, which authorization will need to be renewed upon expiration (i.e., at least every five years) but may be sought more frequently for additional five-year terms (or any shorter period).

English law also generally provides shareholders with preemptive rights when new shares are issued for cash. However, it is possible for the articles of association, or for shareholders to pass a special resolution at a general meeting, being a resolution passed by at least 75% of the votes cast, to disapply preemptive rights. Such a disapplication of preemptive rights may be for a maximum period of up to five years from the date of adoption of the articles of association, if the disapplication is contained in the articles of association, or from the date of the shareholder special resolution, if the disapplication is by shareholder special resolution. In either case, this disapplication would need to be renewed by our shareholders upon its expiration (i.e., at least every five years). We obtained authority from our shareholders at our Annual General Meeting held on June 28, 2022 to disapply preemptive rights for a period of five years from June 28, 2022 up to a maximum nominal amount of $8,400, which disapplication will need to be renewed upon expiration (i.e., at least every five years) to remain effective, but may be sought more frequently for additional five-year terms (or any shorter period).

English law also generally prohibits a public company from repurchasing its own shares without the prior approval of shareholders by ordinary resolution, being a resolution passed by a simple majority of votes cast, and other formalities. Such approval may be for a maximum period of up to five years.

Our articles of association designates that the U.S. federal district courts will be the exclusive forum for the resolution of any complaint asserting a cause of action arising under the Securities Act.

Our articles of association provides that the U.S. federal district courts will be the exclusive forum for resolving any complaint asserting a cause of action arising under the Securities Act. This choice of forum provision may limit a shareholder’s ability to bring a claim in a judicial forum that it finds favorable for disputes with us or our directors, officers or other employees, which may discourage such lawsuits. If a court were to find either choice of forum provision contained in our articles of association to be inapplicable or unenforceable in an action, we may incur additional costs associated with resolving such action in other jurisdictions, which could adversely affect our results of operations and financial condition.

If equity research analysts do not publish research or reports, or publish unfavorable research or reports, about us, our business or our market, the price and trading volume of our ADSs could decline.

The trading market for our ADSs is influenced by the research and reports that equity research analysts publish about us and our business. We currently have research coverage by several equity research, industry or financial analysts. The price of our ADSs could decline if one or more analysts covering our business downgrade our ADSs or issue other unfavorable commentary or research about us. If one or more equity research analysts ceases coverage of us or fails to publish reports on us regularly, demand for our ADSs could decrease, which in turn could cause the trading price or trading volume of our ADSs to decline.

Item 4. Information on the Company.

A. History and development of the company.

We are a public limited company, originally incorporated pursuant to the laws of England and Wales in February 2018 as a private company with limited liability called Autolus Therapeutics Limited. Autolus Limited was originally incorporated under the laws of England and Wales in July 2014. Pursuant to the terms of a corporate reorganization, the shareholders of Autolus Limited exchanged each of the shares held by them in Autolus Limited for the same number and class of newly issued shares of Autolus Therapeutics Limited and, as a result, Autolus Limited became a wholly owned subsidiary of Autolus Therapeutics Limited, a holding company incorporated in February 2018 with nominal assets and liabilities, which had not conducted any operations prior to the share exchange other than actions incidental to the exchange and its incorporation. On June 18, 2018, Autolus Therapeutics Limited re-registered as a public limited company and was renamed Autolus Therapeutics plc. Following the re-registration of Autolus Therapeutics Limited as a public limited company, Autolus Limited reduced its issued share capital pursuant to Part 17 of the Companies Act by way of the cancellation of all of its issued series A preferred shares, C ordinary shares, deferred shares and all but 100 B ordinary shares. On June 22, 2018, the different classes of our issued share capital were converted into a single class of ordinary shares and various classes of deferred shares, and we completed our IPO on the Nasdaq Global Select Market. Our ADSs trade under the symbol "AUTL". Our ordinary shares are not listed.

Our registered office and principal executive offices are located at the Mediaworks, 191 Wood Lane, White City, London W12 7FP, United Kingdom and our telephone number is +44 20 3829 6230. Our website address is www.autolus.com. Information contained in, or that can be accessed through, our website is not a part of, and shall not be incorporated by reference into, this Annual Report. We have included our website address in this Annual Report solely as an inactive textual reference. The SEC maintains a website (www.sec.gov) that contains reports, proxy and information statements and other information regarding registrants, such as us, that file electronically with the SEC.

Our agent for service of process in the United States is Corporation Service Company, 1180 Avenue of the Americas, Suite 210, New York, New York 10036.

Our capital expenditures for the years ended December 31, 2022, 2021 and 2020, amounted to $10.8 million, $8.9 million, and $14.7 million, respectively. These capital expenditures primarily consisted of leasehold improvements, laboratory equipment, and computer and office equipment in the United Kingdom. We expect our capital expenditures to increase in absolute terms in the near term as we continue to advance our research and development programs, to expand our internal manufacturing capabilities, and otherwise to grow our operations. We anticipate our capital expenditures in 2023 to be financed by our existing cash and cash equivalents balance as at December 31, 2022.

B. Business overview.

We are a biopharmaceutical company developing next-generation programmed T cell therapies for the treatment of cancer. Using our broad suite of proprietary and modular T cell programming technologies, we are engineering precisely targeted, controlled and highly active T cell therapies that are designed to better recognize cancer cells, break down their defense mechanisms and attack and kill these cells. We believe our programmed T cell therapies have the potential to be best-in-class and offer cancer patients substantial benefits over the existing standard of care, including the potential for cure in some patients.

Cancers thrive on their ability to fend off T cells by evading recognition by T cells and by establishing other defense mechanisms, such as checkpoint inhibition, and creating a hostile microenvironment. Our T cell programming technologies allow us to tailor our therapies to address the specific cancer we are targeting and introduce new programming modules into a patient’s T cells to give those T cells improved properties to better recognize cancer cells and overcome fundamental cancer defense mechanisms. We believe our leadership in T cell programming technologies will provide us with a competitive advantage as we look to develop future generations of T cell therapies targeting both hematological cancers and solid tumors, including potential products that could have a tolerability profile such to make them amenable to be used in outpatient settings.

Our current clinical-stage pipeline comprises five programs being developed in eight hematological and solid tumor indications. We have worldwide commercial rights to all of our programmed T cell therapies.

Our current clinical-stage programs are:

Obe-cel (AUTO1): Obe-cel (obecabtagene autoleucel) is a CD19-targeting programmed T cell investigational therapy with a CD19 binder designed to improve the efficacy and safety profile, as compared to other CD19 CAR T therapies.

In collaboration with University College London, or UCL, adult patients with relapsed/refractory, or r/r, B-ALL and treated with obe-cel continue to be monitored in the Phase 1 ALLCAR19 trial. Long term follow-up data were presented at the American Society of Hematology, or ASH, meeting in December 2022. As of the data cut as of November 2, 2022, eight out of 20 patients (40%) are in ongoing complete remission, or CR, at a median follow up of 36 months (IQR 24-47) post obe-cel infusion and seven out of 20 patients (35%) were observed to be in ongoing CR post obe-cel without the need for additional anti-leukemic therapy. Long-term remission is associated with CAR-T persistence in seven out of eight patients (88%) as of the cut-off date. We expect to announce additional data from this trial during 2023.

Patients continue to be enrolled into the Phase 1 ALLCAR19 extension trial. Data presented at the 2022 ASH Meeting demonstrated the potentially best-in-class profile of obe-cel supported by the data observed in B-cell non-Hodgkin lymphoma, or NHL, with continued high levels of clinical activity paired with an encouraging tolerability profile across diffuse large B-cell lymphoma, or DLBCL, mantle cell lymphoma, or MCL, follicular lymphoma, or FL, and chronic lymphocytic leukemia, or CLL. We expect to announce additional data during the second half of 2023.

Furthermore, obe-cel is being investigated for the treatment of primary CNS lymphoma, or PCNSL, in an exploratory Phase 1 clinical trial called CAROUSEL. UCL presented initial data at the 27th Congress of the European Hematology Association (EHA) in 2022. We may also pursue a pediatric label through an investigational program in pediatric ALL.

We initiated the FELIX study, a Phase 1b/2 clinical trial of obe-cel for the treatment of adult r/r B-Acute Lymphoblastic Leukemia, or ALL, in 2020. This trial may potentially be a registrational trial. As of the cut-off date of September 2022, the Phase 2 portion of the FELIX study has met its primary endpoint, based on a pre-planned interim analysis of 50 patients with morphological disease, as verified by an independent data monitoring committee, or IDMC, in November 2022. The primary endpoint for the FELIX study is the overall remission rate, or ORR, defined as the proportion of patients achieving CR and complete remission with incomplete blood count recovery, or CRi, as assessed by an independent response review committee, or IRRC. Among the first 50 patients treated with obe-cel in the Cohort A part of the Phase 2 portion of the FELIX study, we observed that obe-cel demonstrated an ORR of 70%. We also observed encouraging safety data, with 3% of patients (3 of 92 patients) experiencing Grade 3 or greater CRS and 8% of patients (7 of 92 patients) experiencing Grade 3 or greater ICANS in a total of 92 patients treated in the entire FELIX study. We expect to provide the next update from the FELIX trial, including data from more patients and longer follow up at a medical conference mid-2023.

AUTO1/22: In collaboration with UCL, we commenced a Phase 1 clinical trial in pediatric patients with our academic partner at UCL in relapsed or refractory ALL with our next-generation product candidate, AUTO1/22, in the fourth quarter of 2020. AUTO1/22 is a dual-targeting CAR-T which builds on the obe-cel approach utilizing the same CD19 CAR, alongside a novel CD22 CAR designed to reduce antigen negative relapse of disease. At the 64th ASH Annual Meeting in December 2022, we presented data reflecting a strong level of activity, with 83% of patients (10 of 12 patients evaluated) experiencing MRD negative complete remissions, and a favorable tolerability profile in a very challenging patient population (four patients failed previous Kymriah treatment with three patients having CD19-negative disease, three patients had non-central nervous system, or CNS, extra-medullary disease, which is associated with poor outcomes with CAR T therapy). In the trial, we observed that AUTO1/22 showed excellent expansion, with a median duration of 7.5 months of persistence of CD22 CAR. No antigen negative relapse was seen in the responding patients as of the data cut-off date. At a median follow up of 8.7 months, five of 10 responding patients were in MRD negative complete response (4-12 months) with two after further therapy for early loss of CAR T persistence. We expect to report more data from this trial in 2023.

AUTO4: A programmed T cell investigational therapy for the treatment of peripheral T-cell lymphoma targeting TRBC1. Unique targeting of TRBC1 potentially opens a new therapeutic approach. The preclinical study package suggested selective binding and anti-tumor activity of TRBC1 and TRBC2 CARs in vitro and in vivo. Early data presented at the 64th ASH Annual Meeting observed that among the first 10 patients dosed with AUTO4, the treatment was well tolerated with no dose limiting toxicities. Ongoing responses at nine and twelve months post-dosing at the highest dose tested ($450x10^6$) are encouraging. No CAR T cell expansion was seen in peripheral blood but CAR T cells were detected in an on-treatment lymph node biopsy. Further, optimization of the AUTO4 manufacturing process has been performed, resulting in a product candidate with the potential for improved product characteristics, including more naive phenotype. The trial is ongoing, with additional patients due to be treated to define the recommended Phase 2 dose using the new manufacturing process. We expect to present longer follow-up from the trial, including analysis from additional patients, later in 2023.

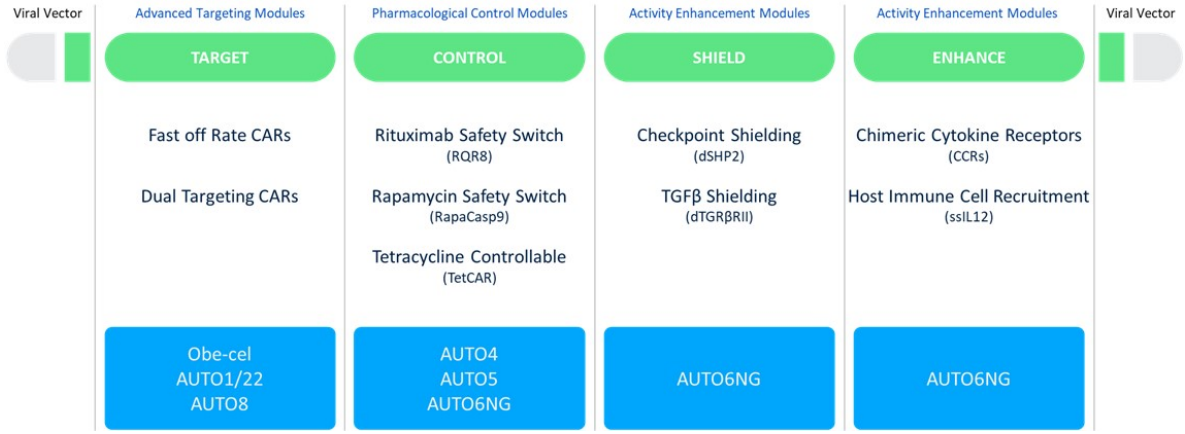
AUTO6NG: A programmed T cell investigational therapy targeting GD2 in development for the treatment of neuroblastoma utilizing a new binder designed to minimize on-target, off-tumor toxicity, humanized to reduce immunogenicity, including RQR8 safety switch. Findings from a Phase 1 clinical trial with AUTO6 were published in November 2020 and provide evidence that AUTO6 induces clinical activity in this solid tumor setting without inducing on-target off-tumor toxicity. We since developed a next-generation product candidate, AUTO6NG, which builds on this approach utilizing the same GD2 CAR alongside additional programming modules to enhance the activity and persistence. In June 2020, we presented preclinical data of AUTO6NG, including data from a tumor model in small cell lung cancer indicating that GD2 is an attractive target for programmed T cell therapies in that indication. In collaboration with UCL, we are planning on initiating a clinical trial in 2023.

AUTO8: A next-generation product candidate for multiple myeloma, which comprises two independent CARs for the multiple myeloma targets, BCMA and CD19. We have developed an optimized BCMA CAR which is designed for improved killing of target cell that express BCMA at low levels. This has been combined with fast off rate CD19 CAR from obe-cel. We believe that the design of AUTO8 has the potential to induce deep and durable responses and extend the durability of effect over other BCMA CARs currently in development. A Phase 1 clinical trial of AUTO8 was initiated in March 2022 with our academic partner UCL.

Our Pipeline

Our product pipeline is built on our core principles of modular innovation with protein-based cell programming focused on advanced targeting, pharmacological control and enhancement of activity. After identifying a cancer target, we select the suite of programming modules that we believe is best suited to target that particular cancer based on the latest clinical data and the results of our cancer research. The particular modules selected may vary, and not every product candidate, including our current product candidates, contain all categories of modules. A viral vector is used to introduce combinations of these modules into the DNA of the T cells, as depicted in the graphic below.

The diagram below shows how our programming modules relate to our product candidates.



Our programs have been highly tailored and specifically engineered via our proprietary modules, and have the potential to be truly differentiated assets that could address limitations of current treatments and provide innovative options for patients.

Obe-cel has an optimized engagement of the CD19 target designed to enhance its persistence. We believe that these properties may enable obe-cel to be a suitable candidate for the treatment of adult patients with ALL, who tend to be less tolerant of severe toxicity compared with children with ALL. There is currently one CAR T cell therapy approved for the treatment of adult ALL. AUTO1/22 builds on the obe-cel approach utilizing the same CD19 CAR alongside a novel CD22 CAR designed to reduce antigen negative relapse of disease.

AUTO4, which we are developing for the treatment of peripheral T-cell lymphoma, employs a novel and differentiated treatment approach. AUTO4 is designed to selectively kill cancerous T cells in a manner that we believe will preserve a portion of the patient's normal, healthy T cells to maintain immunity. It targets an antigen, TRBC1 found on approximately 40% of T cell lymphomas. Since our AUTO4 approach is a novel mechanism to target T cells, we have also programmed the product candidate with a "safety switch" in order to allow physicians to manage toxicity by eliminating the programmed T cells if a patient experiences severe adverse side effects from the treatment. AUTO5 is a preclinical TRBC2 programmed T cell product candidate for the treatment of peripheral T-cell lymphoma. TRBC2 is found on approximately 60% of T cell lymphomas. Plans to progress AUTO5 are subject to clinical data from the AUTO4 program.

We are developing AUTO6NG, which builds upon AUTO6 data by incorporating additional programming modules intended to enhance efficacy by aiming to extend persistence and to address the layers of defense that cancer cells deploy to evade T cell killing.

AUTO8 is our next-generation product candidate for multiple myeloma, which comprises two independent CARs for the multiple myeloma targets, BCMA and CD19. We have developed an optimized BCMA CAR which is designed for improved killing of target cell that express BCMA at low levels. This has been combined with fast off rate CD19 CAR from obe-cel. We believe that the design of AUTO8 has the potential to induce deep and durable responses and extend the durability of effect over other BCMA CARs currently in development.

Background on T Cells and Cancer

Cancers originate from individual cells that have developed mutations in essential cellular programs, driving increased cell division and growth. A key control mechanism to detect and eliminate such cells is the patient's own T cells. T cells are a type of white blood cells used by the human immune system to defend the body against infectious pathogens and cancerous cells. Using their T cell receptor like a molecular scanner, T cells are able to discriminate between normal human cells and ones that contain a mutation that alters their function. If the T cell recognizes an altered cell, it becomes activated and kills that particular cell. For a cancer to grow to the detriment of the patient, cancer cells evolve mechanisms to evade recognition by, or establish other defenses against, T cells.

Cancer Immunotherapy and T cell Therapies

In recent years we have seen the emergence of cancer immunotherapy, in which treatments harness the power of a patient's immune system to combat their disease.

Cancer immunotherapy treatment requires the activation and expansion of cancer-specific T cells, which kill cancer cells by recognizing antigen targets expressed on cancer cells. Studies have shown that tumors develop escape mechanisms that prevent T cell-mediated destruction through immune checkpoint proteins, which shut down anti-tumor immunity. Clinical trials have shown that treatment with immune checkpoint inhibitors can restore T cell activity and results in durable clinical responses. Several anti-PD1 and anti-PD-L1 antibodies are approved for the treatment of various solid tumors and Pembrolizumab is also approved in relapsed/refractory classical Hodgkin's disease or primary mediastinal B-cell lymphoma. However, none of the immune checkpoint inhibitors are currently approved in other hematologic indications. While these approaches collectively represented major advances in cancer treatment, they all lack active redirection of the patient's T cells to the cancer, eventually limiting clinical activity.

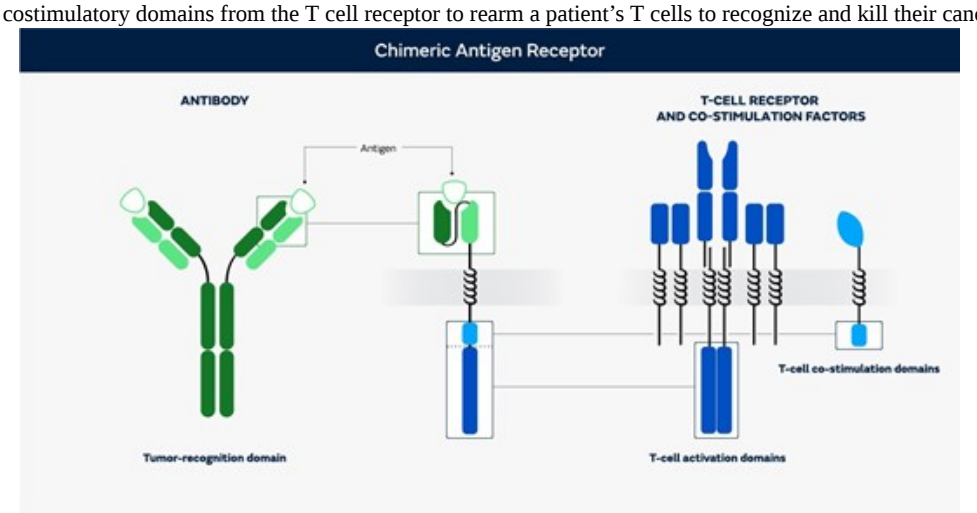
More recently, redirected T cell therapies that are designed to give the patient's T cells a new specificity to recognize cancer cells have been developed. The first approved product of this class is a bi-specific T cell engager called blinatumomab (Blincyto®) from Amgen Inc. Blinatumomab targets the CD19 antigen on the surface of B cells and cancers derived from B cells. Blinatumomab is approved for the treatment of B-ALL. More recently, genetically programmed redirected T cell therapies have been approved. These include CD19 targeting, the CAR-T therapies Kymriah®, Yescarta® and Tecartus®, and Breyanzi®, developed by Novartis AG, Kite Pharma, Inc. and Bristol Myers Squibb Inc., respectively for the treatments of B-ALL and B-NHL. All four of these therapies showed high response rates and, in a subset of patients, prolonged treatment effects. For those patients experiencing a relapse, the common causes for relapse are insufficient survival of the programmed T cells, loss of the CD19 target on the cancer cells and upregulation of checkpoint inhibitor PD-L1 on the cancer cells.

In view of the limitations of current therapies, there remains a critical unmet medical need for improved T cell therapies. We believe that improving efficacy and durability over the products currently on the market or in development for the treatment of cancers requires addressing target antigen loss, countering checkpoint inhibition and adding novel targets to expand the range of indications amenable to programmed T cell therapy. We believe our clinical-stage product candidates and our approach to T cell programming have the potential to address these limitations.

Programmed T Cell Therapies

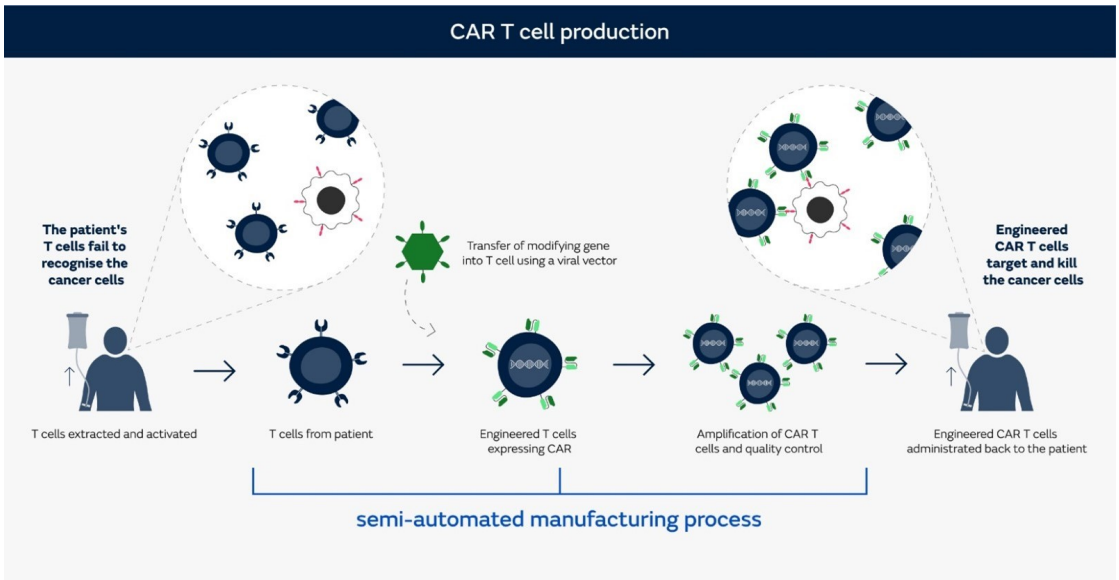
Chimeric Antigen Receptors (CARs)

We use Chimeric Antigen Receptors (CARs) to reprogram our T cell product candidates. These receptors combine the tumor recognition domain of an antibody with the activation and costimulatory domains from the T cell receptor to rearm a patient's T cells to recognize and kill their cancer cells.



CAR T Cell Production

We have developed our own proprietary viral vector and semi-automated cell manufacturing processes to engineer a patient's T cells with the CAR and other programming modules. We believe that this autologous approach has the potential to be both the safest and most therapeutically effective approach to manufacturing CAR T cells.



Limitations of Current T Cell Immunotherapies

Existing T cell immunotherapies, including CAR T therapies, have shown significant efficacy in hematological malignancies; however, the extent and duration of the treatment effects and disease remission are yet to be fully defined. Optimizing the targeting module of a programmed T cell may enhance its effect and safety. Also, in response to targeted therapies, cancer cells often mutate and cease to express the antigen the therapy was designed to recognize.

This loss of target antigen leads to patient relapse. Additionally, numerous challenges, including lack of T cell persistence and upregulation of checkpoint inhibitors, represent significant hurdles that need to be addressed by new therapies. T cell immunotherapies also have the capacity to elicit toxicities including CRS, neurologic toxicity and the elimination of normal cells via on-target off tumor recognition. Further, manufacturing T cells can be prohibitively costly if the manufacturing process is not appropriately designed to support parallel processing and automation. Finally, realization of the potential of this approach across a broad range of solid tumor types will require multiple technology solutions in order to address limitations of the current generation of therapies. Our broad array of proprietary and modular T cell programming technologies are designed to address these limitations.

Our Solution: Advanced T Cell Programming

Our technological approach is the development of advanced T-cell engineering components designed to directly address clinical challenges. A focus in our early-stage pipeline is incorporation of multiple components in a single product. The diagram in this section following the table summarizing our clinical programs shows how our programming modules relate to our product candidates.

Advanced Targeting Technologies

We have developed advanced antigen targeting technologies to improve the ability of our programmed T cell therapies to selectively identify and target cancer cells and to deliver a sustained anti-tumor effect. These targeting technologies include fast off rate CARs, novel targets, high avidity spacers, dual-targeting and pattern recognition.

Fast Off-Rate CARs

We have designed programmed T cells with a fast off-rate binders. These fast off-rate kinetics are similar to the behaviour of naturally occurring T cells. Obe-cel has this enhanced kinetic profile, which, when compared to data reported for other CAR T cell product candidates in clinical development for ALL that use high affinity binders, appears to result in reduced Cytokine Release Syndrome and in increased T cell engraftment. We use Fast Off Rate CARs in our obe-cel, AUTO1/22 and AUTO8 programs.

Dual-Targeting CARs

Relapse due to target antigen loss or down regulation is a major cause of treatment failure in CAR T cell therapy. We have developed product candidates that target two antigens on a cancer cell and are designed to reduce the chances for relapse due to antigen escape. Evidence suggests that it may also improve a response in those patients with low levels of expression of a target antigen on their cancer cells. We use Dual Targeting CARs in our AUTO1/22 and AUTO8 programs.

Pharmacological Control of T Cell Activity

Management of toxicity is a critical step in the successful application of programmed T cell therapies. We have developed multiple technologies designed to pharmacologically control T cell activity in the event a patient suffers certain serious adverse events related to the T cell therapy. Safety switches are designed to selectively eliminate the programmed T cells following administration of a pharmacological agent, whilst tuneable or controllable CAR T cells allow the activity of T cell therapy to be dialled down following administration of a pharmacological agent.

Rituximab Safety Switch (RQR8)

The RQR8 safety switch is designed to selectively eliminate the programmed T cells by the administration of the commercially available monoclonal antibody rituximab. Once administered, rituximab binds to the engineered CD20 epitopes on the surface of the programmed T cell and triggers cell death. We use the RQR8 safety switch in our AUTO4, AUTO5 and AUTO6NG programs.

Rapamycin Safety Switch (RapaCasp9)

The rapaCasp9 safety switch is designed to selectively eliminate the programmed T cells by the administration of the commercially available drug rapamycin. Once administered, rapamycin heterodimerises caspase 9 via FRB and FKBP to activate a cell death cascade and selectively eliminate the programmed T cells.

Tetracycline Controllable CAR (TetCAR)

TetCAR is a controllable CAR T cell system designed to reversibly dampen the activity of the programmed T cells by the administration of the commercially available antibiotic tetracycline to a patient. Once administered, tetracycline temporarily dislocates the CAR signalling domain from the cancer antigen binding domain leading to deactivation of the T cell therapy. Activity is then restored on clearance of the pharmacological agent from the patient.

Tumor Microenvironment Shielding

Tumor cells and other cells in the tumor microenvironment can debilitate anti-tumor immune responses. Proteins expressed on tumor cells can trigger inhibitory receptors on T cells to block their ability to eliminate the tumor, so-called immune checkpoints. Secretion of TGFβ by the tumor and other cells can shut down the activity of a T cell therapy. We have developed technologies designed to shield our programmed T cells from these immunosuppressive pathways.

Checkpoint Shielding (dSHP2)

Immune checkpoint receptors act through a common signalling pathway inside the T cell that prevents normal T cell activation. We have developed a modified version of an adaptor protein, SHP2, that in preclinical studies has been shown to efficiently counteract the inhibition of T cells resulting from the PD-L1/PD-1 interaction. In addition, it is designed to simultaneously disarm multiple inhibitory receptors on the cancer cell. We use the dSHP shielding module in our AUTO6NG program.

Enhanced Activity

One of the challenges of targeting some solid tumors is the lack of such easily accessible stimulation for programmed T cells, leading to poor persistence and a weak anti-tumor activity. Co-administration with cytokines can boost T cell activity and persistence. Certain cytokines can potentiate the anti-tumor of the T cell therapy by recruiting and activating other immune cells to kill the tumor.

However, systemic or local administration of cytokines can be toxic, therefore we have developed programming modules that are designed to harness the enhanced activity of cytokines whilst avoiding the potential for toxicities.

Chimeric Cytokine Receptors (CCRs)

The CCR is a programming module that is designed to deliver a cytokine signal directly inside T cells without administration or secretion of cytokines themselves. We use proteins from an antibody structure to stably heterodimerise two cytokine signalling domains together to deliver a proliferative and survival signal into our T cells. Preclinical data has demonstrated the potential for the CCR to improve the persistence and activity of CAR T cell therapy against solid tumors. We use the CCR enhanced activity module in AUTO6NG.

Host Immune System Recruitment (ssIL12)

IL-12 is a potent anti-tumor cytokine that mediates the activity of many different anti-tumor immune cells. The majority of clinical studies involving treatment of patients with IL-12 were associated with severe systemic side effects mediated by high levels of IFNγ. Our ssIL12 module is designed to secrete very low levels of IL-12 from our T cells and our preclinical data demonstrates the potential for ssIL12 to provide anti-tumor without systemic toxicity.

Our Product Candidates for the Treatment of Hematological Cancers

Our clinical-stage product candidates targeting hematological cancers are obe-cel, AUTO1/22, AUTO4 and AUTO8. We have an additional hematological product candidate, AUTO5, in preclinical development.

Obe-cel (AUTO1) and AUTO1/22: Our Programmed T Cell Therapy for the Treatment of ALL and other b-cell malignancies

Introduction to Obe-cel

Obe-cel is a gene therapy product consisting of autologous T cells that are transduced with a lentiviral vector to express a novel anti-CD19 Chimeric Antigen Receptor (CD19 (CAT) CAR). The transduced T cells express second-generation CARs in which the CD19 CAR construct uses 41BB-ζ and CD3- ζ endodomains.

CD19 is an ideal target for a CAR T cell therapy as it is a cell surface marker for B-precursor cells and B-lymphocytes that is present on most B cell malignancies. Upon CD19 directed CAR T cell therapies, it also leads to B-cell aplasia which can be used as a pharmacodynamic marker. CD19 CAR T cell therapies have proven effective in treating B-cell leukemias and B-cell lymphoma with efficacy dependent on engraftment and expansion of the CAR T cells. However, rapid activation and expansion of CAR T cells can result in CRS and/or ICANS, which in some cases can be life-threatening, particularly for elderly patients and patients with higher tumor burden that have a poor tolerance for toxicity. Furthermore, excessive activation of CAR T cells can lead to cell exhaustion and limit their persistence, which may impact the durability of therapeutic effect. Obe-cel is an investigational therapy in which a patient's T cells are genetically modified to express a novel CD19-specific binder designed to reduce side effects observed with this class of therapeutics.

Obe-cel, currently the subject of an ongoing Phase 1/2 trial (FELIX) in adult r/r B-ALL, has been designed to recognize CD19 and interact with the target with a fast off-rate enabled by the novel CAT scFv binding domain. This property allows the obe-cel cells to efficiently recognize cancer cells, inject cytotoxic proteins to initiate the natural self-destruction process present in all human cells and then rapidly disengage from them in order to engage the next cancer cell, a process also known as serial killing. Rapid disengagement from the target antigen is expected to minimize excessive activation of the programmed T cells, reduce toxicity and may also reduce T cell exhaustion.

Our academic partner, UCL, has conducted separate Phase 1 clinical trials evaluating the safety and efficacy of obe-cel. The first Phase 1 clinical trial in pediatric ALL patients is named the CARPALL trial, the second Phase 1 clinical trial in adult ALL patients is named the ALLCAR19 trial.

Clinical Development of Obe-cel in Adult ALL

Background of Adult ALL

Obe-cel is currently being tested in a Phase 1b/2 clinical trial for the treatment of adult ALL, which according to the American Cancer Society is predicted to affect approximately 6,500 adults in the United States in 2023. Combination chemotherapy enables 90% of adult patients to experience complete remission, or CR. However, the majority of these remissions are not long-lasting in adult patients. Despite this initial CR, and in contrast to pediatric ALL, the prognosis of adult ALL is still poor and has not changed significantly during the last two to three decades, with long-term remission rates limited to 30-40%. Approximately 50% of all adult ALL patients will relapse, and data from the Medical Research Council's UKALL12/ECOG 2993 study, published in 2007, found that five-year overall survival, or OS, rate in adults who relapse following standard multi-agent chemotherapy is 7%. The only curative option for relapsed or refractory ALL consists of achieving a second CR by salvage therapy followed by an allogeneic hematopoietic stem cell transplant, or allo-HSCT. Without allo-HSCT, a subsequent relapse occurs in nearly all patients. However, less than half of patients achieve a second CR, and therefore only a subset will be eligible for this procedure. Even then, less than one-third of patients receiving the transplant are expected to sustain long-term disease-free survival. Further, allo-HSCT is associated with severe morbidity and significant mortality. Many patients with relapsed or refractory ALL will have been maximally treated with chemotherapy, and often do not achieve a second CR with standard-of-care chemotherapy in order to be eligible for allo-HSCT.

Two targeted immunotherapies have been approved for the treatment of adult ALL: blinatumomab and inotuzumab ozogamicin. Both of these therapies achieve high complete response rates, but durability is limited. In a randomized Phase 3 clinical trial of blinatumomab in heavily pretreated B-cell precursor ALL, the blinatumomab arm achieved a complete response rate of 44%, of which 76% also achieved MRD-negative CR, and the median duration of remission was 7.3 months. The median OS in those patients, though significantly improved compared to chemotherapy, was still only 7.7 months. Similarly, in a Phase 3 clinical trial of inotuzumab ozogamicin, a higher percentage of patients achieved MRD-negative CR when treated with inotuzumab compared to standard-of-care chemotherapy, but the median duration of remission was 4.6 months and median OS was 7.7 months.

On October 1, 2021 the FDA approved the use of the CAR T cell therapy brexucabtagene autoleucel (Tecartus) for adults with B-cell precursor ALL that has not responded to treatment (refractory) or has returned after treatment (relapsed). The EC approved Tecartus (brexucabtagene autoleucel) for adults aged 26 and over with relapsed or refractory B-cell precursor ALL in September 2022.

Obe-cel Phase 1b/2 Clinical Trial in Adult ALL (FELIX Trial)

Initial experience in the Phase 1b portion of the FELIX study (NCT04404660) resulted in comparable results as seen in the Phase 1 ALLCAR19 clinical trial. In December 2022, the results of a pre-planned interim analysis of 50 patients with morphological disease of the Phase 2 portion of the FELIX study was announced. The primary endpoint for the Phase 2 portion of the FELIX study is ORR, defined as the proportion of patients achieving CR and CRi as assessed by an IRRC. Based on the verification by the IDMC, the Phase 2 pivotal FELIX clinical trial of obe-cel in r/r adult ALL has met its primary endpoint. Based on 50 patients evaluated for efficacy, the ORR for obe-cel was 70%. Obe-cel showed comparable expansion and initial persistence (median follow-up of 6.4 months) to the data observed in the prior ALLCAR19 study. The safety analysis was based on 92 patients treated with obe-cel and evaluable for safety. %. We also observed encouraging safety data, with 3% of patients (3 of 92 patients), achieving equal to or greater than Grade 3 CRS and 8% of patients (7 of 92 patients) achieved greater than or equal to Grade 3 ICANS in a total of 92 patients treated in the entire FELIX study. We expect to report further data from this trial at a medical conference in mid-2023.

Obe-cel Phase 1 Clinical Trial in Adult ALL (ALLCAR19 Trial)

In the first quarter of 2018, our academic partner UCL initiated a single-arm, open label, multi-center Phase 1 clinical trial of obe-cel, named the ALLCAR19 trial, in patients aged 16 to 65 years with high-risk, relapsed or refractory CD19 positive B-lineage ALL. The clinical trial was conducted at sites in the United Kingdom. The trial enrolled patients with a high tumor burden; 45% of treated patients had 50% or greater bone marrow blasts. In the trial, 20 patients received obe-cel; product for 14 of those patients was manufactured using a semi-automated, fully-enclosed process.

As of the data cut-off date of November 2, 2022, 20 patients with r/r ALL had received obe-cel. The therapy was well tolerated, with no patients experiencing Grade 3 or higher CRS. Three patients (15%), all of whom had high leukemia burden (>50% blasts), experienced Grade 3 ICANS that resolved swiftly with steroids. Of the 20 patients evaluable for efficacy, 17 patients (85%) achieved minimum residual disease (MRD)-negative CR at one month.

At the 64th ASH Annual Meeting in December 2022, we reported regarding our analysis of 20 patients in the B-ALL cohort of the ALLCAR19 trial. We observed that 7 out of 20 patients (35%) were observed to be in ongoing CR at median follow up of 36 months (IQR 24-47) post treatment with obe-cel, without the need for additional anti-leukemia therapy. Ongoing long-term remissions appear to be associated with CAR-T persistence, which was also observed in seven patients at their last follow-up appointment. One patient with a subsequent stem cell transplant, or SCT, also achieved long term remission but lost CAR T persistence after SCT.

Development Strategy for Adult ALL

In 2020, we initiated a multi-center, single-arm Phase 1b/2 clinical trial of obe-cel in adult patients with relapsed or refractory ALL, or r/r ALL, referred to as the FELIX trial. Recruitment in the Phase 2 Cohort A of the FELIX trial for morphological adult r/r ALL patients has been completed.

In January 2023, the FELIX trial completed screening patients for entry into the morphological cohort, as the pre-specified goal of approximately 90 patients enrolled had been reached. We plan to present the results from the FELIX trial at a medical conference in mid-2023, with longer follow up from the trial planned to be reported at the end of 2023. The Phase 2 Cohort A includes approximately 90 patients with morphological disease (at least 5% blasts in the bone marrow at screening), with ORR (CR/CRi) as the primary endpoint; and the secondary endpoints include CR rate, EFS, duration of response (DOR) and MRD negative remission rate. A small cohort is also planned in the Phase 2 portion of the FELIX trial, in which patients with MRD positive disease in morphological remission (Cohort B) as well as patients with isolated extramedullary disease (Cohort C) will be treated with obe-cel.

Obe-cel has received a number of designations from regulatory authorities, as follows: FDA orphan drug designation for the treatment of ALL (October 2019), EMA PRIME designation (March 2021), MHRA ILAP designation (June 2021), EMA orphan drug designation (March 2022), and FDA RMAT designation (April 2022).

Background of Pediatric ALL

According to the American Cancer Society, B-cell ALL is most common in childhood, peaking between two and four years of age. As per the National Cancer Institute Surveillance, Epidemiology and End Results statistics database, there are approximately 3,400 new cases of pediatric ALL diagnosed in the United States each year.

The current standard of care for both pediatric and adult B-cell ALL patients is a standard regimen of combination chemotherapy. Pediatric patients typically respond well to the complex first-line chemotherapy treatment. According to the American Cancer Society, the five-year survival rate for children with B-cell ALL is more than 85% overall. However, 10 to 20% of pediatric B-cell ALL patients relapse with chemotherapy-resistant disease. These patients are re-treated with intensive chemotherapy, and those that respond may proceed to receive an allogenic stem cell transplant, or SCT. However, SCT can be associated with significant long-term morbidity due to the risk of developing graft-versus-host disease, or GVHD, and treatment-related mortality, although the risk of death have declined with better post-transplant management.

Patients with high-risk clinical or genetic features including gene abnormalities, as well as those who have an inadequate response to initial chemotherapy, may not respond well with the current available treatments for B-cell ALL (including SCT), some of these patients will have a five-year OS rate of approximately 15%. Additionally, long-term survival rates are only approximately 10 to 20% among patients receiving a second SCT and negligible in those unable to proceed to a second transplant.

There is still a significant unmet medical need in pediatric patients with high-risk relapsed or refractory B-cell ALL. CD19 CAR T cell therapies have been developed for these patients. The approved CD19 CAR T therapy, Kymriah, has shown approximately 80% of complete molecular response rate. However, at six months after treatment, approximately 40% of the patients relapsed and the majority of the relapses were CD19 negative disease, with approximately two-thirds of relapses determined to have been due to loss of CD19 on the target cells in one study.

CD19 CAR T cell therapies have been tested in pediatric ALL patients and have shown sustained responses without allo-HSCT. In adult ALL, however, one of the major challenges has been severe toxicity, including death due to CAR T cell-mediated toxicity observed in the clinical trials of these products. Obe-cel has been designed to reduce toxicity but still sustain durable CRs, and we believe it has the potential to become a standalone therapy for adult ALL.

Obe-cel Phase 1 Clinical Trial in Pediatric ALL (CARPALL Trial)

The CARPALL trial was initiated by UCL in the second quarter of 2016 and is a single-arm, open label, multi-center Phase 1 trial enrolling patients aged 24 years or younger with high-risk relapsed or refractory CD19 positive B-lineage ALL. The main objective of the trial is to evaluate the safety and efficacy of obe-cel when administered at a single dose of 1 million cells/kg. The trial has completed enrollment with obe-cel. However, the extension arm is now open, and treating pediatric ALL patients with AUTO 1/22 (previously designated AUTO1NG).

As of the final data cut-off date of November 22, 2019, the obe-cel arm of the CARPALL trial had enrolled a total of 25 patients, in two cohorts; one cohort utilized a manual manufacturing process (cohort 1) and one cohort utilized a semi-automated fully enclosed manufacturing process (cohort 2). Product was generated for 14 of 17 patients in cohort 1 and the median follow-up for the 14 treated patients was 23 months. Seven patients were treated in cohort 2. The aim of cohort 2 was to increase feasibility of manufacture at scale; one patient died before infusion and product was generated for 100% of patients. Median follow-up for patients in cohort 2 was seven months.

None of the patients experienced Grade 3 or higher CRS and one patient out of 21 patients (5%) experienced Grade 4 neurotoxicity, which was deemed more consistent with fludarabine than CAR-associated neurotoxicity. Two patients experienced Grade 5 sepsis and death, one in the context of progressive disease and the second was considered related to obe-cel. This patient was in MRD-negative CR and had ongoing Grade 4 cytopenia associated with resistant HSV encephalitis. 13 patients experienced Grade 4 cytopenias that were ongoing at day 28. Nineteen of 21 treated patients (90%) achieved molecular complete remission at post-infusion.

Consistent with preclinical results, CAR T cell expansion and persistence was excellent and CARs were detectable by flow for up to 36 months in four patients in cohort 1 who had ongoing responses beyond 12 months. Persistence was noted in 15 of 21 patients at last follow-up, up to 36 months. All of the patients in cohort 2 achieved molecular complete remission at one month post-infusion.

For cohort 1, with a median follow-up of 23 months, the OS at six and 12 months was 86% and 71%, respectively, and event-free survival at six and 12 months was 71% and 54%, respectively. In cohort 2, at a median follow-up of 7 months, five patients remain in complete molecular remission and two patients relapsed. Five of eight evaluable relapses in cohort 1 and cohort 2 combined were due to CD19 negative escape.

Obe-cel Phase 1 Clinical Trial in other B-cell malignancies (ALLCAR19 and CAROUSEL Trials)

The ALLCAR19 clinical trial has also been expanded to include three additional cohorts with a total of 40 patients:

- 10 patients with r/r DLBCL (including transformed FL, but not Richter's transformation);
- 10 patients with relapsed or refractory B-cell chronic lymphocytic leukemia / small lymphocytic leukemia; and
- 20 patients with relapsed or refractory indolent B-NHL (either FL, mantle cell lymphoma or marginal zone lymphoma).

At the 64th ASH Annual Meeting in December 2022, updates were provided from the B-cell NHL/CLL cohorts. As of the data cut-off date of November 2, 2022, 20 r/r B-NHL and 5 B-CLL patients had received treatment with obe-cel. Obe-cel continues to display a favorable tolerability profile with no ICANS or Grade 3 or higher CRS across different indications. Of 25 patients with NHL/CLL evaluable for efficacy, the best ORR was 23/25 (92%). Obe-cel was observed to be well-tolerated and active in DLBCL, with 7 of 8 patients in ongoing CR at last follow-up. In CLL, four of the five treated patients achieved undetectable minimal residual disease (uMRD) in the bone marrow (BM), with all ongoing at the last follow-up date. While no relapses were seen in DLBCL patients, at a median follow-up of 12.9 months (IQR 7.4-18.0 months), ongoing B-cell aplasia appears to be important for ongoing response. Late CD19+ relapses were seen in FL.

Notably, ongoing CAR T persistence appears to be important for ongoing response in FL. Longer follow-up and enrollment of additional MCL, DLBCL and CLL/SLL patients is ongoing. We expect to present further data from additional B-NHL and CLL patients in 2023.

UCL has also initiated a Phase 1 exploratory trial of obe-cel in patients with relapsed or refractory Primary CNS Lymphoma, or PCNSL. This trial, named CAROUSEL (NCT04443829), is evaluating the feasibility of generating obe-cel and safety of administration in this patient population. UCL presented initial data at the European Hematology Association meeting in June 2022. Excellent AUTO1 expansion was observed in the peripheral blood by qPCR, with persistence in all treated patients at last follow-up. No Grade 3 or greater CRS was observed using intravenous (IV) or intra-ventricular obe-cel administration. Two cases of Grade 3 ICANS were reported following IV infusion, whereby the first patient had several neurological deficits that evolved despite ICANS treatment and were compatible with progressive PCNSL, as confirmed with the month 1 MRI scan, and the second patient had neurological deficits that improved with steroids/anakinra. We observed encouraging response rates in six patients evaluable for efficacy following IV administration of obe-cel. We observed the ORR was four out of six patients (67%), with 2 CRs and 2 PRs. These four responding patients are without disease progression at the last follow up date. Two patients died from progressive PCNSL while part of the study. We expect to report longer follow-up from this trial and enrollment of additional patients is ongoing.

AUTO1/22

Introduction to AUTO1/22

AUTO1/22 is a dual-targeting CAR-T which builds on the obe-cel approach utilizing the same CD19 CAR, alongside a novel CD22 CAR designed to reduce antigen negative relapse of disease. Antigen negative relapse is a common cause of relapse in patients with pediatric ALL.

AUTO1/22 Phase 1 Clinical Trial in Pediatric ALL (CARPALL Trial)

We commenced a Phase 1 clinical trial in pediatric patients with relapsed or refractory ALL with our next-generation product candidate, AUTO1/22 in the fourth quarter of 2020. At the ASH conference in December 2022, we presented data reflecting a strong level of activity, with 83% (10/12) MRD negative complete remissions, and a favorable tolerability profile in a very challenging patient population. Of the patients included in the data set, four failed previous Kymriah treatment, three had CD19-negative disease, and three had non-central nervous system (CNS) extra-medullary disease, which is associated with poor outcomes with CAR T therapy. AUTO1/22 showed excellent expansion, with a median 7.5 months duration of persistence of CD22 CAR. No antigen negative relapse was seen in responding patients. At a median follow up of 8.7 months, five of 10 responding patients were in MRD negative complete response (4-12 months). We expect to report more data from this trial in 2023.

AUTO4: Our T-Cell Lymphoma Program

Introduction to AUTO4

We are developing a programmed T cell product candidate, AUTO4, as a potential treatment for T-cell lymphomas. We are developing this product candidate with a unique targeting approach that is designed to avoid the severe immunosuppression typically associated with the current investigational CAR T-cell therapies which uses a pan t-cell antigen. for this disease.

T cells have one of two functionally identical genes, known as TRBC1 and TRBC2. A normal/healthy T cell population contains a mix of cells expressing either TRBC1 or TRBC2. Both forms are active and provide the body with natural immunity, including antiviral immunity. Because T-cell lymphomas are clonal tumors that develop from a single T cell, they are either entirely TRBC1-positive or entirely TRBC2-positive. Currently available products for the treatment of T-cell lymphoma indiscriminately target all T cells, leading to the severe immunosuppression associated with these treatments.

We have designed AUTO4 as a programmed T cell to specifically target and deplete cells expressing TRBC1, while preserving healthy T cells that express TRBC2. A normal T cell population consists of varying amounts of TRBC1-positive and TRBC2-positive T cells. Based on the typical distribution of TRBC1-positive and TRBC2-positive T cells, we believe that patients treated with AUTO4 should be left with a population of healthy, functional polyclonal T cells, which provides the immune system of these patients the ability to respond to bacterial and viral infections and other pathogens. In addition, this product candidate will have a built-in safety switch designed to eliminate the programmed CAR T cells in the event a patient suffers certain serious adverse events related to the CAR T cell therapy, such as CRS or neurotoxicity.

Background of T-Cell Lymphoma

Mature T cell lymphomas are aggressive, treatment resistant malignancies that are associated with poor prognosis. Clinical application of immunotherapeutic approaches has been limited by a lack of target antigens that discriminate malignant from healthy/polyclonal T cells. T-cell lymphoma is a rare and heterogeneous form of NHL, representing approximately 10 to 20% of NHL cases and 3 to 4% of all hematological malignancies. Most T-cell lymphomas are peripheral T-cell lymphomas, (PTCL), the initial indication for which we are developing AUTO4. PTCL generally involves high-grade tumors and occurs at a similar age as aggressive B cell lymphomas, with a relatively high proportion of patients becoming rapidly unwell. For the majority the PTCL subtypes, the five-year survival rate may range from 18% to 24%. The three most common subtypes of PTCL are peripheral T-cell lymphoma not otherwise specified, or PTCL-NOS, anaplastic large-cell lymphoma, or ALCL, and angioimmunoblastic T-cell lymphoma, or AITL, together accounting for approximately 70% of all PTCLs in the United States.

The first-line treatment for PTCL consists of the combination chemotherapy (e.g CHOP, consisting of cyclophosphamide, vincristine, doxorubicin and prednisolone). However, with CHOP chemotherapy, complete response rates are low and disease relapse is common. In many treatment centers, CHOP chemotherapy may be consolidated with autologous or allogenic stem cell transplantation in selected patients.

Little is understood in terms of treatment guidance for the other PTCL subtypes and these lymphomas lack clear treatment guidelines. A large proportion of T-cell lymphoma patients are refractory to or relapse following treatment with standard therapies and there remains a need to develop an effective therapy for this currently unmet medical need.

Unlike B cell lymphomas, T-cell lymphomas have not benefited from advances in immunotherapeutic approaches. This is mainly due to the lack of therapeutic development in T-cell lymphomas to identify suitable target antigens to distinguish malignant T cells from normal/polyclonal T cells. While a similar problem exists with B cell lymphomas, targeting a pan B cell antigen is an acceptable strategy, as the concomitant depletion of the normal B cell compartment is well tolerated, and some targeted approaches may be ameliorated by the administration of immunoglobulin. In contrast, targeting a pan T cell antigen would result in severe immunosuppression, where there is currently no available rescue medication. Some competitors that are pursuing this approach are planning to use CAR T-cells therapy as a bridging to SCT. However, this approach would only benefit the transplant eligible patients who may not be the majority of the T-cell lymphoma patients. There is currently no programmed T cell therapy that is being developed as a standalone treatment.

Clinical Development of AUTO4

In the fourth quarter of 2018, we began enrolling patients in a single-arm, open label, multi-center Phase 1/2 clinical trial, Libra T1, in patients with TRBC1 positive PTCL-NOS, AITL and ALCL, the three most common subtypes of PTCL, for which patients have failed, or have relapsed disease following, at least one prior therapy. We have received approval from the Medicines and Healthcare products Regulatory Agency (2018) and Spanish health authority (2020), to begin enrollment and we are in the process of enrolling patients. We refer to this trial as the LibrA-T1 trial, which will initially be conducted at sites in the United Kingdom and Spain. Patients are screened for TRBC status of tumor cells using a CE-marked next-generation sequencing (NGS) method prior to full enrollment in the trial.

The main objective of the Phase 1 portion of the trial is to evaluate the safety of AUTO4 and to determine a recommended dose for the Phase 2 portion of the trial. The main objective of the Phase 2 portion will be to further evaluate the safety of the treatment and evaluate efficacy endpoints, such as overall response rate and complete response rate.

We designed the trial to evaluate up to five dose levels of AUTO4, beginning with a low dose of 25 million AUTO4 cells. Assuming that we do not observe any dose limiting toxicities, or DLT, the dose escalation phase of the trial will continue to higher doses of 75 million AUTO4 cells, 225 million AUTO4 cells, 450 million and potentially 900 million AUTO4 cells.

Early data from the first 10 patients dosed in the Libra T1 trial were presented at the 64th ASH Annual Meeting in December 2022. AUTO4 treatment was well tolerated with no DLT, and some patients have experienced durable metabolic CRs, including one patient up to the one-year mark. Ongoing responses at 9-months and 12-months post-dosing at the highest dose tested (450x106) are encouraging, and suggests a potential clinical benefit for patients. No CAR T cell expansion was observed in peripheral blood, but CAR T cells were detected in an on-treatment lymph node biopsy. Further, optimization of the AUTO4 manufacturing process has been performed, resulting in a product candidate with the potential for improved product characteristics, including more naive phenotype. The Libra T1 trial is ongoing, with additional patients due to be treated to define the recommended phase 2 dose using the new manufacturing process. We expect to report longer follow-up from this trial, including data from additional patients, later in 2023.

AUTO8: Our Multiple Myeloma Program

Introduction to AUTO8

AUTO8 is a next-generation product candidate for multiple myeloma, which comprises two independent CARs for the multiple myeloma targets, BCMA and CD19. We have developed an optimized BCMA CAR which is designed for improved killing of target cell that express BCMA at low levels. This has been combined with fast off-rate CD19 CAR from obe-cel. We believe that the design of AUTO8 has the potential to induce deep and durable responses and extend the durability of effect over other approved BCMA CARs and those currently in development.

Background of Multiple Myeloma

According to data from the Global Burden of Disease Study 2020, there were approximately 156,000 new cases of multiple myeloma and 113,000 deaths in 2019. The American Cancer Society estimates that in the United States in 2023, approximately 35,700 new cases will be diagnosed and approximately 12,770 deaths are expected to occur from multiple myeloma. With currently available treatments the five-year survival rate of approximately 58%.

Treatment choices for multiple myeloma vary with the aggressiveness of the disease and related prognostic factors. Newly diagnosed patients in good physical health with active disease generally receive high-dose chemotherapy with autologous stem cell transplantation, or ASCT. Eligibility for ASCT is established primarily by age and comorbidities. When transplantation is not an option, treatment traditionally consists of systemic chemotherapy, with adjunctive use of radiation.

The therapeutic landscape of multiple myeloma has changed significantly in the past decade with the introduction of novel immunomodulatory agents, such as lenalidomide, as well as monoclonal antibodies, such as daratumumab, and proteasome inhibitors, including bortezomib and carfilzomib. The past decade has also seen major progress in the understanding of the molecular oncogenesis of plasma cell neoplasms, which has significantly influenced the clinical management of multiple myeloma. Despite these major advances, most cases of multiple myeloma have remained incurable. A considerable number of multiple myeloma patients ultimately experience a final tumor relapse without any additional, effective treatment option. Patients with relapsed or refractory disease typically have a poor prognosis.

Recently approved therapeutic approaches include products that target BCMA on multiple myeloma cells, including redirected T cell therapies such as T cell engagers and CAR T cell therapies. Despite recent progress, there remains significant unmet clinical need among patients with multiple myeloma, with approximately 12,590 deaths attributed to the disease in the United States in 2015. We believe our programmed T cell product candidate, AUTO8, with its dual-targeting approach, has the potential to lead to higher levels of efficacy and durability of effect compared to other products and redirected T cell therapies that bind to BCMA alone.

Clinical Development of AUTO8

In collaboration with UCL, we commenced a Phase 1 clinical trial in patients with relapsed or refractory multiple myeloma in April 2022. Enrollment in this trial is ongoing and we plan to present initial data from this trial later in 2023.

Our Solid Tumor Programs

Solid tumors present a particular challenge to CAR T cell therapies, since solid tumors tend to fend off T cells with upregulation of checkpoint inhibition and a hostile microenvironment. In addition, contrary to hematological cancer cells that are readily accessible to programmed T cells in the circulating blood of a patient, solid tumors are more difficult for programmed T cells to track down in sufficient numbers to impact the disease. In addition, the persistence of programmed T cells tends to be limited, which also leads to a reduced effect on solid tumor cells. In addition to the programs we are currently pursuing described below, we intend to continue to evaluate other possible solid tumor indications.

AUTO6: Our Neuroblastoma Program

Introduction to AUTO6 and AUTO6NG

We have been granted an exclusive, worldwide license under our license agreement with UCLB to AUTO6 (1RG-CART), a programmed T cell product candidate targeting the glycosphingolipid GD2. CRUK has completed an exploratory Phase 1 clinical trial of AUTO6 in pediatric patients with neuroblastoma. We are developing a next-generation product candidate, which we refer to as AUTO6NG, incorporating additional programming modules designed to improve efficacy, safety and persistence of AUTO6. We expect to initiate a Phase 1/2 clinical trial of AUTO6NG in 2023.

Background of Neuroblastoma

Neuroblastoma is a cancer that develops from immature nerve cells found in several areas of the body, and most commonly arises in and around the adrenal glands, which have similar origins to nerve cells and sit atop the kidneys. However, neuroblastoma can also develop in other areas of the abdomen and in the chest, neck and near the spine, where groups of nerve cells exist. Neuroblastoma most commonly affects children age five or younger, though it may rarely occur in older children. According to the American Cancer Society, there are approximately 700 to 800 new cases of neuroblastoma each year in the United States.

Preclinical Studies of AUTO6/6NG

In preclinical *in vitro* studies, AUTO6 selectively, effectively and efficiently killed GD2-expressing tumor cells while sparing cells that did not express GD2. In addition, the RQR8 safety switch activation by rituximab was tested *in vitro*, where the addition of rituximab was shown to activate the safety switch and eliminate the programmed T cells from the culture, and residual cells did not possess any intrinsic anti-GD2 activity. This safety switch activation was also observed *in vivo* in a mouse model, where the murine analogue of rituximab was able to deplete the GD2-targeting programmed T cell product candidate from the bone marrow, blood, lymph node and spleen of animals that had previously been engrafted with programmed T cells.

In 2016, in collaboration with Cancer Research UK's Centre for Drug Development we initiated a single-arm Phase 1 dose escalation trial of AUTO6 in relapsed or refractory neuroblastoma at two pediatric cancer centers in the United Kingdom. The trial evaluated the safety and efficacy of AUTO6. In 2020 the data from the AUTO6 Phase 1 clinical trial was published in Science Translational Medicine. The results from the study showed that AUTO6 can induce rapid regression of bulky disease in a solid tumor setting without inducing on-target off-tumor toxicity, despite dose dependent CAR T expansion. CAR T cell expansion was observed in all six patients treated at the higher cell dose cohorts in this Phase 1 study. Three of these six patients demonstrated evidence of transient CAR T cell activity, including cytokine release syndrome, and regression of soft tissue and bone marrow disease activity. The GD2 binder used in AUTO6 has been designed to minimize on-target off-tumor neurotoxicity associated with GD2 expression at low levels in pain fibers and the brain. Despite the presence of clear CAR T cell activity, no neurotoxicity was observed. The publication also suggests that, whilst AUTO6 is a valid and safe strategy for targeting neuroblastoma, further modifications are required to promote CAR T cell persistence and induce deeper and more durable responses for these patients.

In November 2019, we reported preclinical data of AUTO6NG. Building on AUTO6, in AUTO6NG we introduced additional programming modules in order to help the programmed T cells persist in and withstand the hostile tumor microenvironment. AUTO6NG is a programmed T cell therapy incorporating the GD2-targeted CAR T and RQR8 safety switch from AUTO6 but also incorporating three additional programming modules: (i) an IL7 chimeric cytokine receptor designed to increase persistence, (ii) a dominant negative TGFbRII protein designed to block inhibitor signals from TGFb and (iii) a truncated SHP2 protein designed to block inhibitor signals from PD1. These modules are delivered, or transduced, into the T cells via two viral vectors. Both single- and dual-transduced CAR T cells were evaluated *in vitro* for anti-tumor activity, cytokine secretion, T cell proliferation, survival, and resistance to immunosuppressive pathways.

The addition of these three modules in the AUTO6NG product candidate significantly augmented its function by extending T cell persistence and rendering modified T cells resistant to TGFb- and PD1/PDL1-driven immune inhibition when compared to AUTO6 *in vitro*. Additionally, intravenous delivery of AUTO6NG in mice with established tumor burden exhibited potent anti-tumor activity and extended survival, whereas AUTO6 showed no activity in that model.

We presented new preclinical data for AUTO6NG in June 2020 at the AACR Virtual Annual Meeting 2020. GD2 was evaluated as a therapeutic CAR-T target antigen in SCLC. We observed that AUTO6 alone has demonstrated efficacy in an in vitro SCLC model; however, successful tumor targeting alone was not sufficient to drive meaningful in vivo efficacy in the same SCLC model. We presented new preclinical data demonstrating the ability to target GD2 in SCLC cell line models in vitro, and the requirement for enhancing modules, designed to overcome TME suppressive mechanisms, to drive superior in vivo efficacy in a SCLC mouse model. The data suggests that AUTO6NG can overcome the immune suppressive mechanisms in the TME.

We believe these data support the continued development of AUTO6NG, and we expect to initiate a Phase 1/2 clinical trial of AUTO6NG in 2023.

Clinical Development Strategy of AUTO6NG

GD2 is expressed in numerous pediatric and adult tumors including neuroblastoma, osteosarcoma, soft tissue sarcoma, melanoma, astrocytoma and small cell lung cancer, or SCLC. Initially we are planning to initiate a Phase 1/2 study in patients with neuroblastoma. This trial is expected to commence in 2023.

Manufacture and Delivery of Programmed T Cell Therapies to Patients

We are devoting significant resources to process development and manufacturing in order to optimize the safety and efficacy of our product candidates, as well as to reduce our per unit manufacturing costs and time to market if we obtain regulatory approval for any of our programmed T cell product candidates.

The manufacture and delivery of programmed T cell therapies to patients involves complex, integrated processes, including harvesting T cells from patients, manufacturing viral vectors with nucleic acid content encoded with our programming modules, manufacturing programmed T cells using the viral vectors ex vivo, multiplying the T cells to obtain the desired dose, and ultimately infusing the T cells back into a patient's body.

Commercial success in T cell therapies requires a manufacturing process that is reliable, scalable and economical. We have established a manufacturing process that is scalable and serves as a manufacturing platform designed to support rapid development of our programmed T cell therapy product candidates through clinical trial phases and regulatory approval processes. We are using a semi-automated, fully enclosed system for cell manufacturing, which is designed to provide a common platform suitable for manufacturing all of our product candidates. This platform allows for parallel processing having the ability to scale for commercial supply in a controlled environment at an economical cost. We have established a viral vector production and viral transduction process to reduce process variability.

Our manufacturing and logistics process is designed to ensure that product integrity is maintained during shipment along with accurate tracking and tracing of shipments. We are expanding internal manufacturing and supply capabilities as well as the use of expert service providers on maturing our vein-to-vein logistics and our gradual capacity expansion in support of commercial operations.

Our manufacturing and commercialization strategy requires a fully integrated vein-to-vein product delivery cycle. We believe having established manufacturing processes suitable for commercialization early in the development of our T cell therapies will allow us to focus on expanding manufacturing capacity during our clinical trials and early commercial launch needs. Over time, we expect to establish regional manufacturing hubs to meet projected near-, mid- and long-term commercial product requirements for commercialization. The first purpose-built facility is called the Nucleus and has been built in Stevenage, UK. We believe that anticipated future commercial requirements can be met. Our plan is to establish our manufacturing infrastructure in a manner that would ameliorate logistics complexities and costs for all regions going forward.

We believe our scalable closed-system manufacturing process, along with our proprietary and modular T cell programming technologies, would be challenging and costly for potential competitors to replicate.

Manufacturing Agreements

We have manufacturing agreements with King's College London for early phase vector manufacturing. Autolus also has an internal capability to produce vector for early and late-stage trials. Additionally, we have also established an agreement with AGC Bio for late stage clinical and commercial supply of vector. All vector manufacturing is done in accordance with current Good Manufacturing Practice, or cGMP, in compliant manufacturing facilities. The manufacturing agreements governing the external supply arrangements also provide for access to services including quality management systems, qualified persons for product release, office space, frozen storage and warehousing services.

For clinical trial supply, we have established our initial cell and vector manufacturing capacity at the Cell and Gene Therapy Catapult in Stevenage, United Kingdom. We have two cell manufacturing suites capable of supporting clinical supply operations. We also have a vector production suite capable of supplying clinical supplies. The licensure and commercial supply of our cell products will be from the new 70,000 sqft Nucleus facility, which must be inspected and licensed by the appropriate authorities prior to use. The Nucleus will provide multiple clean rooms, QC labs, warehouse and administrative space. The building is being fitted out in a phased manner as demand requires; the initial set of clean rooms was made available to us in November 2022. At full capacity, we expect the Nucleus facility to provide manufacturing capacity for approximately 2,000 batches annually, Additional fallow space for clinical or vector manufacture will also be available if required.

In March 2018, we entered into a strategic, long-term supply agreement with Miltenyi Biotec GmbH, or Miltenyi, for the supply of Miltenyi's CliniMACS Prodigy instruments, reagents and disposables for the manufacture of our programmed T cell therapies for preclinical and clinical use and, if approved, for commercial use, as well as support services. The supply agreement sets forth procedures to ensure continuity of supply to us of Miltenyi's products, both during the clinical phase and any future commercial phase of our product candidates. After the initial ten-year term of the agreement, we have two separate options to renew the agreement, each for an additional five-year term. The supply agreement contains customary termination provisions, allowing for termination by a party upon the other party's uncured material breach, upon the other party's bankruptcy or insolvency or upon the other party being subject to an extended period of force majeure events. We may also terminate the supply agreement upon advance written notice, if we decide to suspend or discontinue the development or commercialization of our product candidates. The supply agreement is governed under the laws of Germany.

Commercialization

Given our stage of development, we have not yet established a commercial infrastructure or distribution capabilities. We are developing our clinical-stage programs for the treatment of patients with late-stage or rare hematological cancers and solid tumors, most of whom are treated in specialized treatment centers or hospitals. With our experience in gene therapy, transplantation and oncology, we aim to provide high levels of service and scientific engagement at these treatment centers, and to pilot and establish systems necessary for product delivery by the time of launch. By focusing on these centers, we can begin to build our commercialization capabilities with limited resources.

We have retained worldwide commercial rights for our product candidates. We currently plan to build our global commercialization capabilities internally over time such that we are able to commercialize any product candidate for which we may obtain regulatory approval. We may selectively pursue strategic collaborations with third parties in order to maximize the commercial potential of our product candidates. We generally expect to launch any of our products that receive regulatory approval in the United States first, followed by the European Union and subsequently in other major markets. See "Risk Factors–Risks Related to our Intellectual Property–Third parties may initiate legal proceedings alleging that we are infringing their intellectual property rights, the outcome of which would be uncertain and could significantly harm our business."

Intellectual Property

Intellectual property is of vital importance in our field and in biotechnology generally. We seek to protect and enhance proprietary technology, inventions and improvements that are commercially important to the development of our business by seeking, maintaining and defending patent rights, whether developed internally or licensed from third parties. We will also seek to rely on regulatory protection afforded through orphan drug designations, data exclusivity, market exclusivity and patent term extensions where available.

Our intellectual property estate, which includes in-licensed intellectual property and intellectual property that we own, is designed to provide multiple layers of protection. For example, we are pursuing patent protection for core constructs used in our product candidates, various methods of treatment for particular therapeutic indications using our approach, specific product candidates, innovative manufacturing processes, and constructs that may be used in future product candidates to improve the ability of our programmed T cells to better recognize and kill cancer cells. A portion of our patent portfolio is directed to certain current product candidates or technologies deployed in certain product candidates, and the remainder of the portfolio is directed to alternative approaches, technologies or modules that are not currently deployed in our current product candidates.

As of December 31, 2022, our patent portfolio is comprised of 83 patent families, of which 19 patent families originated from UCLB, the technology-transfer company of UCL, 3 patent families are in-licensed from Noile-Immune Biotech, Inc., 1 patent family is in-licenced from Oxford University Innovation Limited and 60 patent families we own and have originated from our own research. Of the 19 live patent families that were originally in-licensed from UCL, 18 have now been assigned to Autolus under a Deed of Assignment dated 15 October 2020. Because we have acquired or licensed certain of our patents from UCLB, Noile-Immune Biotech, Inc, and Oxford University Innovation Limited, we must rely on their prior practices with regard to the assignment of such intellectual property. Our and their assignment agreements may not be self-executing or may be breached, and we may be forced to bring claims against third parties or defend claims they may bring against us, to determine the ownership of what we regard as our intellectual property.

Commercially or strategically important non-U.S. jurisdictions in which certain patent applications that we have in-licensed are currently pending include: Europe, Australia, Canada, Japan, China, Brazil, Chile, Israel, India, Republic of Korea, Hong Kong, Mexico, New Zealand, Russian Federation, Singapore, South Africa, Colombia, Peru, Cuba, Indonesia, Malaysia and Philippines.

Our strategy is to develop and obtain additional intellectual property covering innovative manufacturing processes and methods for genetically engineering T cells expressing new constructs with properties that are designed to improve the ability of our programmed T cells to recognize and kill cancer cells. To support this effort, we have established expertise and development capabilities focused in the areas of T cell programming, preclinical and clinical research and development, and manufacturing and manufacturing process scale-up, and we expect that our ongoing research and development activities will yield additional patentable inventions and patent applications that will expand our intellectual property portfolio.

The term of individual patents depends upon the legal term of the patents in the countries in which they are obtained. In most countries in which we file, the patent term is 20 years from the date of filing of the first non-provisional application to which priority is claimed. In the United States, a patent's term may be lengthened by patent term adjustment, which compensates a patentee for administrative delays by the U.S. Patent and Trademark Office in granting a patent or may be shortened if a patent is terminally disclaimed over an earlier-filed patent. The term of a patent that covers an FDA-approved drug may also be eligible for a patent term restoration of up to five years under the Hatch-Waxman Act, which is designed to compensate for the patent term lost during the FDA regulatory review process. The length of the patent term restoration is calculated based on the length of time the drug is under regulatory review. A patent term restoration under the Hatch-Waxman Act cannot extend the remaining term of a patent beyond a total of 14 years from the date of product approval and only one patent applicable to an approved drug may be restored.

Moreover, a patent can only be restored once, and thus, if a single patent is applicable to multiple products, it can only be extended based on one product. Similar provisions are available in Europe and certain other foreign jurisdictions to extend the term of a patent that covers an approved drug. If and when possible, we expect to apply for patent term extensions for patents covering our product candidates or their methods of use.

Our commercial success may depend in part on our ability to obtain and maintain patent and other proprietary protection for commercially important technology, inventions and know-how related to our business, defend and enforce our patents, preserve the confidentiality of our trade secrets, and operate without infringing the valid enforceable patents and proprietary rights of third parties. Our ability to stop third parties from making, using, selling, offering to sell or importing our products may depend on the extent to which we have rights under valid and enforceable patents or trade secrets that cover these activities. With respect to both licensed and company-owned intellectual property, we cannot be sure that patents will be granted with respect to any of our pending patent applications or with respect to any patent applications filed by us in the future, nor can we be sure that any patents, if granted, will be commercially useful in protecting our commercial products and methods of manufacturing the same. Development and commercialization of products can be subject to substantial delays and it is possible that, at the time of commercialization, any patent covering the product has expired or will be in force for only a short period of time following commercialization.

Numerous third-party U.S. and non-U.S. issued patents exist in the area of programmed T cell therapies, including patents held by our competitors. We cannot predict with any certainty if any third-party U.S. or foreign patent rights, or other proprietary rights, will be deemed infringed by the use of our technology. Nor can we predict with certainty which, if any, of these rights will or may be asserted against us by third parties. Should we need to defend ourselves against any such claims, substantial costs may be incurred. Furthermore, parties making such claims may be able to obtain injunctive or other equitable relief, which could effectively block our ability to develop or commercialize some or all our products in the United States, European Union and other major markets.

We may rely, in some circumstances, on trade secrets to protect our technology. However, trade secrets can be difficult to protect. We seek to protect our proprietary technology and processes, in part, by entering into confidentiality agreements with our employees, consultants, scientific advisors and contractors. We also seek to preserve the integrity and confidentiality of our data and trade secrets by maintaining physical security of our premises and physical and electronic security of our information technology systems. While we have confidence in these individuals, organizations and systems, agreements or security measures may be breached, and we may not have adequate remedies for any breach. In addition, our trade secrets may otherwise become known or be independently discovered by competitors. To the extent that our consultants, contractors or collaborators use intellectual property owned by others in their work for us, disputes may arise as to the rights in related or resulting know-how and inventions.

Our License Agreement with UCL Business Ltd.

In September 2014, we entered into an exclusive license agreement with UCLB, the technology-transfer company of UCL, for the development and commercialization rights to certain T cell programming modules. The license agreement was amended and restated in March 2016 to also include certain development and commercialization rights to improvements and new T cell programming modules. The license agreement was further amended and restated in March 2018 to include a license to AUTO1, for which UCL is conducting Phase 1 clinical trials in pediatric and adult ALL patients. The license agreement was further amended and restated in October 2020 to reflect our election to have various patent rights assigned to us, and to include a license to new technology and further licenses to AUTO1 for which UCL is conducting Phase 1 clinical trials in primary CNS Lymphoma patients. Under the license agreement, subject to certain limitations, exceptions and retained rights of UCLB, we received an exclusive license of certain patent rights and know-how owned by UCLB covering T cell programming modules. The licensed rights cover obe-cel, AUTO4/5 and AUTO6 targeting modules, as well as additional T cell programming modules and technologies, including dual-targeting technology, pattern recognition technology, safety switches (including RQR8), tunable T cells, manufacturing processes as well as certain technology for evading tumor micro-environments. We also have option rights and rights of first negotiation to obtain an exclusive license for development and commercialization rights to certain new T cell programming modules.

In exchange for the rights under the original license agreement, we granted UCLB 4,769,994 B ordinary shares of Autolus Limited, which, in connection with our corporate reorganization in June 2018, were converted to 1,497,643 ordinary shares of Autolus Therapeutics plc. We also agreed to pay a management fee, milestone payments and royalties upon future net sales of any products that use the in-licensed rights. The management fee of £120,000 was payable in equal installments on the first four anniversaries of our entry into the original license agreement. In exchange for the additional rights we received in March 2016 when the license agreement was amended, we issued UCLB an additional 1,000,000 B ordinary shares, which, in connection with our corporate reorganization in June 2018, were converted to 313,971 ordinary shares of Autolus Therapeutics plc, and made a one-time payment of £150,000. In exchange for the additional rights we received in March 2018 when the license agreement was further amended, we made an initial payment of £1.5 million and paid an additional £0.35 million in connection with UCLB's transfer of clinical data to us in December 2020.

Under the license agreement, as amended, we are obligated to pay UCLB milestone payments upon the initiation of certain clinical activities in an aggregate amount of £0.18 million, the receipt of specified regulatory approvals in an aggregate amount of £37.5 million, the start of commercialization in an aggregate amount of £18 million, and the achievement of net sales levels in an aggregate amount of £51 million. On a per-product basis, these milestone payments range from £1 million to £18.5 million, depending on which T cell programming modules are used in the product achieving the milestone. Under the terms of the license, we have the right to grant sub-licenses to third parties, subject to certain restrictions. If we receive any income in connection with such sublicenses, we must pay UCLB a percentage of the income allocable to the value of the sublicensed intellectual property rights ranging from low twenties to mid-single digits, decreasing based on the development expenses incurred by us and the passage of time. In 2022, £0.1 million was payable to UCLB by us relating to the income allocable to the value of the sublicensed intellectual property rights. UCLB has retained the right to use the licensed T cell programming modules for academic research purposes at UCL and with other academic institutions, subject to certain restrictions.

Upon commercialization of any of our products that use the in-licensed patent rights, we are obligated to pay UCLB a flat royalty for each licensed product ranging from the low- to mid-single digits, depending on which technologies are deployed in the licensed product, based on worldwide annual net sales of each licensed product, subject to certain reductions, including for the market entry of competing products and for loss of patent coverage of licensed products. We may deduct from the royalties payable to UCLB half of any payments made to a third party to obtain a license to such third party's intellectual property that is necessary to exploit any licensed products. Once net sales of a licensed product have reached a certain specified threshold, we may exercise an option to buy out UCLB's rights to the remaining milestone payments, royalty payments, and sublicensing revenue payments for such licensed product, on terms to be negotiated at the time.

As mentioned above, we acquired ownership of the majority of the licensed patent rights under the license agreement (with the exception of the RQR8 patent rights) by virtue of a Deed of Assignment from UCLB which was executed in October 2020. Our payment and diligence obligations remain unaffected by the assignment of the licensed patent rights to us.

Under the license agreement, we are solely responsible, at our expense, for developing the products that use the in-licensed patent rights and obtaining all regulatory approvals for such products worldwide. We are also solely responsible, at our expense, for commercializing the products worldwide after receiving regulatory approval. Further, we are obligated to use commercially reasonable efforts to develop certain products using the patent rights pertaining to the T cell programming modules we have licensed from UCLB. Failure to achieve diligence obligations may result in loss of exclusivity or termination of the license on a program-by-program basis.

The license agreement expires on a product-by-product and country-by-country basis upon the expiration of the royalty term with respect to each product in each country. We may unilaterally terminate the license agreement for any reason upon advance notice to UCLB. Either party may terminate the license agreement for the uncured material breach by the other party or for the insolvency of the other party. If UCLB terminates the license agreement following our insolvency or our material breach of the agreement, or if we terminate the agreement unilaterally, all rights and licenses granted to us will terminate, and all patent rights and know-how transferred, licensed or assigned to us pursuant to the agreement will revert back to UCLB. In addition, UCLB has the right to negotiate with us for the grant of an exclusive license to our improvements to the T cell programming modules we have licensed on terms to be agreed upon at the time.

Competition

The biotechnology and pharmaceutical industries put significant resources in developing novel and proprietary therapies for the treatment of cancer. Consequently, there are a number of different products available in the indications where Autolus is seeking to launch our products. These include in-class competitors, i.e. autologous CAR T cell therapies, and products from different classes, such a bispecific tumour engagers (BiTEs), anti-body drug conjugates (ADC), antibody treatments and classic small molecular entities (SME) anti-tumour agents. These anti-tumour agents can be give as single agents or are often used in combination.

In oncology, it is customary to initially study and launch as a last line agent for use in relapse/refractory patients. Over-time, and based upon further clinical studies, it is then common for products to move earlier in the treatment paradigm, to earlier lines of care. Examples of this are the recent FDA approvals of Yescarta and Breyanzi for second-line treatment in diffuse large B-cell lymphoma. Consequently, as product use is sequenced, physicians make treatment decisions in each line based upon a number of factors such as which products and combinations are registered and reimbursed, response to the treatments used in previous lines of care, the aggressiveness and speed of progression of the tumour and the general health status of the patient.

Consequently, many of the out of class agents will not be direct competitors to autologous CAR T cell therapies in the initial use after launch, as they are predominantly used earlier in the treatment course. However, as CAR T cell therapies move to earlier lines, this will require clinical data to displace the existing standard of care.

In the indications where autologous CAR T cell therapies are registered, due to their superior efficacy, they are poised to become standard or care. Several companies already have autologous CAR T cell therapies which have been registered by the FDA and/or EMA. These are direct competitors and a summary of the indications in which they are currently registered is given below:

Approved Autologous CAR T Cell Therapies*			
Product	**Targeting**	**Company**	**Indications**
Abecma (idecabtagene vicleucel)	BCMA	BMS	Adult patients with relapsed or refractory multiple myeloma after four or more prior lines of therapy.
Breyanzi (lisocabtagene maraleucel)	CD19	BMS	Adult patients with large B-cell lymphoma (LBCL): • refractory disease to first-line chemoimmunotherapy or relapse within 12 months of first-line chemoimmunotherapy; • refractory disease to first-line chemoimmunotherapy or relapse after first-line chemoimmunotherapy and are not eligible for hematopoietic stem cell transplantation (HSCT) due to comorbidities or age • relapsed or refractory disease after two or more lines of systemic therapy
Carvykti (ciltacabtagene autoleucel)	BCMA	J&J / Janssen Biotech	Adult patients with relapsed or refractory multiple myeloma after four or more prior lines of therapy.
Kymriah	CD19	Novartis	Patients up to 25 years of age with B-cell precursor acute lymphoblastic leukemia (ALL) that is refractory or in second or later relapse Adult patients with relapsed or refractory (r/r) large B-cell lymphoma after two or more lines of systemic therapy, including diffuse large B-cell lymphoma (DLBCL) Adult patients with relapsed or refractory follicular lymphoma (FL) after two or more lines of systemic therapy.
Tecartus (brexucabtagene autoleucel)	CD19	Kite Gilead	Adult patients with relapsed or refractory mantle cell lymphoma (MCL). Adult patients with relapsed or refractory B-cell precursor acute lymphoblastic leukemia (ALL).
Yescarta (axicabtagene ciloleucel)	CD19	Kite Gilead	Adult patients with large B-cell lymphoma that is refractory to first-line chemoimmunotherapy or that relapses within 12 months of first-line chemoimmunotherapy. Adult patients with relapsed or refractory large B-cell lymphoma after two or more lines of systemic therapy, including diffuse large B-cell lymphoma (DLBCL). Adult patients with relapsed or refractory follicular lymphoma (FL) after two or more lines of systemic therapy.

*Indication based on the USPI

Four of these products, Tecartus and Yescarta from Kite/Gilead, Kymriah from Novartis and Breyanzi from BMS are anti-CD19 CAR T cell therapies, the same class as our lead product obe-cel. However, only Tecartus is approved for use in adult ALL and we hope that obe-cel will be the second approved product in this class. We believe there will be a market for obe-cel in this indication due to its differentiated safety profile when compared to current approved therapies.

Looking to the future, it is possible that companies could take other autologous CAR T cell products forward in adult ALL or allogeneic “off-the-shelf” CAR T cell therapies could be developed which would be considered direct competitors. Allogeneic products are in early development and, because these products are not made from the patient's own cells, they might be more convenient to deliver, without the need to wait for a product to be manufactured (typical manufacturing times for autologous products are currently 18-25 days). However, as of the date of this Annual Report, this class of product has not shown the same levels of durable activity and the products in clinical trials are therefore likely to require periodic repeat dosing as opposed to autologous products, which allow for the therapy to be given as a one-time treatment.

Government Regulation and Product Approval

As a biopharmaceutical company, we are subject to extensive regulation. Our programmed T cell product candidates, if approved, will be regulated as biological medicines. With this classification, commercial production of our products will need to occur in registered and licensed facilities in compliance with current Good Manufacturing Practices, or cGMPs, for biologics.

Human immunotherapy products are a new category of therapeutics. The FDA categorizes human cell- or tissue-based products as either minimally manipulated or more than minimally manipulated and has determined that more than minimally manipulated products require clinical trials to demonstrate product safety and efficacy and the submission of a Biologics License Application, or BLA, for marketing authorization.

Government authorities in the United States (at the federal, state and local level) and in other countries and jurisdictions, including the European Union, extensively regulate, among other things, the research, development, preclinical and clinical testing, manufacturing, quality control, labeling, packaging, storage, record-keeping, promotion, advertising, sale, distribution, post-approval monitoring and reporting, marketing and export and import of biopharmaceutical products such as those we are developing. Our product candidates must be approved by the FDA before they may be legally marketed in the United States and by the appropriate foreign regulatory agency before they may be legally marketed in foreign countries. Generally, our activities in other countries will be subject to regulation that is similar in nature and scope as that imposed in the United States, although there can be important differences. Additionally, some significant aspects of regulation in Europe are addressed in a centralized way, but country-specific regulation remains essential in many respects. The process for obtaining regulatory marketing approvals and the subsequent compliance with applicable federal, state, local and foreign statutes and regulations require the expenditure of substantial time and financial resources.

U.S. Product Development Process

In the United States, the FDA regulates biological products under the Public Health Service Act, or PHSA, and the Federal Food, Drug and Cosmetic Act, or FDCA, and implementing regulations. Products are also subject to other federal, state and local statutes and regulations. The process of obtaining regulatory approvals and the subsequent compliance with appropriate federal, state, local and foreign statutes and regulations require the expenditure of substantial time and financial resources. Failure to comply with the applicable U.S. requirements at any time during the product development process, approval process or after approval, may subject an applicant to administrative or judicial sanctions. FDA sanctions could include, among other actions, refusal to approve pending applications, withdrawal of an approval, a clinical hold, warning letters and similar public notice of alleged non-compliance with laws, product recalls or withdrawals from the market, product seizures, total or partial suspension of production or distribution, fines, refusals of government contracts, restitution, disgorgement of profits, or civil or criminal penalties. Any agency or judicial enforcement action could have a material adverse effect on us. The process required by the FDA before a biological product may be approved for marketing in the United States generally involves the following:

- completion of preclinical laboratory tests and animal studies according to Good Laboratory Practices, or GLPs, and applicable requirements for the humane use of laboratory animals or other applicable regulations;
- submission to the FDA of an Investigational New Drug Application, or IND, which must become effective before human clinical trials may begin;
- performance of adequate and well-controlled human clinical trials according to the FDA's regulations commonly referred to as Good Clinical Practices, or GCPs, and any additional requirements for the protection of human research subjects and their health information, to establish the safety and efficacy of the proposed biological product for its intended use;
- preparation and submission to the FDA of a Biologics License Application, or BLA, for marketing approval that includes substantive evidence of quality, efficacy, and safety from results of nonclinical testing and clinical trials;
- satisfactory completion of one or more FDA inspections of the manufacturing facility or facilities where the biological product is produced to assess compliance with cGMP to assure that the facilities, methods and controls used in product manufacture are adequate to preserve the biological product's identity, strength, quality and purity and, if applicable, the FDA's current Good Tissue Practices, or GTPs, for the use of human cellular and tissue products;
- potential FDA inspection of the nonclinical study and clinical trial sites that generated the data in support of the BLA;
- payment of user fees for FDA review of the BLA; and
- FDA acceptance, review and approval, of the BLA, which might include review by an advisory committee, a panel typically consisting of independent clinicians and other experts who provide recommendations as to whether the application should be approved and under what conditions.

Before testing any biological product candidate, including our product candidates, in humans, the product candidate must undergo rigorous the preclinical testing. Preclinical tests, also referred to as nonclinical studies, include laboratory evaluations as well as in vitro and animal studies to assess the potential safety and efficacy of the product candidate. After sufficient preclinical testing has been conducted, the conduct of the preclinical tests must comply with federal regulations and requirements including GLPs. The clinical trial sponsor must submit an IND to the FDA before clinical testing can begin in the United States. An IND must contain the results of the preclinical tests, manufacturing information, analytical data, any available clinical data or literature, a proposed clinical protocol, an investigator's brochure, a sample informed consent form, and other materials.

Clinical trial protocols detail, among other things, the objectives of the clinical trial, dosing procedures, subject selection and exclusion criteria, and the parameters to be used to monitor subject safety, including stopping rules that assure a clinical trial will be stopped if certain adverse events should occur. Each protocol and any amendments to the protocol must be submitted to the FDA as part of the IND. Some preclinical testing, such as toxicity studies, may continue even after the IND is submitted.

The IND automatically becomes effective 30 days after receipt by the FDA, unless the FDA raises concerns or questions regarding the proposed clinical trials or places the trial on a clinical hold within that 30-day time period. In such a case, the IND sponsor and the FDA must resolve any outstanding concerns before the clinical trial can begin. The FDA may also impose clinical holds on a biological product candidate at any time before or during clinical trials due to safety concerns or non-compliance. If the FDA imposes a clinical hold, trials may not recommence without FDA authorization and then only under terms authorized by the FDA. Accordingly, we cannot be sure that submission of an IND will result in the FDA allowing clinical trials to begin, or that, once begun, issues will not arise that suspend or terminate such trials.

Further, each clinical trial must be reviewed and approved by an independent institutional review board, or IRB, at or servicing each institution at which the clinical trial will be conducted. An IRB is charged with protecting the welfare and rights of trial participants and considers such items as whether the risks to individuals participating in the clinical trials are minimized and are reasonable in relation to anticipated benefits. The IRB also approves the form and content of the informed consent that must be signed by each clinical trial subject or his or her legal representative and must monitor the clinical trial until completed. Clinical trials involving recombinant or synthetic nucleic acid molecules also must be reviewed by an institutional biosafety committee, or IBC, a local institutional committee that reviews and oversees basic and clinical research conducted at that institution. The IBC assesses the safety of the research and identifies any potential risk to public health or the environment.

Clinical trials involve the administration of the biological product candidate to healthy volunteers or patients under the supervision of qualified investigators, generally physicians not employed by or under the trial sponsor's control. Clinical trials must be conducted and monitored in accordance with the FDA's regulations comprising the GCP requirements, including the requirement that all research patients provide informed consent.

Human clinical trials are typically conducted in three sequential phases, as follows:

- *Phase 1*. The biological product is initially introduced into healthy human subjects and tested for safety. In the case of some products for severe or life-threatening diseases, especially when the product may be too inherently toxic to ethically administer to healthy volunteers, the initial human testing is often conducted in patients with the target disease or condition.
- *Phase 2*. The biological product is evaluated in a limited patient population to identify possible adverse effects and safety risks, to preliminarily evaluate the efficacy of the product for specific targeted diseases and to determine dosage tolerance, optimal dosage and dosing schedule.
- *Phase 3*. Clinical trials are undertaken to further evaluate dosage, clinical efficacy, potency, and safety in an expanded patient population, generally at geographically dispersed clinical trial sites. These clinical trials are intended to generate enough data to statistically evaluate the efficacy and safety of the product for approval, to establish the overall risk to benefit profile of the product and to provide an adequate basis for product labeling.

In some instances, these phases may overlap or even be combined into one study (*e.g.*, Phase 1/2 studies) particularly in case of high medical need and sufficient clinical efficacy and safety of the product phase 2 data may be sufficient for initial approval. Phase 1, Phase 2 and Phase 3 clinical trials may not be completed successfully within any specified period, if at all.

Post-approval clinical trials, sometimes referred to as Phase 4 clinical trials, may be conducted after initial marketing approval. These clinical trials are used to gain additional experience from the treatment of patients in the intended therapeutic indication, particularly for long-term safety follow-up.

During all phases of clinical development, regulatory agencies require extensive monitoring and auditing of all clinical activities, clinical data, and clinical trial investigators. Annual progress reports detailing the results of the clinical trials must be submitted to the FDA. Written IND safety reports must be promptly submitted to the FDA, and the investigators for serious and unexpected adverse events, any findings from other studies, tests in laboratory animals or in vitro testing that suggest a significant risk for human patients, or any clinically important increase in the rate of a serious suspected adverse reaction over that listed in the protocol or investigator brochure. The sponsor must submit an IND safety report within 15 calendar days after the sponsor determines that the information qualifies for reporting. The sponsor also must notify the FDA of any unexpected fatal or life-threatening suspected adverse reaction within seven calendar days after the sponsor's initial receipt of the information. The FDA or the sponsor or its data safety monitoring board, an independent group of experts that evaluates study data for safety and makes recommendations concerning continuation, modification, or termination of clinical trials, may suspend or terminate a clinical trial at any time on various grounds, including a finding that the research patients are being exposed to an unacceptable health risk, including risks inferred from other unrelated immunotherapy trials. Similarly, an IRB can suspend or terminate approval of a clinical trial at its institution if the clinical trial is not being conducted in accordance with the IRB's requirements or if the biological product has been associated with unexpected serious harm to patients.

Because this is a relatively new and expanding area of novel therapeutic interventions, there can be no assurance as to the length of the trial period, the number of patients the FDA will require to be enrolled in the trials in order to establish the safety, efficacy, purity and potency of immunotherapy products, or that the data generated in these trials will be acceptable to the FDA to support marketing approval.

Concurrently with clinical trials, companies usually complete additional nonclinical studies and must also develop additional information about the physical characteristics of the biological product as well as finalize a process for manufacturing the product in commercial quantities in accordance with cGMP requirements. To help reduce the risk of the introduction of adventitious agents with use of biological products, the PHSA emphasizes the importance of manufacturing control for products whose attributes cannot be precisely defined. The manufacturing process must be capable of consistently producing quality batches of the product candidate and, among other things, the sponsor must develop methods for testing the identity, strength, quality, potency and purity of the final biological product. Additionally, appropriate packaging must be selected and tested and stability studies must be conducted to demonstrate that the biological product candidate does not undergo unacceptable deterioration over its shelf life.

U.S. Review and Approval Processes

After the completion of clinical trials of a biological product, FDA approval of a BLA must be obtained before commercial marketing of the biological product. The BLA must include results of product development, laboratory and animal studies, human trials, information on the manufacture and composition of the product, proposed labeling and other relevant information. The testing and approval processes require substantial time and effort and there can be no assurance that the FDA will accept the BLA for filing and, even if filed, that any approval will be granted on a timely basis, if at all as the FDA has significant discretion to approve or reject the BLA and to require additional preclinical or clinical studies.

Under the Prescription Drug User Fee Act, or PDUFA, as amended, each BLA must be accompanied by a significant user fee. The FDA adjusts the PDUFA user fees on an annual basis. PDUFA also imposes an annual program fee for approved biological products. Fee waivers or reductions are available in certain circumstances, including a waiver of the application fee for the first application filed by a small business. Additionally, no user fees are charged on BLAs for products designated as orphan drugs, unless the product also includes a non-orphan indication.

Within 60 days following submission of the application, the FDA reviews a BLA submitted to determine if it is substantially complete before the agency accepts it for filing. The FDA may refuse to file any BLA that it deems incomplete or not properly reviewable at the time of submission and may request additional information. In this event, the BLA must be resubmitted with the additional information. The resubmitted application also is subject to review before the FDA accepts it for filing. Once the submission is accepted for filing, the FDA begins an in-depth substantive review of the BLA. The FDA reviews the BLA to determine, among other things, whether the proposed product is safe, potent, and/or effective for its intended use, and has an acceptable purity profile, and whether the product is being manufactured in accordance with cGMP to assure and preserve the product's identity, safety, strength, quality, potency and purity. The FDA may refer applications for novel biological products or biological products that present difficult questions of safety or efficacy to an advisory committee, typically a panel that includes clinicians and other experts, for review, evaluation and a recommendation as to whether the application should be approved and under what conditions. The FDA is not bound by the recommendations of an advisory committee, but it considers such recommendations carefully when making decisions.

During the biological product approval process, the FDA also will determine whether a Risk Evaluation and Mitigation Strategy, or REMS, is necessary to ensure that the benefits of the product outweigh its risks and to assure the safe use of the biological product, which could include medication guides, physician communication plans, or elements to assure safe use, such as restricted distribution methods, patient registries and other risk minimization tools. FDA determines the requirement for a REMS, as well as the specific REMS provisions, on a case-by-case basis. If the FDA concludes a REMS is needed, the sponsor of the BLA must submit a proposed REMS. The FDA will not approve a BLA without a REMS, if required.

Before approving a BLA, the FDA will inspect the facilities at which the product is manufactured. The FDA will not approve the product unless it determines that the manufacturing processes and facilities are in compliance with cGMP requirements and adequate to assure consistent production of the product within required specifications. For immunotherapy products, the FDA also will not approve the product if the manufacturer is not in compliance with the GTPs, to the extent applicable. These are FDA regulations and guidance documents that govern the methods used in, and the facilities and controls used for, the manufacture of human cells, tissues, and cellular and tissue based products, or HCT/Ps, which are human cells or tissue intended for implantation, transplant, infusion, or transfer into a human recipient. The primary intent of the GTP requirements is to ensure that cell and tissue based products are manufactured in a manner designed to prevent the introduction, transmission and spread of communicable disease. FDA GTP regulations also require tissue establishments to register and list their HCT/Ps with the FDA and, when applicable, to evaluate donors through screening and testing. Additionally, before approving a BLA, the FDA will typically inspect one or more clinical sites to assure that the clinical trials were conducted in compliance with IND trial requirements and GCP requirements.

To assure cGMP, GTP and GCP compliance, an applicant must incur significant expenditure of time, money and effort in the areas of training, recordkeeping, production, and quality control.

Notwithstanding the submission of relevant data and information, the FDA may ultimately decide that the BLA does not satisfy its regulatory criteria for approval and deny approval. If the agency decides not to approve the BLA in its present form, the FDA will issue a Complete Response Letter, which generally outlines the specific deficiencies in the BLA identified by the FDA and may require additional clinical or other data or impose other conditions that must be met in order to secure final approval of the application. The deficiencies identified may be minor, for example, requiring labeling changes, or major, for example, requiring additional clinical trials. Even with the submission of additional information, the FDA may ultimately decide that the application does not satisfy the regulatory criteria for approval. If a Complete Response Letter is issued, the applicant may either resubmit the BLA, addressing all of the deficiencies identified in the letter, or withdraw the application.

If a product receives regulatory approval, the approval is limited to the conditions of use (e.g., patient population, indication) described in the application.

Further, the FDA may require that certain contraindications, warnings or precautions be included in the product labeling, or otherwise limit the scope of any approval. In addition, the FDA may require post marketing clinical trials, sometimes referred to as Phase 4 clinical trials, designed to further assess a biological product's safety and effectiveness, and testing and surveillance programs to monitor the safety of approved products that have been commercialized. After approval, many types of changes to the approved product, such as adding new indications, manufacturing changes and additional labeling claims, are subject to further testing requirements and FDA review and approval.

In addition, under the Pediatric Research Equity Act, or PREA, a BLA or supplement to a BLA must contain data to assess the safety and effectiveness of the product for the claimed indications in all relevant pediatric subpopulations and to support dosing and administration for each pediatric subpopulation for which the product is safe and effective. The FDA may grant deferrals for submission of data or full or partial waivers.

Post-Approval Requirements

Any products for which we receive FDA approvals are subject to continuing regulation by the FDA, including, among other things, record-keeping requirements, reporting of adverse experiences with the product, providing the FDA with updated safety and efficacy information, product sampling and distribution requirements, and complying with FDA promotion and advertising requirements, which include, among others, standards for direct-to-consumer advertising, restrictions on promoting products for uses or in patient populations that are not described in the product's approved uses (known as "off-label use"), limitations on industry-sponsored scientific and educational activities, and requirements that important safety information and material facts related to the product be disclosed. Although physicians may prescribe legally available products for off-label uses, if the physicians deem to be appropriate in their professional medical judgment, manufacturers may not market or promote such off-label uses. The FDA and other agencies actively enforce the laws and regulations prohibiting the promotion of off-label uses, and a company that is found to have improperly promoted off-label uses may be subject to significant civil, criminal and administrative liability.

In addition, quality control and manufacturing procedures must continue to conform to applicable manufacturing requirements after approval to ensure the long-term stability of the product. We rely, and expect to continue to rely, on third parties for the production of clinical and commercial quantities of our products and some intermediates in accordance with cGMP regulations. cGMP regulations require among other things, quality control and quality assurance as well as the corresponding maintenance of records and documentation and the obligation to investigate and correct any deviations from cGMP. Manufacturers and other entities involved in the manufacture and distribution of approved products are required to register their establishments with the FDA and certain state agencies, and are subject to periodic unannounced inspections by the FDA and certain state agencies for compliance with cGMP and other laws. Accordingly, manufacturers must continue to expend time, money, and effort in the area of production and quality control to maintain cGMP compliance. Discovery of problems with a product after approval may result in restrictions on a product, manufacturer, or holder of an approved BLA, including, among other things, recall or withdrawal of the product from the market.

The FDA also may require post-marketing testing, known as Phase 4 testing, and surveillance to monitor the effects of an approved product. Discovery of previously unknown problems with a product, including adverse events of unanticipated severity or frequency, with manufacturing processes, or the failure to comply with applicable FDA requirements can have negative consequences, including adverse publicity, judicial or administrative enforcement, complete withdrawal from the market, product recalls, warning letters from the FDA, mandated corrective advertising or communications with doctors, product seizure or detention, injunctions, and civil or criminal penalties, among others. Newly discovered or developed safety or effectiveness data may require changes to a product's approved labeling, including the addition of new warnings and contraindications, and also may require the implementation of other risk management measures. Also, new government requirements, including those resulting from new legislation, may be established, or the FDA's policies may change, which could delay or prevent regulatory approval of our products under development.

U.S. Marketing Exclusivity

The Biologics Price Competition and Innovation Act amended the PHSA to authorize the FDA to approve similar versions of innovative biologics, commonly known as biosimilars. Biosimilars are approved pursuant to an abbreviated pathway whereby applicants need not submit the full slate of preclinical and clinical data, and approval is based in part on the FDA's findings of safety, purity, and potency for the original biologic (i.e., the reference product). Original BLAs are eligible to receive 12 years of exclusivity from the time of first licensure of the product, which prevents the FDA from approving any biosimilars to the reference product through the abbreviated pathway, but does not prevent approval of BLAs that are accompanied by a full data package and that do not rely on the reference product. A biosimilar may be approved if the product is highly similar to the reference product notwithstanding minor differences in clinically inactive components and there are no clinically meaningful differences with the reference product in terms of the safety, purity, and potency.

Pediatric exclusivity is another type of regulatory market exclusivity in the United States. Pediatric exclusivity, if granted, adds six months to existing exclusivity periods and patent terms. This six-month exclusivity, which runs from the end of other exclusivity protection or patent term, may be granted based on the voluntary completion of a pediatric trial in accordance with an FDA-issued "Written Request" for such a trial. Similar regulations are in place in other jurisdictions.

Coverage, Pricing and Reimbursement

Significant uncertainty exists as to the coverage and reimbursement status of any product candidates for which we obtain regulatory approval. In the United States and markets in other countries, sales of any products for which we receive regulatory approval for commercial sale will depend, in significant part, on the extent to which third-party payors provide coverage, and establish adequate reimbursement levels for such products. In the United States, third-party payers include federal and state healthcare programs, private managed care organizations, health insurers and other organizations. The process for determining whether a third-party payer will provide coverage for a product may be separate from the process of establishing the reimbursement rate that such a payor will pay for the product. Third-party payors may limit coverage to specific products on an approved list, also known as a formulary, which might not include all of the FDA-approved products for a particular indication. Third-party payors are increasingly challenging the price, examining the medical necessity of and reviewing the cost-effectiveness of medical products, therapies and services, in addition to questioning their safety and efficacy.

Reimbursement may impact the demand for, and/or the price of, any product candidate which obtains marketing approval. Even if coverage and reimbursement is obtained for a given product candidate by a third-party payor, the resulting reimbursement payment rates may not be adequate or may require co-payments that patients find unacceptably high. Patients who are prescribed medications for the treatment of their conditions, and their prescribing physicians, generally rely on third-party payors to reimburse all or part of the costs associated with those medications. Patients are unlikely to use a product, and physicians may be less likely to prescribe a product, unless coverage is provided and reimbursement is adequate to cover all or a significant portion of the cost of the product. Therefore, coverage and adequate reimbursement is critical to new drug product acceptance.

Additionally, we are developing a proprietary diagnostic test for use with certain of our product candidates. The diagnostic test will require separate regulatory approval in addition to the regulatory approval of AUTO4 and AUTO5. Failure to obtain marketing approval for the diagnostic test could prevent us from commercializing either AUTO4 or AUTO5 unless another similar diagnostic test for distinguishing TRBC1-positive and TRBC2-positive T cell lymphomas is commercially available. We will be required to obtain coverage and reimbursement for this test separate and apart from the coverage and reimbursement we seek for AUTO4 and AUTO5, if approved. Similar challenges to obtaining coverage and reimbursement, applicable to our product candidates, will apply to this proprietary diagnostic test.

Different pricing and reimbursement schemes exist in other countries. In the EU, governments influence the price of pharmaceutical products through their pricing and reimbursement rules and control of national healthcare systems that fund a large part of the cost of those products to consumers. Some jurisdictions operate positive and negative list systems under which products may only be marketed once a reimbursement price has been agreed. To obtain reimbursement or pricing approval, some of these countries may require the completion of additional clinical trials that compare the cost-effectiveness of a particular product candidate to currently available therapies. Other member states allow companies to fix their own prices for medicines, but monitor and control company profits. In addition, in some countries, cross-border imports from low-priced markets exert a commercial pressure on pricing within a country.

The downward pressure on healthcare costs in general, particularly prescription drugs and biologics, has become very intense. Governments have shown significant interest in implementing cost-containment programs, including price controls, restrictions on reimbursement and requirements for substitution of generic products. As a result, increasingly high barriers are being erected to the entry of new products. The marketability of any product candidates for which we receive regulatory approval for commercial sale may suffer if the government and third-party payors fail to provide coverage and adequate reimbursement. In addition, emphasis on managed care in the United States has increased and we expect will continue to increase the pressure on healthcare pricing. Coverage policies and third-party reimbursement rates may change at any time. Even if favorable coverage and reimbursement status is attained for one or more products for which we receive regulatory approval, less favorable coverage policies and reimbursement rates may be implemented in the future.

Healthcare Laws Governing Interactions with Healthcare Providers

In addition to FDA restrictions on marketing of pharmaceutical products, several other types of state and federal laws restrict our business activities, including certain marketing practices. These laws include, without limitation, anti-kickback laws, false claims laws, data privacy and security laws, as well as transparency laws regarding payments or other items of value provided to healthcare providers.

The U.S. federal Anti-Kickback Statute prohibits any person or entity from, among other things, knowingly and willfully offering, paying, soliciting or receiving remuneration, directly or indirectly, in cash or in kind, to induce or reward, or in return for, purchasing, leasing, ordering or arranging for the purchase, lease or order of any healthcare item, good, facility or service reimbursable, in whole or in part, under Medicare, Medicaid or other federal healthcare programs. The term ‘‘remuneration’’ has been broadly interpreted to include anything of value. This statute has been interpreted to apply to arrangements between pharmaceutical manufacturers on the one hand and prescribers, purchasers and formulary managers on the other hand. Although there are a number of statutory exceptions and regulatory safe harbors protecting certain common activities from prosecution or other regulatory sanctions, the exceptions and safe harbors are drawn narrowly, and practices that involve remuneration that are alleged to be intended to induce prescribing, purchases or recommendations may be subject to scrutiny if they do not qualify for an exception or safe harbor. Failure to meet all of the requirements of a particular applicable statutory exception or regulatory safe harbor does not make the conduct per se illegal under the U.S. federal Anti-Kickback Statute. Instead, the legality of the arrangement will be evaluated on a case-by-case basis based on a cumulative review of all its facts and circumstances.

Several courts have interpreted the statute’s intent requirement to mean that if any one purpose of an arrangement involving remuneration is to induce referrals of federal healthcare covered business, the U.S. federal Anti-Kickback Statute has been violated. Additionally, the intent standard under the U.S. federal Anti-Kickback Statute was amended by the Patient Protection and Affordable Care Act of 2010, as amended by the Health Care and Education Reconciliation Act of 2010, collectively the Affordable Care Act, or ACA, to a stricter standard such that a person or entity no longer needs to have actual knowledge of the statute or specific intent to violate it in order to have committed a violation. In addition, the ACA codified case law that a claim including items or services resulting from a violation of the U.S. federal Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the U.S. federal False Claims Act.

Federal civil and criminal false claims laws and civil monetary penalties laws, including the U.S. federal False Claims Act, which can be enforced through civil whistleblower or qui tam actions, prohibit any person or entity from, among other things, knowingly presenting, or causing to be presented, a false claim for payment to the federal government, or knowingly making, or causing to be made, a false statement to have a false claim paid. Pharmaceutical and other healthcare companies have been prosecuted under these laws for, among other things, allegedly inflating drug prices they report to pricing services, which in turn were used by the government to set Medicare and Medicaid reimbursement rates, and for allegedly providing free product to customers with the expectation that the customers would bill federal programs for the product. In addition, certain marketing practices, including off-label promotion, may also violate false claims laws. Further, pharmaceutical manufacturers can be held liable under the U.S. federal False Claims Act even when they do not submit claims directly to government payors if they are deemed to "cause" the submission of false or fraudulent claims.

The U.S. federal Health Insurance Portability and Accountability Act of 1996, or HIPAA, created new federal criminal statutes that prohibit among other actions, knowingly and willfully executing, or attempting to execute, a scheme to defraud any healthcare benefit program, including private third- party payors, knowingly and willfully embezzling or stealing from a healthcare benefit program, willfully obstructing a criminal investigation of a healthcare offense, and knowingly and willfully falsifying, concealing or covering up a material fact or making any materially false, fictitious or fraudulent statement in connection with the delivery of or payment for healthcare benefits, items or services. Like the U.S. federal Anti-Kickback Statute, the ACA amended the intent standard for certain healthcare fraud under HIPAA such that a person or entity no longer needs to have actual knowledge of the statute or specific intent to violate it in order to have committed a violation.

HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act, or HITECH, and their implementing regulations, impose certain requirements on "covered entities," including certain healthcare providers, health plans and healthcare clearinghouses, as well as their respective "business associates" that create, receive, maintain or transmit individually identifiable health information for or on behalf of a covered entity, and their covered subcontractors, relating to the privacy, security, transmission and breach of individually identifiable health information. Further, HITECH also created four new tiers of civil monetary penalties, amended HIPAA to make civil and criminal penalties directly applicable to business associates, and gave state attorneys general new authority to file civil actions for damages or injunctions in U.S. federal courts to enforce HIPAA and seek attorneys' fees and costs associated with pursuing federal civil actions.

Additionally, the federal Physician Payments Sunshine Act, created under the ACA, and its implementing regulations, require certain manufacturers of drugs, devices, biologics and medical supplies for which payment is available under Medicare, Medicaid or the Children's Health Insurance Program (with certain exceptions) to annually report to the Centers for Medicare and Medicaid Services, or CMS, information related to certain payments or other transfers of value provided to physicians (defined to include doctors, dentists, optometrists, podiatrists and chiropractors), certain other healthcare providers (such as physicians assistants and nurse practitioners) and teaching hospitals, or to entities or individuals at the request of, or designated on behalf of, the physicians and teaching hospitals as well as certain ownership and investment interests held by physicians and their immediate family members.

Additionally, similar healthcare laws and regulations in the European Union and other jurisdictions, including reporting requirements detailing interactions with and payments to healthcare providers and laws governing the data privacy and security of certain protected information, such as the EU GDPR and the UK GDPR, which imposes obligations and restrictions on the collection and use of personal data relating to individuals located in the European Union and the United Kingdom (including health data).

Finally, the majority of states also have statutes or regulations similar to the aforementioned federal laws, some of which are broader in scope and apply to items and services reimbursed under Medicaid and other state programs, or, in several states, apply regardless of the payor. Some state laws require pharmaceutical companies to comply with the pharmaceutical industry's voluntary compliance guidelines and the relevant compliance guidance promulgated by the federal government in addition to requiring drug manufacturers to report information related to payments to clinicians and other healthcare providers or marketing expenditures.

Some states and local jurisdictions require the registration of pharmaceutical sales representatives. State and foreign laws also govern the data privacy and security of health information in some circumstances, many of which differ from each other in significant ways and often are not preempted by HIPAA, thus complicating compliance efforts.

Because of the breadth of these laws and the narrowness of their exceptions and safe harbors, it is possible that business activities can be subject to challenge under one or more of such laws. The scope and enforcement of each of these laws is uncertain and subject to rapid change in the current environment of healthcare reform, especially in light of the lack of applicable precedent and regulations. Federal and state enforcement bodies have recently increased their scrutiny of interactions between healthcare companies and healthcare providers, which has led to a number of investigations, prosecutions, convictions and settlements in the healthcare industry.

Ensuring that business arrangements with third parties comply with applicable healthcare laws and regulations is costly and time consuming. If business operations are found to be in violation of any of the laws described above or any other applicable governmental regulations a pharmaceutical manufacturer may be subject to penalties, including civil, criminal and administrative penalties, damages, fines, disgorgement, individual imprisonment, exclusion from governmental funded healthcare programs, such as Medicare and Medicaid, contractual damages, reputational harm, diminished profits and future earnings, additional reporting obligations and oversight if subject to a corporate integrity agreement or other agreement to resolve allegations of non-compliance with these laws, and curtailment or restructuring of operations, any of which could adversely affect a pharmaceutical manufacturer's ability to operate its business and the results of its operations.

Healthcare Reform Efforts

A primary trend in the United States healthcare industry and elsewhere is cost containment. Over the last several years, there have been federal and state proposals and legislation enacted regarding the pricing of pharmaceutical and biopharmaceutical products, limiting coverage and reimbursement for drugs and other medical products, and making changes to healthcare financing and the delivery of care in the United States.

Recently, there have been a number of health reform measures by the Biden administration that we expect will have a significant impact on the pharmaceutical industry. In July 2021, the Biden administration released an executive order, "Promoting Competition in the American Economy," with multiple provisions aimed at prescription drugs. In response to Biden's executive order, on September 9, 2021, U.S. Department of Health and Human Services, or HHS, released a Comprehensive Plan for Addressing High Drug Prices that outlines principles for drug pricing reform and sets out a variety of potential legislative policies that Congress could pursue to advance these principles. Further, on August 16, 2022, President Biden signed the Inflation Reduction Act of 2022, or IRA, into law, which among other things, extends enhanced subsidies for individuals purchasing health insurance coverage in PPACA marketplaces through plan year 2025. The IRA also eliminates the "donut hole" under the Medicare Part D program beginning in 2025 by significantly lowering the beneficiary maximum out-of-pocket cost and creating a new manufacturer discount program. In addition, the IRA (i) directs HHS to negotiate the price of certain high-expenditure, single-source drugs and biologics covered under Medicare and (ii) imposes rebates under Medicare Part B and Medicare Part D to penalize price increases that outpace inflation. It is currently unclear how the IRA will be implemented but is likely to have a significant impact on the pharmaceutical industry. On October 14, 2022, the Biden administration released an additional executive order directing HHS to report on how the Center for Medicare and Medicaid Innovation can be further leveraged to test new models for lowering drug costs for Medicare and Medicaid beneficiaries.

Further, there remains heightened Congressional scrutiny in the United States of pharmaceutical pricing practices designed to, among other things, bring more transparency in product pricing, review the relationship between pricing and manufacturer patient programs, and reform government program reimbursement methodologies for products. At the state level, legislatures have increasingly enacted legislation and implemented regulations designed to control pharmaceutical and biological product pricing, including price or patient reimbursement constraints, discounts, restrictions on certain product access and marketing cost disclosure and transparency measures, and, in some cases, designed to encourage importation from other countries and bulk purchasing. In addition, regional healthcare authorities and individual hospitals are increasingly using bidding procedures to determine what pharmaceutical products and which suppliers will be included in their prescription drug and other healthcare programs.

In addition to the IRA, other federal health reform measures have been proposed and adopted in the United States that could impact cell therapy. Most notably, the previous administration supported and promulgated a rule related to value based payment alternatives in the Medicaid program. Medicaid is a jointly run federal and state program that provides health benefits coverage for low-income residents and children. In exchange for broad coverage in Medicaid, drug manufacturers are required to sign a Medicare Drug Rebate agreement which requires them to offer Medicaid programs the "best price" available for a particular product. This "best price" takes into consideration any rebates or concessions manufacturers offer, with some exceptions. The final rule would exempt value-based or outcomes-based payment arrangements from the definition of "best price" which provides manufacturers more flexibility to work with commercial payers and states on innovate payment mechanisms for high-cost cell and gene therapies. While Medicaid is not a significant driver of cell therapy sales it is a bellwether program and one we watch closely.

FCPA, the Bribery Act and Other Laws

The FCPA, prohibits any U.S. individual or business from paying, offering, or authorizing payment or offering of anything of value, directly or indirectly, to any foreign official, political party or candidate for the purpose of influencing any act or decision of the foreign entity in order to assist the individual or business in obtaining or retaining business. The FCPA also obligates companies whose securities are listed in the United States to comply with accounting provisions requiring the company to maintain books and records that accurately and fairly reflect all transactions of the corporation, including international subsidiaries, and to devise and maintain an adequate system of internal accounting controls for international operations. Activities that violate the FCPA, even if they occur wholly outside the United States, can result in criminal and civil fines, imprisonment, disgorgement, oversight, and debarment from government contracts.

Our operations are also subject to non-U.S. anti-corruption laws such as the Bribery Act. As with the FCPA, these laws generally prohibit us and our employees and intermediaries from authorizing, promising, offering, or providing, directly or indirectly, improper or prohibited payments, or anything else of value, to government officials or other persons to obtain or retain business or gain some other business advantage. Under the Bribery Act, we may also be liable for failing to prevent a person associated with us from committing a bribery offense.

We are also subject to other laws and regulations governing our international operations, including regulations administered by the governments of the United Kingdom and the United States and authorities in the European Union, including applicable export control regulations, economic sanctions and embargoes on certain countries and persons, anti-money laundering laws, import and customs requirements and currency exchange regulations, collectively referred to as trade control laws.

Failure to comply with the Bribery Act, the FCPA and other anti-corruption laws and trade control laws could subject us to criminal and civil penalties, disgorgement and other sanctions and remedial measures, and legal expenses.

Review and Approval of New Drug Products in the European Union

In the European Union, medicinal products, including advanced therapy medicinal products, or ATMPs, are subject to extensive pre- and post-market regulation by regulatory authorities at both the European Union and national levels. ATMPs comprise gene therapy products, somatic-cell therapy products and tissue engineered products, which are cells or tissues that have undergone substantial manipulation and that are administered to human beings in order to regenerate, repair or replace a human tissue. We anticipate that our T cell therapy products will be regulated as ATMPs in the European Union.

There is legislation at a European Union level relating to the standards of quality and safety for the collection and testing of human blood and blood components for use in cell-based therapies, which could apply to our products. Additionally, there may be local legislation in various European Union Member States, which may be more restrictive than the European Union legislation, and we would need to comply with such legislation to the extent it applies.

Clinical Trials

Clinical trials of medicinal products in the European Union must be conducted in accordance with European Union and national regulations and the International Conference on Harmonization, or ICH, guidelines on Good Clinical Practices, or GCP. Additional GCP guidelines from the European Commission, focusing in particular on traceability, apply to clinical trials of ATMPs. The sponsor must take out a clinical trial insurance policy, and in most European Union countries, the sponsor is liable to provide “no fault” compensation to any study subject injured in the clinical trial.

Prior to commencing a clinical trial, the sponsor must obtain a clinical trial authorization from the competent authority, and a positive opinion from an independent ethics committee. The application for a clinical trial authorization must include, among other things, a copy of the trial protocol and an investigational medicinal product dossier containing information about the manufacture and quality of the medicinal product under investigation. Under the new Regulation on Clinical Trials, which took effect in January 2022, with a 3-year transition period, there will be a centralized application procedure where one national authority takes the lead in reviewing the application and the other national authorities have only a limited involvement. At the same time as the health authority approval for the new clinical trial is obtained for the respective countries also the ethics committee of the respective countries approve the new clinical trial, during the same approval process. As of January 31, 2023, new clinical trial authorization applications must be submitted centrally under the Clinical Trial Regulation. Any substantial changes to the trial protocol or other information submitted with the clinical trial applications must be notified to or approved by the relevant competent authorities and ethics committees through a centralized application. With the Clinical Trial Regulation increased requirements for making Clinical Trial Applications publicly available are established, some sections may be redacted. Medicines used in clinical trials must be manufactured in accordance with cGMP. Other national and European Union-wide regulatory requirements also apply.

During the development of a medicinal product, the EMA and national medicines regulators within the European Union provide the opportunity for dialogue and guidance on the development program. At the EMA level, this is usually done in the form of scientific advice, which is given by the Scientific Advice Working Party of the Committee for Medicinal Products for Human Use, or CHMP. A fee is incurred with each scientific advice procedure. Advice from the EMA is typically provided based on questions concerning, for example, quality (chemistry, manufacturing and controls testing), nonclinical testing and clinical studies, and pharmacovigilance plans and risk-management programs. In accordance with the EMA’s policy, scientific advice will not be legally binding with regard to any future marketing authorization application of the product concerned.

Marketing Authorizations

In order to market a new medicinal product in the European Union, a company must submit and obtain approval from regulators of a marketing authorization application, or MAA. The process for doing this depends, among other things, on the nature of the medicinal product.

The centralized procedure results in a single marketing authorization, or MA, granted by the European Commission that is valid across the EEA (i.e., the European Union as well as Iceland, Liechtenstein and Norway). The centralized procedure is compulsory for human drugs that are: (i) derived from biotechnology processes, such as genetic engineering, (ii) contain a new active substance indicated for the treatment of certain diseases, such as HIV/AIDS, cancer, diabetes, neurodegenerative diseases, autoimmune and other immune dysfunctions and viral diseases, (iii) officially designated orphan medicines and (iv) advanced-therapy medicines, or ATMPs, such as gene therapy, somatic cell therapy or tissue-engineered medicines. The centralized procedure may at the request of the applicant also be used in certain other cases. Therefore, the centralized procedure would be mandatory for the products we are developing.

The Committee for Advanced Therapies, or CAT, is responsible in conjunction with the CHMP for the evaluation of ATMPs. The CAT is primarily responsible for the scientific evaluation of ATMPs and prepares a draft opinion on the quality, safety and efficacy of each ATMP for which a marketing authorization application is submitted. The CAT's opinion is then taken into account by the CHMP when giving its final recommendation regarding the authorization of a product in view of the balance of benefits and risks identified. Although the CAT's draft opinion is submitted to the CHMP for final approval, the CHMP may depart from the draft opinion, if it provides detailed scientific justification. The CHMP and CAT are also responsible for providing guidelines on ATMPs and have published numerous guidelines, including specific guidelines on gene therapies and cell therapies. These guidelines provide additional guidance on the factors that the EMA will consider in relation to the development and evaluation of ATMPs and include, among other things, the preclinical studies required to characterize ATMPs; the manufacturing and control information that should be submitted in a marketing authorization application; and post-approval measures required to monitor patients and evaluate the long term efficacy and potential adverse reactions of ATMPs. Although these guidelines are not legally binding, we believe that our compliance with them is likely necessary to gain and maintain approval for any of our product candidates.

Under the centralized procedure in the European Union, the maximum timeframe for the evaluation of an MAA by the EMA is 210 days. This excludes so-called clock stops, during which additional written or oral information is to be provided by the applicant in response to questions asked by the CHMP. At the end of the review period, the CHMP provides an opinion to the European Commission. If this is opinion favorable, the Commission may then adopt a decision to grant an MA. In exceptional cases, the CHMP might perform an accelerated review of an MAA in no more than 150 days. This is usually when the product is of major interest from the point of view of public health and, in particular, from the viewpoint of therapeutic innovation.

The European Commission may grant a so-called "marketing authorization under exceptional circumstances". Such authorization is intended for products for which the applicant can demonstrate that it is unable to provide comprehensive data on the efficacy and safety under normal conditions of use, because the indications for which the product in question is intended are encountered so rarely that the applicant cannot reasonably be expected to provide comprehensive evidence, or in the present state of scientific knowledge, comprehensive information cannot be provided, or it would be contrary to generally accepted principles of medical ethics to collect such information. Consequently, marketing authorization under exceptional circumstances may be granted subject to certain specific obligations, which may include the following:

- the applicant must complete an identified program of studies within a time period specified by the competent authority, the results of which form the basis of a reassessment of the benefit/risk profile;
- the medicinal product in question may be supplied on medical prescription only and may in certain cases be administered only under strict medical supervision, possibly in a hospital and in the case of a radiopharmaceutical, by an authorized person; and
- the package leaflet and any medical information must draw the attention of the medical practitioner to the fact that the particulars available concerning the medicinal product in question are as yet inadequate in certain specified respects.

A marketing authorization under exceptional circumstances is subject to annual review to reassess the risk-benefit balance in an annual reassessment procedure. Continuation of the authorization is linked to the annual reassessment and a negative assessment could potentially result in the marketing authorization being suspended or revoked. The renewal of a marketing authorization of a medicinal product under exceptional circumstances, however, follows the same rules as a "normal" marketing authorization. Thus, a marketing authorization under exceptional circumstances is granted for an initial five years, after which the authorization will become valid indefinitely, unless the EMA decides that safety grounds merit one additional five-year renewal.

The European Commission may also grant a so-called “conditional marketing authorization” prior to obtaining the comprehensive clinical data required for an application for a full marketing authorization. Such conditional marketing authorizations may be granted for product candidates (including medicines designated as orphan medicinal products), if (i) the risk-benefit balance of the product candidate is positive, (ii) it is likely that the applicant will be in a position to provide the required comprehensive clinical trial data, (iii) the product fulfills an unmet medical need and (iv) the benefit to public health of the immediate availability on the market of the medicinal product concerned outweighs the risk inherent in the fact that additional data are still required.

A conditional marketing authorization may contain specific obligations to be fulfilled by the marketing authorization holder, including obligations with respect to the completion of ongoing or new studies, and with respect to the collection of pharmacovigilance data. Conditional marketing authorizations are valid for one year, and may be renewed annually, if the risk-benefit balance remains positive, and after an assessment of the need for additional or modified conditions and/or specific obligations. The timelines for the centralized procedure described above also apply with respect to the review by the CHMP of applications for a conditional marketing authorization.

The European Union medicines rules expressly permit the EU Member States to adopt national legislation prohibiting or restricting the sale, supply or use of any medicinal product containing, consisting of or derived from a specific type of human or animal cell, such as embryonic stem cells. While the products we have in development do not make use of embryonic stem cells, it is possible that the national laws in certain EU Member States may prohibit or restrict us from commercializing our products, even if they have been granted an EU marketing authorization.

Data Exclusivity

Marketing authorization applications for generic medicinal products do not need to include the results of preclinical and clinical trials, but instead can refer to the data included in the marketing authorization of a reference product for which regulatory data exclusivity has expired. If a marketing authorization is granted for a medicinal product containing a new active substance, that product benefits from eight years of data exclusivity, during which generic marketing authorization applications referring to the data of that product may not be accepted by the regulatory authorities, and a further two years of market exclusivity, during which such generic products may not be placed on the market. The two-year period may be extended to three years if during the first eight years a new therapeutic indication with significant clinical benefit over existing therapies is approved.

There is a special regime for biosimilars, or biological medicinal products that are similar to a reference medicinal product but that do not meet the definition of a generic medicinal product, for example, because of differences in raw materials or manufacturing processes. For such products, the results of appropriate preclinical or clinical trials must be provided, and guidelines from the EMA detail the type of quantity of supplementary data to be provided for different types of biological product. There are no such guidelines for complex biological products, such as gene or cell therapy medicinal products, and so it is unlikely that biosimilars of those products will currently be approved in the European Union. However, guidance from the EMA states that they will be considered in the future in light of the scientific knowledge and regulatory experience gained at the time.

Pediatric Development

In the European Union, companies developing a new medicinal product must agree to a Pediatric Investigation Plan, or PIP, with the EMA during drug development and, at the latest, before submission of a marketing authorization, and must conduct pediatric clinical trials in accordance with that PIP, unless a deferral or waiver applies (e.g., because the relevant disease or condition occurs only in adults). The marketing authorization application for the product must include the results of pediatric clinical trials conducted in accordance with the PIP, unless a waiver applies, or a full or partial deferral has been granted. Products that are granted a marketing authorization on the basis of the pediatric clinical trials conducted in accordance with the PIP are eligible for a six-month extension of the protection under a supplementary protection certificate (if any is in effect at the time of approval) or, in the case of orphan medicinal products, a two-year extension of the orphan market exclusivity. This pediatric reward is subject to specific conditions and is not automatically available when data in compliance with the PIP are developed and submitted.

In the United States, companies developing a new medicinal product must agree to a Pediatric Study Plan, or PSP, with the FDA during development (except for non-oncology medicinal product with an Orphan Drug Designation) and, at the latest, before submission of a marketing authorization application, and must conduct pediatric clinical trials in accordance with that PSP as agreed, unless a deferral or waiver applies (e.g., because the relevant disease or condition occurs only in adults). The marketing authorization application for the product must include the results of pediatric clinical trials conducted in accordance with the PSP, unless a waiver applies, or a full or partial deferral has been granted. Products that are granted a marketing authorization on the basis of the pediatric clinical trials conducted in accordance with the PSP are eligible for a six-month extension of marketing exclusivity (pediatric exclusivity).

Post-Approval Controls

The holder of a marketing authorization must establish and maintain a pharmacovigilance system and appoint an individual qualified person for pharmacovigilance, or QPPV, who is responsible for oversight of that system. Key obligations include expedited reporting of suspected serious adverse reactions and submission of periodic safety update reports, or PSURs.

All new marketing authorization applications must include a risk management plan, or RMP, describing the risk management system that the company will put in place and documenting measures to prevent or minimize the risks associated with the product. The regulatory authorities may also impose specific obligations as a condition of the marketing authorization. Such risk-minimization measures or post-authorization obligations may include additional safety monitoring, more frequent submission of PSURs, or the conduct of additional clinical trials or post-authorization safety studies. RMPs and PSURs are routinely available to third parties requesting access, subject to limited redactions. All advertising and promotional activities for the product must be consistent with the approved summary of product characteristics, and therefore all off-label promotion is prohibited. Direct-to-consumer advertising of prescription medicines is also prohibited in the European Union. Although general requirements for advertising and promotion of medicinal products are established under EU directives, the details are governed by regulations in each EU Member State and can differ from one country to another.

Pricing and Reimbursement in the European Union

Governments influence the price of medicinal products in the European Union through their pricing and reimbursement rules and control of national healthcare systems that fund a large part of the cost of those products to consumers. Some jurisdictions operate positive and negative list systems under which products may only be marketed once a reimbursement price has been agreed. To obtain reimbursement or pricing approval, some of these countries may require the completion of clinical trials that compare the cost-effectiveness of a particular product candidate to currently available therapies. Other EU Member States allow companies to fix their own prices for medicines, but monitor and control company profits. The downward pressure on healthcare costs in general, particularly prescription medicines, has become very intense. As a result, increasingly high barriers are being erected to the entry of new products.

Brexit and the Regulatory Framework in the United Kingdom

On June 23, 2016, the electorate in the United Kingdom voted in favor of leaving the European Union (commonly referred to as ‘‘Brexit’’) and the United Kingdom officially withdrew from the European Union on January 31, 2020. Pursuant to the formal withdrawal arrangements agreed between the United Kingdom and the European Union, the United Kingdom was subject to a transition period until December 31, 2020, or the Transition Period, during which European Union rules continued to apply. A trade and cooperation agreement, or the Trade and Cooperation Agreement, that outlines the future trading relationship between the United Kingdom and the European Union was agreed in December 2020 and formally entered into force on May 1, 2021.

Brexit is influencing the United Kingdom as a place to conduct clinical trials. The European Union’s regulatory environment for clinical trials is being harmonized as part of the Clinical Trial Regulations, which took effect in January 2022, but it is currently unclear as to what extent the United Kingdom will seek to align its regulations with the European Union. Updated clinical trial legislation in the United Kingdom was under public consultation in 2022 but the MHRA is yet to publish the outcome of such consultation. Failure of the United Kingdom to closely align its regulations with the European Union may have an effect on the cost of conducting clinical trials in the United Kingdom as opposed to other countries and/or make it harder to seek a marketing authorization for our product candidates on the basis of clinical trials conducted in the United Kingdom.

In the short term there will be few changes to clinical trials that only have sites in the United Kingdom. The MHRA have confirmed that the sponsor of a clinical trial can be based in the EEA for an initial period following Brexit. Further investigational medicinal products can be supplied directly from the EU/EEA to a trial site in Great Britain without further oversight. Such products will require oversight by the holder of a UK Manufacturing and Import Authorisation but do not currently require recertification. The United Kingdom is now a “third country” for the purpose of clinical trials that have sites in the EEA. For such trials the sponsor/legal representative must be based in the EEA, and the trial must be registered on the EU Clinical Trials Register (including data on sites outside of the EEA).

The data exclusivity periods in the United Kingdom are currently in line with those in the European Union, but the Trade and Cooperation Agreement provides that the periods for both data and market exclusivity are to be determined by domestic law, and so there could be divergence in the future.

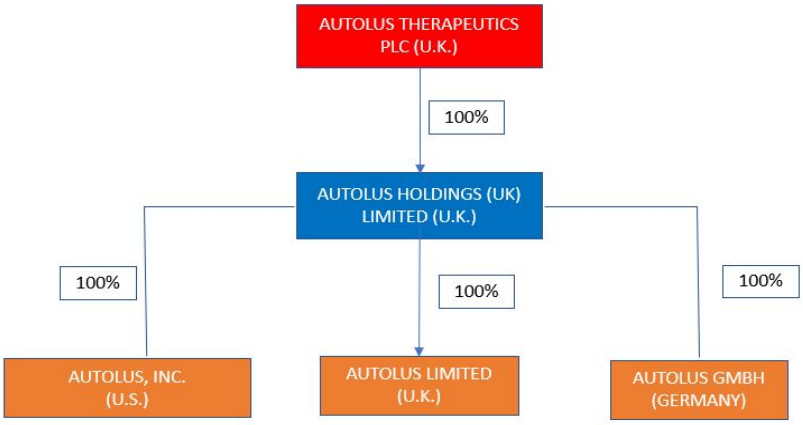
Orphan designation in Great Britain following Brexit is, unlike in the European Union, not available pre-marketing authorization. Applications for orphan designation are made at the same time as an application for a marketing authorization. The criteria to be granted an orphan drug designation are essentially identical to those in the European Union but based on the prevalence of the condition in Great Britain. It is therefore possible that conditions that were or would have been designated as orphan conditions in Great Britain prior to the end of the Transition Period are or would no longer be and that conditions that were not or would not have been designated as orphan conditions in the European Union will be designated as such in Great Britain.

It is currently unclear what the United Kingdom regulatory arrangements will be in the future. The MHRA have taken steps to build relationships and partnerships with other global regulators such as joining the ACCESS group (Canada, Australia, Switzerland and Singapore) and taking part in Project Orbis, which is an FDA-led project. The future regulatory system and these partnerships may provide alternative routes to market in the United Kingdom and beyond.

The Retained EU Law (Revocation and Reform) Bill 2022, which is currently progressing through the Parliament of the United Kingdom and seeks to allow the Government of the United Kingdom to repeal or replace certain European Union law that was incorporated into the law of the United Kingdom effective as of the end of the transition period, increases the likelihood of further regulatory divergence between the European Union and United Kingdom, which could lead to further disruption in the trade of goods between the United Kingdom and European Union.

C. Organizational structure.

The following diagram illustrates our corporate structure:



In December 2020, Autolus Limited transferred, by way of an interim distribution in kind to its immediate parent, Autolus Holdings (UK) Limited, the entire issued share capital of its wholly owned subsidiary, Autolus Inc., our U.S. subsidiary which was incorporated under the laws of the State of Delaware in October 2017. Autolus Limited transferred all of its German assets to Autolus GmbH in December 2020.

D. Property and equipment.

Our corporate headquarters are located at the Mediaworks, 191 Wood Lane, White City, London W12 7FP, United Kingdom, where we lease 32,673 square feet of office and laboratory space. We entered the lease in November 2018 with a rent-free period at the beginning of the lease term until August 2020. In addition, we have the option to terminate the lease in November 2026.

Our prior corporate headquarters were located in Forest House, White City, London. In September 2015, we entered into a lease consisting of approximately 14,908 square feet of office space in Forest House. In September 2020, the landlord exercised its option to terminate our lease on one year's notice; consequently, the lease terminated in September 2021, at which time the landlord paid us a break-lease fee. This building was vacated in 2021 and all related activity moved to our Mediaworks corporate headquarters.

In September 2017, we executed an arrangement with Cell Therapy Catapult Limited to lease a manufacturing suite at the Cell and Gene Therapy Catapult manufacturing center in Stevenage, United Kingdom, or the Catapult, for a term through May 2021, at which time we renewed the lease. The lease had a six-month rent-free period.

In October 2018, we entered into a sublease for 27,502 square feet of office space in Rockville, Maryland. On February 27, 2020, we terminated the sublease of this office space and concurrently entered into a direct lease with the building owner for the same premises. The lease is non-cancellable and is scheduled to terminate in March 2025.

In December 2018, we executed an additional lease arrangement with Cell Therapy Catapult Limited for additional manufacturing space at the Catapult for a term through September 2023, at which time we have the option to renew or terminate the lease.

In January 2019, we entered into a lease for 84,264 square feet of office and manufacturing space in Rockville, Maryland, under which the lease term commenced in August 2020 and expires in June 2036. The lease agreement required us to enter into a lease provided that the landlord completed the required leasehold improvements described in the agreement; the improvements were completed in August 2020. In March 2021, following a strategic review of our manufacturing plan, we terminated this lease by mutual consent with the landlord. In connection with this lease termination, the landlord paid us a one-time termination fee.

In February 2019, we entered into a lease for a manufacturing facility, consisting of approximately 39,558 square feet, in Enfield, United Kingdom. The lease term is 15 years, commencing in February 2019, with an option to terminate the lease in February 2029. We initially planned on initiating manufacturing activities at this facility in 2020; however, following a strategic review of our manufacturing plan, we chose to discontinue the fit-out of manufacturing capability at the Enfield facility in December 2019. In March 2021, one of the units was split in two separate units and the Company surrendered one of those units back to the landlord. In October 2021, we subleased a portion of the facility to third party tenants over lease terms from October 2021 to February 2029 and October 2026, respectively.

In addition, in May 2020, we executed an arrangement with Cell Therapy Catapult Limited to lease a third manufacturing suite at the Catapult for a term through April 2024. In July 2022 we and Cell Therapy Catapult Limited mutually agreed: (i) to extend the lease term of a manufacturing suite leased by us from April 2024 to February 2025, and (ii) to reduce the lease term of a different manufacturing suite leased by us from July 2024 to June 2023.

In September 2021, we entered into an arrangement with Forge Life Sciences Nominee, an affiliate of the Reef Group, for the design, construction and lease of a new manufacturing facility in Stevenage, UK. The 70,000 square foot facility is being built by Merit Holdings Limited as general contractor. Under our arrangement, the landlord will lease the facility to us on agreed terms, upon satisfaction of certain conditions and completion of construction. In November 2022, the landlord provided access to the first of three clean rooms in the facility, thus meeting the definition of a lease in accordance to ASC 842. The remaining portion of the facility will be handed over by the landlord upon satisfaction of certain conditions and completion of the remaining construction. On full fit out, this new manufacturing facility will have a cGMP cell manufacturing capacity of approximately 2,000 batches a year. We anticipate that the size and layout of the new facility will allow for further increases in this capacity.

In order to commence the scale up of manufacturing capability, an administrative office and training facility was set up at Unit 10, Gateway 1000, Arlington Business Park in Stevenage adjacent to the Catapult facility on the GSK Campus. This office and training space is essential for staff augmentation and cell manufacturing and quality control training in support of our new manufacturing facility fit out and manufacturing commencement. The current lease expires in 2025, when the unit is likely to be vacated and all staff relocated to the new facility.

In order to support local activities, we hold a short-term lease office in Basel, which currently expires in January 2024, and a similar lease for an office in Munich to support our commercial presence, which is renewed annually.

We anticipate leasing additional office and manufacturing space as we add employees, and we believe that suitable additional or substitute space will be available as needed to accommodate any such expansion of our operations.

Item 4A. Unresolved Staff Comments.

Not applicable.

Item 5. Operating and Financial Review and Prospects.

The following discussion and analysis of our financial condition and results of operations should be read together with our consolidated financial statements and related notes appearing elsewhere in this Annual Report. Some of the information contained in this discussion and analysis or set forth elsewhere in this Annual Report, including information with respect to our plans and strategy for our business and related financing, includes forward-looking statements that involve risks and uncertainties. As a result of many factors, including those set forth in the Item 3.D. "Risk Factors" section of this Annual Report, our actual results could differ materially from the results described in or implied by these forward-looking statements. Please also see the section titled "Cautionary Statement Regarding Forward-Looking Statements."

We maintain our books and records in pounds sterling, our results are subsequently converted to U.S. dollars and we prepare our consolidated financial statements in accordance with U.S. GAAP. All references in this Annual Report to "$" are to U.S. dollars and all references to "£" are to pounds sterling. Our consolidated balance sheets as of December 31, 2022 and 2021 have been translated from pounds sterling into U.S. dollars at the rate of £1.00 to $1.2090 and £1.00 to $1.3510, respectively. Our consolidated statements of operations and cash flows for the years ended December 31, 2022, 2021 and 2020, have been translated from pounds sterling to U.S. dollars at the rate of £1.00 to $1.2374, £1.00 to $1.3755 and £1.00 to $1.2862, respectively. These translations should not be considered representations that any such amounts have been, could have been or could be converted into U.S. dollars at that or any other exchange rate as of that or any other date.

A. Operating results.

Overview

We are a biopharmaceutical company developing next-generation programmed T cell therapies for the treatment of cancer. Using our broad suite of proprietary and modular T cell programming technologies, we are engineering precisely targeted, controlled and highly active T cell therapies that are designed to better recognize cancer cells, break down their defense mechanisms and attack and kill these cells. We believe our programmed T cell therapies have the potential to be best-in-class and offer cancer patients substantial benefits over the existing standard of care, including the potential for cure in some patients.

Recent Developments

Obe-cel updates:

Obecabtagene autoleucel (obe-cel) in relapsed / refractory (r/r) adult ALL – FELIX Trial

In December 2022, we announced the presentation of our interim analysis from the pivotal FELIX Phase 2 clinical trial, and that we met our primary endpoint. We expect data from the FELIX study to form the basis of a BLA submission for obe-cel to the FDA at the end of 2023. We expect to present longer term follow up data from the FELIX study at the 65th ASH Annual Meeting in late 2023 as well as at additional medical conferences in the first half of 2024.

Updates regarding obe-cel trials in collaboration with University College London

- *Obe-cel in r/r adult B-ALL patients – Phase 1 ALLCAR19 Trial*

We presented long term follow-up data from the Phase 1 ALLCAR19 Trial at the 64th ASH Annual Meeting in December 2022, which demonstrated that 35% of adult B-ALL patients in the study remained in complete remission at a median follow up of three years without the need for additional anti-leukemia therapy. We expects to announce additional data from this trial in 2023.

- *Obe-cel in r/r B-NHL and CLL patients – Phase 1 ALLCAR19 Extension Trial*

We presented data at the 64th ASH Annual Meeting in December 2022 which demonstrated the potentially best-in-class profile of obe-cel supported by the data observed in B-cell non-Hodgkin lymphoma (NHL), with continued high levels of clinical activity paired with an encouraging tolerability profile across diffuse large B-cell lymphoma (DLBCL), mantle cell lymphoma (MCL), follicular lymphoma (FL) and chronic lymphocytic leukemia (CLL). We continue to enroll patients in this trial, and and expect to announce additional data from the trial in 2023.

- *Obe-cel in Primary CNS Lymphoma patients – Phase 1 CAROUSEL Trial*

Data presented at the EHA 2022 Congress in June 2022 demonstrated first activity in Primary CNS Lymphoma. We continue to enroll patients in the trial, and we expect to announce additional data from the trial in 2023.

- *AUTO1/22 in pediatric B-ALL patients – Phase 1 CARPALL Trial*

Data were presented at the 64th ASH Annual Meeting in December 2022 by our UCL collaborators, which showed encouraging response rates in patients ineligible for commercial CAR T therapy, with 83% of patients achieving minimal residual disease (MRD) negative complete responses (CRs). Importantly, there were no observed antigen negative relapses. We expect to announce additional data from the trial in 2023.

Update Regarding Early-stage Pipeline

- *AUTO4 in T Cell Lymphoma patients – Phase 1/2 LibrA T1 Trial*

We have worked to optimize the manufacturing process for AUTO4, and are enrolling additional patients into the LibrA T1 Trial to test this manufacturing change. Data presented at the 64th ASH Annual Meeting in December 2022 demonstrated that some patients have experienced durable metabolic CRs, including one patient up to the one-year mark. We expect to announce additional data from the trial in 2023.

- *AUTO8 in Multiple Myeloma – Phase 1 MCARTY Trial*

AUTO8 is next-generation product candidate for multiple myeloma, which comprises two independent CARs for the multiple myeloma targets, BCMA and CD19. In collaboration with UCL, we initiated a trial in the first quarter of 2022. Patient enrollment is ongoing, and initial data is expected to be reported in 2023.

- *AUTO6NG in Neuroblastoma*

AUTO6NG contains a CAR that targets GD2 alongside additional programming modules to enhance the activity and persistence. In collaboration with UCL, we are planning on initiating a clinical trial of AUTO6NG in 2023.

Since our inception, we have incurred significant operating losses. For the years ended December 31, 2022, 2021, and 2020, we incurred net losses of $148.8 million, $142.1 million, and $142.1 million, respectively. As of December 31, 2022, we had an accumulated deficit of $670.2 million.

We expect to continue to incur significant expenses for the foreseeable future as we advance our product candidates through preclinical and clinical development, seek regulatory approval and pursue commercialization of any approved product candidates. In addition, if we obtain marketing approval for any of our product candidates, we expect to incur significant commercialization expenses related to product manufacturing, marketing, sales and distribution. In addition, we may incur expenses in connection with the in-license or acquisition of additional product candidates. Furthermore, we have incurred and expect to continue to incur, additional costs associated with operating as a public company, including significant legal, accounting, investor relations and other expenses that we did not incur as a private company.

Until such time as we can generate significant revenue from product sales, if ever, we expect to finance our operations through the sale of equity, strategic financings or other capital sources, including potential collaborations with other companies or other strategic transactions. We may be unable to raise additional funds or enter into such other agreements or arrangements when needed on favorable terms, or at all. If we fail to raise capital or enter into such agreements as, and when, needed, we may have to significantly delay, scale back or discontinue the development and commercialization of one or more of our drug candidates or delay our pursuit of potential in-licenses or acquisitions.

Based on our current clinical development plans, we believe our existing cash and cash equivalents of $382.4 million at December 31, 2022, will be able to fund our current and planned operating expenses and capital expenditure requirements through at least the next twelve months from the date of this Annual Report. The forecast of cash resources is forward-looking information that involves risks and uncertainties, and the actual amount of our expenses could vary materially and adversely as a result of a number of factors. We have based these estimates on assumptions that may prove to be wrong, and our expenses could prove to be significantly higher than we currently anticipate. Management does not know whether additional financing will be on terms favorable or acceptable to us when needed, if at all. If adequate additional funds are not available when required, or if we are unsuccessful in entering into partnership agreements for further development of our product candidates, management may need to curtail its development efforts and planned operations.

Components of Our Results of Operations

Grant Income

Grant income consists of proceeds from government research grants used to perform specific research and development activities. We recognize grant income over the period in which we recognize the related costs covered under the terms and conditions of the grant. We have received grants from the U.K. government, which are repayable under certain circumstances, including breach or noncompliance with the terms of the grant. For grants with refund provisions, we review the grant to determine the likelihood of repayment. If the likelihood of repayment of the grant is determined to be remote, then the grant is recognized as grant income.

License Revenue

We account for our revenue pursuant to the provisions of Accounting Standards Codification, or ASC Topic 606, *Revenue from Contracts with Customers* (“ASC Topic 606”).

We have no products approved for commercial sale and have not generated any revenue from commercial product sales. The total revenue to date has been generated principally from license agreements. During the year ended December 31, 2022, we entered into a small number of license agreements which included non-refundable upfront license fees, options for future commercial licenses, payments based upon achievement of clinical development and regulatory objectives, payments based upon achievement of certain levels of product sales, and royalties on licensed product sales.

In determining the appropriate amount of revenue to be recognized as we fulfill our obligations under our agreements, we perform the following steps: (i) identification of the promised goods or services in the contract; (ii) determination of whether the promised goods or services are performance obligations, including whether they are distinct in the context of the contract; (iii) measurement of the transaction price, including the constraint on variable consideration; (iv) allocation of the transaction price to the performance obligations based on estimated selling prices; and (v) recognition of revenue when (or as) we satisfy each performance obligation.

License Fees and Multiple Element Arrangements

If a license to our intellectual property is determined to be distinct from the other performance obligations identified in the arrangement, we recognize revenues from non-refundable, upfront fees allocated to the license at such time as the license is transferred to the licensee and the licensee is able to use, and benefit from the license. For licenses that are bundled with other promises, we utilize judgment to assess the nature of the combined performance obligations to determine whether the combined performance obligations are satisfied over time or at a point in time and, if over time, the appropriate method of measuring progress for purposes of recognizing revenue from non-refundable, upfront fees. We evaluate the measure of progress each reporting period and, if necessary, adjust the measure of performance and related revenue recognition.

Appropriate methods of measuring progress include output methods and input methods. In determining the appropriate method for measuring progress, we consider the nature of service that we promise to transfer to the customer. When we decide on a method of measurement, we will apply that single method of measuring progress for each performance obligation satisfied over time and will apply that method consistently to similar performance obligations and in similar circumstances.

If an arrangement is determined to contain customer options that allow the customer to acquire additional goods or services, the goods and services underlying the customer options that are not determined to be material rights are not considered to be performance obligations at the outset of the arrangement, as they are contingent upon option exercise. We evaluate the customer options for material rights, or options to acquire additional goods or services for free or at a discount. If the customer options are determined to represent a material right, the material right is recognized as a separate performance obligation at the outset of the arrangement. We allocate the transaction price to material rights based on the relative standalone selling price, which is determined based on any identified discount and the probability that the customer will exercise the option. Amounts allocated to a material right are not recognized as revenue until, at the earliest, the option is exercised.

Contingent Research Milestone Payments

ASC Topic 606 constrains the amount of variable consideration included in the transaction price in that either all, or a portion, of an amount of variable consideration should be included in the transaction price. The variable consideration amount should be included only to the extent that it is probable that a significant reversal in the amount of cumulative revenue recognized will not occur when the uncertainty associated with the variable consideration is subsequently resolved. The assessment of whether variable consideration should be constrained is largely a qualitative one that has two elements: the likelihood of a change in estimate, and the magnitude thereof. Variable consideration is not constrained if the potential reversal of cumulative revenue recognized is not significant, for example.

If the consideration in a contract includes a variable amount, we will estimate the amount of consideration in exchange for transfer of promised goods or services. The consideration also can vary if our entitlement to the consideration is contingent on the occurrence or non-occurrence of a future event. We consider contingent research milestone payments to fall under the scope of variable consideration, which should be estimated for revenue recognition purposes at the inception of the contract and reassessed ongoing at the end of each reporting period.

We assess whether contingent research milestones should be considered variable consideration that should be constrained and thus not part of the transaction price. This includes an assessment of the probability that all or some of the milestone revenue could be reversed when the uncertainty around whether or not the achievement of each milestone is resolved, and the amount of reversal could be significant.

U.S. GAAP provides factors to consider when assessing whether variable consideration should be constrained. All of the factors should be considered, and no factor is determinate. We consider all relevant factors.

Royalty Revenue

For arrangements that include sales-based royalties, including milestone payments based on the level of sales, and the license is deemed to be the predominant item to which the royalties relate, we recognize revenue at the later of (i) when the related sales occur, or (ii) when the performance obligation to which some or all of the royalty has been allocated has been satisfied (or partially satisfied).

Operating Expenses

Research and Development Expenses

Research and development expenses consist of costs incurred in connection with the research and development of our product candidates, which are partially offset by research and development expenditure tax credits provided by His Majesty's Revenue & Customs, or HMRC. We expense research and development costs as incurred. These expenses include:

- expenses incurred under agreements with contract research organizations, or CROs, as well as investigative sites and consultants that conduct our clinical trials, preclinical studies and other scientific development services;
- manufacturing scale-up expenses and the cost of acquiring and manufacturing preclinical and clinical trial materials;
- employee-related expenses, including salaries, related benefits, travel and share-based compensation expense for employees engaged in research and development functions;
- expenses incurred for outsourced professional scientific development services;
- costs for laboratory materials and supplies used to support our research activities;
- allocated facilities costs, depreciation and other expenses, which include rent and utilities; and
- upfront, milestone and management fees for maintaining licenses under our third-party licensing agreements.

We recognize external development costs based on an evaluation of the progress to completion of specific tasks using information provided to us by our service providers.

Our direct research and development expenses are tracked on a program-by-program basis for our product candidates and consist primarily of external costs, such as fees paid to outside consultants and CROs in connection with our preclinical development, manufacturing and clinical development activities. Our direct research and development expenses by program also include fees incurred under license agreements. We do not allocate employee costs or facility expenses, including depreciation or other indirect costs, to specific programs because these costs are deployed across multiple programs and, as such, are not separately classified. We use internal resources primarily to oversee research and development as well as for managing our preclinical development, process development, manufacturing and clinical development activities.

Research and development activities are central to our business model. Product candidates in later stages of clinical development generally have higher development costs than those in earlier stages of clinical development, primarily due to the increased size and duration of later-stage clinical trials. As a result, we expect that our research and development expenses will increase substantially over the next few years as we increase personnel costs, initiate and conduct additional clinical trials and prepare regulatory filings related to our product candidates. We also expect to incur additional expenses related to milestone, royalty payments and maintenance fees payable to third parties with whom we have entered into license agreements to acquire the rights related to our product candidates.

The successful development and commercialization of our product candidates is highly uncertain. At this time, we cannot reasonably estimate or know the nature, timing and costs of the efforts that will be necessary to complete the clinical development of any of our product candidates or when, if ever, material net cash inflows may commence from sales of any of our product candidates. This uncertainty is due to the numerous risks and uncertainties associated with development and commercialization activities, including the uncertainty of:

- the scope, progress, outcome and costs of our clinical trials and other research and development activities, including establishing an appropriate safety profile with IND-directed studies;
- successful patient enrollment in, and the initiation and completion of, clinical trials;
- the timing, receipt and terms of any marketing approvals from applicable regulatory authorities;
- establishing commercial manufacturing capabilities or making arrangements with third-party manufacturers;
- development and timely delivery of commercial-grade drug formulations that can be used in our clinical trials and for commercial manufacturing;
- obtaining, maintaining, defending and enforcing patent claims and other intellectual property rights;
- significant and changing government regulation;
- launching commercial sales of our product candidates, if and when approved, whether alone or in collaboration with others;
- maintaining a continued acceptable safety profile of the product candidates following approval; and
- significant competition and rapidly changing technologies within the biopharmaceutical industry.

We may never succeed in achieving regulatory approval for any of our product candidates. We may obtain unexpected results from our clinical trials. We may elect to discontinue, delay or modify clinical trials of some product candidates or focus on others. Any changes in the outcome of any of these variables with respect to the development of our product candidates in clinical development could mean a significant change in the costs and timing associated with the development of these product candidates. For example, if the EMA, the FDA, or another regulatory authority were to delay our planned start of clinical trials or require us to conduct clinical trials or other testing beyond those that we currently expect or if we experience significant delays in enrollment in any of our planned clinical trials, we could be required to expend significant additional financial resources and time on the completion of clinical development of that product candidate. Commercialization of our product candidates will take several years and millions of dollars in development costs.

General and Administrative Expenses

General and administrative expenses consist primarily of salaries, related benefits, travel and share-based compensation expense for personnel in executive, finance, legal and administrative functions. General and administrative expenses also include allocated facility-related costs, patent filing and prosecution costs and professional fees for marketing, insurance, legal, consulting, accounting and audit services.

We anticipate that our general and administrative expenses will increase in the future as we increase our headcount to support the planned development of our product candidates. Additionally, if we believe a regulatory approval of one of our product candidates appears likely, we would anticipate an increase in payroll and expense as a result of our preparation for commercial operations, especially as it relates to the sales and marketing of our product candidate.

We have experienced, and expect to continue to experience, increased expense with being a public company, including increased accounting, audit, legal, regulatory and compliance costs associated with maintaining compliance with Nasdaq listing rules and SEC requirements, director and officer insurance premiums, as well as higher investor and public relations costs.

Other (Expense) / Income

Other income consists primarily of interest income earned on our cash balances held at a commercial bank and foreign currency transaction gains as well as gains arising from the termination of leases. Other expense consists primarily of foreign currency transaction losses.

Interest Expense

Interest expense consists primarily of non-cash interest expense arising from amortization of the liability related to future royalties and sales milestones, pursuant to our Collaboration Agreement with Blackstone, using the effective interest rate method. On a quarterly basis, we assess the expected present value of the future Blackstone Development payment which may be received by us and future royalties and sales milestone payments to Blackstone which may be paid by us. To the extent the amount or timing of such receipts or payments is materially different than our previous estimates we record a cumulative catch-up adjustment to the liability related to future royalties and sales milestones. The adjustment to the carrying amount is recognized as an adjustment to finance expense in the period in which the change in estimate occurred.

Interest Income

Interest income consists primarily of interest received from banks on our cash and cash equivalents balances. We invest funds in a variety of short-term interest-bearing instruments.

Income Tax Benefit

We are subject to corporate taxation in the United Kingdom, United States, Germany and Switzerland. Due to the nature of our business, we have generated losses since inception. Our income tax benefit recognized represents the sum of the research and development tax credits recoverable in the United Kingdom and income tax payable in the United States.

As a company that carries out extensive research and development activities, we benefit from the U.K. research and development tax credit regime under the scheme for small or medium-sized enterprises, or SMEs, and also claim a Research and Development Expenditure Credit, or RDEC, to the extent that our projects are grant funded. Under the SME regime, we are able to surrender some of our trading losses that arise from our qualifying research and development activities for a cash rebate of up to 33.35% of such qualifying research and development expenditure. The UK Government recently enacted changes which reduce the potential cash rebate under the SME regime to 18.6% for qualifying expenditure incurred on or after April 1, 2023. The net tax benefit of the RDEC reflected in our financial statements for the year ended December 31, 2022 and 2021, was 10.5%, respectively.

Following recent enacted changes by the UK Government the net tax benefit of the RDEC for qualifying expenditure incurred on or after April 1, 2023 has been increased to 15%. We currently meet the conditions of the SME regime, but also can make claims under the RDEC regime to the extent that our projects are grant funded. We may not be able to continue in the future to qualify as a small or medium-sized enterprise under the SME Program, based on size criteria concerning employee headcount, turnover and gross assets. If we cease to qualify under the SME regime we may make a claim under the RDEC regime. It should be noted, however, that the types of qualifying expenditure in respect of which we may make claims under the RDEC Program are more restricted than under the SME Program (for example, it may be the case that certain subcontracted costs in respect of which claims may be made under the SME Program do not qualify for relief under the RDEC Program).

Un-surrendered U.K. losses may be carried forward indefinitely to be offset against future taxable profits, subject to numerous utilization criteria and restrictions. The amount that can be offset each year is limited to £5.0 million plus an incremental 50% of United Kingdom taxable profits. After accounting for tax credits receivable, we had accumulated tax losses for carry forward in the U.K. of $320.8 million at December 31, 2022 and $278.6 million at December 31, 2021. No deferred tax assets are recognized on our U.K. losses and tax credit carryforwards because there is currently no indication that we will make sufficient taxable profits to utilize these tax losses and tax credit carryforwards. We carry a $2.1 million deferred tax asset balance related to the U.S. entity at December 31, 2022. We have recorded a valuation allowance against the net deferred tax asset where the recoverability due to future taxable profits is unknown. The UK government announced that the rate of corporation tax would increase to 25% in 2023, with lower rates and tapered relief to be applied to companies with profits below £250,000.

In the event we generate profits in the future, we may benefit from the United Kingdom “patent box” regime that allows profits attributable to revenues from patents or patented products to be taxed at an effective rate of 10%.

Value Added Tax, or VAT, is broadly charged on all taxable supplies of goods and services by VAT-registered businesses. Under current rates, an amount of 20% of the value, as determined for VAT purposes, of the goods or services supplied is added to all sales invoices and is payable to HMRC. Similarly, VAT paid on purchase invoices is generally reclaimable from HMRC.

Results of Operations

Comparison of Years Ended December 31, 2022 and 2021

The following table summarizes our results of operations for the years ended December 31, 2022 and 2021 (in thousands).

	Year Ended December 31,		
	2022	**2021**	**Change**
Grant income	$ 166	$ 823	$ (65
License revenue	6,194	1,507	4,68
Operating expenses:			
Research and development	(141,992)	(134,789)	(7,20
General and administrative	(31,899)	(31,865)	(3
Loss on disposal of leasehold improvements	(515)	(676)	16
Total operating expenses, net	**(168,046)**	**(165,000)**	**(3,04**
Other income (expense):			
Interest income	1,708	262	1,44
Interest expense	(8,905)	(1,105)	(7,80
Other income (expense)	2,038	(145)	2,18
Total other expense, net	**(5,159)**	**(988)**	**(4,17**
Net loss before income tax	**(173,205)**	**(165,988)**	**(7,21**
Income tax benefit	24,366	23,892	47
Net loss attributable to ordinary shareholders	**$ (148,839)**	**$ (142,096)**	**$ (6,74**

Grant Income

Grant income decreased to $0.2 million for the year ended December 31, 2022 from $0.8 million for the year ended December 31, 2021. The decrease in grant income of $0.6 million was due to a corresponding decrease in reimbursable expenditures.

License Revenue

License revenue increased to $6.2 million for the year ended December 31, 2022, primarily due to a third party, Moderna Therapeutics, exercising its option to license certain of our intellectual property, which triggered an option exercise fee, and our entry into a license agreement with Bristol Myers Squibb which included recognition of a nonrefundable upfront payment. During the year ended December 31, 2021, we recognized $1.5 million of license revenue relating to the grant of the license to Moderna.

Research and Development Expenses

The following tables provide additional detail on our research and development expenses (in thousands):

	Year Ended December 31,		
	2022	**2021**	**Change**
	(unaudited in thousands)		
Direct research and development expenses			
B cell malignancies (Obe-cel, AUTO1/22 & AUTO3)	$ 42,597	$ 27,135	$ 15,462
Other projects (AUTO4, AUTO5, AUTO6, AUTO7 & AUTO8)	2,920	4,244	(1,324)
Total direct research and development expense	**45,517**	**31,379**	**14,138**
Research and development expense and unallocated costs:			
Personnel related (including share-based compensation)	53,762	54,228	(466)
Indirect research and development expense	42,713	49,182	(6,469)
Total research and development expenses	**$ 141,992**	**$ 134,789**	**$ 7,203**

Research and development expenses increased by $7.2 million to $142.0 million for the year ended December 31, 2022 from $134.8 million for the year ended December 31, 2021 primarily due to:

- an increase of $11.6 million in clinical costs and manufacturing costs primarily relating to our obe-cel clinical product candidate,
- an increase of $0.4 million in legal fees and professional consulting fees in relation to our research and development activities,
- an increase of $0.2 million related to the development of our information technology infrastructure and support for information systems related to the conduct of clinical trials and manufacturing operations,
- an increase of $0.2 million in cell logistics costs,
- a decrease of $3.7 million in facilities costs related to the termination and closure of our US manufacturing facility in 2021 and a shift in our overall manufacturing strategy,
- a decrease of $0.9 million in depreciation and amortization related to property and equipment and intangible assets, and
- a decrease of $0.6 million in salaries and other employment costs including share-based compensation expenses, which is mainly due to lower exchange rates used upon consolidation for the year ended December 31, 2022 compared to the year ended December 31, 2021, offset by an increase in employee headcount engaged in research and development activities.

General and Administrative Expenses

General and administrative expenses remained consistent at $31.9 million for the year ended December 31, 2022 and 2021, respectively primarily due to:

- an increase of $1.4 million, in salaries and other employment costs including share-based compensation expenses, is mainly driven by an increase in the average number of employees engaged in general and administrative activities;
- an increase of $0.3 million primarily related to information technology costs;
- a net increase of $0.1 million in legal fees and professional consulting fees in relation to our general and administrative activities, which is offset against lower cost for director and officer insurance;
- a decrease of $1.0 million of commercial preparation costs due to the timing of related activities;
- a decrease of $0.4 million in facilities costs related to the termination of certain lease agreements in the prior year; and
- a decrease of $0.4 million in depreciation and amortization related to property and equipment and intangible assets.

Loss on Disposal of Leasehold Improvements

We incurred a loss on disposal of leasehold improvements of $0.5 million related to those leasehold improvements which are no longer being utilized at one of our Cell Therapy Catapult Limited leased facilities in Stevenage, United Kingdom for the year ended December 31, 2022. For the year ended December 31, 2021, we incurred a loss on disposal of leasehold improvements of $0.7 million related to the leasehold improvements no longer being utilized in the facility in White City, London, United Kingdom.

Interest Income

Interest income increased to $1.7 million for the year ended December 31, 2022, as compared to $0.3 million for the year ended December 31, 2021. The increase in interest income of $1.4 million primarily relates to the increase in interest rates on our interest-bearing bank accounts and short-term investments during the year ended December 31, 2022 as compared to the prior year.

Interest Expense

Interest expense increased to $8.9 million for the year ended December 31, 2022 as compared to $1.1 million for the year ended December 31, 2021. Interest expense is primarily related to the liability for future royalties and sales milestones, net which arose upon the execution of our strategic collaboration and financing agreement with Blackstone in November 2021. The increase in interest expense for the year ended December 31, 2022 is primarily driven by the full year of the liability related to the Blackstone collaboration in 2022 compared to a partial year liability accrued in 2021.

Other Income (Expense), Net

Other income (expense), net, increased to an income of $2.0 million for the year ended December 31, 2022 from an expense of $0.1 million for the year ended December 31, 2021. During the year ended December 31, 2022, we recognized a foreign exchange gain of $1.7 million, sublease income of $0.2 million and other income of $0.1 million. This compares to an expense of $0.1 million for the year ended December 31, 2021 which included a foreign exchange loss of $2.2 million offset by a gain on lease terminations of $2.0 million and other income of $0.1 million.

Income Tax Benefit

Income tax benefit increased to $24.4 million for the year ended December 31, 2022 from $23.9 million for the year ended December 31, 2021 due to an increase in qualifying research and development expenditures for the period.

Comparison of Years Ended December 31, 2021 and 2020

The following table summarizes our results of operations for the years ended December 31, 2021 and 2020 (in thousands).

	Year Ended December 31,		
	2021	**2020**	**Change**
Grant income	$ 823	$ 1,473	$ (650)
License revenue	1,507	242	1,265
Operating expenses:			
Research and development	(134,789)	(134,888)	99
General and administrative	(31,865)	(34,972)	3,107
Loss on disposal of leasehold improvements	(676)	—	(676)
Total operating expenses, net	**(165,000)**	**(168,145)**	**3,145**
Other income (expense):			
Interest income	262	536	(274)
Other (expense) income	(145)	1,352	(1,497)
Interest expense	(1,105)	—	(1,105)
Total other (expense) income, net	**(988)**	**1,888**	**(2,876)**
Net loss before income tax	**(165,988)**	**(166,257)**	**269**
Income tax benefit	23,892	24,163	(271)
Net loss attributable to ordinary shareholders	**$ (142,096)**	**$ (142,094)**	**$ (2)**

Grant Income

Grant income decreased to $0.8 million for the year ended December 31, 2021 from $1.5 million for the year ended December 31, 2020. The decrease in grant income of $0.7 million was due to a corresponding decrease in reimbursable expenditures.

License Revenue

The $1.5 million of license revenue relates to the grant of a license to Moderna during the year ended December 31, 2021, compared to $0.2 million in license revenue relating to the grant of a license to an investee company of Syncona, our principal shareholder, for the year ended December 31, 2020.

Research and Development Expenses

The following table summarizes our research and development expenses incurred by program:

	Year Ended December 31,		2021-2020
	2021	**2020**	**Change**
	(unaudited, in thousands)		
Direct research and development expenses			
B cell malignancies (Obe-cel, AUTO1/22 & AUTO3)	$ 27,135	$ 29,335	$ (2,200)
Other projects (AUTO4, AUTO5, AUTO6, AUTO7 & AUTO8)	4,244	3,366	878
Total direct research and development expense	**$ 31,379**	**$ 32,701**	**$ (1,322)**
Research and development expense and unallocated costs:			
Personnel related (including share-based compensation)	54,228	58,171	(3,943)
Indirect research and development expense	49,182	44,016	5,166
Total research and development expenses	**$ 134,789**	**$ 134,888**	**$ (99)**

Research and development expenses remained relatively flat at $134.8 million for the year ended December 31, 2021 when compared to $134.9 million for the year ended December 31, 2020. Cash costs, which exclude depreciation and amortization as well as share-based compensation, increased to $121.4 million from $116.9 million. The increase in research and development cash costs of $4.5 million consisted primarily of (i) an increase in compensation and employment related costs of $3.8 million due to a combination of an increase in employee headcount, to support the advancement of our product candidates in clinical development, and to severance payments related to the reduction in workforce that was initiated during the first quarter of 2021, (ii) an increase of $2.5 million in facilities costs related to the continued scaling of manufacturing operations, (iii) an increase of $2.4 million in purchased consumables used in the manufacturing of obe-cel in the FELIX study, (iv) an increase of $0.9 million in IT infrastructure and support for information systems related to the conduct of clinical trials and manufacturing operations, and (v) an increase of $0.1 million related to cell logistics, which is offset by a reduction in clinical trial costs of $5.2 million.

Non-cash costs, representing depreciation and amortization and share-based compensation, decreased to $13.4 million for the year ended December 31, 2021 from $18.1 million for the year ended December 31, 2020. The $4.7 million decrease of non-cash costs is related to a decrease of $7.7 million share-based compensation expense as a result of a lower fair value of options recognized during the period and due to the reduction in workforce that was initiated during the first quarter of 2021, offset by a $3.0 million increase in depreciation and amortization expense.

General and Administrative Expenses

General and administrative expenses decreased to $31.9 million for the year ended December 31, 2021 from $35.0 million for the year ended December 31, 2020. Cash costs, which exclude depreciation as well as share-based compensation decreased to $26.7 million from $27.4 million. There were decreases of $0.7 million of costs due to (i) a decrease of $0.8 million in expenses relating to our commercial preparation costs, (ii) a decreases of $0.6 million in employee compensation expense due to reduction in headcount during the first quarter of 2021 and lower retention costs, (iii) a decrease of $0.5 million in facilities cost, and (iv) a decrease of $0.1 million in other general administration expenses, offset by increases in director and officer insurance in IT infrastructure and support for information systems of $1.0 million and $0.3 million, respectively.

Non-cash costs, representing depreciation and amortization and share-based compensation, decreased to $5.2 million for the year ended December 31, 2022 from $7.6 million for the year ended December 31, 2021. The $2.4 million decrease of non-cash costs is mainly attributed to lower share-based compensation expenses as a result of the lower fair value of options recognized during the period and due to a reduction in workforce that was initiated during the first quarter of 2021.

Loss on Disposal of Leasehold Improvements

Loss on disposal of leasehold improvements of $0.7 million for the year ended December 31, 2021 related to the disposal of leasehold improvements no longer being utilized at our current headquarters in White City, London.

Interest Income

Interest income decreased to $0.3 million for the year ended December 31, 2021 from $0.5 million for the year ended December 31, 2020. This decrease is due to the lower cash balances held during the year combined with lower interest rates for cash held on deposit.

Other (Expense) Income

Other (expense) income decreased to other expense of $0.1 million from other income of $1.4 million for the year ended December 31, 2021. The decrease of $1.5 million is primarily due to a decrease of $2.1 million due to the weakening of the U.S. dollar exchange rate relative to the pound sterling for the year ended December 31, 2021 as compared to the year ended December 31, 2020, offset by gains on lease terminations of $0.6 million, net of the related expenses.

Interest expense

Interest expense increased to $1.1 million for the year ended December 31, 2021 and relates to the liability relating to future royalties and sales milestones which arose upon entering into our strategic collaboration and financing agreement with Blackstone, in November 2021.

Income Tax Benefits

Income tax benefit decreased to $23.9 million for the year ended December 31, 2021 from $24.2 million for the year ended December 31, 2020 due to small decrease in the research and development expenditures which were qualifying for the year. As research and development credits fell at a faster rate than our net loss before income tax, this led to a lower effective tax rate. Research and development credits are obtained at a maximum rate of 33.35% of our qualifying research and development expenses, and the decrease in the net credit was primarily attributable to a decrease in our eligible research and development expenses.

B. Liquidity and capital resources.

Since our inception, we have not generated any commercial product revenue and have incurred operating losses and negative cash flows from our operations. We expect to incur significant expenses and operating losses for the foreseeable future as we advance our product candidates through preclinical and clinical development, and seek regulatory approval and pursue commercialization of any approved product candidates. We expect that our research and development and general and administrative expenses may increase in connection with our planned research, clinical development and potential commercialization activities. As a result, we will need significant additional capital to fund our operations until such time as we can generate significant revenue from product sales.

We do not currently have any approved products and have never generated any commercial revenue from product sales. We have funded our operations to date primarily with proceeds from government grants, sales of our equity securities, through public offerings and sales pursuant to our at-the market-facility, U.K. research and development tax credits and receipts from the U.K. RDEC Scheme, out-licensing arrangements and strategic collaboration and financing agreements. From our inception in 2014 through December 31, 2022, we have raised $1.1 billion from these capital sources.

As of December 31, 2022, we had cash and cash equivalents on hand of $382.4 million.

Cash Flows

The following table summarizes our cash flows for each of the periods presented (in thousands):

	Year Ended December 31,		
	2022	**2021**	**2020**
Net cash used in operating activities	$(112,308)	$(117,861)	$(117,758)
Net cash used in investing activities	(10,841)	(8,857)	(14,681)
Net cash provided by financing activities	223,610	284,063	74,415
Effect of exchange rate changes on cash and restricted cash	(28,376)	(754)	679
Net increase (decrease) in cash and restricted cash	$72,085	$156,591	$(57,345)

Net Cash Used in Operating Activities

During the year ended December 31, 2022, operating activities used $112.3 million of cash, resulting from our net loss of $148.8 million, and net cash used resulting from changes in our operating assets and liabilities of $4.0 million, and by non-cash charges of $32.6 million. The non-cash charges related to share-based compensation of $12.0 million, depreciation and amortization of $7.4 million, non-cash interest expense and cumulative catch-up adjustment of $8.9 million, foreign exchange differences of $4.0 million and loss on disposal of leasehold improvements of $0.5 million which is offset by a deferred tax movement of $0.3 million. Net cash used in operating activities resulting from changes in our operating assets and liabilities for the year ended December 31, 2022 consisted primarily of a $10.8 million increase in prepaid expenses and other current and non-current assets and an increase in accrued expenses and other liabilities of $16.0 million, offset by a decrease in a $1.3 million in right of use assets from amortization and operating lease liabilities, net.

During the year ended December 31, 2021, operating activities used $117.9 million of cash, resulting from our net loss of $142.1 million, offset by net cash used resulting from changes in our operating assets and liabilities of $4.1 million and by non-cash charges of $20.1 million. The non-cash charges primarily related to share-based compensation of $9.9 million, depreciation and amortization of $8.5 million, non-cash interest expense of $1.1 million and loss on disposal of leasehold improvements of $0.7 million which is offset by a deferred tax movement of $0.1 million. Net cash used resulting from changes in our operating assets and liabilities for the year ended December 31, 2021, consisted primarily of a $6.1 million decrease in prepaid expenses and other assets and current and non-current and $0.6 million decrease in long term deposits, offset by a decrease of $3.8 million in accounts payable and accrued expenses and other liabilities.

During the year ended December 31, 2020, operating activities used $117.8 million of cash, resulting from our net loss of $142.1 million, offset by net cash used resulting from changes in our operating assets and liabilities of $1.4 million and by non-cash charges of $22.9 million. The non-cash charges primarily related to share-based compensation of $20.1 million and depreciation of $5.7 million, offset by a gain on lease incentive of $1.3 million and a gain on lease termination of $0.2 million. Net cash used resulting from changes in our operating assets and liabilities for the year ended December 31, 2020 consisted primarily of a $5.3 million increase in prepaid expenses and other assets, current and non-current assets and $0.5 million increase in long term deposits, offset in part by a $7.0 million increase in accounts payable and accrued expenses and other liabilities.

Net Cash Used in Investing Activities

During the years ended December 31, 2022, 2021, and 2020, we used $10.8 million, $8.9 million and $14.7 million, respectively, of cash in investing activities, which consisted primarily of purchases of property and equipment.

Net Cash Provided by Financing Activities

During the year ended December 31, 2022, net cash provided by financing activities was $223.6 million, consisting of net cash proceeds from our December underwritten public offering of $153.5 million, and $70.0 million from two development milestone payments in accordance with our collaboration and strategic financing with Blackstone. We also received cash proceeds of $0.1 million from the exercise of share options.

During the year ended December 31, 2021, net cash provided by financing activities was $284.1 million, consisting primarily of net cash proceeds of $147.6 million from our November 2021 private placement and strategic financing with Blackstone and $106.9 million from our February 2021 follow-on equity capital raise. We also raised net cash proceeds of $29.6 million through sales pursuant to our Open Market Sales Agreement with Jefferies LLC.

During the year ended December 31, 2020, net cash provided by financing activities was $74.4 million, consisting of net cash proceeds from our January 2020 follow-on capital raise.

Cash Denomination

The following table reflects unrestricted cash denominations in U.S. dollars and pound sterling as of (in thousands):

	December 31,			
	2022		2021	
Total cash and cash equivalents held	$	382,436	$	310,338
U.S. dollars	$	199,809	$	168,093
Pound sterling*	£	151,326	£	105,285

* Pound sterling amount disclosed include immaterial amounts of Swiss franc and Euro account balances.

Funding Requirements

We expect our expenses to increase substantially in connection with our ongoing activities, particularly as we advance the preclinical activities and clinical trials of our product candidates. Our expenses will increase as we:

- seek regulatory approvals for any product candidates that successfully complete preclinical and clinical trials;
- establish a sales, marketing and distribution infrastructure in anticipation of commercializing of any product candidates for which we may obtain marketing approval and intend to commercialize on our own or jointly;
- hire additional clinical, medical, and development personnel;
- expand our infrastructure and facilities to accommodate our growing employee base; and
- maintain, expand and protect our intellectual property portfolio.

Our primary uses of capital are, and we expect will continue to be, compensation and related expenses, clinical costs, external research and development services, laboratory and related supplies, legal and other regulatory expenses, and administrative and overhead costs. Our future funding requirements will be heavily determined by the resources needed to support development of our product candidates.

Based on our current clinical development plans, we believe our existing cash and cash equivalents of $382.4 million at December 31, 2022, will enable us to fund our current and planned operating expenses and capital expenditure requirements for at least 12 months from the issuance of our annual report. We have based these estimates on assumptions that may prove to be wrong, and we could utilize our available capital resources sooner than we expect. If we receive regulatory approval for our other product candidates, we expect to incur significant commercialization expenses related to product manufacturing, sales, marketing and distribution, depending on where we choose to commercialize. We may also require additional capital to pursue in-licenses or acquisitions of other product candidates.

Because of the numerous risks and uncertainties associated with research, development and commercialization of pharmaceutical product candidates, we are unable to estimate the exact amount of our working capital requirements. Our future funding requirements will depend on and could increase significantly as a result of many factors, including:

- the scope, progress, outcome and costs of our clinical trials and other research and development activities;
- the costs, timing, receipt and terms of any marketing approvals from applicable regulatory authorities;
- the costs of future activities, including product sales, medical affairs, marketing, manufacturing and distribution, for any of our product candidates for which we receive marketing approval;
- the revenue, if any, received from commercial sale of our products, should any of our product candidates receive marketing approval;
- the costs and timing of hiring new employees to support our continued growth;
- the costs of preparing, filing and prosecuting patent applications, maintaining and enforcing our intellectual property rights and defending intellectual property-related claims; and
- the extent to which we in-license or acquire additional product candidates or technologies.

Until such time, if ever, that we can generate product revenue sufficient to achieve profitability, we expect to finance our cash needs primarily through equity offerings, U.K. research and development tax credits and receipts from the U.K. RDEC Scheme, out-licensing arrangements, strategic collaboration and financing agreements. To the extent that we raise additional capital through the sale of equity, your ownership interest will be diluted. If we raise additional funds through other third-party funding, collaborations agreements, strategic alliances, licensing arrangements or marketing and distribution arrangements, we may have to relinquish valuable rights to our technologies, future revenue streams, research programs or product candidates or grant licenses on terms that may not be favorable to us. If we are unable to raise additional funds through equity financings when needed, we may be required to delay, limit, reduce or terminate our product development or future commercialization efforts or grant rights to develop and market products or product candidates that we would otherwise prefer to develop and market ourselves.

Lease, Purchase, and Other Obligations

We have operating lease obligations related to our property, plant and equipment. The details of these leases are disclosed in Item 4D. "Property, Plant and Equipment." within this annual report. The obligations related to both short- and long-term lease arrangements is set forth in Note 15 "Leases" and Note 16, "Commitment and Contingencies" to our consolidated financial statements appearing at the end of this Annual Report.

We enter into contracts in the normal course of business with CROs and other third parties for clinical trials and preclinical research studies and testing. These contracts are generally cancellable by us upon prior notice. Payments due upon cancellation consist only of payments for services provided or expenses incurred, including noncancellable obligations of our service providers, up to the date of cancellation.

We have contingent payment obligations that we may incur upon achievement of clinical, regulatory and commercial milestones, as applicable, or royalty payments that we may be required to make under our license agreements with UCLB, Noile-Immune Biotech and Adaptive and our collaboration agreement with Blackstone; however, timing and likelihood of such payments are not known as of December 31, 2022.

JOBS Act

On April 5, 2012, the Jumpstart Our Business Startups Act, or the JOBS Act, was enacted. The JOBS Act provides that, among other things, an emerging growth company can take advantage of an extended transition period for complying with new or revised accounting standards. As an emerging growth company, we have irrevocably elected not to take advantage of the extended transition period afforded by the JOBS Act for implementation of new or revised accounting standards and, as a result, we will comply with new or revised accounting standards on the relevant dates on which adoption of such standards is required for non-emerging growth public companies.

In addition, we intend to rely on the other exemptions and reduced reporting requirements provided by the JOBS Act. Subject to certain conditions set forth in the JOBS Act, we are entitled to rely on certain exemptions as an “emerging growth company,” we are not required to, among other things, (i) provide an auditor’s attestation report on our system of internal controls over financial reporting pursuant to Section 404(b), (ii) provide all of the compensation disclosure that may be required of non-emerging growth public companies under the Dodd-Frank Wall Street Reform and Consumer Protection Act, (iii) comply with any requirement that may be adopted by the Public Company Accounting Oversight Board regarding mandatory audit firm rotation or a supplement to the auditor’s report providing additional information about the audit and the financial statements (auditor discussion and analysis), and (iv) disclose certain executive compensation-related items such as the correlation between executive compensation and performance and comparisons of the chief executive officer’s compensation to median employee compensation. We will remain an emerging growth company until the earliest of (i) the last day of the fiscal year in which we have total annual gross revenue of $1.07 billion or more; (ii) December 31, 2023, which is the last day of our fiscal year following the fifth anniversary of the date of the completion of our initial public offering; (iii) the date on which we have issued more than $1.0 billion in nonconvertible debt during the previous three years; and (iv) the date on which we are deemed to be a large accelerated filer under the rules of the SEC.

C. Research and development, patents and licenses, etc.

Full details of our research and development activities and expenditures are given in Item 4.B. "Information on the Company – Business Overview” and Item 5.A. "Operating Results” within this Annual Report.

D. Trend information.

See Item 5.A. "Operating Results” and Item 5.B. "Liquidity and Capital Resources” within this Annual Report.

E. Critical accounting estimates

Our consolidated financial statements are prepared in accordance with U.S. GAAP. The preparation of our consolidated financial statements and related disclosures requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, costs and expenses, and the disclosure of contingent assets and liabilities in our financial statements. We base our estimates on historical experience, known trends and events and various other factors that we believe are reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. We evaluate our estimates and assumptions on an ongoing basis. Our actual results may differ from these estimates under different assumptions or conditions.

While our significant accounting policies are described in more detail in Note 2 to our consolidated financial statements appearing at the end of this Annual Report, we believe that the following accounting policies are those most critical to the judgments and estimates used in the preparation of our consolidated financial statements.

Share-based compensation

We issue ordinary shares as well as options and other securities exercisable for or convertible into ordinary shares or ADSs as incentives to our employees and directors. To the extent such incentives are in the form of share options, the options are granted pursuant to the terms of our 2017 Share Option Plan, or the 2017 Plan, or pursuant to the terms of our 2018 Equity Incentive Plan, or the 2018 Plan. Options granted under the 2017 Plan and 2018 Plan, as well as shares granted as employee incentives, typically vest over a four-year service period with 25% of the award vesting on the first anniversary of the commencement date and the balance vesting monthly over the remaining three years, unless the awards contain specific performance vesting provisions. For equity awards issued that have both a performance vesting condition and a services condition, or performance awards, once the performance criteria is achieved, the performance awards are then subject to a four-year service vesting with 25% of the performance award vesting on the first anniversary of the performance condition being achieved, with the balance vesting monthly over the remaining three years. For certain members of senior management and directors, the board has approved an alternative vesting schedule for the equity awards. The options granted under the 2017 Plan and 2018 Plan generally expire ten years from the date of grant.

We recognize compensation expense for equity awards based on the grant date fair value of the award. For equity awards that vest based on a service condition, the share-based compensation expense is recognized on a straight-line basis over the requisite service period. For equity awards that contain both performance and service conditions, we recognize share-based compensation expense ratably over the requisite service period when the achievement of a performance-based milestone is probable based on the relative satisfaction of the performance condition as of the reporting date. For performance conditions related to regulatory approvals those regulatory approvals are deemed probable when actually achieved.

Share-based compensation is recognized as an expense in the consolidated financial statements based on the grant date fair value over the requisite service period. For awards granted to our employees and directors that vest based on service conditions, we use the accelerated method to allocate compensation expense to reporting periods. We do not adjust share-based compensation for estimated forfeitures and account for forfeitures when they occur.

We use the fair value of our ordinary shares, determined by reference to the closing price of our ADSs on the Nasdaq Global Select Market on the date of grant, to determine the fair value of restricted share awards.

We use the Black-Scholes option pricing model to estimate the fair value of share options. This option-pricing model requires the input of various subjective assumptions, including the option's expected life and the price volatility of the security.

The fair value of each share option grant is estimated on the date of grant using the Black-Scholes option pricing model and applying assumptions used in connection with option grants made during the periods covered by these consolidated financial statements. Assumptions used in the option pricing model include the following:

Expected volatility. We lack company-specific historical and implied volatility information for our ADSs for expected terms greater than 4.5 years. Therefore, we estimate the expected share volatility based on the historical volatility of publicly traded peer companies and expect to continue to do so until such time as we have adequate historical data regarding the volatility of our own traded security price.

Expected term. The expected term of options granted represents the weighted average period of time that options granted are expected to be outstanding giving consideration to vesting schedules and our historical exercise patterns. The expected term of our share options has been determined utilizing the "simplified" method for awards that qualify as "plain-vanilla" options.

Risk-free interest rate. The risk-free interest rate is determined by reference to the U.S. Treasury yield curve in effect at the time of grant of the award for time periods that are approximately equal to the expected term of the award.

Expected dividend. Expected dividend yield of zero is based on the fact that we have never paid cash dividends on ordinary shares and do not expect to pay any cash dividends in the foreseeable future.

Fair value of ordinary shares. The fair market value of our ADSs underlying the option is equal to the closing price of the ADSs on the Nasdaq Global Select market on the date the grant is approved by the Board.

Non-cash interest expense and liability related to future royalties and sales milestones, net and cumulative catch-up adjustments

We accounted for the Blackstone Collaboration Agreement as a liability. The liability related to future royalties and sales milestones, net and the related non-cash interest expense are measured based on our current estimates of the timing and amount of expected future royalty and milestone payments expected to be paid and the Blackstone Development Payments expected to be received over the estimated term of the agreement.

The liability is amortized using the effective interest rate method, resulting in recognition of non-cash interest expense over the estimated term of the agreement. Each reporting period we assess the estimated probability, timing and amount of the future expected royalty, sales milestone payments and the Blackstone Development Payment over the estimated term. If there are changes to the estimates, we recognize the impact to the liability's amortization schedule and the related non-cash interest expense using the catch-up method.

Our estimate of the probability, timing and amount of expected future royalties and sales milestones to be paid by us and Blackstone development payment to be paid to us, considers significant unobservable inputs. These inputs include regulatory approval, the estimated patient population, estimated selling price, estimated sales, estimated peak sales and sales ramp, timing of the expected launch and its impact on the royalties as well as the overall probability of a success. Additionally, the transaction costs associated with the liability will be amortized to non-cash interest expense over the estimated term of the agreements.

The carrying amount of the Blackstone Collaboration Agreement liability is based on our estimate of the future royalties and sales milestones to be paid to Blackstone by us and the Blackstone Development payment to be received over the life of the arrangement as discounted using the initial effective interest rate. The excess estimated present value of future royalty and sales milestone payments and the future Blackstone Development Payment received over the carrying amount is recognized as a cumulative catch-up adjustment within interest expense using the effective interest rate method.

Initial fair value of warrants

We granted Blackstone a warrant to purchase up to 3,265,306 of our ADSs representing 3,265,306 of our ordinary shares, at an exercise price of $7.35 per ADS. The Blackstone Warrant is exercisable in whole or in part until November 6, 2026.

The Blackstone Warrant's mechanism does not create any obligation to transfer cash to the investor but a fixed amount of ordinary shares upon exercise. Therefore, we account for the Blackstone Warrant as equity-classified instruments (as part of additional paid in capital), based on an assessment of the applicable U.S. GAAP authoritative guidance. The assessment considers whether the warrants are freestanding financial instruments, meet the definition of a liability or whether the warrants meet all of the requirements for equity classification, including whether the warrants are indexed to the our own shares, among other conditions for equity classification.

The fair value of the warrants grant is estimated on the date of grant using the Black-Scholes option pricing model. Our assumptions used in the Black Scholes option pricing model in relation to Blackstone Warrant issued during the period include the following:

Expected volatility. We lack company-specific historical and implied volatility information for our ADSs for expected terms greater than 4.5 years. Therefore, we use a combination of the historical volatility of our ADSs and also the expected share volatility based on the historical volatility of publicly traded peer companies and expect to continue to do so until such time as we have adequate historical data regarding the volatility of our own traded security price.

Expected term. The expected term of our warrants has been determined utilizing the contractual term of the warrants.

Risk-free interest rate. The risk-free interest rate is determined by reference to the U.S. Treasury yield curve in effect at the time of granting of the award for time periods that are approximately equal to the expected term of the award.

Expected dividend. Expected dividend yield of zero is based on the fact that the we have never paid cash dividends on ordinary shares and does not expect to pay any cash dividends in the foreseeable future.

Fair value of ordinary shares. The fair value of each ordinary share was based on the closing price of ours publicly traded ordinary shares as reported on date of issuance.

Income Taxes

We account for income taxes under the asset and liability method which includes the recognition of deferred tax assets and liabilities for the expected future tax consequences of events that have been included in our financial statements. Under this approach, deferred taxes are recorded for the future tax consequences expected to occur when the reported amounts of assets and liabilities are recovered or paid. The provision for income taxes represents income taxes paid or payable for the current year plus deferred taxes. Deferred taxes result from differences between the financial statements and tax bases of our assets and liabilities, and are adjusted for changes in tax rates and tax laws when changes are enacted. The effects of future changes in income tax laws or rates are not anticipated.

We are subject to corporate income taxes in the United Kingdom, the United States, Germany and Switzerland. The calculation of our tax provision involves the application of tax law in multiple jurisdictions and requires judgement and estimates.

We evaluate the realizability of our deferred tax assets at each reporting date, and we establish a valuation allowance when it is more likely than not that all or a portion of our deferred tax assets will not be realized.

The ultimate realization of deferred tax assets is dependent upon the generation of future taxable income of the same character and in the same jurisdiction. We consider all available positive and negative evidence in making this assessment, including, but not limited to, the scheduled reversal of deferred tax liabilities, projected future taxable income, and tax planning strategies. In circumstances where there is sufficient negative evidence indicating that our deferred tax assets are not more likely than not realizable, we establish a valuation allowance.

We use a two-step approach to recognizing and measuring uncertain tax positions. The first step is to evaluate tax positions taken or expected to be taken in a tax return by assessing whether they are more likely than not sustainable, based solely on their technical merits, upon examination, and including resolution of any related appeals or litigation process. The second step is to measure the associated tax benefit of each position as the largest amount that we believe is more likely than not realizable. Differences between the amount of tax benefits taken or expected to be taken in our income tax returns and the amount of tax benefits recognized in our financial statements represent our unrecognized income tax benefits, which we either record as a liability or as a reduction of deferred tax assets.

Deferred Tax and Current Tax Credits

Tax on the profit or loss for the year comprises current and deferred tax. Tax is recognized in the statement of operations, except to the extent that it relates to items recognized directly in equity, in which case it is recognized in equity. Current tax is the expected tax payable on the taxable income or loss for the year, using tax rates enacted or substantively enacted at the balance sheet date, and any adjustment to tax payable in respect of previous years. Tax credits are accrued for the year based on calculations that conform to the U.K. research and development tax credit regime, under both the SME and large company regimes. We meet the conditions of the SME regime, but also can make claims under the RDEC regime to the extent that our projects are grant funded.

We may not be able to continue to claim research and development tax credits under the SME regime in the future because we may no longer qualify as a small or medium-sized company. However, we should continue to be able to make claims under the RDEC regime.

Deferred tax is recognized on temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for taxation purposes. The amount of deferred tax is based on the expected manner of realization or settlement of the carrying amount of assets and liabilities, using tax rates enacted or substantively enacted at the balance sheet date. A deferred tax asset is recognized only to the extent that it is probable that future taxable profits will be available against which the asset can be utilized. No deferred tax assets are recognized on our losses carried forward and other attributes because there is currently no indication that we will make sufficient profits to utilize these attributes.

Accrued Research and Development Expenses

As part of the process of preparing our consolidated financial statements, we are required to estimate accruals for research and development expenses. This process involves reviewing and identifying services which have been performed by third parties on our behalf and determining the value of these services. In addition, we make estimates of costs incurred to date but not yet invoiced, in relation to external clinical research organizations and clinical site costs. We analyze the progress of clinical trials, including levels of patient enrollment, invoices received and contracted costs, when evaluating the adequacy of the accrued liabilities for research and development. We make judgments and estimates in determining the accrued balance in any accounting period.

Item 6. Directors, Senior Management and Employees

A. Directors and senior management.

The following table sets forth information regarding members of our senior management and our directors, including their ages as of March 1, 2023.

NAME	AGE	POSITION(S)
Senior Management:		
Christian Itin, Ph.D.	58	Chief Executive Officer and Director
Lucinda Crabtree, Ph.D.	43	Senior Vice President, Chief Financial Officer
Martin Pulé, MBBS	50	Senior Vice President, Founder, Chief Scientific Officer
Christopher Vann	58	Senior Vice President, Chief Operating Officer
David Brochu	67	Senior Vice President, Chief Technical Officer
Edgar Braendle, M.D.	63	Senior Vice President, Chief Development Officer
Brent Rice	57	Senior Vice President, Chief Commercial Officer
Non-Executive Directors:		
John Johnson*	65	Chairman of the Board of Directors
Joseph Anderson, Ph.D.	63	Director
Linda Bain	52	Director
John Berriman	74	Director
Cynthia Butitta	68	Director
Kapil Dhingra, M.D.	63	Director
Martin Murphy, Ph.D.	54	Director
William Young, Ph.D.	78	Director

** Mr. Johnson has notified the Company of his intention not to stand for re-election at our 2023 Annual General Meeting of Shareholders.*

Senior Management

Christian Itin, Ph.D. has served as our Chief Executive Officer since March 2016 and as a director since October 2014. He served as Chairman of our board of directors from October 2014 to September 2021. Prior to joining us, Dr. Itin served as chief executive officer and chairman of the board of directors at Cytos Biotechnology Ltd, a biotechnology company, from November 2012 until it merged with Kuros Biosurgery Holding Ltd in January 2016. From January 2016 until June 2018, he served as chairman, and from June 2018 to May 2019 as non-executive director, of Kuros Biosciences Ltd. Prior to that, Dr. Itin served as president, chief executive officer and director of Micromet, Inc., a biopharmaceutical company, from 2006 until it was acquired by Amgen Inc. in 2012. From 1999 until 2006, he served in a number of capacities with Micromet, Inc.'s subsidiary, Micromet AG, including head of IP and licensing, vice president of business and corporate development, chief business officer and ultimately as its chief executive officer. Before joining Micromet, Dr. Itin was a co-founder of Zyomyx, a protein chip company. Dr. Itin also served as a non-executive director of Kymab Ltd., a privately held biopharmaceutical company, until its sale to Sanofi in 2021. Dr. Itin received a Diploma in Biology and a Ph.D. in Cell Biology from the University of Basel, Switzerland. In addition, he also performed post-doctoral research at the Biocenter of University of Basel and at the Stanford University School of Medicine. We believe that Dr. Itin is qualified to serve on our board of directors because of his deep knowledge of our company and his extensive experience serving in executive and non-executive leadership positions at other public and private biotechnology companies.

Lucinda Crabtree, Ph.D, joined us in January 2020 and has served as Chief Financial Officer since April 2022. Her prior roles with us include serving as our Senior Vice President, Finance, Business Strategy and Planning and Vice President, Investor Relations and Corporate Communications. Dr. Crabtree oversaw our public offerings of American Depositary Shares in 2020 and 2021 and was a key contributor in closing the Blackstone transaction in November 2021. Prior to joining us, between September 2015 and January 2020, Dr. Crabtree served as a Senior Investment Analyst at Woodford Investment Management. Dr. Crabtree has also held roles at Grunenthal Group and AstraZeneca. She holds a first-class B.S. in Physiology and Pharmacology from University College London and a Ph.D. in Pharmacology from University College London.

Martin Pulé, MBBS has served as our Senior Vice President, Founder and Chief Scientific Officer since August 2014. He also served as a member of our board of directors from August 2014 to June 2018. Dr. Pulé has served as a clinical senior lecturer in the Department of Haematology at University College London Cancer Institute since 2010 and as an Honorary Consultant in Haematology at University College London Hospital since 2010. He entered the T cell engineering field in 2001 as a travelling Fulbright Scholar at the Center for Cell and Gene Therapy at Baylor College of Medicine, Houston, Texas. Dr. Pulé holds an M.B.B.S. from University College Dublin and is a Fellow of the Royal College of Pathologists.

Christopher Vann has served as our Senior Vice President, Chief Operating Officer since October 2016. Prior to joining us, he worked at Hoffmann-La Roche's Swiss headquarters from February 1994 to September 2016, most recently serving as its commercial director from December 2011 to September 2016 where he was primarily responsible for leading the lung cancer commercial team and general management of the Tarceva brand. Mr. Vann has significant experience of global lifecycle management of oncology products as well as implementing marketing strategy at a regional and national level. This includes launching several oncology, immunology and transplant products in the United States, United Kingdom, Romania, Russia, South Africa and countries in Asia, including Japan. Mr. Vann holds a B.S. in Toxicology and Pharmacology from the School of Pharmacy, University of London.

David Brochu has served as our Senior Vice President, Chief Technical Officer since January 2021. Prior to that, he served as our Senior Vice President, Head of Product Delivery from October 2019 to January 2021, and our Vice President of Technical Operations from March 2019 and October 2019. Mr. Brochu previously served as vice president of technical operations and program head at Kedrion USA, leading, its next generation IVIG development and industrialization effort. Prior to this, he was the vice president of plasma collection operations for Talecris Biotherapeutics (formerly Bayer HealthCare LLC), most recently serving as its vice president of plasma collection operations where he led the operations buildout in the Western United States. Prior to Talecris, he held engineering and technical operations leadership roles at Bayer and Warner Lambert in the United States, European Union and South America. David has over 30 years of operational and development experience. He holds a B.S. in chemical engineering from Northeastern University.

Edgar Braendle, M.D., has served as our Chief Development Officer since July 2021. Prior to joining us, he served as Chief Medical Officer and Global Head of Development at Sumitomo Dainippon Pharma Oncology (SDPO) from July 2020 to July 2021, where he was responsible for leading the global oncology development programs. Prior to then, from October 2017 until July 2020, Dr. Braendle served as Executive Vice President, Head of Research and Development and Chief Medical Officer at Boston Biomedical Inc., and served as President and Chief Executive Officer of ARUP Laboratories, a national clinical and anatomic pathology reference laboratory, from August 2016 to October 2017. Prior to this, he spent more than a decade at Novartis, where he served in various positions of increasing responsibility, most recently as Senior Vice President and Global Head of Companion Diagnostics leading the company's precision medicine approach. In an earlier role as Vice President, Global Head of Oncology Biologics, Dr. Braendle led the development of oncology biologics in early to late stages. He started his industry career at Schering AG. Dr. Braendle has a M.D and training in hematologic malignancies and solid tumor oncology, pharmacology and urology at the University of Aachen, University of Bonn, and the University of Ulm in Germany.

Brent Rice has served as our Senior Vice President, Chief Commercial Officer since December 2021, having previously served as our Vice President, Chief Commercial Officer (US) from June 2020 to December 2021 and our Vice President, Global Market Access from October 2018 to June 2020. Previously, Brent served as the Head of Managed Markets for Juno Therapeutics, from November 2017 to August 2018, where he was responsible for building their Payer, Access and Reimbursement strategy and capability. Prior to joining Juno Therapeutics, Brent spent 18 years with Amgen from December 1999 to October 2017 in positions of escalating responsibility, where he was recognized as a strong cross-functional leader supporting Amgen's portfolio of products through innovative partnerships and life cycle management. Brent holds a B.A. in Russian Studies from the University of California at Los Angeles and an M.B.A. from the University of Denver.

Non-Executive Directors

John H. Johnson was appointed as our Chairman of the board of directors in September 2021. Mr. Johnson has indicated his intention not to stand for re-election at our 2023 Annual General Meeting of Shareholders. Since May 2022, he has served as the Chief Executive Officer and a non-executive director of Reaction Biology, a provider of drug discovery services. Previously, he served as Chief Executive Officer of Strongbridge Biopharma plc, between July 2020 and October 2021, until its acquisition by Xeris Biopharma Holdings. Since October 2021, he has served as a non-executive director for Xeris. He previously served as Strongbridge's Chairman of the board of directors from March 2015 until November 2019 and Executive Chairman from November 2019 until July 2020. Additionally, he has served as a member of the board of directors of Verastem, Inc. since April 2020, and Axogen, Inc. since July 2021. Mr. Johnson recently served as a board member of Melinta Pharmaceuticals, Inc. through September 2019, having served as Chief Executive Officer from February 2019 through August 2019 and as interim Chief Executive Officer from October 2018 through February 2019. Mr. Johnson is the former lead independent director of Sucampo Pharmaceuticals, Inc., from January 2016 until February 2018, and a former director of Histogenics Corporation, from November 2013 until February 2019, AVEO Pharmaceuticals, Inc., from February 2018 until February 2019, and Portola Pharmaceuticals, Inc., from March 2014 until July 2020. From July to November 2018, Mr. Johnson served as an interim executive officer of Portola. He is a recognized leader in the biopharmaceutical industry with more than 30 years of experience at leading global organizations, including Johnson & Johnson, Eli Lilly & Company, ImClone, and Pfizer, Inc. John previously served on the board of directors of Pharmaceutical Research and Manufacturers of America (PhRMA), the Health Section Governing Board of Biotechnology Industry Organizations (BIO), and BioNJ, and holds a BS from the East Stroudsburg University of Pennsylvania. We believe that Mr. Johnson is qualified to serve on our board of directors because of his extensive experience serving on boards of directors of life science companies.

Joseph Anderson, Ph.D. has served on our board of directors since February 2016. He is a Partner in Sofinnova Partners, which he joined in October 2020. Previously, he served as the chief executive officer and a member of the board of directors of Arix Bioscience plc, a global life sciences company, where he held similar positions since January 2016. He has founded and managed public equity funds and served as a member of the following boards of directors: Algeta ASA (acquired by Bayer AG) from 2009 to 2013, Amarin plc from October 2009 to 2013, Cytos Biotechnology Ltd, a biotechnology company, from 2012 until it merged with Kuros Biosurgery Holding Ltd in January 2016, and Epigenomics AG from 2012 to 2014. He was a partner at Abingworth LLP, an international investment group dedicated to the life sciences and healthcare sectors, from January 2004 through December 2015. From October 1999 through December 2003, Dr. Anderson was previously at First State Investments in London, part of the Commonwealth Bank of Australia, where he was head of global healthcare equities and portfolio manager. Prior to this, he was a pharmaceuticals analyst at investment bank, Dresdner Kleinwort Benson from June 1998 through October 1999. From 1990 to 1998, Dr. Anderson established and was head of the strategy unit at The Wellcome Trust, one of the world's largest medical foundations. Dr. Anderson holds a Ph.D. in Biochemistry from the University of Aston and a B.S. in Biological Science from Queen Mary College, University of London. We believe that Dr. Anderson is qualified to serve on our board of directors because of his extensive experience serving on boards of directors of life science companies.

Linda Bain has served on our board of directors since June 2018. She currently serves as the Chief Financial Ffficer of Codiak BioSciences, Inc., a position she has held since December 2015. She has also served as a non-executive director of Arvinas, Inc. since June 2020 and Hemab Therapeutics since January 2022. Between July 2021 and September 2022, Ms. Bain also served as a non-executive director for VBI Vaccines, Inc. Prior to joining Codiak, Ms. Bain served as the Chief Financial Officer and treasurer of Avalanche Biotechnologies, Inc. from April 2014 until November 2015. Previously, Ms. Bain served at Bluebird bio, Inc., a gene therapy biotechnology company, as vice president of finance and business operations from October 2011 to March 2014, and Chief Accounting officer and treasurer from June 2013 to March 2014. From September 2008 to September 2011, Ms. Bain served as Vice President of Finance at Genzyme Corporation. From September 2007 to September 2008, she served as vice president at Fidelity Investments, and from May 2000 to September 2007, she held a number of positions at AstraZeneca plc. She received her B.S. degree in Accounting and Business Administration and an Honors Degree in Accounting and Business Administration from the University of the Free State in South Africa. Ms. Bain is a certified public accountant. We believe that Ms. Bain is qualified to serve on our board of directors because of her extensive experience in our industry, her background in accounting and finance and her leadership skills.

John Berriman has served on our board of directors since August 2014. He serves as chairman of the boards of directors of Confo Therapeutics NV, a position he has held since December 2016, Depixus SAS, a position he has held since December 2015, and Autifony Therapeutics Ltd, a position he has held 2011. He previously served as chairman of the board of directors of ReNeuron Group plc between April 2015 and September 2020; as chairman of the board of directors of Heptares Therapeutics Ltd from 2007 until its acquisition by Sosei Group in February 2015; as chairman of the board of directors of Algeta ASA from 2004 through its listing on the Oslo Stock Exchange in 2007 and subsequently served as deputy chairman from 2008 until it was sold to Bayer AG in 2014; and as a director of Micromet, Inc. from May 2006 until it was sold to Amgen Inc. in 2012. Prior to this, from 1997 to 2004, he was a director of Abingworth Management, an international healthcare venture capital firm, where he was involved in founding, financing and serving as a director of several biotechnology companies in Europe and the United States, many of which obtained listings on public stock exchanges. Prior to that, Mr. Berriman spent 14 years with Celltech Group plc and was a member of its board when it listed on the London Stock Exchange in 1994. He holds a M.S in Chemical Engineering from the University of Cambridge and an M.B.A. from the London Business School. We believe that Mr. Berriman is qualified to serve on our board of directors because of his extensive experience in our industry, including his strategic management and operational experience, his experience serving on public company boards and his experience with public offerings, private investments and mergers.

Cynthia Butitta has served on our board of directors since March 2018. Ms. Butitta served as the executive vice president and chief financial officer of Kite Pharma Inc., a biopharmaceutical company, from January 2014 to May 2016 and as its chief operating officer from March 2014 to September 2017. From May 2011 to December 2012, she served as senior vice president and chief financial officer at NextWave Pharmaceuticals, Inc., a specialty pharmaceutical company. Prior to that, Ms. Butitta served as chief operating officer of Telik, Inc., a biopharmaceutical company, from March 2001 to December 2010 and as its chief financial officer from August 1998 to December 2010. Ms. Butitta also served as principal accounting officer of Telik, Inc. until December 2010. She has served as a member of the board of directors of UroGen Pharma Ltd. since October 2017, Olema Pharmaceuticals Inc. since August 2020 and Century Therapeutics since February 2021. Ms. Butitta holds a B.S. with honors in Business and Accounting from Edgewood College in Madison, Wisconsin and an M.B.A. in Finance from the University of Wisconsin, Madison. We believe that Ms. Butitta is qualified to serve on our board of directors because of her extensive financial and operational experience within the biotechnology and high-technology industries, as well as her leadership skills.

Kapil Dhingra, M.D. has served on our board of directors since August 2014. Dr. Dhingra currently serves as the managing member of KAPital Consulting, LLC, a healthcare consulting firm he founded in June 2008. Dr. Dhingra has over 30 years of experience in oncology clinical research and drug development. From 1999 to 2008, Dr. Dhingra worked at Hoffmann-La Roche,where he served in roles of increasing responsibility, most recently as vice president, head of the oncology disease biology leadership team and head of oncology clinical development. From 2000 to 2008, he held a clinical affiliate appointment at Memorial Sloan Kettering Cancer Center. From 1996 to 1999, Dr. Dhingra worked at Eli Lilly and Company where he served in roles of increasing responsibility, most recently as senior clinical research physician. Dr. Dhingra also served as a clinical associate professor of medicine at the Indiana University School of Medicine from 1997 to 1999. Prior to Eli Lilly and Company, Dr. Dhingra was a member of the faculty of the MD Anderson Cancer Center of the University of Texas from 1989 to 1996. Dr. Dhingra has served on the boards of directors of LAVA Therapeutics BV since February 2021, Black Diamond Therapeutics since January 2021, Replimune Limited since July 2017, Median Technologies, a medical imaging software company, since June 2017, and Mariana Oncology (previously known as Curie Therapeutics) since January 2022. Dr. Dhingra previously served as a member of the boards of directors of BioVex from 2009 until its acquisition by Amgen Inc. in 2011, Micromet, Inc. from February 2009 until its acquisition by Amgen Inc. in 2012, YM Biosciences Inc. from 2012 until its acquisition by Gilead Sciences, Inc. in February 2013, Algeta ASA from 2010 until its acquisition by Bayer in March 2014 and EpiTherapeutics ApS from January 2014 until its acquisition by Gilead in May 2015, Advanced Accelerator Applications S.A., a pharmaceutical company, from April 2014 until its acquisition by Novartis in January 2018, Exosome Diagnostics from 2012 until its acquisition by Bio-Techne Corporation in August 2018, and Five Prime Therapeutics, Inc., a biotechnology company, from December 2015 until its acquisition by Amgen in April 2021. Dr. Dhingra holds an M.D. from the All India Institute of Medical Services in New Delhi, India and has performed postgraduate work at the All India Institute of Medical Services, the Lincoln Medical and Mental Health Center of New York Medical College and Emory University School of Medicine. We believe that Dr. Dhingra is qualified to serve on our board of directors because of his extensive experience in executive positions with several pharmaceutical companies and in the clinical development of pharmaceuticals in several therapeutic areas, including in oncology, and his experience serving on the boards of numerous publicly traded life science companies.

Martin Murphy, Ph.D. has served on our board of directors since September 2014. He currently serves as Chair of Syncona Investment Management Limited, part of the global life science company Syncona Ltd. Previously, he served as the chief executive officer of Syncona Investment Management Limited until December 2022, and founded Syncona Partners LLP and served as its chief executive officer from May 2012 to December 2016. Prior to that, he was a partner at MVM Life Science Partners LLP, a venture capital company focused on life science and healthcare investments, from 2003 to 2012. During his time at MVM, Dr. Murphy was a member of the management and investment committees and led MVM's European operations. Before MVM, Dr. Murphy worked at 3i Group plc and McKinsey & Company. He has a Ph.D. in Biochemistry from the University of Cambridge. We believe that Dr. Murphy is qualified to serve on our board of directors because of his extensive experience as an investor, particularly in the life sciences industry.

William D. Young, Ph.D. has served on our board of directors since November 2021 and was appointed to our board of directors as Blackstone's designee pursuant to the terms of the collaboration and financing agreement we entered into with Blackstone in November 2021. He has serves as a Senior Advisor to the Blackstone Life Sciences group, a position he has held since November 2018, following Blackstone's acquisition of Clarus Ventures. Mr. Young became a Venture Partner with Clarus in 2010 after serving as Chief Executive Officer of Monogram Biosciences, from 1999 until to the sale of the company to LabCorp in 2009. Prior to then, he was at Genentech for 19 years, serving in various positions of increasing responsibility, most recently serving as Chief Operating Officer and responsible for all of the biotechnology company's development, operations and commercial functions. Prior to Genentech, Mr. Young was at Eli Lilly and Company for fourteen years. Mr. Young has served as chairman of the board of directors of Nanostring Technologies since January 2010, as a member of the board of Theravance Biopharma since October 2013 (and lead independent director since April 2014), and a non-executive director of Praxis Precision Medicine since December 2016. Previously he served on the board of directors of Vertex Pharmaceuticals from May 2014 until June 2020. Mr. Young received his B.S in chemical engineering from Purdue University, his MBA from Indiana University and an honorary doctorate in engineering from Purdue University. In 1993 he was elected to the National Academy of Engineering for his leadership in research, development and manufacturing of recombinant proteins using recombinant DNA technology. We believe that Dr. Young is qualified to serve on our board of directors because of his extensive experience in the life sciences industry.

Board Diversity

The table below provides certain information regarding the diversity of our board of directors as of the date of this report.

Board Diversity Matrix				
Country of Principal Executive Offices:	United Kingdom			
Foreign Private Issuer	Yes			
Disclosure Prohibited under Home Country Law	No			
Total Number of Directors	9			
	Male	**Female**	**Non-Binary**	**Did Not Disclose Gender**
Part I: Gender Identity				
Directors	7	2	0	0
Part II: Demographic Background				
Underrepresented Individual in Home Country Jurisdiction	1	0	0	0
LGBTQ+	0			
Did Not Disclose Demographic Background	0			

Family Relationships

There are no family relationships among any of our senior management or our directors.

B. Compensation.

The following discussion provides the amount of compensation paid, and benefits in-kind granted, by us and our subsidiaries to our directors, members of our senior management and non-employee directors for services in all capacities to us and our subsidiaries for the year ended December 31, 2022, as well as the amount contributed by us or our subsidiaries into money purchase plans for the year ended December 31, 2022 to provide pension, retirement or similar benefits to, our directors, members of our senior management and non-employee directors.

Director Compensation

For the year ended December 31, 2022, the table below sets forth the compensation paid to our directors. In the case of Dr. Itin, our chief executive officer, the table below sets forth the compensation paid to him for services as a member of our senior management. He does not receive any compensation for serving as an executive director. All such amounts are established and paid in pounds sterling.

Name	Salary/Fees	Annual Bonus	Pension Benefit	All Other Compensation	Total
Christian Itin, Ph.D. Executive Director	£ 415,000	£ 186,750	£ —	£ 1,549,935	£ 2,151,685
John Johnson Chairman of the Board	£ 50,000	£ —	£ —	£ 111,716	£ 161,717
Joseph Anderson, Ph.D. Non-Executive Director	£ 39,000	£ —	£ —	£ 33,500	£ 72,500
Jay Backstrom, M.D, M.P.H* Non-Executive Director	£ 42,000	£ —	£ —	£ 63,720	£ 105,720
Linda Bain Non-Executive Director	£ 45,000	£ —	£ —	£ 35,831	£ 80,831
John Berriman Non-Executive Director	£ 39,000	£ —	£ —	£ 33,586	£ 72,587
Cynthia Butitta Non-Executive Director	£ 40,500	£ —	£ —	£ 33,874	£ 74,374
Kapil Dhingra, M.D. Non-Executive Director	£ 42,000	£ —	£ —	£ 33,586	£ 75,586
Martin Murphy, Ph.D. Non-Executive Director	£ 34,500	£ —	£ —	£ 33,500	£ 68,000
William Young, Ph.D. Non-Executive Director	£ 34,500	£ —	£ —	£ 68,363	£ 102,863

* Dr. *Backstrom resigned from the Board of directors effective February 28, 2023.*

Non-Executive Letters of Appointment

Non-executive directors are engaged on letters of appointment that set out their duties and responsibilities. The non-executive directors do not receive benefits upon termination or resignation from their respective positions as directors.

Non-Executive Director Compensation Policy

In September and December 2021, following market research and advice from its compensation consultant, our board of directors amended our non-executive director compensation policy to increase the equity awards for, respectively, the chair and other non-executive directors.

Under this policy, we pay each of our non-executive directors a cash retainer for service on our board of directors and committees of our board of directors. Our chair or lead independent director, as applicable, also receives an additional cash retainer. These retainers are payable in arrears in twelve equal monthly installments at the end of each calendar month, provided that the amount of such payment will be prorated for any portion of such month that the director is not serving on our board. Non-executive directors residing outside the United Kingdom will be paid the applicable amounts converted from pounds sterling into a currency of their request at the time of payment. We will also reimburse our directors for their reasonable out-of-pocket expenses in connection with attending board and committee meetings.

Non-executive directors are eligible to receive cash compensation as follows:

	Annual Cash Retainer (£)
Annual retainer for board of director chair	50,000
Annual retainer for board of director member	30,000
Additional retainer for lead independent director	12,000
Additional retainer for audit committee chair	12,000
Additional retainer for audit committee member	6,000
Additional retainer for compensation committee chair	9,000
Additional retainer for compensation committee member	4,500
Additional retainer for nominating and governance committee chair	6,000
Additional retainer for nominating and governance committee member	3,000
Additional retainer for research and development committee chair	12,000
Additional retainer for research and development committee member	6,000

Equity Compensation

In addition to cash compensation, each non-executive director is eligible to receive share options under our equity incentive plans. Any share options granted under this policy shall have a term of ten years from the date of grant, subject to earlier termination in connection with a termination of service. Vesting schedules for equity awards are subject to the non-executive director's continuous service on each applicable vesting date.

Notwithstanding any vesting schedule, for each non-executive director who remains in continuous service with us until immediately prior to the closing of a change in control (as such term is defined in our 2018 Plan), the shares subject to his or her then-outstanding initial or annual equity awards that were granted pursuant to this policy will become fully vested immediately prior to the closing of such change in control.

Upon the termination of the membership of the non-executive director on the board for any reason, his or her options granted under this policy shall remain exercisable for three months following his or her date of termination (or such longer period as the board may determine in its discretion on or after the date of grant of such options).

Initial Award

Each new non-executive director elected to our board of directors is granted an initial, one-time equity award of options to purchase 40,000 of our ADSs on the date of such director's initial election or appointment to the board of directors, which will vest in equal monthly installments through the third anniversary of the grant date. In addition, a non-executive director who is initially appointed to serve as chair of the board receives an option to purchase 25,000 of our ADSs on the date of such appointment to chair, which will vest in equal monthly installments through the third anniversary of the grant date.

Annual Awards

On the date of each of our annual meeting of shareholders, each non-executive director that continues to serve will be granted an option to purchase 20,000 of our ADSs or ordinary shares, which will vest in equal monthly installments through the first anniversary of the grant date. In October 2022, the Compensation Committee of the board approved a one-time increase in the annual equity award grant to non-executive directors, from 20,000 to 45,000 shares, to be awarded at the conclusion of the Company's 2023 Annual General Meeting of Shareholders.

Senior Management Compensation

The compensation for each member of our executive management comprises the following elements: base salary, annual bonus, personal benefits, pension or 401(k) plan and long-term incentives. For the year ended December 31, 2022, the aggregate compensation accrued or paid to the members of our senior management for services, whether or not a director, in all capacities was $11.8 million. The amount set aside or accrued by us to provide pension, retirement or similar benefits to members of senior management amounted to a total of $1,300 in the year ended December 31, 2022.

Bonus Plan

Management Incentive Compensation Plan

On May 17, 2016, the board of directors adopted the Management Incentive Compensation Plan. The Management Incentive Compensation Plan is designed to offer annual incentive compensation to our members of senior management and managers by rewarding the achievement of corporate goals and specifically measured personal goals that are consistent with and support the achievement of the corporate goals. The key terms of the Management Incentive Compensation Plan are summarized below.

Administration and Eligibility

Our Chief Executive Officer is responsible for the administration of the Management Incentive Compensation Plan; however, the compensation committee of the board of directors is responsible for approving any incentive awards to our Chief Executive Officer and other members of our senior management.

In order to be eligible to receive an incentive award under the Management Incentive Compensation Plan, an individual must have been employed with us for at least three consecutive months during a plan year, which runs from January 1 to December 31, and must achieve a rating of at least 75% of his or her personal goal.

For the year ended December 31, 2022 the Compensation Committee of our board of directors determined that our corporate goals were achieved at a level of 75%. Pursuant to the terms of the Management Incentive Compensation Plan, our Chief Executive Officer and non-executive director received an incentive award of £186,750, based on his target bonus percentage of 60%, the corporate goal achievement level and his base salary of £415,000.

Form and Determination of Incentive Awards

Incentive award payments may be made in cash, or, at the discretion of the compensation committee and subject to the approval of our board of directors, through the issuance of equity.

An individual's potential incentive award is calculated by multiplying his or her base salary as of the end of the plan year by the participant's "target award multiplier," which is a percentage ranging from 10% to 60%. The resulting amount is then divided between a corporate component and an individual component based on the weighting assigned for the individual's management level. After the end of the plan year, the actual achievement of the corporate and individual goals is determined, each expressed as a percentage of complete achievement, resulting in the calculation of the individual's total incentive award.

Annual performance reviews for participants in the Management Incentive Compensation Plan are completed following the end of the applicable plan year, with payment of incentive awards made as soon as practicable thereafter.

Termination of Employment

If a participant in the Management Incentive Compensation Plan gives or receives notice of termination or his or her employment is terminated prior to the payment of an incentive award under the Management Incentive Compensation Plan, our board of directors has discretion as to whether or not to pay an incentive award and whether to pay the full amount of the incentive award or a portion thereof.

Amendment

Our board of directors may abolish or alter the Management Incentive Compensation Plan at any time before, during or after a plan year is completed.

Senior Management Employment Arrangements

We have entered into arrangements with members of our senior management to grant restricted shares that are subject to vesting and a repurchase right in favor of us in the event the individual terminates his or her employment prior to the vesting date.

In order to align the interests of our executive management with our shareholders, members of our executive management are eligible to receive share-based awards pursuant to our equity incentive plans. The amount of the awards will generally be subject to the discretion of our board of directors and our compensation committee.

Outstanding Equity Awards, Grants and Option Exercise

The following table summarizes the equity awards that we granted to members of our board of directors and senior management pursuant to the terms of the 2017 Plan or 2018 Plan during the year ended December 31, 2022.

Name	Ordinary Share Underlying Option	Exercise Price	Grant Date	Expiration Date
Senior Management				
Christian Itin, Ph.D	250,000	$ 2.86	7/22/2022	7/22/20
Lucinda Crabtree, Ph.D	200,000	$ 4.24	4/1/2022	4/1/20
	150,000	$ 2.86	7/22/2022	7/22/20
Brent Rice	50,000	$ 2.86	7/22/2022	7/22/20
Christopher Vann	150,000	$ 2.86	7/22/2022	7/22/20
David Brochu	200,000	$ 2.86	7/22/2022	7/22/20
Edgar Braendle, M.D.	100,000	$ 2.86	7/22/2022	7/22/20
Martin Pule, MBBS	125,000	$ 2.86	7/22/2022	7/22/20
Non-Executive Directors				
John Johnson	20,000	$ 2.84	6/28/2022	6/28/20
Joseph Anderson, Ph.D.	20,000	$ 2.84	6/28/2022	6/28/20
Jay Backstrom, M.D, M.P.H	20,000	$ 2.84	6/28/2022	6/28/20
Linda Bain	20,000	$ 2.84	6/28/2022	6/28/20
John Berriman	20,000	$ 2.84	6/28/2022	6/28/20
Cynthia Butitta	20,000	$ 2.84	6/28/2022	6/28/20
Kapil Dhingra, M.D.	20,000	$ 2.84	6/28/2022	6/28/20
Martin Murphy, Ph.D.	20,000	$ 2.84	6/28/2022	6/28/20
William Young, Ph.D.	20,000	$ 2.84	6/28/2022	6/28/20

As of December 31, 2022, members of our board of directors and senior management held options to purchase an aggregate of 2,876,584 ordinary shares and restricted share awards covering an aggregate of 287,500 ordinary shares. No options were exercised by any members of our board of directors and senior management during the year ended December 31, 2022.

Equity Incentive Plans

We have granted equity securities under a share option plan and an equity incentive plan, which are summarized in this section.

2017 Share Option Plan

In 2017, our board of directors and shareholders approved the 2017 Plan to provide equity incentives to certain eligible employees and directors, consultants and advisors. The 2017 Plan provided for the grant of potentially tax-favored Enterprise Management Incentives, or EMI, options to our U.K. employees and for the grant of options to our U.S. employees. The 2017 Plan terminated in connection with our IPO; accordingly, as of September 30, 2018, there were no shares available for future grants under the 2017 Plan. Options previously granted pursuant to the 2017 Plan and that are currently outstanding remain subject to the terms of the 2017 Plan.

2018 Equity Incentive Plan

The 2018 Plan was approved by our board of directors and shareholders in June 2018 and became effective as of our IPO. The 2018 Plan allows for the grant of equity-based incentive awards to our employees and directors, including directors who are also our employees. Except where the context indicates otherwise, references hereunder to our ordinary shares shall be deemed to include a number of ADSs equal to the number of ordinary shares. The material terms of the 2018 Plan are summarized below:

Eligibility and Administration

Our employees and directors, and employees and consultants of our subsidiaries, referred to as service providers are eligible to receive awards under the 2018 Plan. The 2018 Plan is administered by our board of directors, which may delegate its duties and responsibilities to one or more committees of our directors and/or officers (referred to as the plan administrator below), subject to certain limitations imposed under the 2018 Plan, and other applicable laws and stock exchange rules. Our board of directors has delegated concurrent authority to administer the 2018 Plan to the compensation committee. The plan administrator has the authority to take all actions and make all determinations under the 2018 Plan, to interpret the 2018 Plan and award agreements and to adopt, amend and repeal rules for the administration of the 2018 Plan as it deems advisable. The plan administrator also has the authority to determine which eligible service providers receive awards, grant awards, set the terms and conditions of all awards under the 2018 Plan, including any vesting and vesting acceleration provisions, and designate whether such awards will cover our ordinary shares or ADSs, subject to the conditions and limitations in the 2018 Plan.

Shares Available for Awards

The maximum number of ordinary shares that may be issued under our 2018 Plan was initially 3,281,622 shares, which consists of 3,025,548 ordinary shares under the 2018 Plan at the time of its adoption and 256,074 ordinary shares that remained available for future grants under the 2017 Plan at the time of its termination. Additionally, the number of ordinary shares reserved for issuance under the 2018 Plan will automatically increase on October 1st of each year, for a period of not more than ten years, commencing on October 1, 2018 and ending on (and including) October 1, 2027, by an amount equal to the lesser of (i) 4% of the total number of ordinary shares outstanding on September 30 of the same calendar year or (ii) such fewer number of ordinary shares as the board of directors may designate prior to the applicable October 1st date. As of December 31, 2022, 15,340,772 ordinary shares may be issued under the 2018 Plan, of which 4,596,418 ordinary shares were available for future grant as of that date.

If an award under the 2018 Plan, or any prior equity incentive plan, expires, lapses or is terminated, exchanged for cash, surrendered, repurchased, canceled without having been fully exercised or forfeited, any unused shares subject to the award will, as applicable, become or again be available for new grants under the 2018 Plan. Awards granted under the 2018 Plan in substitution for any options or other equity or equity-based awards granted by an entity before the entity's merger or consolidation with us or our acquisition of the entity's property or stock will not reduce the shares available for grant under the 2018 Plan, but will count against the maximum number of shares that may be issued upon the exercise of incentive options.

Awards

The 2018 Plan provides for the grant of options, share appreciation rights, or SARs, restricted shares, dividend equivalents, restricted share units, or RSUs, and other share-based awards. All awards under the 2018 Plan will be set forth in award agreements, which will detail the terms and conditions of awards, including any applicable vesting and payment terms, change of control provisions and post-termination exercise limitations. A brief description of each award type follows.

Options and SARs. Options provide for the purchase of our ordinary shares in the future at an exercise price set on the grant date. SARs entitle their holder, upon exercise, to receive from us an amount equal to the appreciation of the shares subject to the award between the grant date and the exercise date. The plan administrator will determine the number of shares covered by each option and SAR, the exercise price of each option and SAR and the conditions and limitations applicable to the exercise of each option and SAR.

Restricted Shares and RSUs. Restricted shares are an award of nontransferable ordinary shares that remain forfeitable unless and until specified conditions are met and which may be subject to a purchase price. RSUs are contractual promises to deliver our ordinary shares in the future, which may also remain forfeitable unless and until specified conditions are met and may be accompanied by the right to receive the equivalent value of dividends paid on our ordinary shares prior to the delivery of the underlying shares. The plan administrator may provide that the delivery of the shares underlying RSUs will be deferred on a mandatory basis or at the election of the participant. The terms and conditions applicable to restricted shares and RSUs will be determined by the plan administrator, subject to the conditions and limitations contained in the 2018 Plan.

Other Share-Based Awards. Other share-based awards are awards of fully vested ordinary shares and other awards valued wholly or partially by referring to, or otherwise based on, our ordinary shares or other property. Other share-based awards may be granted to participants and may also be available as a payment form in the settlement of other awards, as standalone payments and as payment in lieu of compensation to which a participant is otherwise entitled. The plan administrator will determine the terms and conditions of other share-based awards, which may include any purchase price, performance goal, transfer restrictions and vesting conditions.

Performance Criteria

The plan administrator may select performance criteria for an award to establish performance goals for a performance period.

Certain Transactions

In connection with certain corporate transactions and events affecting our ordinary shares, including a change of control, another similar corporate transaction or event, another unusual or nonrecurring transaction or event affecting us or our financial statements or a change in any applicable laws or accounting principles, the plan administrator has broad discretion to take action under the 2018 Plan to prevent the dilution or enlargement of intended benefits, facilitate the transaction or event or give effect to the change in applicable laws or accounting principles. This includes canceling awards for cash or property, accelerating the vesting of awards, providing for the assumption or substitution of awards by a successor entity, adjusting the number and type of shares subject to outstanding awards and/or with respect to which awards may be granted under the 2018 Plan and replacing or terminating awards under the 2018 Plan. In addition, in the event of certain non-reciprocal transactions with our shareholders, the plan administrator will make equitable adjustments to the 2018 Plan and outstanding awards as it deems appropriate to reflect the transaction.

Plan Amendment and Termination

Our board of directors may amend or terminate the 2018 Plan at any time; however, no amendment, other than an amendment that increases the number of shares available under the 2018 Plan, may materially and adversely affect an award outstanding under the 2018 Plan without the consent of the affected participant and shareholder approval will be obtained for any amendment to the extent necessary to comply with applicable laws. Further, the plan administrator cannot, without the approval of our shareholders, amend any outstanding option or SAR to reduce its price per share or cancel any outstanding option or SAR in exchange for cash or another award under the 2018 Plan with an exercise price per share that is less than the exercise price per share of the original option or SAR. The 2018 Plan will remain in effect until the tenth anniversary of its effective date unless earlier terminated by our board of directors. No awards may be granted under the 2018 Plan after its termination.

Transferability and Participant Payments

Except as the plan administrator may determine or provide in an award agreement, awards under the 2018 Plan are generally non-transferrable, except by will or the laws of descent and distribution, or, subject to the plan administrator's consent, pursuant to a domestic relations order, and are generally exercisable only by the participant. With regard to tax withholding obligations arising in connection with awards under the 2018 Plan, and exercise price obligations arising in connection with the exercise of options under the 2018 Plan, the plan administrator may, in its discretion, accept cash, wire transfer or cheque, our ordinary shares that meet specified conditions, a promissory note, a "market sell order," such other consideration as the plan administrator deems suitable or any combination of the foregoing.

Non-U.S. Participants

The plan administrator may modify awards granted to participants who are non-U.S. nationals or employed outside the United States or establish sub-plans or procedures to address differences in laws, rules, regulations or customs of such foreign jurisdictions.

U.S. Taxpayers

Awards may be granted under the 2018 Plan to U.S. taxpayers.

2018 Non-Employee Sub Plan

The 2018 Non-Employee Sub Plan will govern equity awards granted to our non-executive directors and our service providers. The 2018 Non-Employee Sub Plan was adopted under the 2018 Plan and provides for equity- and cash-based awards to be made on identical terms to awards made under our 2018 Plan. If all or any part of an award granted under the 2018 Non-Employee Sub Plan expires, lapses or is terminated, exchanged for cash, surrendered, repurchased, canceled without having been fully exercised or forfeited, any unused shares covered by the award will become or again be available for new grants under the 2018 Non-Employee Sub Plan.

C. Board practices.

Composition of Our Board of Directors

Our board of directors presently has nine members and one vacancy. As a foreign private issuer, under the listing requirements and rules of Nasdaq, we are not required to have independent directors on our board of directors, except that our audit committee is required to consist fully of independent directors, subject to certain phase-in schedules. However, our board of directors has determined that Drs. Anderson, Dhingra and Murphy, Mses. Butitta and Bain and Messrs. Berriman, Johnson and Young representing eight of our nine directors, do not have a relationship that would interfere with the exercise of independent judgment in carrying out the responsibilities of director and that each of these directors is “independent” as that term is defined under Nasdaq rules.

In accordance with our Articles of Association, our board of directors are divided into three classes with staggered three-year terms. At each annual general meeting of shareholders, the directors whose terms expire will retire and are eligible for re-appointment by ordinary resolution at such annual general meeting. At each annual general meeting, the successors to directors whose terms then expire or the directors who have been re-appointed will be elected to serve from the time of election and qualification until the third annual meeting following election. Our directors are divided among the three classes as follows:

- Class I, which consists of Joseph Anderson, Martin Murphy and one vacancy, whose terms will expire at our 2025 annual general meeting;
- Class II, which consists of John Johnson, John Berriman and Kapil Dhingra, whose terms will expire at our 2023 annual general meeting; and
- Class III, which consists of Christian Itin, Cynthia Butitta, Linda Bain and William Young, whose terms will expire at our 2024 annual general meeting.

Each director shall serve until his or her successor is duly elected and qualified or until his or her earlier death, resignation or removal. Mr. Johnson has informed us of his intention not to stand for re-election as our Class II director at our 2023 Annual General Meeting of Shareholders.

Committees of Our Board of Directors

Our board of directors has four standing committees: an audit committee, a compensation committee, a nominating and corporate governance committee, and a research and development committee. The board has adopted a written charter for each of the committees below that is available to shareholders on our website at http://www.autolus.com/investor-relations/corporate-governance/documents-charters.

Audit Committee

The audit committee is composed of Ms. Bain (chair), Dr. Anderson and Ms. Butitta, and assists the board of directors in overseeing our accounting and financial reporting processes. The audit committee consists exclusively of members of our board who are financially literate, and our board of directors has determined that Ms. Bain is an “audit committee financial expert” as defined by applicable SEC rules and has the requisite financial sophistication as defined under the applicable Nasdaq rules and regulations. Our board of directors has determined that each member of the audit committee is an independent director under Nasdaq listing rules and under Rule 10A-3 under the Exchange Act. Our audit committee meets at least four times per year and oversees and reviews our internal controls, accounting policies and financial reporting, and provides a forum through which our independent registered public accounting firm reports. Our audit committee meets regularly with our independent registered public accounting firm without management present.

The primary functions of the audit committee include:

- recommending the appointment of the independent auditor to shareholders for approval at the general meeting of shareholders;
- the appointment, compensation, retention and oversight of any accounting firm engaged for the purpose of preparing or issuing an audit report or performing other audit services;
- pre-approving the audit services and non-audit services to be provided by our independent auditor before the auditor is engaged to render such services;
- evaluating the independent auditor’s qualifications, performance and independence, and presenting its conclusions to the full board of directors on at least an annual basis;
- reviewing and discussing with management and our independent registered public accounting firm our financial statements and our financial reporting process; and
- reviewing, approving or ratifying any related party transactions.

Compensation Committee

The compensation committee is composed of Mr. Berriman (chairman), Ms. Butitta and Dr. Murphy. Under SEC and Nasdaq rules, there are heightened independence standards for members of the compensation committee, including a prohibition against the receipt of any compensation from us other than standard board member fees. Although foreign private issuers are not required to meet this heightened standard, all of our compensation committee members meet this heightened standard.

The primary functions of the compensation committee include:

- identifying, reviewing, overseeing and proposing policies relevant to the compensation and benefits of our directors and senior management;
- evaluating the performance of senior management in light of such policies and reporting to the board; and
- overseeing and administering our share option plan, equity incentive plan and other benefit plans in operation from time to time.

Nominating and Corporate Governance Committee

The nominating and corporate governance committee is composed of Dr. Dhingra (chairman), Dr. Anderson and Ms. Bain.

The primary functions of the nominating and corporate governance committee include:

- drawing up selection criteria and appointment procedures for directors;
- recommending nominees for appointment to our board of directors and its corresponding committees; and
- assessing the functioning of individual members of our board of directors and management and reporting the results of such assessment to the full board of directors.

Research and Development Committee

The research and development committee is composed of Drs. Dhingra, Itin and Murphy. The Board has not yet appointed a replacement chair for this committee following Dr. Jay Backstrom's resignation as a director effective February 28, 2023.

The primary functions of the research and development committee include:

- overseeing the Company's scientific, technical, research and development strategy, and the implementation thereof;
- advising our board of directors and management regarding program prioritization, clinical development strategy, regulatory strategy and interactions, intellectual property, product manufacture and supply, and related matters; and
- reviewing and assessing business development opportunities related to research collaborations, licensing or strategic transactions.

D. Employees.

As of December 31, 2022, we had 399 full-time employees, 61 of whom hold Ph.D. or M.D. degrees. Of these 399 employees, 343 are engaged in research and development activities and 56 are engaged in business development, finance, information systems, facilities, human resources or administrative support. None of our employees is subject to a collective bargaining agreement. We consider our relationship with our employees to be good.

Our human capital resources objectives include, as applicable, identifying, recruiting, retaining, incentivizing and integrating our existing and additional employees. The principal purposes of our equity incentive plans are to attract, retain and motivate selected employees, consultants and directors through the granting of equity-based compensation awards.

	At December 31,		
	2022	**2021**	**2020**
Function:			
Administrative	56	51	59
Research and development	343	273	317
Total	**399**	**324**	**376**
Geography:			
United Kingdom	362	295	340
Germany and Switzerland	8	4	2
United States	29	25	34

E. Share ownership.

For information regarding the share ownership of our directors and members senior management, see Item 6.B—"Compensation" and Item 7.A —"Major Shareholders."

Item 7. Major Shareholders and Related Party Transactions

A. Major shareholders.

The following table sets forth information with respect to the beneficial ownership of our ordinary shares as of March 1, 2023 by:

- each beneficial owner of 5% or more of our outstanding ordinary shares;
- each of our current directors and each member of our senior management; and
- all of our directors and senior management as a group.

Beneficial ownership is determined in accordance with the rules of the SEC. These rules generally attribute beneficial ownership of securities to persons who possess sole or shared voting power or investment power with respect to those securities and include ordinary shares that can be acquired within 60 days of March 1, 2023. These ordinary shares, however, are not included in the computation of the percentage ownership of any other person. Percentage ownership calculations are based on 173,074,510 ordinary shares outstanding (including ordinary shares in the form of ADSs) as of March 1, 2023.

Except as otherwise indicated, all of the shares reflected in the table are ordinary shares and all persons listed below have sole voting and investment power with respect to the shares beneficially owned by them, subject to applicable community property laws. The information is not necessarily indicative of beneficial ownership for any other purpose.

Except as otherwise indicated, the addresses of the persons listed in the table is c/o Autolus Therapeutics plc, 191 Wood Lane, White City, London W12 7FP, United Kingdom.

NAME OF BENEFICIAL OWNER	Number of Ordinary Shares Beneficially Owned (#)	Percent of Ordinary Shares Beneficially Owned (%)
5% or Greater Shareholders:		
Syncona Portfolio Limited (1)	33,527,162	19.4 %
BXLS V - Autobahn L.P (2)	23,750,917	13.7 %
Deep Track Capital, LP (3)	15,000,000	8.7 %
Qatar Investment Authority (4)	15,000,000	8.7 %
PPF Capital Partners Fund B.V. (5)	14,612,275	8.4 %
Armistice Capital, LLC (6)	10,224,000	5.8 %
Senior Management and Directors:		
Christian Itin, Ph.D. (7)	1,922,043	1.1 %
Lucinda Crabtree,Ph.D. (8)	68,645	
Brent Rice (9)	139,176	*
Christopher Vann (10)	517,000	*
David Brochu (11)	260,936	*
Edgar Braendle M.D.(12)	280,207	*
Martin Pulé, MBBS (13)	902,419	*
John Johnson (14)	36,944	
Joseph Anderson, Ph.D. (15)	63,333	*
Linda Bain (16)	94,730	*
John Berriman (17)	215,362	*
Cynthia Butitta (18)	120,428	*
Kapil Dhingra, M.D. (19)	152,568	*
Martin Murphy, Ph.D. (20)	33,590,495	19.4 %
William Young, Ph.D. (21)	23,749	*
All directors and senior management as a group (15 persons) (22)	38,388,035	22.2 %

* Represents beneficial ownership of less than one percent.

(1) The information shown is based, in part, upon disclosures filed on a Schedule 13G/A on February 14, 2023 by Syncona Portfolio Limited. The number reported consists of (i) 12,180,333 ordinary shares and (ii) 21,346,829 ADSs. Syncona Portfolio Limited is a wholly owned subsidiary of Syncona Holdings Limited, which, in turn, is a wholly controlled subsidiary of Syncona Limited, a publicly-listed company. Each of Syncona Holdings Limited and Syncona Limited may be deemed to have voting and dispositive power over the securities held by Syncona Portfolio Limited. Investment and voting decisions with respect to these securities are made by Syncona Portfolio Limited acting upon the recommendation of an investment committee of Syncona Investment Management Limited, also a subsidiary of Syncona Holdings Limited. The members of this investment committee consist of Nigel Keen, Martin Murphy and Chris Hollowood. The address for Syncona Portfolio Limited is Arnold House, St Julian's Avenue, St Peter Port, Guernsey GY1 3RD, Channel Islands.

(2) The information shown is based, in part, upon disclosures filed on a Schedule 13D/A on December 13, 2022 by Blackstone Inc. The number reported consists of (i) 20,485,611 ADSs and (ii) 3,265,306 warrants. Blackstone Life Sciences Associates V (CYM) L.L.C. ("Autobahn GP") is the general partner of BXLS V – Autobahn L.P. ("BLXS V"). Blackstone Clarus GP L.L.C. is the general partner of Autobahn GP. The sole member of Blackstone Clarus GP L.L.C. is Blackstone Holdings I L.P. The general partner of Blackstone Holdings I L.P. is Blackstone Holdings I/II GP L.L.C. The sole member of Blackstone Holdings I/II GP L.L.C. is Blackstone Inc. The sole holder of the Series II preferred stock of Blackstone Inc. is Blackstone Group Management L.L.C. Blackstone Group Management L.L.C. is wholly-owned by Blackstone's senior managing directors and controlled by its founder, Stephen A. Schwarzman. The address of the principal business office of BLXS V and Autobahn GP is 101 Main Street, Suite 1210, Cambridge, MA 02142. The address of the principal business office of each of the other Blackstone entities and Mr. Schwarzman is c/o Blackstone Inc., 345 Park Avenue, New York, NY 10154.

(3) The information shown is based, in part, upon disclosures filed on a Schedule 13G on February 14, 2023 by Deep Track Capital, LP. The number reported consists of 15,000,000 ADSs. Deep Track Biotechnology Master Fund, Ltd is a wholly owned subsidiary of Deep Track Capital, LP. The address of the principal business office of Deep Track Capital, LP is 200 Greenwich Ave, 3rd Floor, Greenwich, CT 06830. The address of the principal business office of Deep Track Biotechnology Master Fund, Ltd. is c/o Walkers Corporate Limited, 190 Elgin Ave, George Town, KY1-9001, Cayman Islands. Deep Track Capital, LP. and Deep Track Biotechnology Master Fund, Ltd are controlled by its founder, David Kroin. The address of the principal business office of Mr. Kroin is c/o Deep Track Capital, LP, 200 Greenwich Ave, 3rd Floor, Greenwich, CT 06830.

(4) The information shown is based, in part, upon disclosures filed on a Schedule 13G on December 13, 2022 by Qatar Investment Authority. The number reported consists of 15,000,000 ADSs. The address of the principal business office of Qatar Investment Authority is Ooredoo Tower (Building 14), Al Dafna Street (Street 801), Al Dafna (Zone 61), Doha, P.O. Box 23224, Qatar.

(5) The information shown is based, in part, upon disclosures filed on a Schedule 13D/A on June 23, 2021 by PPF Capital Partners Fund B.V., PPF Group N.V. and Renata Kellnerova. The number reported consists of 14,612,275 ADSs. The principal shareholder of PPF Capital Partners Fund B.V. is PPF Group N.V., which is ultimately beneficially owned by Renata Kellnerova. The address of the principal office of each of PPF Group and PPF Capital is Strawinskylaan 933, 1077XX Amsterdam, The Netherlands. The address of the principal office of Renata Kellnerova is c/o PPF a.s., Evropská 2690/17, P.O. Box 177, 160 41 Prague 6, Czech Republic.

(6) The information shown is based, in part, upon disclosures filed on a Schedule 13G on February 14, 2023 by Armistice Capital, LLC. The number reported consists of 10,224,000 ADSs. Armistic Capital LLC are controlled by its founder, Steven Boyd. The address of the principal business office of Armistice Capital, LLC is 510 Madison Avenue, 7th Floor, New York, NY 10022. The address of the principal business office of Mr. Boyd is c/o Armistice Capital, LLC., 510 Madison Avenue, 7th Floor, New York, NY 10022.

(7) Consists of (i) 1,066,009 ordinary shares issuable upon conversion of restricted ordinary shares, (ii) 50,000 ordinary shares issuable upon restricted stock units and (iii)) 806,034 ordinary shares underlying options that are vested and exercisable within 60 days of March 01, 2023.

(8) Consists of ordinary shares underlying options that are vested and exercisable within 60 days of March 01, 2023.

(9) Consists of (i) 50,000 ordinary shares issuable upon conversion of restricted stock units and (ii) 89,176 ordinary shares underlying options that are vested and exercisable within 60 days of March 01, 2023.

(10) Consists of (i) 112,211 ordinary shares issuable upon conversion of restricted ordinary shares, ii) 40,000 ordinary shares issuable upon conversion of restricted stock units and (ii) 353,955 ordinary shares underlying options that are vested and exercisable within 60 days of March 01, 2023.

(11) Consists of (i) 60,000 ordinary shares issuable upon conversion of restricted stock units and (ii) 200,936 ordinary shares underlying options that are vested and exercisable within 60 days of March 01, 2023.

(12) Consists of (i) 100,000 ordinary shares issuable upon conversion of restricted stock units and (ii) 180,207 ordinary shares underlying options that are vested and exercisable within 60 days of March 01, 2023.

(13) Consists of (i) 538,677 ordinary shares, (ii) 160,064 ordinary shares issuable upon conversion of restricted ordinary shares, and (iii) 203,678 ordinary shares underlying options that are vested and exercisable within 60 days of March 01, 2022.

(14) Consists of ordinary shares underlying options that are vested and exercisable within 60 days of March 01, 2023.

(15) Consists of ordinary shares underlying options that are vested and exercisable within 60 days of March 01, 2023.

(16) Consists of ordinary shares underlying options that are vested and exercisable within 60 days of March 01, 2023.

(17) Consists of (i) 62,794 ordinary shares and (ii) 73,537 ordinary shares issuable upon conversion of restricted ordinary shares, and (iii) 79,031 ordinary shares underlying options that are vested and exercisable within 60 days of March 01, 2023.

(18) Consists of (i) 10,000 ADSs and (ii) 110,428 ordinary shares underlying options that are vested and exercisable within 60 days of March 01, 2023.

(19) Consists of (i) 73,537 ordinary shares issuable upon conversion of restricted ordinary shares and (ii) 79,031 ordinary shares underlying options that are vested and exercisable within 60 days of March 01, 2023.

(20) Consists of (i) the shares set forth in footnote (1) above, and (ii) and 63,333 ordinary shares underlying options that are vested and exercisable within 60 days of March 01 2023. Regarding the shares set forth in footnote (1), Dr. Murphy is one of two members of the Investment Committee of Syncona Investment Management Limited, which makes the investment decisions on which Syncona Portfolio Limited ultimately transacts. Dr. Murphy disclaims beneficial ownership of these shares except to the extent of any pecuniary interest therein.

(21) Consists of ordinary shares underlying options that are vested and exercisable within 60 days of March 01, 2023.

(22) Consists of (i) 35,636,491 ordinary shares, (ii) 287,500 ordinary shares issuable upon conversion of restricted stock units and (iii) 2,464,044 ordinary shares underlying options that are vested and exercisable within 60 days of March 01, 2023.

The significant changes in the beneficial ownership percentage held by our major shareholders during the past three years result from our April 2019, January 2020, February 2021 and December 2022 follow-on offerings of ADSs, our sale of ADSs to Blackstone in November 2021 in connection with our strategic collaboration agreement, and the dilution resulting from these offerings.

As of December 31, 2022, assuming that all of our ordinary shares represented by ADSs are held by residents of the United States other than ADSs held by the entities set forth in the table above and certain other holders that we know to be non-residents of the United States, we estimate that approximately 44.7% of our outstanding ordinary shares (including ordinary shares underlying ADSs) were held in the United States by 83 holders of record. The actual number of holders is greater than these numbers of record holders, and includes beneficial owners whose ordinary shares are held in street name by brokers and other nominees. This number of holders of record also does not include holders whose shares may be held in trust by other entities.

B. Related party transactions.

Policies and Procedures for Related Person Transactions

We have adopted a related person transaction policy that sets forth our procedures for the identification, review, consideration and approval or ratification of related person transactions. For purposes of our policy only, a related person transaction is a transaction, arrangement or relationship, or any series of similar transactions, arrangements or relationships, in which we or any of our subsidiaries and any related person are, were or will be participants in which the amount involved exceeds $120,000 or which is unusual in its nature or conditions. Transactions involving compensation for services provided to us as an employee or director are not covered by this policy. A related person is any executive officer, director or beneficial owner of more than 5% of any class of our voting securities, including any of their immediate family members and any entity owned or controlled by such persons.

For so long as we qualify as a foreign private issuer, a related person will be any:

- enterprise that directly or indirectly controls or is controlled by or is under common control with us;
- enterprise over which we have a significant influence or which has significant influence over us;
- individual owning, directly or indirectly, an interest in our voting power that gives them significant influence over us, and close members of any such individual's family;
- persons having authority or responsibility for planning, directing or controlling our activities, including directors and senior management and close members of such individuals' families; or
- enterprise in which a substantial interest in our voting power is owned, directly or indirectly, by any person described above or over which such a person is able to exercise significant influence, including enterprises owned by our directors or major shareholders and enterprises that have a member of key management in common with us.

If we cease to be a foreign private issuer, then, under our policy, a related person will be any:

- person who is, or at any time since the beginning of our last fiscal year was, a director or member of senior management of us or a nominee to become a director of us;
- security holder known by us to be the beneficial owner of more than 5% of any class of our voting securities;
- immediate family member of any of the foregoing; and
- firm, corporation or other entity in which any of the foregoing persons is an executive, partner or principal or similar control position or in which such person has a 5% or greater beneficial ownership interest.

Under the policy, if a transaction has been identified as a related person transaction, including any transaction that was not a related person transaction when originally consummated or any transaction that was not initially identified as a related person transaction prior to consummation, our management must present information regarding the related person transaction to our audit committee, or, if audit committee approval would be inappropriate, to another independent body of our board of directors for review, consideration and approval or ratification. The presentation must include a description of, among other things, the material facts, the interests, direct and indirect, of the related persons, the benefits to us of the transaction and whether the transaction is on terms that are comparable to the terms available to or from, as the case may be, an unrelated third party or to or from employees generally. Under the policy, we will collect information that we deem reasonably necessary from each director, member of senior management and, to the extent feasible, significant shareholder to enable us to identify any existing or potential related person transactions and to effectuate the terms of the policy. In addition, under our Code of Business Conduct and Ethics, our employees, members of senior management and directors have an affirmative responsibility to disclose any transaction or relationship that reasonably could be expected to give rise to a conflict of interest.

Transactions with Our Principal Shareholders, Directors and Members of our Senior Management

The following is a description of related party transactions we have entered into since January 1, 2020 with our directors, members of our senior management and holders of more than 5% of our outstanding voting securities and their affiliates, whom we refer to as our related persons, in which the amount involved exceeds $120,000 and that are material to us, other than the compensation arrangements we describe in Item 6.B. "Management - Compensation of Senior Management and Directors."

Transactions with Entities Affiliated with Syncona

Participation in January 2020 Public Offering

In our January 2020 public offering, Syncona Portfolio Limited purchased 1,363,636 ADSs. This purchase was made through the underwriters at the public offering price.

License Agreement

In September 2020, we entered into a license agreement with an investee company of Syncona Portfolio Limited, a holder of more than 5% of our share capital. This agreement generated $242,000 of license revenue which is recognized in the Consolidated Statement of Operations for the year ended December 31, 2020. There was no revenue recognized during the year ended December 31, 2022 and 2021, respectively arising from the license agreement with the investee company of Syncona Portfolio Limited.

Participation in February 2021 Public Offering

In our February 2021 public offering, Syncona Portfolio Limited purchased 3,571,428 ADSs. This purchase was made through the underwriters at the public offering price.

Transactions with Entities Affiliated with Blackstone

Collaboration and Financing Agreement

On November 6, 2021, Autolus Therapeutics plc and its wholly-owned subsidiary, Autolus Limited ("Autolus"; Autolus and Autolus Therapeutics plc are collectively referred to herein as the "Company") and BXLS V – Autobahn L.P. ("Blackstone") entered into a Collaboration and Financing Agreement (the "Agreement") pursuant to which Blackstone has agreed to pay the Company up to $150 million to provide financing for the continued development and commercialization of the Company's CD19 CAR T cell investigational therapy product candidate, obecabtagene autoleucel ("obe-cel," previously known as AUTO1) as well as the Company's next generation product candidates of obe-cel (obe-cel and such next generation products, collectively, the "Collaboration Products"). The first $50 million in project financing will be payable by Blackstone as an upfront payment within 15 business days of entry into the Agreement, and the remainder (up to $100 million) will be payable based on certain specified clinical, manufacturing and regulatory milestones (each such payment, a "Blackstone Development Payment" and collectively, the "Blackstone Development Payments").

In exchange for the Blackstone Development Payments, Autolus has agreed to make payments to Blackstone (the "Revenue Share Payments") equal to a mid-single digit royalty, subject to the Aggregate Cap (as defined in the Agreement) on payments under the Agreement, based on net sales anywhere in the world of (i) Collaboration Products in B-cell malignancies, (ii) subject to certain conditions set forth in the Agreement, the Company's CD19 and CD22 CAR T cell investigational therapy product candidate known as AUTO3 in B-cell malignancies, and (iii) certain Collaboration Products to the extent developed or commercialized in indications other than a B-cell malignancy ("Obe-cel Franchise Products"). Autolus is also obligated to make payments (the "Sales Milestone Payments"), subject to the Aggregate Cap, if certain cumulative net sales levels are achieved.

Autolus Therapeutics plc and all of its subsidiaries have provided, and all of its future subsidiaries will provide, a guaranty to Blackstone of Autolus's obligations under the Agreement. In addition, Autolus has granted a security interest in Autolus Limited to Blackstone in (a) intellectual property that is necessary or useful for the development, manufacture, use, commercialization, import, or export of Collaboration Products (the "Autolus IP Collateral"), (b) a segregated and blocked cash collateral account that will be established following regulatory approval of any Collaboration Product, solely for the purpose of receiving remittance of Revenue Share Payments and Sales Milestone Payments and disbursement thereof to Blackstone as provided in the Agreement, (c) a segregated cash collateral account established solely for the purpose of receiving Blackstone Development Payments and disbursing them for use by the Company in accordance with the terms of the Agreement, (d) all assets or property of the Company related to or arising from the Collaboration Products in any B-cell malignancy or the Obe-cel Franchise Products in any indication other than a B-cell malignancy, and (e) all proceeds and products of each of the foregoing (collectively referred to as the "Collateral"). The security interest will be maintained until the earlier of (i) such time at which cumulative payments made by Autolus under the Agreement equal $150 million and (ii) the first commercial sale in the United States of obe-cel or any other Lead Product (as defined in the Agreement) selected to replace obe-cel following a Program Failure (as defined in the Agreement) (such time, the "Release Time").

The Agreement contains negative covenants that restrict the Company and its subsidiaries from, among other things, (a) granting liens or otherwise encumbering its assets that constitute Collateral, (b) paying dividends or making distributions on account or, or redeeming, retiring or purchasing any capital stock, (c) other than certain permitted licensing transactions, transferring to third parties rights to commercialize any Collaboration Product or the Autolus IP Collateral anywhere in the world and (d) selling, transferring or assigning any rights to receive payments of royalties, returns on net sales, revenue share or other compensation or license fees with respect to a Collaboration Product in a B-cell malignancy and/or Obe-cel Franchise Product in any indication other than a B-cell malignancy. Each of the negative covenants is subject to exceptions and carveouts set forth in the Agreement. The negative covenants will fall away upon the Release Time.

The Company and Blackstone will form a joint steering committee, comprised of representatives from each party, to provide non-binding advice on the development, manufacture and commercialization of Collaboration Products in any B-cell malignancy anywhere in the world. Blackstone will also have the right to designate one representative with relevant experience to participate in the Company's existing CMC advisory board, which advises the Company on technical, scientific and regulatory matters relating to the manufacture of the Lead Product. In addition, Blackstone was entitled to appoint a member to our board of directors. Dr. Young was appointed as Blackstone's designee to our board of directors in November 2021.

Warrant Issuance

On November 6, 2021, in connection with the Agreement, Autolus Therapeutics plc issued a warrant to Blackstone to purchase up to 3,265,306 American Depositary Shares (the "Warrant"). The Warrant has an exercise price of $7.35 per American Depositary Share, and is exercisable in whole or in part until November 6, 2026. The Warrant was offered and sold in reliance on the exemption afforded by Section 4(a)(2) of the U.S. Securities Act of 1933, as amended (the "Securities Act").

Securities Purchase Agreement and Registration Rights Agreement

In connection with entering into the Agreement, Autolus Therapeutics plc and Blackstone also entered into a Securities Purchase Agreement dated November 6, 2021 (the "Purchase Agreement"). Pursuant to the Purchase Agreement, Blackstone will pay Autolus Therapeutics plc an aggregate of $100 million to purchase an aggregate of 17,985,611 American Depositary Shares, representing 17,985,611 ordinary shares of Autolus Therapeutics plc with a nominal value of $0.000042 per share (the "ADSs") at $5.56 per ADS, which is the closing price of the ADSs on the Nasdaq Stock Market on November 5, 2021 (the "Blackstone Equity Investment").

In connection with the Purchase Agreement, on November 6, 2021, Autolus Therapeutics plc entered into a Registration Rights Agreement (the "Registration Rights Agreement") with Blackstone. Pursuant to the Registration Rights Agreement, the Company agreed to prepare and file a registration statement with the Securities and Exchange Commission (the "SEC") within 45 days following the Closing Date for purposes of registering the ordinary shares underlying the ADSs issued pursuant to the Purchase Agreement and the ordinary shares underlying the ADS to be issued upon exercise of the Warrant (the "Securities"). The ADSs are registered on a Registration Statement on Form F-6 (File No. 333-224837). Autolus Therapeutics plc has agreed to use its commercially reasonable efforts to cause the registration statement to be declared effective by the SEC.

Participation in December 2022 Public Offering

In connection with our December 2022 public offering, certain of our related parties purchased our ADSs from the underwriters at the public offering price of $2.00 per ADSs, and on the same terms as other investors in our public offering. The following table summarizes purchases of ADS by our related parties:

RELATED PARTY	ADSs	TOTAL PURCHASE PRICE
Syncona Portfolio Limited (1)	14,000,000	$ 28,000,000
Deep Track Capital, LP (2)	15,000,000	$ 30,000,000
Qatar Investment Authority (3)	15,000,000	$ 30,000,000
Armistice Capital, LLC (4)	10,000,000	$ 20,000,000
Entities affiliated with Blackstone (5)	2,500,000	$ 5,000,000

(1) Syncona Portfolio Limited is a holder of more than 5% of our capital stock.
(2) In connection with this transaction, Deep Track Capital, LP became a holder of more than 5% of our capital stock.
(3) In connection with this transaction, Qatar Investment Authority became a holder of more than 5% of our capital stock.
(4) In connection with this transaction, Armistice Capital, LLC became a holder of more than 5% of our capital stock.
(5) Entities affiliated with Blackstone collectively hold more than 5% of our capital stock.

Agreements with Our Senior Management and Directors

We have entered into service agreements with the members of our senior management and non-executive directors. See Item 6.B. "Management—Compensation of Senior Management and Directors." These agreements contain customary provisions and representations, including confidentiality, non-competition, non-solicitation and inventions assignment undertakings by the members of our senior management. However, the enforceability of the non-competition provisions may be limited under applicable law.

Indemnification Agreements

We entered into a deed of indemnity with each of our directors and members of our senior management. These agreements and our Articles of Association require us to indemnify our directors and senior management to the fullest extent permitted by law.

Registration Rights Agreement

We have entered into a registration rights agreement with certain of our existing shareholders pursuant to which we have granted them customary registration rights for the resale of the ordinary shares held by certain of our existing shareholders.

C. Interests of experts and counsel.

Not applicable.

Item 8. Financial Information.

A. Consolidated Statements and Other Financial Information.

Our consolidated financial statements are appended at the end of this Annual Report, starting on page F-1.

Dividend Policy

We have never declared or paid a dividend, and we do not anticipate declaring or paying dividends in the foreseeable future. We intend to retain all available funds and any future earnings to fund the development and expansion of our business.

Under English law, among other things, we may only pay dividends if we have sufficient distributable reserves (on a non-consolidated basis), which are our accumulated realized profits that have not been previously distributed or capitalized less our accumulated realized losses, so far as such losses have not been previously written off in a reduction or reorganization of capital.

Legal Proceedings

We are not currently a party to any material legal proceedings. From time to time, we may be a party to litigation or subject to claims incident to the ordinary course of business. Although the results of litigation and claims cannot be predicted with certainty, we currently believe that the final outcome of these ordinary course matters will not have a significant effect on our financial position or profitability. Regardless of the outcome, litigation can have an adverse impact on us because of defense and settlement costs, diversion of management resources and other factors.

B. Significant Changes.

Not applicable.

Item 9. The Offer and Listing.

A. Offer and listing details.

Our ADS began trading on the Nasdaq Global Select Market under the symbol “AUTL” since June 22, 2018. Prior to that date, there was no public trading market for ADSs or our ordinary shares.

B. Plan of distribution.

Not applicable.

C. Markets.

Our ADSs have been listed on the Nasdaq Global Select Market under the symbol “AUTL” since June 22, 2018. Our ordinary shares are not listed.

D. Selling shareholders.

Not applicable.

E. Dilution.

Not applicable.

F. Expenses of the issue.

Not applicable.

Item 10. Additional Information.

A. Share capital.

Not applicable.

B. Memorandum and articles of association.

General

We are a public limited company, originally incorporated pursuant to the laws of England and Wales in February 2018 as a private company with limited liability called Autolus Therapeutics Limited. Autolus Limited was originally incorporated under the laws of England and Wales in July 2014. Pursuant to the terms of our corporate reorganization, the shareholders of Autolus Limited exchanged each of the shares held by them in Autolus Limited for the same number and class of newly issued shares of Autolus Therapeutics Limited and, as a result, Autolus Limited became a wholly owned subsidiary of Autolus Therapeutics Limited. On June 18, 2018, Autolus Therapeutics Limited re-registered as a public limited company and was renamed Autolus Therapeutics plc. On June 22, 2018, our outstanding preferred and ordinary shares were converted into a single class of ordinary shares and various classes of deferred shares, and we completed our initial public offering of ADSs on the Nasdaq Global Select Market.

We are registered with the Registrar of Companies in England and Wales under number 11185179, and our registered office is at The Mediaworks, 191 Wood Lane, White City, London W12 7FP, United Kingdom.

Issued Share Capital

Effective from June 28, 2022, the board of directors has the authority, as approved by shareholders at the Annual General Meeting held on such date, to allot new ordinary shares or to grant rights to subscribe for or to convert any security into our ordinary shares up to a maximum aggregate nominal amount of $8,400. This authority runs for five years and will expire on June 27, 2027. Effective as of June 28, 2022, the board also has the authority, as approved by shareholders at the Annual General Meeting held on such date, to allot ordinary shares for cash or to grant rights to subscribe for or to convert any security into ordinary shares in the Company without first offering them to existing shareholders in proportion to their existing holdings up to an aggregate maximum nominal amount of $8,400. This authority runs for five years and will expire on June 27, 2027.

As of December 31, 2022, our issued capital share consisted of 173,074,510 ordinary shares, with a nominal value of $0.000042 per share, (ii) 34,425 deferred shares, with a nominal value of £0.00001 per share, (iii) 88,893,548 B deferred shares, with a nominal value of £0.00099 per share and (iv) 1 C deferred share, with a nominal value of £0.000008. Each issued share has been fully paid.

Ordinary Shares

Our ordinary shares have the rights and restrictions described in “Key Provisions of Our Articles of Association” below. The following summarizes the rights of holders of our ordinary shares:

- each holder of our ordinary shares is entitled to one vote per ordinary share on all matters to be voted on by shareholders generally;
- the holders of the ordinary shares shall be entitled to receive notice of, attend, speak and vote at our general meetings; and
- holders of our ordinary shares are entitled to receive such dividends as are recommended by our directors and declared by our shareholders.

Registered Shares

We are required by the Companies Act to keep a register of our shareholders. Under English law, the ordinary shares are deemed to be issued when the name of the shareholder is entered in our register of members. The register of members therefore is prima facie evidence of the identity of our shareholders, and the shares that they hold. The register of members generally provides limited, or no, information regarding the ultimate beneficial owners of our ordinary shares. Our register of members is maintained by our registrar, Computershare Investor Services plc.

Holders of our ADSs will not be treated as our shareholders and their names will therefore not be entered in our share register. The Depositary, the custodian or their nominees will be the holder of the ordinary shares underlying our ADSs. Holders of our ADSs have a right to receive the ordinary shares underlying their ADSs. For discussion on our ADSs and ADS holder rights, see “Description of American Depositary Shares” in this Annual Report.

Under the Companies Act, we must enter an allotment of shares in our register of members as soon as practicable and in any event within two months of the allotment. We also are required by the Companies Act to register a transfer of shares (or give the transferee notice of and reasons for refusal as the transferee may reasonably request) as soon as practicable and in any event within two months of receiving notice of the transfer.

We, any of our shareholders or any other affected person may apply to the court for rectification of the register of members if:

- the name of any person, without sufficient cause, is wrongly entered in or omitted from our register of members; or
- there is a default or unnecessary delay in entering on the register the fact of any person having ceased to be a member or on which we have a lien, provided that such delay does not prevent dealings in the shares taking place on an open and proper basis.

Registration Rights

We and the holders of certain of our ordinary shares are parties to a registration rights agreement that provides the following registration rights:

- *Demand Registration on Form F-1* - each holder shall be entitled to demand registrations on Form F-1, provided that these demand registration rights may only be exercised by holders who hold, in the aggregate, not less than 25% of the aggregate number of shares then outstanding and held by all holders who are party to the agreement, and provided further that the we shall not be required to effect a demand registration statement after we have effected two demand registration statements, and such registration statements have been declared or ordered effective.
- *Demand Registration on Form F-3* - each holder shall be entitled to unlimited demand registrations on Form F-3, if we are eligible to register shares on Form F-3, provided that these demand registration rights may only be exercised by holders who hold, in the aggregate, not less than 10% of the aggregate number of shares then outstanding and held by all holders who are party to the agreement. These demand registration rights may not be exercised more than twice in any twelve-month period.
- *Piggyback Registration* - each holder shall be entitled to piggyback registration rights, subject, in the case of an underwritten offering, to customary reductions by the underwriter, provided that the aggregate number of securities of the holders included in the registration may not be reduced to less than 30% of the total number of securities registered.
- *Expenses* - We will pay all registration expenses relating to the exercise of the registration rights above, including the reasonable fees and expenses of legal counsel to the participating holders up to a maximum of $50,000 in the aggregate per registration.

In addition, Pursuant to the Blackstone Registration Rights Agreement, we prepared and filed a registration statement with the SEC for the purpose of registering the ordinary shares underlying the ADSs issued pursuant to the Blackstone Securities Purchase Agreement and the ordinary shares underlying the ADSs to be issued upon exercise of the Blackstone Warrant.

Preemptive Rights

English law generally provides shareholders with statutory preemptive rights when new shares are issued for cash; however, it is possible for the articles of association, or shareholders by way of a special resolution at a general meeting, to disapply preemptive rights. Such a disapplication of preemptive rights may be for a maximum period of up to five years from the date of adoption of the articles of association, if the disapplication is contained in the articles of association, or from the date of the shareholder special resolution, if the disapplication is by shareholder special resolution. In either case, this disapplication would need to be renewed by our shareholders upon its expiration (i.e., at least every five years). Our articles of association disapplied preemptive rights for a period of five years from the date of adoption on June 26, 2018. At our Annual General Meeting on June 28, 2022, shareholders authorized the board of directors to disapply preemptive rights for a further period of five years from the date of such authorization to June 27, 2027. This disapplication will need to be renewed upon expiration (i.e., at least every five years) to remain effective, but may be sought more frequently for additional five-year terms (or any shorter period).

Purchase of Own Shares

English law permits a public limited company to purchase its own shares out of the distributable profits of the company or the proceeds of a fresh issue of shares made for the purpose of financing the purchase, subject to complying with procedural requirements under the Companies Act and provided that its articles of association do not prohibit it from doing so. Our articles of association, a summary of which is provided below, do not prohibit us from purchasing our own shares. A public limited company must not purchase its own shares if, as a result of the purchase, there would no longer be any issued shares of the company other than redeemable shares or shares held as treasury shares.

Any such purchase will be either a “market purchase” or “off market purchase,” each as defined in the Companies Act. A “market purchase” is a purchase made on a “recognized investment exchange” (other than an overseas exchange) as defined in the UK Financial Services and Markets Act 2000, or FSMA. An “off market purchase” is a purchase that is not made on a “recognized investment exchange.” Both “market purchases” and “off market purchases” require prior shareholder approval by way of an ordinary resolution. In the case of an “off market purchase,” a company’s shareholders, other than the shareholders from whom the company is purchasing shares, must approve the terms of the contract to purchase shares and in the case of a “market purchase,” the shareholders must approve the maximum number of shares that can be purchased and the maximum and minimum prices to be paid by the company.

The Nasdaq Global Select Market is an “overseas exchange” for the purposes of the Companies Act and does not fall within the definition of a “recognized investment exchange” for the purposes of FSMA and any purchase made by us would accordingly need to comply with the procedural requirements under the Companies Act that regulate “off market purchases.”

A share buy-back by a company of its shares will give rise to U.K. stamp duty reserve tax and stamp duty at the rate of 0.5% of the amount or value of the consideration payable by the company (rounded up to the next £5.00), and such stamp duty reserve tax or stamp duty will be paid by the company. The charge to stamp duty reserve tax will be cancelled or, if already paid, repaid (generally with interest), where a transfer instrument for stamp duty purposes has been duly stamped within six years of the charge arising (either by paying the stamp duty or by claiming an appropriate relief) or if the instrument is otherwise exempt from stamp duty.

Distributions and Dividends

Under the Companies Act, before a company can lawfully make a distribution or dividend, it must ensure that it has sufficient distributable reserves, as determined on a non-consolidated basis. The basic rule is that a company’s profits available for the purpose of making a distribution are its accumulated, realized profits, so far as not previously utilized by distribution or capitalization, less its accumulated, realized losses, so far as not previously written off in a reduction or reorganization of capital duly made. The requirement to have sufficient distributable reserves before a distribution or dividend can be paid applies to us and to each of our subsidiaries that has been incorporated under English law.

As a public company, it will not be sufficient that we have made a distributable profit for the purpose of making a distribution. An additional capital maintenance requirement will be imposed on us to ensure that the net worth of the company is at least equal to the amount of its capital. A public company can only make a distribution:

- if, at the time that the distribution is made, the amount of its net assets (that is, the total excess of assets over liabilities) is not less than the total of its called up share capital and undistributable reserves; and
- if, and to the extent that, the distribution itself, at the time that it is made, does not reduce the amount of its net assets to less than that total.

Disclosure of Interest in Shares

Pursuant to Part 22 of the Companies Act, we are empowered to give by notice in writing to any person whom we know or have reasonable cause to believe to be interested in our shares, or at any time during the three years immediately preceding the date on which the notice is issued has been so interested, within a reasonable time to disclose to us particulars of that person's interest and, so far as is within his or her knowledge, particulars of any other interest that subsists or subsisted in those shares.

Under our articles of association, if a person defaults in supplying us with the required particulars in relation to the shares in question, or default shares within the prescribed period, our board of directors may by notice direct that:

- the relevant shareholder shall not be entitled in respect of the default shares to be present or vote, either in person or by proxy, at any general meeting or separate meeting of the holders of a class of shares or upon any poll or to exercise any other right conferred by the membership in relation to any such meeting;
- where the default shares represent at least 0.25% of their class, (a) any dividend or other money payable in respect of the default shares shall be retained by us without liability to pay interest, and/or (b) no transfers by the relevant shareholder of any default shares may be registered, unless the shareholder himself or herself is not in default and the shareholder proves to the satisfaction of the board of directors that no person in default as regards to supplying such information is interested in any of the default shares; and/or
- any shares held by the relevant shareholder in uncertificated form shall be converted into certificated form.

Key Provisions of Our Articles of Association

The following is a summary of certain key provisions of our articles of association, which were adopted by a special resolution of our shareholders passed in June 2018. Please note that this is only a summary and is not intended to be exhaustive. For further information please refer to the full version of our articles of association, which is included as an exhibit to this Annual Report

The articles of association contain no specific restrictions on our purpose and therefore, by virtue of section 31(1) of the Companies Act, our purpose is unrestricted.

The articles of association contain, among other things, provisions to the following effect:

Share Capital

Our share capital currently consists of ordinary shares, deferred shares, B deferred shares and C deferred shares. We may issue shares with such rights or restrictions as may be determined by ordinary resolution, including shares which are to be redeemed, or are liable to be redeemed at our option or the option of the holder of such shares.

Voting

Holders of ordinary shares have the right to receive notice of, and to vote at, our general meetings. Any resolution put to the vote of a general meeting must be decided exclusively on a poll. Each shareholder who is present in person (or, being a corporation, by representative) or by proxy has one vote in respect of every share held by him.

Variation of Rights

Whenever our share capital is divided into different classes of shares, the special rights attached to any class may be varied or abrogated either (i) with the consent in writing of the holders of three-quarters in nominal value of the issued shares of that class, (ii) with the authority of a special resolution passed at a separate meeting of the holders of the shares of that class or (iii) in any other way as expressly provided for in relation to such rights, and may be so varied and abrogated while the company is a going concern.

Dividends

We may, subject to the provisions of the Companies Act and our articles of association, by ordinary resolution from time to time declare dividends to be paid to shareholders not exceeding the amount recommended by our board of directors. Subject to the provisions of the Companies Act, in the discretion of board of directors, on the basis that our profits justify such payments, the board of directors may pay interim dividends on any class of our shares.

Any dividend unclaimed after a period of 12 years from the date such dividend was declared or became payable shall, if the board of directors resolve, be forfeited, cease to remain owing and shall revert to us. No dividend or other moneys payable on or in respect of a share shall bear interest as against us.

Transfer of Ordinary Shares

Each member may transfer all or any of his shares which are in certificated form by means of an instrument of transfer in writing in any usual form or in any other form which the board of directors may approve.

The board of directors may, in its absolute discretion, refuse to register a transfer of certificated shares unless:

(i) it is for a share which is fully paid up;

(ii) it is for a share upon which the company has no lien;

(iii) it is only for one class of share;

(iv) it is in favor of a single transferee or no more than four joint transferees;

(v) it is duly stamped or is duly certificated or otherwise shown to the satisfaction of the board of directors to be exempt from stamp duty; and

(vi) it is delivered for registration to the registered office of the company (or such other place as the board of directors may determine), accompanied (except in the case of a transfer by a person to whom the company is not required by law to issue a certificate and to whom a certificate has not been issued or in the case of a renunciation) by the certificate for the shares to which it relates and such other evidence as the board of directors may reasonably require to prove the title of the transferor (or person renouncing) and the due execution of the transfer or renunciation by him or, if the transfer or renunciation is executed by some other person on his behalf, the authority of that person to do so.

Allotment of Shares and Preemption Rights

Subject to the Companies Act and to any rights attached to existing shares, any share may be issued with or have attached to it such rights and restrictions as the company may by ordinary resolution determine, or if no ordinary resolution has been passed or so far as the resolution does not make specific provision, as the board of directors may determine (including shares which are to be redeemed, or are liable to be redeemed at the option of the company or the holder of such shares).

In accordance with section 551 of the Companies Act, the board of directors may be generally and unconditionally authorized to exercise for each prescribed period all the powers of the company to allot shares up to an aggregate nominal amount equal to the amount stated in the relevant ordinary resolution authorizing such allotment. Effective as of June 28, 2022, the board has the authority, as approved by shareholders at the Annual General Meeting held on such date, to allot new ordinary shares or to grant rights to subscribe for or to convert any security into our ordinary shares up to a maximum aggregate nominal amount of $8,400. This authority runs for five years and will expire on June 27, 2027.

The provisions of section 561 of the Companies Act (which confer on shareholders rights of preemption in respect of the allotment of equity securities which are paid up in cash) apply to the company except to the extent disapplied by special resolution of the shareholders of the company, or in the company's articles of association. Effective as of June 28, 2022, the board has the authority, as approved by shareholders at the Annual General Meeting held on such date, to disapply preemption rights in respect of allotments of shares up to an aggregate maximum nominal amount of $8,400. This authority runs for five years and will expire on June 27, 2027.

Alteration of Share Capital

In accordance with the Companies Act, the company may by ordinary resolution consolidate its share capital into shares of larger nominal value than its existing shares, or sub-divide its shares into shares of a smaller amount than the existing shares, and may in each case determine that the shares resulting from such sub-division or share consolidation may have a preference or advantage or be subject to a particular restriction.

The company may, in accordance with the Companies Act, reduce or cancel its share capital or any capital redemption reserve or share premium account in any manner and with and subject to any conditions, authorities and consents required by law.

Board of Directors

Unless otherwise determined by the company by ordinary resolution, the number of directors (other than any alternate directors) shall not be less than two and not more than 15.

Subject to the articles of association and the Companies Act, the company may by ordinary resolution appoint a person who is willing to act as a director and the board of directors shall have power at any time to appoint any person who is willing to act as a director, in both cases either to fill a vacancy or as an addition to the existing board of directors, provided the total number of directors shall not exceed the maximum number of 15.

Our articles of association provide that our board of directors is divided into three classes, each of which will consist, as nearly as possible, of one-third of the total number of directors constituting our entire board and which will serve staggered three-year terms. At each annual general meeting, the successors to directors whose terms then expire will be elected to serve from the time of election and qualification until the third annual meeting following election.

At every subsequent annual general meeting, any director who either (i) has been appointed by the board of directors since the last annual general meeting or (ii) was not appointed or reappointed at one of the preceding two annual general meetings, must retire from office and may offer themselves for reappointment by the shareholders by ordinary resolution.

Subject to the provisions of the articles of association, the board of directors may regulate their proceedings as they deem appropriate. A director may, and the secretary at the request of a director shall, call a meeting of the directors.

The quorum for a meeting of the board of directors may be determined by the board and until otherwise determined, it is set at two directors.

Questions and matters requiring resolution arising at a meeting shall be decided by a majority of votes of the participating directors, with each director having one vote. In the case of an equality of votes, the chairman will have a casting vote or second vote, unless he or she is not entitled to vote on the resolution in question.

Directors shall be entitled to receive such compensation as the board shall determine for their services to the company as directors, and for any other service which they undertake for the company provided that the aggregate fees payable to the directors must not exceed $2,500,000 per annum or such higher amount as may from time to time be decided by ordinary resolution. The directors shall also be entitled to be paid all reasonable expenses properly incurred by them in connection with their attendance at meetings of shareholders or class meetings, board of director or committee meetings or otherwise in connection with the exercise of their powers and the discharge of their responsibilities in relation to the company.

The board of directors may, in accordance with the requirements in the articles of association, authorize any matter proposed to them by any director which would, if not authorized, involve a director breaching their duty under the Companies Act, to avoid conflicts of interests.

A director seeking authorization in respect of such conflict shall declare to the board of directors the nature and extent of his interest in a conflict as soon as is reasonably practicable. The director shall provide the board with such details of the matter as are necessary for the board to decide how to address the conflict together with such additional information as may be requested by the board.

Any authorization by the board of directors will be effective only if:

(i) to the extent permitted by the Companies Act, the matter in question shall have been proposed by any director for consideration in the same way that any other matter may be proposed to the directors under the provisions of the articles of association;

(ii) any requirement as to the quorum for consideration of the relevant matter is met without counting the conflicted director and any other conflicted director; and

(iii) the matter is agreed to without the conflicted director voting or would be agreed to if the conflicted director's and any other interested director's vote is not counted.

Subject to the provisions of the Companies Act, every director, secretary or other officer of the company (other than an auditor) is entitled to be indemnified against all losses and liabilities incurred in connection with his or her duties and powers.

General Meetings

The company must convene and hold annual general meetings once a year in accordance with the Companies Act. Under the Companies Act, an annual general meeting must be called by notice of at least 21 days.

No business shall be transacted at any general meeting unless a quorum is present when the meeting proceeds to business, but the absence of a quorum shall not preclude the choice or appointment of a chairman of the meeting which shall not be treated as part of the business of the meeting. Unless otherwise provided by the articles of association, two shareholders present in person or by proxy and entitled to vote shall be a quorum for all purposes.

Borrowing Powers

Subject to the articles of association and the Companies Act, the board of directors may exercise all of the powers of the company to:

(a) borrow money;

(b) indemnify and guarantee;

(c) mortgage or charge the assets of the company;

(d) create and issue debentures and other securities; and

(e) give security either outright or as collateral security for any debt, liability or obligation of the company or of any third party.

Capitalization of Profits

The directors may, if they are so authorized by an ordinary resolution of the shareholders, decide to capitalize any undivided profits of the company not required for paying any preferential dividend (whether or not they are available for distribution), or any sum standing to the credit of the company's share premium account, capital redemption reserve or any other reserve or fund of the company which is available for distribution. The directors may also, subject to the aforementioned ordinary resolution, appropriate any sum which they so decide to capitalize to the persons who would have been entitled to it if it were distributed by way of dividend and in the same proportions.

Uncertificated Shares

Subject to the Companies Act, the board of directors may permit title to shares of any class to be issued or held otherwise than by a certificate and to be transferred by means of a "relevant system" (*e.g.*, DTC) without a certificate.

The board of directors may take such steps as it sees fit in relation to the evidencing of and transfer of title to uncertificated shares, any records relating to the holding of uncertificated shares and the conversion of uncertificated shares to certificated shares, or *vice versa*.

The company may by notice in writing to the holder of an uncertificated share, require that share to be converted into certificated form.

The board of directors may take such other action that the board considers appropriate to achieve the sale, transfer, disposal, forfeiture, re-allotment or surrender of an uncertified share or otherwise to enforce a lien in respect of it.

Choice of Forum

Our articles of association will provide that the U.S. federal district courts will be the exclusive forum for resolving any complaint asserting a cause of action arising under the Securities Act.

Other Relevant United Kingdom Laws and Regulations

Mandatory Bid

(i) The Takeover Code does not currently apply to the company. However if the company were to become subject to the Takeover Code in the future, the following provisions will apply. Under Rule 9 of the Takeover Code, where:

a. any person, together with persons acting in concert with him, acquires, whether by a series of transactions over a period of time or not, an interest in shares which (taken together with shares in which he is already interested, and in which persons acting in concert with him are interested) carry 30% or more of the voting rights of a company; or

b. any person who, together with persons acting in concert with him, is interested in shares which in the aggregate carry not less than 30% of the voting rights of a company but does not hold shares carrying more than 50% of such voting rights and such person, or any person acting in concert with him, acquires an interest in any other shares which increases the percentage of shares carrying voting rights in which he is interested; such person shall, except in limited circumstances, be obliged to extend offers, on the basis set out in Rules 9.3, 9.4 and 9.5 of the Takeover Code, to the holders of any class of equity share capital, whether voting or non-voting, and also to the holders of any other class of transferable securities carrying voting rights. Offers for different classes of equity share capital must be comparable; the Takeover Panel should be consulted in advance in such cases.

(ii) An offer under Rule 9 of the Takeover Code must be in cash and at the highest price paid for any interest in the shares by the person required to make an offer or any person acting in concert with him during the 12 months prior to the announcement of the offer.

(iii) Under the Takeover Code, a "concert party" arises where persons acting together pursuant to an agreement or understanding (whether formal or informal and whether or not in writing) actively cooperate, through the acquisition by them of an interest in shares in a company, to obtain or consolidate control of the company. "Control" means holding, or aggregate holdings, of an interest in shares carrying 30% or more of the voting rights of the company, irrespective of whether the holding or holdings give *de facto* control.

Squeeze-out

(i) Under sections 979 to 982 of the Companies Act, if an offeror were to acquire, or unconditionally contract to acquire, not less than 90% in value of the ordinary shares of the company and 90% of the voting rights carried by the ordinary shares of the company, it could then compulsorily acquire the remaining 10%. It would do so by sending a notice to outstanding shareholders telling them that it will compulsorily acquire their shares, provided that no such notice may be served after the end of: (a) the period of three months beginning with the day after the last day on which the offer can be accepted; or (b) if earlier, and the offer is not one to which section 943(1) of the Companies Act applies, the period of six months beginning with the date of the offer.

(ii) Six weeks following service of the notice, the offeror must send a copy of it to the company together with the consideration for the ordinary shares to which the notice relates, and an instrument of transfer executed on behalf of the outstanding shareholder(s) by a person appointed by the offeror.

(iii) The company will hold the consideration on trust for the outstanding shareholders.

Sell-out

(i) Sections 983 to 985 of the Companies Act also give minority shareholders in the company a right to be bought out in certain circumstances by an offeror who has made a takeover offer. If a takeover offer relating to all the ordinary shares of the company is made at any time before the end of the period within which the offer could be accepted and the offeror held or had agreed to acquire not less than 90% of the ordinary shares, any holder of shares to which the offer related who had not accepted the offer could by a written communication to the offeror require it to acquire those shares. The offeror is required to give any shareholder notice of his right to be bought out within one month of that right arising. The offeror may impose a time limit on the rights of minority shareholders to be bought out, but that period cannot end less than three months after the end of the acceptance period, or, if longer a period of three months from the date of the notice.

(ii) If a shareholder exercises his rights, the offeror is bound to acquire those shares on the terms of the offer or on such other terms as may be agreed.

Differences in Corporate Law

The applicable provisions of the Companies Act differ from laws applicable to U.S. corporations and their shareholders. Set forth below is a summary of certain differences between the provisions of the Companies Act applicable to us and the General Corporation Law of the State of Delaware relating to shareholders' rights and protections. This summary is not intended to be a complete discussion of the respective rights and it is qualified in its entirety by reference to Delaware law and English law.

	ENGLAND	DELAWARE
Number of Directors	Under the Companies Act, a public limited company must have at least two directors and the number of directors may be fixed by or in the manner provided in a company's articles of association.	Under Delaware law, a corporation must have at least one director and the number of directors shall be fixed by or in the manner provided in the bylaws.

	ENGLAND	DELAWARE
Removal of Directors	Under the Companies Act, shareholders may remove a director without cause by an ordinary resolution (which is passed by a simple majority of those voting in person or by proxy at a general meeting) irrespective of any provisions of any service contract the director has with the company, provided 28 clear days' notice of the resolution has been given to the company and its shareholders. On receipt of notice of an intended resolution to remove a director, the company must forthwith send a copy of the notice to the director concerned. Certain other procedural requirements under the Companies Act must also be followed, such as allowing the director to make representations against his or her removal either at the meeting or in writing.	Under Delaware law, any director or the entire board of directors may be removed, with or without cause, by the holders of a majority of the shares then entitled to vote at an election of directors, except (i) unless the certificate of incorporation provides otherwise, in the case of a corporation whose board of directors is classified, stockholders may effect such removal only for cause, or (ii) in the case of a corporation having cumulative voting, if less than the entire board of directors is to be removed, no director may be removed without cause if the votes cast against his removal would be sufficient to elect him if then cumulatively voted at an election of the entire board of directors, or, if there are classes of directors, at an election of the class of directors of which he is a part.

	ENGLAND	DELAWARE
Vacancies of Board of Directors	Under English law, the procedure by which directors, other than a company's initial directors, are appointed is generally set out in a company's articles of association, provided that where two or more persons are appointed as directors of a public limited company by resolution of the shareholders, resolutions appointing each director must be voted on individually.	Under Delaware law, vacancies and newly created directorships may be filled by a majority of the directors then in office (even though less than a quorum) or by a sole remaining director unless (i) otherwise provided in the certificate of incorporation or bylaws of the corporation or (ii) the certificate of incorporation directs that a particular class of stock is to elect such director, in which case a majority of the other directors elected by such class, or a sole remaining director elected by such class, will fill such vacancy.

	ENGLAND	DELAWARE
Annual General Meeting	Under the Companies Act, a public limited company must hold an annual general meeting in each six-month period following the company's annual accounting reference date.	Under Delaware law, the annual meeting of stockholders shall be held at such place, on such date and at such time as may be designated from time to time by the board of directors or as provided in the certificate of incorporation or by the bylaws.

	ENGLAND	DELAWARE
General Meeting	Under the Companies Act, a general meeting of the shareholders of a public limited company may be called by the directors. Shareholders holding at least 5% of the paid-up capital of the company carrying voting rights at general meetings (excluding any paid up capital held as treasury shares) can require the directors to call a general meeting and, if the directors fail to do so within a certain period, may themselves convene a general meeting.	Under Delaware law, special meetings of the stockholders may be called by the board of directors or by such person or persons as may be authorized by the certificate of incorporation or by the bylaws.

	ENGLAND	DELAWARE
Notice of General Meeting	Under the Companies Act, at least 21 days' notice must be given for an annual general meeting and any resolutions to be proposed at the meeting. Subject to a company's articles of association providing for a longer period, at least 14 days' notice is required for any other general meeting of a public limited company. In addition, certain matters, such as the removal of directors or auditors, require special notice, which is 28 days' notice. The shareholders of a company may in all cases consent to a shorter notice period, the proportion of shareholders' consent required being 100% of those entitled to attend and vote in the case of an annual general meeting and, in the case of any other general meeting, a majority in number of the members having a right to attend and vote at the meeting, being a majority who together hold not less than 95% in nominal value of the shares giving a right to attend and vote at the meeting.	Under Delaware law, unless otherwise provided in the certificate of incorporation or bylaws, written notice of any meeting of the stockholders must be given to each stockholder entitled to vote at the meeting not less than ten nor more than 60 days before the date of the meeting and shall specify the place, date, hour and purpose or purposes of the meeting.

	ENGLAND	DELAWARE
Proxy	Under the Companies Act, at any meeting of shareholders, a shareholder may designate another person to attend, speak and vote at the meeting on their behalf by proxy.	Under Delaware law, at any meeting of stockholders, a stockholder may designate another person to act for such stockholder by proxy, but no such proxy shall be voted or acted upon after three years from its date, unless the proxy provides for a longer period. A director of a Delaware corporation may not issue a proxy representing the director's voting rights as a director.

	ENGLAND	DELAWARE
Preemptive Rights	Under the Companies Act, “equity securities,” being (i) shares in the company other than shares that, with respect to dividends and capital, carry a right to participate only up to a specified amount in a distribution, referred to as “ordinary shares,” or (ii) rights to subscribe for, or to convert securities into, ordinary shares, proposed to be allotted for cash must be offered first to the existing equity shareholders in the company in proportion to the respective nominal value of their holdings, unless an exception applies or a special resolution to the contrary has been passed by shareholders in a general meeting or the articles of association provide otherwise in each case in accordance with the provisions of the Companies Act.	Under Delaware law, shareholders have no preemptive rights to subscribe to additional issues of stock or to any security convertible into such stock unless, and except to the extent that, such rights are expressly provided for in the certificate of incorporation.

	ENGLAND	DELAWARE
Authority to Allot	Under the Companies Act, the directors of a company must not allot shares or grant rights to subscribe for or convert any security into shares unless an exception applies or an ordinary resolution to the contrary has been passed by shareholders in a general meeting or the articles of association provide otherwise, in each case in accordance with the provisions of the Companies Act.	Under Delaware law, if the corporation’s charter or certificate of incorporation so provides, the board of directors has the power to authorize the issuance of stock. The board may authorize capital stock to be issued for consideration consisting of cash, any tangible or intangible property or any benefit to the corporation or any combination thereof. It may determine the amount of such consideration by approving a formula. In the absence of actual fraud in the transaction, the judgment of the directors as to the value of such consideration is conclusive.

	ENGLAND	DELAWARE
Liability of Directors and Officers	Under the Companies Act, any provision, whether contained in a company's articles of association or any contract or otherwise, that purports to exempt a director of a company, to any extent, from any liability that would otherwise attach to him in connection with any negligence, default, breach of duty or breach of trust in relation to the company, is void. Any provision by which a company directly or indirectly provides an indemnity, to any extent, for a director of the company or of an associated company against any liability attaching to him in connection with any negligence, default, breach of duty or breach of trust in relation to the company of which he is a director is also void except as permitted by the Companies Act, which provides exceptions for the company to (i) purchase and maintain insurance against such liability; (ii) provide a "qualifying third party indemnity," or an indemnity against liability incurred by the director to a person other than the company or an associated company or criminal proceedings in which he is convicted; and (iii) provide a "qualifying pension scheme indemnity," or an indemnity against liability incurred in connection with the company's activities as trustee of an occupational pension plan.	Under Delaware law, a corporation's certificate of incorporation may include a provision eliminating or limiting the personal liability of a director to the corporation and its stockholders for damages arising from a breach of fiduciary duty as a director. However, no provision can limit the liability of a director for: any breach of the director's duty of loyalty to the corporation or its stockholders; acts or omissions not in good faith or that involve intentional misconduct or a knowing violation of law; intentional or negligent payment of unlawful

Voting Rights	Under English law, unless a poll is demanded by the shareholders of a company or is required by the chairman of the meeting or the company's articles of association, shareholders shall vote on all resolutions on a show of hands. Under the Companies Act, a poll may be demanded by (i) not fewer than five shareholders having the right to vote on the resolution; (ii) any shareholder(s) representing not less than 10% of the total voting rights of all the shareholders having the right to vote on the resolution (excluding any voting rights attaching to treasury shares); or (iii) any shareholder(s) holding shares in the company conferring a right to vote on the resolution (excluding any voting rights attaching to treasury shares) being shares on which an aggregate sum has been paid up equal to not less than 10% of the total sum paid up on all the shares conferring that right. A company's articles of association may provide more extensive rights for shareholders to call a poll. Under English law, an ordinary resolution is passed on a show of hands if it is approved by a simple majority (more than 50%) of the votes cast by shareholders present (in person or by proxy) and entitled to vote. If a poll is demanded, an ordinary resolution is passed if it is approved by holders representing a simple majority of the total voting rights of shareholders present, in person or by proxy, who, being entitled to vote, vote on the resolution. Special resolutions require the affirmative vote of not less than 75% of the votes cast by shareholders present, in person or by proxy, at the meeting.	Delaware law provides that, unless otherwise provided in the certificate of incorporation, each stockholder is entitled to one vote for each share of capital stock held by such stockholder.

	ENGLAND	DELAWARE
Shareholder Vote on Certain Transactions	The Companies Act provides for schemes of arrangement, which are arrangements or compromises between a company and any class of shareholders or creditors and used in certain types of reconstructions, amalgamations, capital reorganizations or takeovers. These arrangements require: the approval at a shareholders' or creditors' meeting convened by order of the court, of a majority in number of shareholders or creditors representing 75% in value of the capital held by, or debt owed to, the class of shareholders or creditors, or class thereof present and voting, either in person or by proxy; and the approval of the court.	Generally, under Delaware law, unless the certificate of incorporation provides for the vote of a larger portion of the stock, completion of a merger, consolidation, sale, lease or exchange of all or substantially all of a corporation's assets or dissolution requires: the approval of the board of directors; and the approval by the vote of the holders of a majority of the outstanding stock or, if the certificate of incorporation provides for more or less than one vote per share, a majority of the votes of the outstanding stock of the corporation entitled to vote on the matter.

	ENGLAND	DELAWARE
Standard of Conduct for Directors	Under English law, a director owes various statutory and fiduciary duties to the company, including: to act in the way he considers, in good faith, would be most likely to promote the success of the company for the benefit of its members as a whole; to avoid a situation in which he has, or can have, a direct or indirect interest that conflicts, or possibly conflicts, with the interests of the company; to act in accordance with the company's constitution and only exercise his powers for the purposes for which they are conferred; to exercise independent judgment; to exercise reasonable care, skill and diligence; not to accept benefits from a third party conferred by reason of his being a director or doing, or not doing, anything as a director; and to declare any interest that he has, whether directly or indirectly, in a proposed or existing transaction or arrangement with the company.	Delaware law does not contain specific provisions setting forth the standard of conduct of a director. The scope of the fiduciary duties of directors is generally determined by the courts of the State of Delaware. In general, directors have a duty to act without self-interest, on a well-informed basis and in a manner they reasonably believe to be in the best interest of the stockholders. Directors of a Delaware corporation owe fiduciary duties of care and loyalty to the corporation and to its shareholders. The duty of care generally requires that a director acts in good faith, with the care that an ordinarily prudent person would exercise under similar circumstances. Under this duty, a director must inform himself of all material information reasonably available regarding a significant transaction. The duty of loyalty requires that a director act in a manner he reasonably believes to be in the best interests of the corporation. He must not use his corporate position for personal gain or advantage. In general, but subject to certain exceptions, actions of a director are presumed to have been made on an informed basis, in good faith and in the honest belief that the action taken was in the best interests of the corporation. However, this presumption may be rebutted by evidence of a breach of one of the fiduciary duties. Delaware courts have also imposed a heightened standard of conduct upon directors of a Delaware corporation who take any action designed to defeat a threatened change in control of the corporation. In addition, under Delaware law, when the board of directors of a Delaware corporation approves the sale or break-up of a corporation, the board of directors may, in certain circumstances, have a duty to obtain the highest value reasonably available to the shareholders.

	ENGLAND	DELAWARE
Shareholder Litigation	Under English law, generally, the company, rather than its shareholders, is the proper claimant in an action in respect of a wrong done to the company or where there is an irregularity in the company's internal management. Notwithstanding this general position, the Companies Act provides that (i) a court may allow a shareholder to bring a derivative claim (that is, an action in respect of and on behalf of the company) in respect of a cause of action arising from a director's negligence, default, breach of duty or breach of trust and (ii) a shareholder may bring a claim for a court order where the company's affairs have been or are being conducted in a manner that is unfairly prejudicial to some of its shareholders.	Under Delaware law, a stockholder may initiate a derivative action to enforce a right of a corporation if the corporation fails to enforce the right itself. The complaint must: state that the plaintiff was a stockholder at the time of the transaction of which the plaintiff complains or that the plaintiff's shares thereafter devolved on the plaintiff by operation of law; and allege with particularity the efforts made by the plaintiff to obtain the action the plaintiff desires from the directors and the reasons for the plaintiff's failure to obtain the action; or state the reasons for not making the effort. Additionally, the plaintiff must remain a stockholder through the duration of the derivative suit. The action will not be dismissed or compromised without the approval of the Delaware Court of Chancery.

C. Material contracts.

In addition to the contracts described elsewhere in this Annual Report, the following are summaries of each material contract to which we are a party for the two years preceding the date of this Annual Report.

Underwriting Agreements

We entered into an underwriting agreement with J.P. Morgan Securities LLC and Jefferies LLC as representatives of the underwriters, on January 22, 2020, with respect to the ADSs sold in our January 2020 public offering. We have agreed to indemnify the underwriters against certain liabilities, including liabilities under the Securities Act, and to contribute to payments the underwriters may be required to make in respect of such liabilities.

We entered into an underwriting agreement with J.P. Morgan Securities LLC and Wells Fargo Securities, LLC as representatives of the underwriters, on February 9, 2021, with respect to the ADSs sold in our February 2021 public offering. We have agreed to indemnify the underwriters against certain liabilities, including liabilities under the Securities Act, and to contribute to payments the underwriters may be required to make in respect of such liabilities.

We entered into an underwriting agreement with Jefferies LLC, William Blair & Company, L.L.C. and Wells Fargo Securities, LLC as representatives of the underwriters, on December 8, 2022, with respect to the ADSs sold in our December 2022 public offering. We have agreed to indemnify the underwriters against certain liabilities, including liabilities under the Securities Act, and to contribute to payments the underwriters may be required to make in respect of such liabilities.

University College of London Business Ltd. (UCLB) License

In September 2014, we entered into an exclusive license agreement, or the License, with UCL Business Ltd., or UCLB, the technology transfer company of University College London, or UCL, to obtain licenses to certain technology rights in the field of cancer therapy and diagnosis. In March 2016 and March 2018, the License was amended to include additional rights. In October 2020, the License was again amended and restated to reflect our election to have various UCLB patent rights assigned to us, as well as to provide us with access to additional licensed technologies. The License contains customary indemnification and other risk allocation terms with respect to the licensed technologies and our uses thereof.

Blackstone Agreement

On November 6, 2021, we concurrently entered into (i) a Strategic Collaboration and Financing agreement (the "Blackstone Collaboration Agreement"), (ii) a Securities Purchase Agreement (the "Blackstone Securities Purchase Agreement"), (iii) a Warrant Agreement (the "Blackstone Warrant") and (iv) a Registration Rights Agreement (the "Blackstone Registration Rights Agreement"), collectively called the "Blackstone Agreements", with BXLS V - Autobahn L.P, ("Blackstone"). Blackstone is managed by Blackstone Inc. Pursuant to the Blackstone Collaboration Agreement, Blackstone agreed to pay us up to $150 million to support the continued development of our CD19 CAR T cell investigational therapy product candidate, obecabtagene autoleucel (obe-cel), as well as next generation product therapies of obe-cel in B-cell malignancies. The initial payment of $50 million, as well as two milestone payments of $35 million each, have been paid by Blackstone and the remaining $30 million milestone will be payable based on certain specified regulatory milestones (each such payment, a “Blackstone Development Payment” and collectively, the “Blackstone Development Payments”).]

In exchange for the Blackstone Development Payments, we have agreed to make payments to Blackstone (the “Revenue Share Payments”) equal to a mid-single digit royalty, subject to the Aggregate Cap (as defined in the Blackstone Collaboration Agreement) on payments under the Blackstone Collaboration Agreement, based on net sales anywhere in the world of (i) Collaboration Products in B-cell malignancies, (ii) subject to certain conditions set forth in the Blackstone Collaboration Agreement, our CD19 and CD22 CAR T cell investigational therapy product candidate known as AUTO3 in B-cell malignancies, and (iii) certain Collaboration Products to the extent developed or commercialized in indications other than a B-cell malignancy (“Obe-cel Franchise Products”). We are also obligated to make payments (the “Sales Milestone Payments”), subject to the Aggregate Cap, if certain cumulative net sales levels are achieved.

The Company and all of our subsidiaries have provided, and all of our future subsidiaries will provide, a guaranty to Blackstone of our obligations under the Blackstone Collaboration Agreement. In addition, we have granted a security interest in Autolus Limited to Blackstone in (a) intellectual property that is necessary or useful for the development, manufacture, use, commercialization, import, or export of Collaboration Products (the “Autolus IP Collateral”), (b) a segregated and blocked cash collateral account that will be established following regulatory approval of any Collaboration Product, solely for the purpose of receiving remittance of Revenue Share Payments and Sales Milestone Payments and disbursement thereof to Blackstone as provided in the Blackstone Collaboration Agreement, (c) a segregated cash collateral account established solely for the purpose of receiving Blackstone Development Payments and disbursing them for use by us in accordance with the terms of the Blackstone Collaboration Agreement, (d) all assets or property of the Company related to or arising from the Collaboration Products in any B-cell malignancy or the Obe-cel Franchise Products in any indication other than a B-cell malignancy, and (e) all proceeds and products of each of the foregoing (collectively referred to as the “Collateral”). The security interest will be maintained until the earlier of (i) such time at which cumulative payments made by us under the Blackstone Collaboration Agreement equal $150 million and (ii) the first commercial sale in the United States of obe-cel or any other Lead Product (as defined in the Blackstone Collaboration Agreement) selected to replace obe-cel following a Program Failure (as defined in the Blackstone Collaboration Agreement) (such time, the “Release Time”).

The Blackstone Collaboration Agreement contains negative covenants that restrict us from, among other things, (a) granting liens or otherwise encumbering its assets that constitute Collateral, (b) paying dividends or making distributions on account or, redeeming, retiring or purchasing any capital stock, (c) other than certain permitted licensing transactions, transferring to third parties rights to commercialize any Collaboration Product or the Autolus IP Collateral anywhere in the world and (d) selling, transferring or assigning any rights to receive payments of royalties, returns on net sales, revenue share or other compensation or license fees with respect to a Collaboration Product in a B-cell malignancy and/or Obe-cel Franchise Product in any indication other than a B-cell malignancy. Each of the negative covenants is subject to exceptions and carve-outs set forth in the Blackstone Collaboration Agreement. The negative covenants will fall away upon the Release Time.

We and Blackstone have formed a joint steering committee, comprised of representatives from each party, to provide non-binding advice on the development, manufacture and commercialization of Collaboration Products in any B-cell malignancy anywhere in the world. Blackstone also has the right to designate one representative with relevant experience to participate in the our existing CMC advisory board, which advises us on technical, scientific and regulatory matters relating to the manufacture of the Lead Product. In addition, Blackstone is entitled to appoint a member to our board of directors and has appointed William Young.

Termination of the Blackstone Collaboration Agreement by Blackstone due to certain breaches of the Blackstone Collaboration Agreement or other actions by us will require us to make liquidated damage payments to Blackstone in excess of the Blackstone Development Payments.

For additional information on our material contracts, please see “Item 4. Information on the Company,” “Item 6. Directors, Senior Management and Employees,” and “Item 7.B. Related Party Transactions” of this Annual Report.

D. Exchange controls.

There are no governmental laws, decrees, regulations or other legislation in the United Kingdom that may affect the import or export of capital, including the availability of cash and cash equivalents for use by us, or that may affect the remittance of dividends, interest, or other payments by us to non-resident holders of our ordinary shares or ADSs, other than withholding tax requirements. There is no limitation imposed by the laws of England and Wales or our articles of association on the right of non-residents to hold or vote shares.

E. Taxation.

The following summary contains a description of material U.K. and U.S. federal income tax consequences of the acquisition, ownership and disposition of our ADSs. This summary should not be considered a comprehensive description of all the tax considerations that may be relevant to beneficial owners of ADSs.

Material U.S. Federal Income Tax Considerations for U.S. Holders

The following is a description of the material U.S. federal income tax consequences to the U.S. Holders (as defined below) of owning and disposing of our ADSs. It is not a comprehensive description of all tax considerations that may be relevant to a particular person’s decision to acquire securities. This discussion applies only to a U.S. Holder that holds our ADSs as a capital asset for tax purposes (generally, property held for investment). In addition, it does not describe all of the tax consequences that may be relevant in light of a U.S. Holder’s particular circumstances, including state and local tax consequences, estate tax consequences, alternative minimum tax consequences, the potential application of the Medicare contribution tax, and tax consequences applicable to U.S. Holders subject to special rules, such as:

- banks, insurance companies, and certain other financial institutions;
- U.S. expatriates and certain former citizens or long-term residents of the United States;
- dealers or traders in securities who use a mark-to-market method of tax accounting;
- persons holding ADSs as part of a hedging transaction, “straddle,” wash sale, conversion transaction or integrated transaction or persons entering into a constructive sale with respect to ADSs;
- persons whose “functional currency” for U.S. federal income tax purposes is not the U.S. dollar;
- brokers, dealers or traders in securities, commodities or currencies;
- tax-exempt entities or government organizations;
- S corporations, partnerships, or other entities or arrangements classified as partnerships for U.S. federal income tax purposes (and investors therein);
- regulated investment companies or real estate investment trusts;
- persons who acquired ADSs pursuant to the exercise of any employee share option or otherwise as compensation;
- persons that own or are deemed to own 10 percent or more of our shares including shares represented by ADSs (by vote or value); and
- persons holding our ADSs in connection with a trade or business, permanent establishment, or fixed base outside the United States.

If an entity that is classified as a partnership for U.S. federal income tax purposes holds ADSs, the U.S. federal income tax treatment of a partner will generally depend on the status of the partner and the activities of the partnership. Partnerships holding ADSs and partners in such partnerships are encouraged to consult their tax advisers as to the particular U.S. federal income tax consequences of holding and disposing of ADSs.

U.S. Holders that own (directly, indirectly, or constructively through the application of attribution rules) 10% or more of our total combined voting power or value could be subject to adverse U.S. federal income tax consequences pursuant to the controlled

foreign corporation rules due to our ownership of a U.S. subsidiary. Such prospective holders should consult with their tax advisors as to the tax consequences of acquiring, owning and disposing of our ADSs.

The discussion is based on the Internal Revenue Code of 1986, as amended, or the Code, administrative pronouncements, judicial decisions, final, temporary and proposed Treasury Regulations, and the income tax treaty between the United Kingdom and the United States, or the Treaty, all as of the date hereof, changes to any of which may affect the tax consequences described herein—possibly with retroactive effect.

A "U.S. Holder" is a holder who, for U.S. federal income tax purposes, is a beneficial owner of ADSs who is eligible for the benefits of the Treaty and is:

(i) a citizen or individual resident of the United States;

(ii) a corporation, or other entity taxable as a corporation, created or organized in or under the laws of the United States, any state therein or the District of Columbia;

(iii) an estate the income of which is subject to U.S. federal income taxation regardless of its source; or

(iv) a trust if (1) a U.S. court is able to exercise primary supervision over the administration of the trust and one or more U.S. persons have authority to control all substantial decisions of the trust or (2) the trust has a valid election to be treated as a U.S. person under applicable U.S. Treasury Regulations.

U.S. Holders are encouraged to consult their tax advisers concerning the U.S. federal, state, local and foreign tax consequences of owning and disposing of ADSs in their particular circumstances.

THESE PARAGRAPHS ARE A SUMMARY OF CERTAIN U.S. TAX CONSIDERATIONS AND ARE INTENDED AS A GENERAL GUIDE ONLY. IT IS RECOMMENDED THAT ALL HOLDERS OF ADSs OBTAIN ADVICE AS TO THE CONSEQUENCES OF THE ACQUISITION, OWNERSHIP AND DISPOSAL OF THE ADSs IN THEIR OWN SPECIFIC CIRCUMSTANCES FROM THEIR OWN TAX ADVISORS.

The discussion below assumes that the representations contained in the deposit agreement are true and that the obligations in the deposit agreement and any related agreement will be complied with in accordance with their terms. A U.S. Holder of ADSs will generally be treated for U.S. federal income tax purposes as the owner of the underlying ordinary shares that such ADSs represent. Accordingly, no gain or loss will be recognized if a U.S. Holder exchanges ADSs for the underlying shares represented by those ADSs. The U.S. Treasury has expressed concern that parties to whom ADSs are released before shares are delivered to the Depositary or intermediaries in the chain of ownership between holders and the issuer of the security underlying the ADSs, may be taking actions that are inconsistent with the claiming of foreign tax credits by U.S. Holders of ADSs. These actions would also be inconsistent with the claiming of the reduced rate of tax, described below, applicable to dividends received by certain non-corporate U.S. Holders. Accordingly, the creditability of non-U.S. withholding taxes (if any), and the availability of the reduced tax rate for dividends received by certain non-corporate U.S. Holders, each described below, could be affected by actions taken by such parties or intermediaries.

Passive Foreign Investment Company Rules

If we are classified as a passive foreign investment company, or a PFIC in any taxable year, a U.S. Holder will be subject to special rules generally intended to reduce or eliminate any benefits from the deferral of U.S. federal income tax that a U.S. Holder could derive from investing in a non-U.S. company that does not distribute all of its earnings on a current basis.

A non-U.S. corporation will be classified as a PFIC for any taxable year in which, after applying certain look-through rules, either:

- at least 75% of its gross income is passive income (such as interest income); or
- at least 50% of its gross assets (determined on the basis of a quarterly average) is attributable to assets that produce passive income or are held for the production of passive income.

We will be treated as owning our proportionate share of the assets and earning our proportionate share of the income of any other corporation, the equity of which we own, directly or indirectly, 25% or more (by value).

We believe we were a PFIC for our taxable year ended December 31, 2022 and we may be a PFIC in future taxable years. No assurances regarding our PFIC status can be provided for any past, current or future taxable years. The determination of whether we are a PFIC is a fact-intensive determination made on an annual basis and the applicable law is subject to varying interpretation. In particular, the characterization of our assets as active or passive may depend in part on our current and intended future business plans, which are subject to change. In addition, for our current and future taxable years, the total value of our assets for PFIC testing purposes may be determined in part by reference to the market price of our ordinary shares or ADSs from time to time, which may fluctuate considerably.

Under the income test, our status as a PFIC depends on the composition of our income which will depend on the transactions we enter into in the future and our corporate structure. The composition of our income and assets is also affected by how, and how quickly, we spend the cash we raise in any offering. Our U.S. counsel expresses no opinion with respect to our PFIC status for our taxable year ended December 31, 2022 or any future taxable year.

If we are classified as a PFIC in any year with respect to which a U.S. Holder owns ADSs, we will continue to be treated as a PFIC with respect to such U.S. Holder in all succeeding years during which the U.S. Holder owns the ADSs, regardless of whether we continue to meet the tests described above unless (i) we cease to be a PFIC and the U.S. Holder has made a “deemed sale” election under the PFIC rules, (ii) we cease to be a PFIC and the U.S. Holder has a valid mark-to- market election in effect (as described below) or (iii) the U.S. Holder makes a Qualified Electing Fund Election, or QEF Election, with respect to all taxable years during such U.S. Holders holding period in which we are a PFIC.

If a U.S. Holder makes an effective QEF Election, the U.S. Holder will be required to include in gross income each year, whether or not we make distributions, as capital gains, such U.S. Holder’s pro rata share of our net capital gains and, as ordinary income, such U.S. Holder’s pro rata share of our earnings in excess of our net capital gains. However, a U.S. Holder can only make a QEF election with respect to ADSs in a PFIC if such company agrees to furnish such U.S. Holder with certain tax information annually. For our taxable year ended December 31, 2022, we intend to provide U.S. Holders, upon request, such information as the IRS may require, including a PFIC annual information statement, in order to enable U.S. Holders to make a QEF Election. However, there is no assurance that we will have timely knowledge of our status as a PFIC in the future or that the required information will be provided at a time that will permit a U.S. Holder to make or maintain a QEF Election. We have not determined if we will provide U.S. Holders such information for any subsequent taxable year. An electing U.S. Holder’s basis in ADSs will be increased to reflect the amount of any taxed but undistributed income. Distributions of income that had previously been taxed will result in a corresponding reduction of basis in the ADSs and may not be taxed again as distributions to the U.S. Holder. However, we do not currently expect to pay distributions with respect to our ADSs. U.S. Holders should consult with their tax advisors regarding the implications of owning stock in a PFIC, including whether and how to make and maintain a QEF Election.

If the “deemed sale” election is made, a U.S. Holder will be deemed to have sold the ADSs the U.S. Holder holds at their fair market value and any gain from such deemed sale would be subject to the rules described below. After the deemed sale election, so long as we do not become a PFIC in a subsequent taxable year, the U.S. Holder’s ADSs with respect to which such election was made will not be treated as shares in a PFIC and the U.S. Holder will not be subject to the rules described below with respect to any “excess distribution” the U.S. Holder receives from us or any gain from an actual sale or other disposition of the ADSs. U.S. Holders should consult their tax advisors as to the possibility and consequences of making a deemed sale election if we cease to be a PFIC and such election becomes available.

For each taxable year we are treated as a PFIC with respect to U.S. Holders, U.S. Holders will be subject to special tax rules with respect to any “excess distribution” such U.S. Holder receives and any gain such U.S. Holder recognizes from a sale or other disposition (including a pledge) of ADSs, unless (i) such U.S. Holder makes a QEF Election with respect to all taxable years of a U.S. Holder’s holding period during which we are a PFIC or makes a purging election to cause a deemed sale of the ADSs at their fair market value in conjunction with a QEF election (however, as discussed above, such elections are expected and assumed not to be available) or (ii) our ADSs constitute “marketable“ securities, and such U.S. Holder makes a mark-to-market election as discussed below. Distributions a U.S. Holder receives in a taxable year that are greater than 125% of the average annual distributions a U.S. Holder received during the shorter of the three preceding taxable years or the U.S. Holder’s holding period for the ADSs will be treated as an excess distribution. Under these special tax rules:

- the excess distribution or gain will be allocated ratably over a U.S. Holder’s holding period for the ADSs;
- the amount allocated to the current taxable year, and any taxable year prior to the first taxable year in which we became a PFIC, will be treated as ordinary income; and
- the amount allocated to each other year will be subject to the highest tax rate in effect for that year and the interest charge generally applicable to underpayments of tax will be imposed on the resulting tax attributable to each such year.

The tax liability for amounts allocated to years prior to the year of disposition or the year of an “excess distribution” cannot be offset by any net operating losses for such years, and gains (but not losses) realized on the sale of the ADSs cannot be treated as capital, even if a U.S. Holder holds the ADSs as capital assets.

If we are a PFIC, a U.S. Holder will generally be subject to similar rules with respect to distributions we receive from, and our dispositions of the stock of, any of our direct or indirect subsidiaries that also are PFICs, as if such distributions were indirectly received by, and/or dispositions were indirectly carried out by, such U.S. Holder. U.S. Holders should consult their tax advisors regarding the application of the PFIC rules to our subsidiaries.

U.S. Holders can avoid the interest charge on excess distributions or gain relating to the ADSs by making a mark-to-market election with respect to the ordinary shares, provided that the ADSs are “marketable.” ADSs will be marketable if they are “regularly traded” on certain U.S. stock exchanges or on a foreign stock exchange that meets certain conditions. For these purposes, the ordinary shares or ADSs will be considered regularly traded during any calendar year during which they are traded, other than in de minimis quantities, on at least 15 days during each calendar quarter. Any trades that have as their principal purpose meeting this requirement will be disregarded. Our ADSs are listed on Nasdaq, which is a qualified exchange for these purposes. Consequently, if our ADSs remain listed on Nasdaq and are regularly traded, and you are a holder of ADSs, we expect the mark-to-market election would be available to U.S. Holders if we are a PFIC. Each U.S. Holder should consult its tax advisor as to the whether a mark-to-market election is available or advisable with respect to the ADSs.

A U.S. Holder that makes a mark-to-market election must include as ordinary income for each year an amount equal to the excess, if any, of the fair market value of the ADSs at the close of the taxable year over the U.S. Holder’s adjusted tax basis in the ADSs. Accordingly, such mark-to-market election may accelerate the recognition of income without a corresponding receipt of cash. An electing holder may also claim an ordinary loss deduction for the excess, if any, of the U.S. Holder’s adjusted basis in the ADSs over the fair market value of the ADSs at the close of the taxable year, but this deduction is allowable only to the extent of any net mark-to-market gains for prior years. Gains from an actual sale or other disposition of the ADSs will be treated as ordinary income, and any losses incurred on a sale or other disposition of the ADSs will be treated as an ordinary loss to the extent of any net mark-to-market gains for prior years. Once made, the election cannot be revoked without the consent of the Internal Revenue Service, or the IRS, unless the ADSs cease to be marketable.

However, a mark-to-market election generally cannot be made for equity interests in any lower- tier PFICs that we own, unless shares of such lower-tier PFIC are themselves “marketable.” As a result, even if a U.S. Holder validly makes a mark-to-market election with respect to our ADSs, the U.S. Holder may continue to be subject to the PFIC rules (described above) with respect to its indirect interest in any of our investments that are treated as an equity interest in a PFIC for U.S. federal income tax purposes. U.S. Holders should consult their tax advisors as to the availability and desirability of a mark-to-market election, as well as the impact of such election on interests in any lower-tier PFICs.

Unless otherwise provided by the U.S. Treasury, each U.S. shareholder of a PFIC is required to file an annual report containing such information as the U.S. Treasury may require. A U.S. Holder’s failure to file the annual report will cause the statute of limitations for such U.S. Holder’s U.S. federal income tax return to remain open with regard to the items required to be included in such report until three years after the U.S. Holder files the annual report, and, unless such failure is due to reasonable cause and not willful neglect, the statute of limitations for the U.S. Holder’s entire U.S. federal income tax return will remain open during such period. U.S. Holders should consult their tax advisors regarding the requirements of filing such information returns under these rules.

ADSs

A U.S. Holder of ADSs will generally be treated for U.S. federal income tax purposes as the owner of the underlying ordinary shares that such ADSs represent. Accordingly, no gain or loss will be recognized if a U.S. Holder exchanges ADSs for the underlying shares represented by those ADSs.

The U.S. Treasury has expressed concern that parties to whom ADSs are released before shares are delivered to the Depositary or intermediaries in the chain of ownership between holders and the issuer of the security underlying the ADSs, may be taking actions that are inconsistent with the claiming of foreign tax credits by U.S. Holders of ADSs. These actions would also be inconsistent with the claiming of the reduced rate of tax, described below, applicable to dividends received by certain non-corporate U.S. Holders. Accordingly, the creditability of non-U.S. withholding taxes (if any), and the availability of the reduced tax rate for dividends received by certain non-corporate U.S. Holders, each described below, could be affected by actions taken by such parties or intermediaries.

Taxation of Distributions

Subject to the discussion above under "Passive Foreign Investment Company Rules," distributions paid on ADSs, other than certain pro rata distributions of ADSs, will generally be treated as dividends to the extent paid out of our current or accumulated earnings and profits (as determined under U.S. federal income tax principles). Because we may not calculate our earnings and profits under U.S. federal income tax principles, we expect that distributions generally will be reported to U.S. Holders as dividends. Subject to applicable limitations, dividends paid to certain non-corporate U.S. Holders may be taxable at preferential rates applicable to "qualified dividend income." However, the qualified dividend income treatment will not apply if we are treated as a PFIC with respect to the U.S. Holder for the taxable year in which a dividend is paid or the preceding year. The amount of the dividend will be treated as foreign-source dividend income to U.S. Holders and will not be eligible for the dividends-received deduction generally available to U.S. corporations under the Code. Dividends will generally be included in a U.S. Holder's income on the date of the U.S. Holder's receipt of the dividend. The amount of any dividend income paid in foreign currency will be the U.S. dollar amount calculated by reference to the exchange rate in effect on the date of actual or constructive receipt, regardless of whether the payment is in fact converted into U.S. dollars. If the dividend is converted into U.S. dollars on the date of receipt, a U.S. Holder should not be required to recognize foreign currency gain or loss in respect of the dividend income. A U.S. Holder may have foreign currency gain or loss if the dividend is converted into U.S. dollars after the date of receipt. Such gain or loss would generally be treated as U.S.-source ordinary income or loss. The amount of any distribution of property other than cash (and other than certain pro rata distributions of ADSs or rights to acquire ADSs) will be the fair market value of such property on the date of distribution.

For foreign tax credit limitation purposes, our dividends will generally be treated as passive category income. Because no U.K. income taxes will be withheld from dividends on ADSs, there will be no creditable foreign taxes associated with any dividends that a U.S. Holder will receive.

Sale or Other Taxable Disposition of ADSs

Subject to the discussion above under "Passive Foreign Investment Company Rules," gain or loss realized on the sale or other taxable disposition of ADSs will be capital gain or loss, and will be a long-term capital gain or loss if the U.S. Holder held the ADSs for more than one year. The amount of the gain or loss will equal the difference between the U.S. Holder's tax basis in the ADSs disposed of and the amount realized on the disposition, in each case as determined in U.S. dollars. This gain or loss will generally be U.S.-source gain or loss for foreign tax credit purposes. The deductibility of capital losses is subject to limitations.

If the consideration received by a U.S. Holder is not paid in U.S. dollars, the amount realized will be the U.S. dollar value of the payment received determined by reference to the spot rate of exchange on the date of the sale or other disposition. However, if the ADSs are treated as traded on an "established securities market" and a U.S. Holder is either a cash basis taxpayer or an accrual basis taxpayer that has made a special election (which must be applied consistently from year to year and cannot be changed without the consent of the IRS), such U.S. Holder will determine the U.S. dollar value of the amount realized in a non-U.S. dollar currency by translating the amount received at the spot rate of exchange on the settlement date of the sale. If a U.S. Holder is an accrual basis taxpayer that is not eligible to or does not elect to determine the amount realized using the spot rate on the settlement date, such U.S. Holder will recognize foreign currency gain or loss to the extent of any difference between the U.S. dollar amount realized on the date of sale or disposition and the U.S. dollar value of the currency received at the spot rate on the settlement date.

WE STRONGLY URGE YOU TO CONSULT YOUR TAX ADVISOR REGARDING THE IMPACT OF OUR PFIC STATUS ON YOUR INVESTMENT IN THE ADSs AS WELL AS THE APPLICATION OF THE PFIC RULES TO YOUR INVESTMENT IN THE ADSs.

Information Reporting and Backup Withholding

Payments of dividends and sales proceeds that are made within the United States or through certain U.S.-related financial intermediaries generally are subject to information reporting, and may be subject to backup withholding, unless (i) the U.S. Holder is a corporation or other exempt recipient or (ii) in the case of backup withholding, the U.S. Holder provides a correct taxpayer identification number and certifies that it is not subject to backup withholding (generally, by providing an IRS Form W-9).

Backup withholding is not an additional tax. The amount of any backup withholding from a payment to a U.S. Holder will be allowed as a credit against the holder's U.S. federal income tax liability and may entitle it to a refund, provided that the required information is timely furnished to the IRS.

Information with Respect to Foreign Financial Assets

Certain U.S. Holders who are individuals (and, under regulations, certain entities) may be required to report information relating to the ordinary shares or ADSs, subject to certain exceptions (including an exception for ordinary shares or ADSs held in accounts maintained by certain U.S. financial institutions). Such U.S. Holders who fail to timely furnish the required information may be subject to a penalty. Additionally, if a U.S. Holder does not file the required information, the statute of limitations with respect to tax returns of the U.S. Holder to which the information relates may not close until three years after such information is filed. U.S. Holders should consult their tax advisers regarding their reporting obligations with respect to their ownership and disposition of the ADSs.

U.K. Taxation

The following is intended as a general guide to current U.K. tax law and HM Revenue & Customs, or HMRC, published practice applying as at the date of this Annual Report (both of which are subject to change at any time, possibly with retrospective effect) relating to the holding of ADSs. It does not constitute legal or tax advice and does not purport to be a complete analysis of all U.K. tax considerations relating to the holding of ADSs, or all of the circumstances in which holders of ADSs may benefit from an exemption or relief from U.K. taxation. It is written on the basis that we do not (and will not) directly or indirectly derive 75% or more of our qualifying asset value from U.K. land, and that we are and remain solely resident in the United Kingdom for tax purposes and will therefore be subject to the U.K. tax regime and not the U.S. tax regime save as set out above under “Material U.S. Federal Income Tax Considerations for U.S. Holders.”

Except to the extent that the position of non-U.K. resident persons is expressly referred to, this guide relates only to persons who are resident (and, in the case of individuals, domiciled or deemed domiciled and to whom split-year treatment does not apply) for tax purposes solely in the United Kingdom and do not have a permanent establishment, branch, agency (or equivalent) or fixed base in any other jurisdiction with which the holding of the ADSs is connected, or U.K. Holders, who are absolute beneficial owners of the ADSs (where the ADSs are not held through an Individual Savings Account or a Self-Invested Personal Pension) and who hold the ADSs as investments.

This guide may not relate to certain classes of U.K. Holders, such as (but not limited to):

- persons who are connected with the company;
- financial institutions;
- insurance companies;
- charities or tax-exempt organizations;
- collective investment schemes;
- pension schemes;
- market makers, intermediaries, brokers or dealers in securities;
- persons who have (or are deemed to have) acquired their ADSs by virtue of an office or employment or who are or have been officers or employees of the company or any of its affiliates; and
- individuals who are subject to U.K. taxation on a remittance basis.

The decision of the First-tier Tribunal (Tax Chamber) in HSBC Holdings PLC and The Bank of New York Mellon Corporation v HMRC (2012) cast some doubt on whether a holder of a depositary receipt is the beneficial owner of the underlying shares. However, based on published HMRC guidance we would expect that HMRC will regard a holder of ADSs as holding the beneficial interest in the underlying shares and therefore these paragraphs assume that a holder of ADSs is the beneficial owner of the underlying ordinary shares and any dividends paid in respect of the underlying ordinary shares (where the dividends are regarded for U.K. purposes as that person’s own income) for U.K. direct tax purposes.

THESE PARAGRAPHS ARE A SUMMARY OF CERTAIN U.K. TAX CONSIDERATIONS AND ARE INTENDED AS A GENERAL GUIDE ONLY. IT IS RECOMMENDED THAT ALL HOLDERS OF ADSs OBTAIN ADVICE AS TO THE CONSEQUENCES OF THE ACQUISITION, OWNERSHIP AND DISPOSAL OF THE ADSs IN THEIR OWN SPECIFIC CIRCUMSTANCES FROM THEIR OWN TAX ADVISORS. IN PARTICULAR, NON-U.K. RESIDENT OR DOMICILED PERSONS ARE ADVISED TO CONSIDER THE POTENTIAL IMPACT OF ANY RELEVANT DOUBLE TAXATION AGREEMENTS.

Dividends

Withholding Tax

Dividends paid by us will not be subject to any withholding or deduction for or on account of U.K. tax.

Income Tax

An individual U.K. Holder may, depending on his or her particular circumstances, be subject to U.K. tax on dividends received from the company. An individual holder of ADSs who is not resident for tax purposes in the United Kingdom should not be chargeable to U.K. income tax on dividends received from the company unless he or she carries on (whether solely or in partnership) a trade, profession or vocation in the United Kingdom through a branch or agency to which the ADSs are attributable. There are certain exceptions for trading in the United Kingdom through independent agents, such as some brokers and investment managers.

All dividends received by an individual U.K. Holder from us or from other sources will form part of that U.K. Holder's total income for income tax purposes and will constitute the top slice of that income. A nil rate of income tax will apply to the first £1,000 of taxable dividend income received by the individual U.K. Holder in a tax year beginning April 5, 2023. A nil rate of income tax will apply to the first £500 of taxable dividend income received by the individual U.K. Holder in a tax year beginning April 5, 2024. Income within the nil rate band will be taken into account in determining whether income in excess of the £1,000 and £500 tax-free allowances, the respective years, falls within the basic rate, higher rate or additional rate tax bands. Dividend income in excess of the tax-free allowance will (subject to the availability of any income tax personal allowance) be taxed at 8.75% to the extent that the excess amount falls within the basic rate tax band, 33.75% to the extent that the excess amount falls within the higher rate tax band and 39.35% to the extent that the excess amount falls within the additional rate tax band. The annual tax-free dividend allowance will be reduced to £1,000 with effect from April 2023, and then to £500 with effect from April 2024.

Corporation Tax

A corporate holder of ADSs who is not resident for tax purposes in the United Kingdom should not be chargeable to U.K. corporation tax on dividends received from us unless it carries on (whether solely or in partnership) a trade in the United Kingdom through a permanent establishment to which the ADSs are attributable.

Corporate U.K. Holders should not be subject to U.K. corporation tax on any dividend received from us so long as the dividends qualify for exemption, which should be the case, although certain conditions must be met. If the conditions for the exemption are not satisfied, or such U.K. Holder elects for an otherwise exempt dividend to be taxable, U.K. corporation tax will be chargeable on the amount of any dividends (at the current rate of 19%, but with the main rate announced to increase to 25% with effect from April 1, 2023).

Chargeable Gains

A disposal or deemed disposal of ADSs by a U.K. Holder may, depending on the U.K. Holder's circumstances and subject to any available exemptions or reliefs (such as the annual exemption), give rise to a chargeable gain or an allowable loss for the purposes of U.K. capital gains tax and corporation tax on chargeable gains.

If an individual U.K. Holder who is subject to U.K. income tax at either the higher or the additional rate is liable to U.K. capital gains tax on the disposal of ADSs, the current applicable rate will be 20%. For an individual U.K. Holder who is subject to U.K. income tax at the basic rate and liable to U.K. capital gains tax on such disposal, the current applicable rate would be 10%, save to the extent that any capital gains, when aggregated with the U.K. Holder's other taxable income and gains in the relevant tax year, exceed the unused basic rate tax band. In that case, the rate currently applicable to the excess would be 20%.

If a corporate U.K. Holder becomes liable to U.K. corporation tax on the disposal (or deemed disposal) of ADSs, the main rate of U.K. corporation tax (currently 19%, but announced to increase to 25% with effect from April 1, 2023) would apply.

A holder of ADSs which is not resident for tax purposes in the United Kingdom should not normally be liable to U.K. capital gains tax or corporation tax on chargeable gains on a disposal (or deemed disposal) of ADSs unless the person is carrying on (whether solely or in partnership) a trade, profession or vocation in the United Kingdom through a branch or agency (or, in the case of a corporate holder of ADSs, through a permanent establishment) to which the ADSs are attributable. However, an individual holder of ADSs who has ceased to be resident for tax purposes in the United Kingdom for a period of less than five years and who disposes of ADSs during that period may be liable on his or her return to the United Kingdom to U.K. tax on any capital gain realized (subject to any available exemption or relief).

Stamp Duty and Stamp Duty Reserve Tax

The discussion below relates to the holders of our ordinary shares or ADSs wherever resident, however it should be noted that special rules may apply to certain persons such as market makers, brokers, dealers or intermediaries.

Issue of Ordinary Shares

No U.K. stamp duty or stamp duty reserve tax, or SDRT, is generally payable on the issue of the underlying ordinary shares in the company.

Transfers of Ordinary Shares

An unconditional agreement to transfer ordinary shares in certificated form will normally give rise to a charge to SDRT at the rate of 0.5% of the amount or value of the consideration payable for the transfer. The purchaser of the shares is liable for the SDRT. Transfers of ordinary shares in certificated form are generally also subject to stamp duty at the rate of 0.5% of the amount or value of the consideration given for the transfer (rounded up to the next £5.00). Stamp duty is normally paid by the purchaser. The charge to SDRT will be canceled or, if already paid, repaid (generally with interest), where a transfer instrument has been duly stamped within six years of the charge arising (either by paying the stamp duty or by claiming an appropriate relief) or if the instrument is otherwise exempt from stamp duty.

An unconditional agreement to transfer ordinary shares to, or to a nominee or agent for, a person whose business is or includes the issue of depositary receipts or the provision of clearance services will generally be subject to SDRT (or, where the transfer is effected by a written instrument, stamp duty) at a higher rate of 1.5% of the amount or value of the consideration given for the transfer unless the clearance service has made and maintained an election under section 97A of the U.K. Finance Act 1986, or a section 97A election. It is understood that HMRC regards the facilities of DTC as a clearance service for these purposes and we are not aware of any section 97A election having been made by DTC.

However, no SDRT is generally payable where the transfer of ordinary shares to a clearance service or depositary receipt system is an integral part of an issue of share capital.

Any stamp duty or SDRT payable on a transfer of ordinary shares to a depositary receipt system or clearance service will in practice generally be paid by the transferors or participants in the clearance service or depositary receipt system.

Issue of ADSs

No U.K. stamp duty or SDRT is payable on the issue of ADSs in the company.

Transfers of ADSs

No SDRT should be required to be paid on a paperless transfer of ADSs through the clearance service facilities of DTC, provided that no section 97A election has been made by DTC, and such ADSs are held through DTC at the time of any agreement for their transfer.

No U.K. stamp duty will in practice be payable on a written instrument transferring an ADS provided that the instrument of transfer is executed and remains at all times outside the United Kingdom. Where these conditions are not met, the transfer of, or agreement to transfer, an ADS could, depending on the circumstances, attract a charge to U.K. stamp duty at the rate of 0.5% of the amount or value of the consideration. If it is necessary to pay stamp duty, it may also be necessary to pay interest and penalties.

F. Dividends and paying agents.

Not applicable.

G. Statement by experts.

Not applicable.

H. Documents on display.

We are subject to the information reporting requirements of the Exchange Act applicable to foreign private issuers and file reports under those requirements with the SEC. Those reports may be inspected without charge at the locations described below. As a foreign private issuer, we are exempt from the rules under the Exchange Act related to the furnishing and content of proxy statements, and our officers, directors and principal shareholders are exempt from the reporting and short-swing profit recovery provisions contained in Section 16 of the Exchange Act. In addition, we are not required under the Exchange Act to file periodic reports and financial statements with the SEC as frequently or as promptly as U.S. companies whose securities are registered under the Exchange Act.

We maintain a corporate website at www.autolus.com. Information contained in, or that can be accessed through, our website is not a part of, and shall not be incorporated by reference into, this Annual Report. We have included our website address in this Annual Report solely as an inactive textual reference.

The SEC maintains a website (www.sec.gov) that contains reports, proxy and information statements and other information regarding registrants, such as us, that file electronically with the SEC.

With respect to references made in this Annual Report to any contract or other document of our company, such references are not necessarily complete and you should refer to the exhibits attached or incorporated by reference to this Annual Report for copies of the actual contract or document.

I. Subsidiary Information.

Not applicable.

J. Annual Report to Security Holders.

Not applicable.

Item 11. Quantitative and Qualitative Disclosures About Market Risk.

We are exposed to market risks in the ordinary course of our business, which are principally limited to interest rate fluctuations and foreign currency exchange rate fluctuations. We maintain significant amounts of cash that are in excess of federally insured limits in various currencies, placed with one or more financial institutions for varying periods according to expected liquidity requirements.

Interest Rate Risk

As of December 31, 2022 and 2021, we had cash and cash equivalents of $382.4 million and $310.3 million, respectively. Our exposure to interest rate sensitivity is impacted by changes in the underlying U.S. and U.K. bank interest rates. Our surplus cash have been invested in interest-bearing savings and money market accounts from time to time. We have not entered into investments for trading or speculative purposes. Due to the conservative nature of our investment portfolio, which is predicated on capital preservation of investments with short-term maturities, we do not believe an immediate one percentage point change in interest rates would have a material effect on the fair market value of our portfolio, and we, therefore, do not expect our operating results or cash flows to be significantly affected by changes in market interest rates.

Foreign Currency Exchange Risk

We maintain our consolidated financial statements in our functional currency, which is pounds sterling. Monetary assets and liabilities denominated in currencies other than the functional currency are translated into the functional currency at rates of exchange prevailing at the balance sheet dates. Non-monetary assets and liabilities denominated in foreign currencies are translated into the functional currency at the exchange rates prevailing at the date of the transaction. Exchange gains or losses arising from foreign currency transactions are included in the determination of net income (loss) for the respective periods. We recorded a foreign exchange gain of $1.8 million for the year ended December 31, 2022, and foreign exchange loss of $2.3 million and $0.2 million for the years ended December 31, 2021, and 2020, which are included in other income (expense) in the statements of operations and comprehensive loss.

For financial reporting purposes, our consolidated financial statements are prepared using the functional currency and translated into the U.S. dollar. Assets and liabilities are translated at the exchange rates at the balance sheet dates and revenue and expenses are translated at the average exchange rates and shareholders' equity is translated based on historical exchange rates. Translation adjustments are not included in determining net income (loss) but are included in foreign exchange adjustment to accumulated other comprehensive income (loss), a component of shareholders' equity.

We do not currently engage in currency hedging activities in order to reduce our currency exposure, but we may begin to do so in the future. Instruments that may be used to hedge future risks may include foreign currency forward and swap contracts. These instruments may be used to selectively manage risks, but there can be no assurance that we will be fully protected against material foreign currency fluctuations.

Item 12. Description of Securities Other than Equity Securities.

A. Debt Securities

Not applicable.

B. Warrants and Rights.

Not applicable.

C. Other Securities.

Not applicable.

D. American Depositary Shares.

Citibank, N.A., as Depositary bank, registers and delivers our American Depositary Shares, also referred to as ADSs. Each ADS represents one ordinary share (or a right to receive one ordinary share) deposited with Citibank, N.A., London Branch, or any successor, as custodian for the Depositary. Each ADS will also represent any other securities, cash or other property which may be held by the Depositary in respect of the Depositary facility. The Depositary's corporate office at which the ADSs are administered is located at 388 Greenwich Street, New York, New York 10013. A deposit agreement among us, the Depositary and the ADS holders sets out ADS holder rights as well as the rights and obligations of the Depositary. A form of the deposit agreement is incorporated by reference as an exhibit to this Annual Report.

Fees and Charges

The following table shows the fees and charges that a holder of our ADSs may have to pay, either directly or indirectly. The majority of these costs are set by the Depositary bank and are subject to change:

SERVICE	FEE
Issuance of ADSs (e.g., an issuance of ADS upon a deposit of ordinary shares or upon a change in the ADS(s)-to-ordinary shares ratio), excluding ADS issuances as a result of distributions of ordinary shares	Up to $0.05 per ADS issued
Cancellation of ADSs (e.g., a cancellation of ADSs for delivery of deposited property or upon a change in the ADS(s)-to-ordinary shares ratio, or for any other reason)	Up to $0.05 per ADS canceled
Distribution of cash dividends or other cash distributions (e.g., upon a sale of rights and other entitlements)	Up to $0.05 per ADS held
Distribution of ADSs pursuant to (i) share dividends or other free share distributions, or (ii) exercise of rights to purchase additional ADSs	Up to $0.05 per ADS held
Distribution of securities other than ADSs or rights to purchase additional ADSs (e.g., upon a spin-off)	Up to $0.05 per ADS held
ADS Services	Up to $0.05 per ADS held on the applicable record date(s) established by the Depositary

As an ADS holder, you will also be responsible to pay certain charges such as:

- taxes (including applicable interest and penalties) and other governmental charges;
- the registration fees as may from time to time be in effect for the registration of ordinary shares on the share register and applicable to transfers of ordinary shares to or from the name of the custodian, the Depositary or any nominees upon the making of deposits and withdrawals, respectively;
- certain cable, telex and facsimile transmission and delivery expenses;
- the expenses and charges incurred by the Depositary in the conversion of foreign currency;
- the fees and expenses incurred by the Depositary in connection with compliance with exchange control regulations and other regulatory requirements applicable to ordinary shares, ADSs and ADRs; and
- the fees and expenses incurred by the Depositary, the custodian or any nominee in connection with the servicing or delivery of deposited property.

PART II

Item 13. Defaults, Dividend Arrearages and Delinquencies.

Not applicable.

Item 14. Material Modifications to the Rights of Security Holders and Use of Proceeds.

A. Not applicable.

B. Not applicable.

C. Not applicable.

D. Not applicable.

E. Use of Proceeds.

Not applicable.

Item 15. Controls and Procedures.

A. Disclosure Controls and Procedures.

We maintain “disclosure controls and procedures,” as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended, or the Exchange Act, that are designed to ensure that information required to be disclosed by us in the reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the SEC’s rules and forms, and is accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer, as appropriate to allow timely decisions regarding required disclosure. Our management, with the participation of our Chief Executive Officer and Chief Financial Officer, has evaluated the effectiveness of our disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) as of December 31, 2022. Based on such evaluation, our Chief Executive Officer and Chief Financial Officer have concluded that, as of December 31, 2022, our disclosure controls and procedures were effective.

B. Management’s Annual Report on Internal Control over Financial Reporting.

Our management is responsible for establishing and maintaining adequate internal control over our financial reporting, as such term is defined in Rule 13a-15(f) under the Exchange Act.

Our management, under the supervision and with the participation of our Chief Executive Officer and Chief Financial Officer, conducted an assessment of the evaluation of the effectiveness of our internal control over financial reporting as of December 31, 2022 based on the criteria set forth in “Internal Control - Integrated Framework (2013)” issued by the Committee of Sponsoring Organizations of the Treadway Commission.

Based on this assessment, our management concluded that our internal control over financial reporting was effective as of December 31, 2022.

C. Attestation Report of the Registered Public Accounting Firm.

This Annual Report does not include an attestation report of our registered public accounting firm due to a transition period established by rules of the SEC for newly public companies. For so long as we qualify as an "emerging growth company" as defined under the JOBS Act, our independent registered accounting firm is not required to issue an attestation report on our internal control over financial reporting.

D. Changes in Internal Control Over Financial Reporting.

There were no changes in our internal control over financial reporting (as defined in Rule 13a-15(f) of the Exchange Act) that occurred during the period covered by this Annual Report that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Item 15T. Controls and Procedures.

Not applicable.

Item 16. [Reserved]

Item 16A. Audit Committee Financial Expert.

Our Board has determined that Ms. Bain is an "audit committee financial expert" as defined by SEC rules and has the requisite financial sophistication under the applicable rules and regulations of the Nasdaq Stock Market. Ms. Bain is independent as such term is defined in Rule 10A-3 under the Exchange Act and under the listing standards of the Nasdaq Stock Market.

Item 16B. Code of Ethics.

We have adopted a Code of Business Conduct and Ethics, or the Code of Ethics, that is applicable to all of our employees, officers and directors and is available on our website at https://www.autolus.com/investor-relations/corporate-governance/documents-charters. Information contained on, or that can be accessed through, our website does not constitute a part of this report and is not incorporated by reference herein. If we make any amendment to the Code of Ethics or grant any waivers, including any implicit waiver, from a provision of the Code of Ethics, we will disclose the nature of such amendment or waiver on our website to the extent required by the rules and regulations of the SEC. Under Item 16B of Form 20-F, if a waiver or amendment of the Code of Ethics applies to our principal executive officer, principal financial officer, principal accounting officer or controller and relates to standards promoting any of the values described in Item 16B(b) of Form 20-F, we are required to disclose such waiver or amendment on our website in accordance with the requirements of Instruction 4 to such Item 16B.

Item 16C. Principal Accountant Fees and Services.

Ernst & Young LLP has served as our independent registered public accountant since September 2017 and has audited our consolidated financial statements for the years ended December 31, 2022 and 2021.

The following table shows the aggregate fees for services rendered by Ernst & Young LLP to us and our subsidiaries for the years ended December 31, 2022 and 2021.

	Year Ended December 31,	
	2022	**2021**
	(in thousands)	
Audit fees	$ 965	$ 903
Audit-related fees	267	$ 155
Total	**$ 1,232**	**$ 1,058**

Audit fees. Audit fees consisted of fees for the audit of our annual financial statements and other professional services provided in connection with the statutory and regulatory filings or engagements, including fees for the review of our interim financial information.

Audit-related fees. Audit related fees include fees for assurance reporting on our current and historical financial information included in our SEC registration statements in connection with our follow-on capital raises and our at-the-market facility program, including services that generally only the independent accountant can reasonably provide such as comfort letters.

Audit Committee Pre-Approval Policies and Procedures

Our audit committee reviews and pre-approves the scope and the cost of audit services related to us and permissible non-audit services performed by the independent auditors, other than those for *de minimis* services which are approved by the audit committee prior to the completion of the audit. All of the services related to us provided by Ernst & Young LLP during the year ended December 31, 2022 were pre-approved by the audit committee.

Item 16D. Exemptions from the Listing Standards for Audit Committees.

Not applicable

Item 16E Purchases of Equity Securities by the Issuer and Affiliated Purchasers.

Not applicable.

Item 16F. Change in Registrant's Certifying Accountant.

Not applicable

Item 16G. Corporate Governance.

We are a "foreign private issuer," as defined by the SEC. As a result, in accordance with Nasdaq listing requirements, we may rely on home country governance requirements and certain exemptions thereunder rather than complying with Nasdaq corporate governance standards. While we voluntarily follow most Nasdaq corporate governance rules, we may choose to take advantage of the following limited exemptions:

- Exemption from filing quarterly reports on Form 10-Q containing unaudited financial and other specified information or current reports on Form 8-K upon the occurrence of specified significant events.
- Exemption from Section 16 rules requiring insiders to file public reports of their share ownership and trading activities and liability for insiders who profit from trades in a short period of time, which will provide less data in this regard than shareholders of U.S. companies that are subject to the Exchange Act.
- Exemption from the requirement that our board have a compensation committee that is composed entirely of independent directors with a written charter addressing the committee's purpose and responsibilities.
- Exemption from the requirement to have independent director oversight of director nominations.

We intend to follow U.K. corporate governance practices in lieu of Nasdaq corporate governance requirements as follows:

- We do not intend to follow Nasdaq Rule 5620(c) regarding quorum requirements applicable to meetings of shareholders. Such quorum requirements are not required under English law. In accordance with generally accepted business practice, our Articles of Association provide alternative quorum requirements that are generally applicable to meetings of shareholders.
- We do not intend to follow Nasdaq Rule 5605(b)(2), which requires that independent directors regularly meet in executive sessions where only independent directors are present. Our independent directors may choose to meet in executive sessions at their discretion.

Although we may rely on certain home country corporate governance practices, we must comply with Nasdaq's Notification of Noncompliance requirement (Nasdaq Rule 5625) and the Voting Rights requirement (Nasdaq Rule 5640). Further, we must have an audit committee that satisfies Nasdaq Rule 5605(c)(3), which addresses audit committee responsibilities and authority and requires that the audit committee consist of members who meet the independence requirements of Nasdaq Rule 5605(c)(2)(A)(ii).

We intend to take all actions necessary for us to maintain compliance as a foreign private issuer under the applicable corporate governance requirements of the Sarbanes-Oxley Act, the rules adopted by the SEC and Nasdaq listing rules. Accordingly, our shareholders will not have the same protections afforded to shareholders of companies that are subject to all of the corporate governance requirements of Nasdaq.

Item 16H. Mine Safety Disclosure

Not applicable

PART III

Item 17. Financial Statements.

See the financial statements beginning on page F-1 of this Annual Report.

Item 18. Financial Statements.

Not applicable.

Item **19. C.**

		INCORPORATED BY REFERENCE			
EXHIBIT NUMBER	DESCRIPTION OF EXHIBIT	SCHEDULE/ FORM	FILE NUMBER	EXHIBIT	FILE DATE
1.1	Articles of Association of Autolus Therapeutics plc.	Form F-1/A	333-224720	3.1	6/19/18
2.1	Deposit Agreement by and among the registrant, Citibank, N.A., as the Depositary bank and the holders and beneficial owners of American Depositary Shares issued thereunder.	Form F-6/A	333-224837	99.(a)	6/19/18
2.2	Form of American Depositary Receipt (included in exhibit 2.1).	Form F-6/A	333-224837	99.(a)	6/19/18
2.3	Autolus Therapeutics plc, Registration Rights Agreement, dated as June 26, 2018				
2.4	Description of Securities	Form 20-F	001-38547	2.4	3/3/20
2.5	Warrant issued to BXLS V – Autobahn L.P. dated November 6, 2021.	Form 6-K	001-38547	99.3	11/8/21
2.6	Registration Rights Agreement by and between the Registrant and BXLS V – Autobahn L.P. dated November 6, 2021.	Form 6-K	001-38547	99.2	11/8/21
4.1#	License Agreement, dated as of September 25, 2014 by and between the registrant and UCL Business Ltd., as amended on March 2, 2016, March 28, 2018 and October 15, 2020.	Form 20-F	001-38547	4.7	3/4/21
4.2#	Supply Agreement, dated as of March 23, 2018, by and between the registrant and Miltenyi Biotec GmbH.	Form F-1/A	333-224720	10.2	6/8/18
4.3+	Autolus Therapeutics plc 2018 Equity Incentive Plan.	Form F-1/A	333-224720	10.3	6/19/18
4.4+	Non-employee Sub Plan to the Autolus Therapeutics plc 2018 Equity Incentive Plan.	Form F-1/A	333-224720	10.4	6/19/18
4.5+	Management Incentive Compensation Plan.	Form F-1/A	333-224720	10.5	6/8/18

4.6+	Form of Deed of Indemnity between the registrant and each of its members of senior management and directors.	Form F-1/A	333-224720	10.6	6/8/18
4.7	Collaboration and Financing Agreement, dated as of November 6, 2021, between Autolus Limited and BXLS V — Autobahn L.P.	Form 20-F	001-38547	4.7	3/10/22
4.8	Securities Purchase Agreement by and between the Registrant and BXLS V – Autobahn L.P. dated November 6, 2021.	Form 6-K	001-38547	99.1	11/8/21
8.1	Subsidiaries of the registrant.	Form 20-F	001-38547	8.1	3/3/20
12.1*	Certification of Principal Executive Officer Pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.				
12.2*	Certification of Principal Financial Officer Pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.				
13.1**	Certification of Principal Executive Officer and Principal Financial Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.				
15.1*	Consent of Ernst & Young LLP				
101.INS*	XBRL Instance Document				
101.SCH*	XBRL Taxonomy Extension Schema Document				
101.CAL*	XBRL Taxonomy Extension Calculation Linkbase Document				
101.DEF*	XBRL Taxonomy Extension Definition Linkbase Document				
101.LAB*	XBRL Taxonomy Extension Label Linkbase Document				
101.PRE*	XBRL Taxonomy Extension Presentation Linkbase Document				

+ Indicates management contract or compensatory plan.

Confidential treatment has been granted as to portions of the exhibit (indicated by asterisks). Confidential materials omitted and filed separately with the Securities and Exchange Commission.

* Filed herewith.

** Furnished herewith.

SIGNATURES

The registrant hereby certifies that it meets all of the requirements for filing on Form 20-F and that it has duly caused and authorized the undersigned to sign this annual report on its behalf.

AUTOLUS THERAPEUTICS PLC

Date: March 7, 2023

By: /s/ Christian Itin
Christian Itin
Chief Executive Officer

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

Report of Independent Registered Public Accounting Firm

To the Shareholders and the Board of Directors of Autolus Therapeutics plc

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Autolus Therapeutics plc (the Company) as of December 31, 2022 and 2021, the related consolidated statements of operations and comprehensive loss, shareholders' equity and cash flows for each of the three years in the period ended December 31, 2022, and the related notes (collectively referred to as the “consolidated financial statements”). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2022 and 2021, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2022, in conformity with U.S. generally accepted accounting principles.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company’s financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion.

Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ Ernst & Young LLP

We have served as the Company’s auditor since 2017.

Reading, United Kingdom

March 7, 2023

Consolidated Balance Sheets
(In thousands, except share and per share amounts)

	Note	December 31, 2022	December 31, 2021
Assets			
Current assets:			
Cash and cash equivalents		$ 382,436	$ 310,338
Restricted cash		325	338
Prepaid expenses and other current assets	4	43,010	36,276
Total current assets		**425,771**	**346,952**
Non-current assets:			
Property and equipment, net	5	35,209	33,541
Prepaid expenses and other non-current assets		2,176	2,362
Operating lease right-of-use assets, net	15	23,210	18,775
Long-term deposits		1,832	2,039
Deferred tax asset	14	2,076	1,826
Intangible assets, net	6	—	65
Total assets		**$ 490,274**	**$ 405,560**
Liabilities and shareholders' equity			
Current liabilities:			
Accounts payable		531	431
Accrued expenses and other liabilities	7	40,797	23,667
Operating lease liabilities, current	15	5,038	4,453
Total current liabilities		**46,366**	**28,551**
Non-current liabilities:			
Operating lease liabilities, non-current	15	19,218	16,545
Liability related to future royalties and sales milestones, net	8, 19	125,900	47,016
Other long term payables		116	128
Total liabilities		**191,600**	**92,240**
Commitments and contingencies	16		
Shareholders' equity:			
Ordinary shares, $0.000042 par value; 290,909,783 and 200,000,000 shares authorized at December 31, 2022 and 2021, 173,074,510 and 90,907,830 shares issued and outstanding at December 31, 2022 and 2021	10	8	4
Deferred shares,£0.00001 par value; 34,425 shares authorized, issued and outstanding at December 31, 2022 and 2021	10	—	—
Deferred B shares, £0.00099 par value; 88,893,548 shares authorized, issued and outstanding at December 31, 2022 and 2021	10	118	118
Deferred C shares, £0.000008 par value; 1 share authorized, issued and outstanding at December 31, 2022 and 2021	10	—	—
Additional paid-in capital		1,007,625	843,108
Accumulated other comprehensive loss		(38,898)	(8,570)
Accumulated deficit		(670,179)	(521,340)
Total shareholders' equity		**298,674**	**313,320**
Total liabilities and shareholders' equity		**$ 490,274**	**$ 405,560**

The accompanying notes are an integral part of these consolidated financial statements.

Consolidated Statements of Operations and Comprehensive Loss
(In thousands, except share and per share amounts)

	Note	December 31, 2022	2021	2020
Grant income		$ 166	$ 823	$ 1,473
License revenue	3	6,194	1,507	242
Operating expenses:				
Research and development		(141,992)	(134,789)	(134,888)
General and administrative		(31,899)	(31,865)	(34,972)
Loss on disposal of leasehold improvements		(515)	(676)	—
Total operating expenses, net		**(168,046)**	**(165,000)**	**(168,145)**
Other income (expense):				
Interest income		1,708	262	536
Interest expense	8, 19	(8,905)	(1,105)	—
Other income (expense)		2,038	(145)	1,352
Total other (expense) income, net		**(5,159)**	**(988)**	**1,888**
Net loss before income tax		**(173,205)**	**(165,988)**	**(166,257)**
Income tax benefit	14	24,366	23,892	24,163
Net loss attributable to ordinary shareholders		**(148,839)**	**(142,096)**	**(142,094)**
Other comprehensive (loss) income:				
Foreign currency exchange translation adjustment		(30,328)	(2,709)	2,830
Total comprehensive loss		**$ (179,167)**	**$ (144,805)**	**$ (139,264)**
Basic and diluted net loss per ordinary share	12	$ (1.57)	$ (1.97)	$ (2.76)
Weighted-average basic and diluted ordinary shares	12	94,993,400	72,084,078	51,558,075

The accompanying notes are an integral part of these consolidated financial statements.

Consolidated Statements of Shareholders' Equity

(In thousands, except share amounts)

	Ordinary shares		Deferred Shares		Deferred B shares		Deferred C Shares					
	Shares	Amount	Shares	Amount	Shares	Amount	Shares	Amount	Additional Paid in Capital	Accumulated other comprehensive loss	Accumulated deficit	Total
Balance at December 31, 2019	**44,983,006**	**$ 2**	**34,425**	**$ —**	**88,893,548**	**$ 118**	**1**	**$ —**	**$ 500,560**	**$ (8,691)**	**$ (237,150)**	**$ 254,839**
Issuance of ordinary shares, net of issuance costs	7,250,000	1	—	—	—	—	—	—	73,952	—	—	73,953
Share-based compensation expense	—	—	—	—	—	—	—	—	20,021	—	—	20,021
Restricted shares - forfeited	(1,969)	—	—	—	—	—	—	—	—	—	—	—
Exercise of stock options	115,194	—	—	—	—	—	—	—	483	—	—	483
Unrealized gain on foreign currency translation	—	—	—	—	—	—	—	—	—	2,830	—	2,830
Net loss	—	—	—	—	—	—	—	—	—	—	(142,094)	(142,094)
Balance at December 31, 2020	**52,346,231**	**$ 3**	**34,425**	**$ —**	**88,893,548**	**$ 118**	**1**	**$ —**	**$ 595,016**	**$ (5,861)**	**$ (379,244)**	**$ 210,032**
Issuance of ordinary shares, net of issuance costs	38,202,155	1	—	—	—	—	—	—	228,160	—	—	228,161
Share-based compensation expense	—	—	—	—	—	—	—	—	9,937	—	—	9,937
Vesting of restricted stock	163,375	—	—	—	—	—	—	—	—	—	—	—
Exercise of stock options	196,069	—	—	—	—	—	—	—	127	—	—	127
Issuance of warrants, net of transaction costs	—	—	—	—	—	—	—	—	9,868	—	—	9,868
Unrealized loss on foreign currency translation	—	—	—	—	—	—	—	—	—	(2,709)	—	(2,709)
Net loss	—	—	—	—	—	—	—	—	—	—	(142,096)	(142,096)
Balance at December 31, 2021	**90,907,830**	**$ 4**	**34,425**	**$ —**	**88,893,548**	**$ 118**	**1**	**$ —**	**$ 843,108**	**$ (8,570)**	**$ (521,340)**	**$ 313,320**
Issuance of ordinary shares, net of issuance costs	81,927,012	4	—	—	—	—	—	—	152,386	—	—	152,390
Share-based compensation expense	—	—	—	—	—	—	—	—	12,014	—	—	12,014
Vesting of restricted stock	76,804	—	—	—	—	—	—	—	—	—	—	—
Exercise of stock options	162,864	—	—	—	—	—	—	—	117	—	—	117
Unrealized loss on foreign currency translation	—	—	—	—	—	—	—	—	—	(30,328)	—	(30,328)
Net loss	—	—	—	—	—	—	—	—	—	—	(148,839)	(148,839)
Balance at December 31, 2022	**173,074,510**	**$ 8**	**34,425**	**$ —**	**88,893,548**	**$ 118**	**1**	**$ —**	**$ 1,007,625**	**$ (38,898)**	**$ (670,179)**	**$ 298,674**

The accompanying notes are an integral part of these consolidated financial statements.

Consolidated Statements of Cash Flows
(In thousands)

	December 31, 2022	2021	2020
Cash flows from operating activities:			
Net loss	$ (148,839)	$ (142,096)	$ (142,094)
Adjustments to reconcile net loss to net cash used in operating activities:			
Depreciation and amortization	7,422	8,458	5,658
Loss on disposal of fixed assets and intangible assets	515	672	—
Non-cash share-based compensation (net of amount capitalized)	12,014	9,937	20,107
Non-cash interest expense and cumulative catch-up adjustment	8,884	1,093	—
Foreign exchange differences	3,996	—	—
Loss (gain) on lease incentive and reassessment	—	9	(1,335)
Gain on termination of operating lease	—	—	(160)
Deferred income tax	(268)	(72)	(1,344)
Changes in operating assets and liabilities			
(Increase) decrease in prepaid expenses and other current assets	(10,962)	5,574	(2,660)
Decrease (increase) in prepaid expenses and other non-current assets	161	503	(2,637)
(Increase) decrease in long-term deposits	(5)	575	(508)
Increase (decrease) in accounts payable	22	(1,816)	1,439
Increase (decrease) in accrued expenses and other liabilities	16,007	(2,021)	5,608
(Decrease) increase in current and non-current operating lease liabilities, net of operating lease right of use assets	(1,255)	1,323	168
Net cash used in operating activities	**(112,308)**	**(117,861)**	**(117,758)**
Cash flows from investing activities:			
Purchases of property and equipment	(10,841)	(8,857)	(14,681)
Net cash used in investing activities	**(10,841)**	**(8,857)**	**(14,681)**
Cash flows from financing activities:			
Proceeds of issuance of ordinary shares	163,854	245,900	79,750
Proceeds from exercise of share options	117	125	462
Proceeds from liability related to future royalties and sales milestones	70,000	50,000	—
Payments of equity issuance costs	(10,361)	(11,453)	(5,797)
Payments of issuance costs related to the liability related to the sale of future royalties and sales milestones	—	(509)	—
Net cash provided by financing activities	**223,610**	**284,063**	**74,415**
Effect of exchange rate changes on cash and restricted cash	(28,376)	(754)	679
Net increase (decrease) in cash, cash equivalents and restricted cash	**72,085**	**156,591**	**(57,345)**
Cash, cash equivalents and restricted cash, beginning of period	**310,676**	**154,085**	**211,430**
Cash, cash equivalents and restricted cash, end of period	**$ 382,761**	**$ 310,676**	**$ 154,085**

Consolidated Statements of Cash Flows
(In thousands)

	December 31,		
	2022	**2021**	**2020**
Supplemental cash flow information			
Cash paid for taxes	$ (471)	$ (364)	$ (1,841)
Cash received for taxes	20,044	25,031	21,620
Net cash received from taxes	**$ 19,573**	**$ 24,667**	**$ 19,779**
Supplemental non-cash flow information			
Property and equipment purchases included in accounts payable or accrued expenses	$ 2,864	$ 3,712	$ 2,499
Leased assets terminated and obtained in exchange for operating lease liabilities, net	$ —	$ 28,517	$ 2,487
Leased assets obtained in exchange for operating lease liabilities	$ 9,785	$ 627	$ 26,956
Capitalized share-based compensation, net of forfeitures	$ (6)	$ —	$ (86)
Capitalized implementation costs included in accrued expenses	$ 230	$ 100	$ 144
Issuance costs included in accounts payable and accrued expenses	$ 1,103	$ 245	
Warrants issued in relation to Blackstone Agreements at relative fair value	$ —	$ 9,868	$ —
Reconciliation of cash and cash equivalents and restricted cash reported within the consolidated balance sheets			
Cash and cash equivalents	$ 382,436	$ 310,338	$ 153,299
Short-term restricted cash	325	338	786
Total cash and cash equivalents and restricted cash	**$ 382,761**	**$ 310,676**	**$ 154,085**

The accompanying notes are an integral part of these consolidated financial statements.

Note 1. Nature of the Business

Autolus Therapeutics plc and its subsidiaries (collectively "Autolus" or the “Company”) is a biopharmaceutical company developing next-generation programmed T cell therapies for the treatment of cancer. Using its broad suite of proprietary and modular T cell programming technologies, the Company is engineering precisely targeted, controlled and highly active T cell therapies that are designed to better recognize cancer cells, break down their defense mechanisms and attack and kill these cells. The Company believes its programmed T cell therapies have the potential to be best-in-class and offer cancer patients substantial benefits over the existing standard of care, including the potential for cure in some patients.

The Company is subject to risks and uncertainties common to early-stage companies in the biotechnology industry, including, but not limited to, development by competitors of new technological innovations, dependence on key personnel, protection of proprietary technology, compliance with government regulations and the ability to secure additional capital to fund operations. Product candidates currently under development will require significant additional research and development efforts, including preclinical and clinical testing and regulatory approval, prior to commercialization. These efforts require significant amounts of capital, adequate personnel and infrastructure and extensive compliance-reporting capabilities. Even if the Company’s product development efforts are successful, it is uncertain when, if ever, the Company will realize revenue from its product sales.

The Company has funded its operations primarily with proceeds from the sale of equity securities, through public offerings and sales pursuant to the Company's at-the-market facility, government grants, U.K. research and development tax credits and receipts from the U.K. RDEC Scheme, out-licensing arrangements and strategic collaboration and financing agreements. The Company has incurred recurring losses since its inception, including net losses of $148.8 million, $142.1 million and $142.1 million for the years ended December 31, 2022, 2021 and 2020, respectively. As of December 31, 2022 and 2021, the Company had an accumulated deficit of $670.2 million and $521.3 million, respectively. The Company expects to continue to generate operating losses for the foreseeable future. The future viability of the Company beyond that point is dependent on its ability to raise additional capital to finance its operations. The Company’s inability to raise additional capital as and when needed could have a negative impact on its financial condition and ability to pursue its business strategies. There can be no assurances, however, that the current operating plan will be achieved or that additional funding will be available on terms acceptable to the Company, or at all.

Note 2. Summary of Significant Accounting Policies

Basis of Presentation

The consolidated financial statements of the Company have been prepared in accordance with generally accepted accounting principles in the United States of America (“U.S. GAAP”) and are presented in U.S. dollars. All intercompany accounts and transactions between the Autolus Therapeutics plc and its subsidiaries have been eliminated upon consolidation.

Use of Estimates

The preparation of consolidated financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, the disclosure of contingent assets and liabilities at the date of the consolidated financial statements and the reported amounts of income and expenses during the reporting periods. Actual results could differ from those estimates. Significant estimates and assumptions reflected in these consolidated financial statements include, but are not limited to, the accrual for research and development expenses, share-based compensation including assessing the probability of meeting performance conditions, income taxes, initial fair value of warrants, and non-cash interest expense on liability related to future royalties and sales milestones. Estimates are periodically reviewed in light of changes in circumstances, facts and experience. Changes in estimates are recorded in the period in which they become known.

Going concern

The financial position of the Company, its cash flows and liquidity position and borrowing facilities are described in the primary statements and notes to these sets of consolidated financial statements.

The Company reported cash and cash equivalents of $382.4 million and net current assets of $379.4 million at December 31, 2022, with a net loss for the year the ended December 31, 2022 of $148.8 million. The Company did not generate positive operational cash flow which was largely due to the continuing focus on the research, development, and clinical activities to advance the programs within the Company's pipeline.

In assessing the going concern assumptions, the Company's board of directors, "the Board", has undertaken a rigorous assessment of the detailed forecasts covering the period through the end of 2024 taking into account a wide range of downside risks including program delays and non-receipt of milestone payments. As part of considering the downside risks, the Board has considered the impact of the coronavirus 2019 (''COVID-19'') pandemic. Whilst it is difficult to estimate the impact of the COVID-19 pandemic, the Board has concluded that it will not have a significant negative impact on the cash outflows of the Company over the period assessed for going concern purposes.

Consequently, the Company concluded with its existing cash and cash equivalents of $382.4 million it believes it can fund operations for at least the next twelve months from the date of issuance of these financial statements and as such has prepared the consolidated financial statements on the going concern basis. As the Company continues to incur losses, the transition to profitability is dependent upon the successful development, approval and commercialization of its product candidates and achieving a level of revenues adequate to support its cost structure. Additional funding will be needed before the Company is expected to reach cash breakeven, following commercialization of its first program.

Cash and cash equivalents

The Company considers cash and cash equivalents in the consolidated financial statements to include cash and highly liquid investments at financial institutions with a maturity of ninety five days or less, which are subject to an insignificant risk of changes in value.

Restricted Cash

The Company's restricted cash consists of cash providing security for corporate credit cards and rental deposits relating to the sub-lease of facilities by Autolus to third parties. In prior years, the Company entered into a credit card arrangement that requires a security deposit of $0.2 million. In October 2021, the Company entered into two sub-leasing agreements relating to the Enfield facility, which require aggregate rental deposits of $0.1 million to be held by the Company.

Fair Value Measurements

The Company uses valuation approaches that maximize the use of observable inputs and minimize the use of unobservable inputs to the extent possible. The Company determines the fair value based on assumptions that market participants would use in pricing an asset or liability in the principal or most advantageous market. When considering market participant assumptions in fair value measurements, the following fair value hierarchy distinguishes between observable and unobservable inputs, which are categorized in of the following levels:

- Level 1 — Quoted prices in active markets for identical assets or liabilities.
- Level 2 — Inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly or indirectly.
- Level 3 — Unobservable inputs that reflect the Company's own assumptions about the assumptions market participants would use in pricing the asset or liability.

The carrying amounts reported in the balance sheet for cash and cash equivalents, restricted cash, prepaid expenses and other assets, accounts payable and accrued expenses and other liabilities approximate their fair value because of the short-term nature of these instruments.

Concentration of Credit Risk

Financial instruments that subject the Company to credit risk consist primarily of cash and cash equivalents and restricted cash. The Company places cash and cash equivalents and restricted cash with established financial institutions with strong credit ratings. The Company has no significant off-balance-sheet risk or concentration of credit risk, such as foreign exchange contracts, options contracts, or other foreign hedging arrangements.

Implementation Costs in a Cloud Computing Arrangement

The Company's cloud computing arrangements primarily comprise hosting arrangements which are service contracts, whereby the Company gains remote access to use enterprise software hosted by the vendor or another third party on an as-needed basis for a period of time in exchange for a subscription fee. Implementation costs for cloud computing arrangements are capitalized if certain criteria are met and consist of internal and external costs directly attributable to developing and configuring cloud computing software for its intended use. These capitalized implementation costs are presented in the consolidated balance sheet in prepaid expenses and other assets, current and non-current, and are generally amortized over the fixed, non-cancellable term of the associated hosting arrangement on a straight-line basis.

Property and Equipment

Property and equipment are recorded at cost and depreciated or amortized using the straight-line method over the estimated useful lives of the respective assets. As of December 31, 2022 and 2021, the Company's property and equipment consisted of office equipment, lab equipment, furniture and fittings, and leasehold improvements.

Depreciation is computed using the straight-line method over the estimated useful lives of the related assets. The following table provides the range of estimated useful lives used for each asset type:

Office equipment	3 years
Lab equipment	5 to 10 years
Furniture and fittings	5 years
Leasehold improvements	shorter of the lease term or the estimated useful life of the asset

Assets under construction consist of costs incurred with leasehold improvements and, once placed into service, will be depreciated over the shorter of the lease term or the estimated useful life of the asset. Upon retirement or sale, the cost of assets disposed of, and the related accumulated depreciation, are removed from the accounts and any resulting gain or loss is included in the statement of operations and other comprehensive loss.

Repairs and maintenance expenditures, which are not considered improvements and do not extend the useful life of property and equipment, are expensed as incurred.

The Company recognized a loss on the disposal of $0.5 million relating to leasehold improvements which are no longer being utilized in a Cell and Gene Therapy Catapult manufacturing facility in Stevenage, United Kingdom during the year ended December 31, 2022. The Company recognized a loss on disposal of leasehold improvements of $0.7 million during the year ended December 31, 2021 and did not recognize a disposal loss during the years ended December 31, 2020.

The Company routinely evaluates the useful life attributed to its assets.

Impairment of Long-lived Assets

The Company evaluates an asset for potential impairment when events or changes in circumstances indicate the carrying value of the asset may not be recoverable. Recoverability is measured by comparing the carrying value of the asset to the expected future net undiscounted cash flows that the asset is expected to generate. If such asset is considered to be impaired, the impairment to be recognized is measured by the amount by which the carrying value of the asset exceeds the fair value. The Company did not recognize an impairment for the years ended December 31, 2022, 2021 and 2020.

Leases

Effective January 1, 2019, the Company adopted Accounting Standards Codification (“ASC”), Topic 842, Leases (“ASC 842”), using the required modified retrospective approach and utilizing the effective date as its date of initial application.

At the inception of an arrangement, the Company determines whether the arrangement is or contains a lease based on the unique facts and circumstances present. Most leases with a term greater than one year are recognized on the balance sheet as right-of-use assets, lease liabilities and, if applicable, long-term lease liabilities. The Company has elected not to recognize on the balance sheet, leases with terms of one year or less. Operating lease liabilities and their corresponding right-of-use assets are recorded based on the present value of lease payments over the expected remaining lease term. However, certain adjustments to the right-of-use asset may be required for items such as incentives received, initial direct costs, or prepayments. The interest rate implicit in lease contracts is typically not readily determinable. As a result, the Company utilizes its incremental borrowing rates, which are the rates incurred to borrow on a collateralized basis over a similar term an amount equal to the lease payments in a similar economic environment.

In accordance with the guidance in ASC 842, components of a lease should be split into three categories: lease components (*e.g.*, land, building, etc.), non-lease components (*e.g.*, common area maintenance, consumables, etc.), and non-components (*e.g.*, property taxes, insurance, etc.). Then the fixed and in-substance fixed contract consideration (including any related to non-components) must be allocated based on the respective relative fair values to the lease components and non-lease components.

Although separation of lease and non-lease components is required, certain practical expedients are available. Entities may elect the practical expedient to not separate lease and non-lease components. Rather, they would account for each lease component and the related non-lease component together as a single component. For new and amended leases beginning in 2019, the Company elected the practical expedients to account for the lease and non-lease components for leases for classes of all underlying assets and allocate all of the contract consideration to the lease component only. The Company determined the underlying lease to be the predominant component, and therefore, the entire agreement was accounted for under ASC 842.

Intangible Assets Subject to Amortization

The Company’s intangible assets have been related to acquired software licenses with finite lives which are amortized over their useful lives and reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of the asset may not be recoverable. If any indicators were present, the Company would test for recoverability by comparing the carrying amount of the asset to the net undiscounted cash flows expected to be generated from the asset. If those net undiscounted cash flows do not exceed the carrying amount (*i.e.*, the asset is not recoverable), the Company would perform the next step, which is to determine the fair value of the asset and record an impairment loss, if any. The Company evaluates the useful lives for these intangible assets each reporting period to determine whether events and circumstances warrant a revision in their remaining useful lives. At December 31, 2022 these intangible assets were fully amortized. The Company did not recognize an impairment loss related to intangible assets in the years ended December 31, 2022, 2021 and 2020.

Segment Information

Operating segments are defined as components of an enterprise about which separate discrete information is available for evaluation by the chief operating decision maker in deciding how to allocate resources and assess performance. The Company and the Company’s chief operating decision maker, the Company’s Chief Executive Officer, view the Company’s operations and manages its business as a single operating segment, which is the business of developing and commercializing CAR-T therapies. The Company operates in three geographic regions: the United Kingdom, mainland Europe and the United States. A majority of the Company’s assets are held in the United Kingdom.

Research and Development Costs

Research and development costs are expensed as incurred. Research and development expenses consist of costs incurred in performing research and development activities, including salaries, share-based compensation and benefits, depreciation expense, third-party license fees, external costs of outside vendors engaged to conduct clinical development activities, clinical trials, costs to manufacture clinical trial materials and certain tax credits associated with research and development activities. The Company recorded the U.K.'s research and development expenditure credit ("RDEC") of less than $0.1 million, $0.1 million, and $0.1 million for the years ended December 31, 2022, 2021 and 2020, respectively, as reductions of research and development expenses within the Company’s statement of operations and comprehensive loss.

Accrued Research and Development Expenses

As part of the process of preparing consolidated financial statements, the Company is required to estimate accruals for research and development expenses. This process involves reviewing and identifying services which have been performed by third parties on the Company's behalf and determining the value of these services. In addition, the Company makes estimates of costs incurred to date but not yet invoiced, in relation to external clinical research organizations and clinical site costs. The Company analyzes the progress of clinical trials, including levels of patient enrollment; invoices received and contracted costs, when evaluating the adequacy of the accrued liabilities for research and development. The Company makes judgments and estimates in determining the accrued balance in any accounting period.

Share-Based Compensation

The Company recognizes share-based compensation expense for equity awards based on the grant date fair value of the award. The Company recognizes share-based compensation expense for awards granted to employees that have a graded vesting schedule based on a service condition only on a straight-line basis over the requisite service period for each separately vesting portion of the award as if the award was, in substance, multiple awards (the "graded-vesting attribution method"), based on the estimated grant date fair value for each separately vesting tranche. For equity awards with a graded vesting schedule and a combination of service and performance conditions, the Company recognizes share-based compensation expense using a graded-vesting attribution method over the requisite service period when the achievement of a performance-based milestone is probable, based on the relative satisfaction of the performance condition as of the reporting date. For performance conditions related to regulatory approvals those regulatory approvals are deemed probable when actually achieved. The Company accounts for forfeitures as they occur.

For share-based awards granted to consultants and non-employees, compensation expense is recognized using the graded-vesting attribution method over the period during which services are rendered by such consultants and non-employees until completed. The measurement date for employee awards is the date of grant, and share-based compensation costs are recognized as expense over the employees' requisite service period, which is the vesting period, on an accelerated basis. In the year ended December 31, 2019 the Company adopted Accounting Standards Update ("ASU") No. 2018-07, "Compensation —Stock Compensation (Topic 718): Improvements to Non-employee Share-Based Payment Accounting" ("ASU No. 2018-07"), prior to which the measurement date for non-employee awards was generally the date the services were completed, resulting in financial reporting period adjustments to share-based compensation during the vesting terms for changes in the fair value of the awards. After the adoption of ASU No. 2018-07, the measurement date for non-employee awards is the later of the adoption date of ASU No. 2018-07 or the date of grant, without changes in the fair value of the award.

The fair value of each share option grant is estimated on the date of grant using the Black-Scholes option pricing model. See Note 11, "Share-based compensation", for the Company's assumptions used in connection with share option grants made during the periods covered by these consolidated financial statements. Assumptions used in the option pricing model include the following:

Expected volatility. The Company lacks company-specific historical and implied volatility information for the Company's ADSs for expected terms greater than 4.5 years. Therefore, it uses a combination of the historical volatility of the ADSs and also the expected share volatility based on the historical volatility of publicly traded peer companies and expect to continue to do so until such time as the Company has adequate historical data regarding the volatility of its own traded ADS price.

Expected term. The expected term of the Company's share options has been determined utilizing the "simplified" method for awards that qualify as "plain-vanilla" options.

Risk-free interest rate. The risk-free interest rate is determined by reference to the U.S. Treasury yield curve in effect at the time of grant of the award for time periods that are approximately equal to the expected term of the award.

Expected dividend. Expected dividend yield of zero is based on the fact that the Company has never paid cash dividends on ordinary shares and does not expect to pay any cash dividends in the foreseeable future.

Fair value of ordinary shares. The fair market value of the Company's ADSs underlying the share option is equal to the closing price of the ADSs on the Nasdaq Global Select Market on the date the grant is approved by the board of directors.

Foreign Currency Translation

The Company maintains its financial statements in its functional currency, which is pound sterling. Monetary assets and liabilities denominated in currencies other than the functional currency are translated into the functional currency at rates of exchange prevailing at the balance sheet dates. Non-monetary assets and liabilities denominated in foreign currencies are translated into the functional currency at the exchange rates prevailing at the date of the transaction. Exchange gains or losses arising from foreign currency transactions are included in the determination of net income (loss) for the respective periods. The Company recorded a foreign exchange gain of $1.8 million for the year ended December 31, 2022, and foreign exchange losses of $2.3 million and $0.2 million for the years ended December 31, 2021, and 2020, respectively which are included in other income (expense) in the consolidated statements of operations and comprehensive loss.

For financial reporting purposes, the financial statements of the Company have been translated into U.S. dollars. Assets and liabilities have been translated at the exchange rates at the balance sheet dates, while revenue and expenses are translated at the average exchange rates over the reporting period and shareholders' equity amounts are translated based on historical exchange rates as of the date of each transaction. Translation adjustments are not included in determining net income (loss) but are included in foreign exchange adjustment to other comprehensive loss, a component of shareholders' equity.

Patent Costs

The Company expenses patent prosecution and related legal costs as they are incurred and classifies such costs as general and administrative expenses in the accompanying statements of operations and comprehensive loss. The Company recorded patent expenses of $1.6 million, $1.7 million and $2.1 million for the years ended December 31, 2022, 2021 and 2020, respectively.

Grant Income

The Company has received research grants under which it is reimbursed for specific research and development activities. Payments received are recognized as income in the statements of operations and comprehensive loss over the period in which the Company recognizes the related costs. At the time the Company recognizes grant income, it has complied with the conditions attached to it and the receipt of the reimbursement is reasonably assured. The Company has received grants from the U.K. government, which are repayable under certain circumstances, including breach or noncompliance. For grants with refund provisions, the Company reviews the grant to determine the likelihood of repayment. If the likelihood of repayment of the grant is determined to be remote, then the grant is recognized as grant income. The Company has determined that the likelihood of any repayment events included in its current grants is remote.

License Revenue

The Company accounts for its revenues pursuant to the provisions of ASC Topic 606, *Revenue from Contracts with Customers* ("ASC Topic 606").

The Company has no products approved for commercial sale and have not generated any revenue from commercial product sales. The revenue to date has been generated principally from out-licensing agreements with a small number of the Company's customers.

In determining the appropriate amount of revenue to be recognized as the Company fulfills its obligations under its agreements, the Company performs the following steps: (i) identification of the promised goods or services in the contract; (ii) determination of whether the promised goods or services are performance obligations, including whether they are distinct in the context of the contract; (iii) measurement of the transaction price, including the constraint on variable consideration; (iv) allocation of the transaction price to the performance obligations based on estimated selling prices; and (v) recognition of revenue when (or as) the Company satisfies each performance obligation.

License Fees and Multiple Element Arrangements

If a license to the Company's intellectual property is determined to be distinct from the other performance obligations identified in the arrangement, the Company recognizes revenues from non-refundable, upfront fees allocated to the license at such time as the license is transferred to the licensee and the licensee is able to use, and benefit from, the license. For licenses that are bundled with other promises, the Company utilizes judgment to assess the nature of the combined performance obligations to determine whether the combined performance obligations are satisfied over time or at a point in time and, if over time, the appropriate method of measuring progress for purposes of recognizing revenue from non-refundable, upfront fees. The Company evaluates the measure of progress each reporting period and, if necessary, adjusts the measure of performance and related revenue recognition.

Appropriate methods of measuring progress include output methods and input methods. In determining the appropriate method for measuring progress, the Company considers the nature of service that the Company promises to transfer to the customer. When the Company decides on a method of measurement, the Company will apply that single method of measuring progress for each performance obligation satisfied over time and will apply that method consistently to similar performance obligations and in similar circumstances.

Customer Options

If an arrangement is determined to contain customer options that allow the customer to acquire additional goods or services, the goods and services underlying the customer options that are not determined to be material rights are not considered to be performance obligations at the outset of the arrangement, as they are contingent upon option exercise. The Company evaluate the customer options for material rights, or options to acquire additional goods or services for free or at a discount. If the customer options are determined to represent a material right, the material right is recognized as a separate performance obligation at the outset of the arrangement. The Company allocate the transaction price to material rights based on the relative standalone selling price, which is determined based on any identified discount and the probability that the customer will exercise the option. Amounts allocated to a material right are not recognized as revenue until, at the earliest, the option is exercised.

Contingent Research Milestone Payments

ASC Topic 606 constrains the amount of variable consideration included in the transaction price in that either all, or a portion, of an amount of variable consideration should be included in the transaction price. The variable consideration amount should be included only to the extent that it is probable that a significant reversal in the amount of cumulative revenue recognized will not occur when the uncertainty associated with the variable consideration is subsequently resolved. The assessment of whether variable consideration should be constrained is largely a qualitative one that has two elements: the likelihood of a change in estimate, and the magnitude thereof. Variable consideration is not constrained if the potential reversal of cumulative revenue recognized is not significant, for example.

If the consideration in a contract includes a variable amount, the Company will estimate the amount of consideration in exchange for transfer of promised goods or services. The consideration also can vary if the Company’s entitlement to the consideration is contingent on the occurrence or non-occurrence of a future event. The Company considers contingent research milestone payments to fall under the scope of variable consideration, which should be estimated for revenue recognition purposes at the inception of the contract and reassessed ongoing at the end of each reporting period.

The Company assesses whether contingent research milestones should be considered variable consideration that should be constrained and thus not part of the transaction price. This includes an assessment of the probability that all or some of the milestone revenue could be reversed when the uncertainty around whether or not the achievement of each milestone is resolved, and the amount of reversal could be significant.

U.S. GAAP provides factors to consider when assessing whether variable consideration should be constrained. All of the factors should be considered, and no factor is determinate. The Company considers all relevant factors when assessing whether variable consideration should be constrained

Royalty Revenue

For arrangements that include sales-based royalties, including milestone payments based on the level of sales, and the license is deemed to be the predominant item to which the royalties relate, we recognize revenue at the later of (i) when the related sales occur, or (ii) when the performance obligation to which some or all of the royalty has been allocated has been satisfied (or partially satisfied).

Accounts receivable

Accounts receivable are recorded at the invoiced amount and do not bear interest. Amounts collected on accounts receivable are included in net cash used by operating activities in the consolidated statements of cash flows. Accounts receivable are recorded within prepaid expenses and other current assets on the balance sheet.

Interest Expense and Liability Related to Future Royalties and Sales Milestones, net

The Company accounted for the Blackstone Collaboration Agreement as a liability. See Note 8, "Liability relating to future royalties and sales milestones, net" for additional details. The liability relates to future royalties and sales milestones and the related non-cash interest expense are measured based on the Company's current estimates of the timing, probability and amount of expected future royalty and sales milestone payments to be paid by the Company and the Blackstone Development payment to be received from Blackstone, respectively over the term of the agreement. The liability is amortized using the effective interest rate method, resulting in recognition of non-cash interest expense over the estimated term of the agreement which is recognized within interest expense. Each reporting period the Company assesses the estimated probability, timing and amount of any future royalty and sales milestone payments to be made by the Company and Blackstone Development payment to be received from Blackstone, respectively over the term. The Company recognizes any cumulative catch-up adjustments relating to a change in estimates to the Blackstone Collaboration Agreement within interest expense. The Company’s estimate of the probability, amount and timing of expected future royalties and sales milestones to be paid and the probability and timing of the Blackstone Development payment to be received from Blackstone considers significant unobservable inputs including regulatory approval, estimated patient population, estimated selling price, estimated sales, estimated peak sales and sales ramp, timing of the expected launch and its impact on the royalties as well as the overall probability of a success. Additionally, the transaction costs associated with the liability will be amortized to non-cash interest expense over the estimated term of the agreements.

Income Taxes

The Company accounts for income taxes under the asset and liability method which includes the recognition of deferred tax assets and liabilities for the expected future tax consequences of events that have been included in the Company’s financial statements. Under this approach, deferred taxes are recorded for the future tax consequences expected to occur when the reported amounts of assets and liabilities are recovered or paid. The provision for income taxes represents income taxes paid or payable for the current year plus deferred taxes. Deferred taxes result from differences between the financial statements and tax bases of the Company’s assets and liabilities, and are adjusted for changes in tax rates and tax law when changes are enacted. The effects of future changes in income tax laws or rates are not anticipated.

The Company is subject to income taxes in the United Kingdom, the United States, Germany and Switzerland. The calculation of the Company’s tax provision involves the application of tax law in multiple jurisdictions and requires judgement and estimates.

The Company evaluates the realizability of its deferred tax assets at each reporting date, and establishes a valuation allowance when it is more likely than not that all or a portion of its deferred tax assets will not be realized.

The ultimate realization of deferred tax assets is dependent upon the generation of future taxable income of the same character and in the same jurisdiction. The Company considers all available positive and negative evidence in making this assessment, including, but not limited to, the scheduled reversal of deferred tax liabilities, projected future taxable income, and tax planning strategies. In circumstances where there is sufficient negative evidence indicating that the Company’s deferred tax assets are not more likely than not realizable, the Company establishes a valuation allowance.

The Company uses a two-step approach for recognizing and measuring uncertain tax positions. The first step is to evaluate tax positions taken or expected to be taken in a tax return by assessing whether they are more likely than not sustainable, based solely on their technical merits, upon examination, and including resolution of any related appeals or litigation process. The second step is to measure the associated tax benefit or each position as the largest amount that the Company believes is more likely than not realizable. Differences between the amount of tax benefits taken or expected to be taken in the Company’s income tax returns and the amount of tax benefits recognized in the its financial statements represent the Company’s unrecognized income tax benefits, which it either records as a liability or reduction of deferred tax assets.

Income Tax Credit

The Company benefits from the U.K. research and development tax credit regime under both the small and medium sized enterprise, or SME, scheme and by claiming an RDEC in respect of grant funded projects. Under the SME regime, a portion of the Company’s losses can be surrendered for a cash rebate of up to 33.35% of eligible expenditures; however, effective April 1, 2023, this percentage will be reduced to 18.6%. Such credits are accounted for within the tax provision in the year in which the expenditures were incurred.

Comprehensive Loss

The Company follows the provisions of the Financial Accounting Standards Board ("FASB") ASC Topic 220, *Comprehensive Income*, which establishes standards for the reporting and display of comprehensive income and its components. Comprehensive gain or loss is defined to include all changes in equity during a period except those resulting from investments by owners and distributions to owners. The Company recorded a foreign currency translation adjustment loss of $30.3 million and $2.7 million for the years ended December 31, 2022, and 2021 respectively, and a foreign currency translation adjustment gain of $2.8 million for the year ended December 31, 2020.

Restructuring expenses

The Company records costs and liabilities associated with exit and disposal activities in accordance with FASB ASC Topic 420, *Exit or Disposal Cost Obligations* ("ASC 420"). Such costs are based on estimates of fair value in the period liabilities are incurred. The Company evaluates and adjusts these costs as appropriate for changes in circumstances as additional information becomes available. Refer to Note 17, "Employee Benefits Plan and Severance Plan"

Net Loss per Share

Basic and diluted net loss per ordinary share is determined by dividing net loss by the weighted average number of ordinary shares outstanding during the period. For all periods presented, the outstanding but unvested restricted shares, unvested restricted share units, share options and warrants have been excluded from the calculation, because their effects would be anti-dilutive. Therefore, the weighted average shares outstanding used to calculate both basic and diluted loss per share are the same for each period presented. Refer to Note 12, "Net loss per share"

Emerging Growth Company Status

The Company is an "emerging growth company," as defined in the Jumpstart Our Business Startups Act ("JOBS Act") and may take advantage of certain exemptions from various reporting requirements that are applicable to other public companies that are not emerging growth companies. The Company may take advantage of these exemptions until the Company is no longer an emerging growth company. Section 107 of the JOBS Act provides that an emerging growth company can take advantage of the extended transition period afforded by the JOBS Act for the implementation of new or revised accounting standards. The Company has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 7(a)(2)(B) of the Securities Act.

These exemptions provided by the JOBS Act will apply up until December 31, 2023, the last day of the fiscal year following the fifth anniversary of the IPO or such earlier time that the Company is no longer meets the requirements of being an emerging growth company. The Company would cease to be an emerging growth company if it has more than $1.07 billion in annual gross revenue, has more than $700 million in market value of its securities held by non-affiliates (and it has been a public company for at least twelve months, and has filed one annual report on Form 20-F), or it issues more than $1 billion of non-convertible debt securities over a three-year period.

JOBS Act

On April 5, 2012, the JOBS Act, was enacted. The JOBS Act provides that, among other things, an emerging growth company can take advantage of an extended transition period for complying with new or revised accounting standards. As an emerging growth company, the Company has irrevocably elected not to take advantage of the extended transition period afforded by the JOBS Act for the implementation of new or revised accounting standards and, as a result, the Company will comply with new or revised accounting standards on the relevant dates on which adoption of such standards is required for non-emerging growth public companies.

In addition, the Company intends to rely on the other exemptions and reduced reporting requirements provided by the JOBS Act. Subject to certain conditions set forth in the JOBS Act, the Company is entitled to rely on certain exemptions as an "emerging growth company." As an emerging growth company, the Company is not required to, among other things, (i) provide an auditor's attestation report on the Company's system of internal controls over financial reporting pursuant to Section 404(b), (ii) provide all of the compensation disclosure that may be required of non-emerging growth public companies under the Dodd-Frank Wall Street Reform and Consumer Protection Act, (iii) comply with any requirement that may be adopted by the Public Company Accounting Oversight Board regarding mandatory audit firm rotation or a supplement to the auditor's report providing additional information about the audit and the financial statements (auditor discussion and analysis), and (iv) disclose certain executive compensation-related items such as the correlation between executive compensation and performance and comparisons of the chief executive officer's compensation to median employee compensation. We will remain an emerging growth company until the earliest of (i) the last day of the fiscal year in which we have total annual gross revenue of $1.07 billion or more; (ii) December 31, 2023, which is the last day of our fiscal year following the fifth anniversary of the date of the completion of our initial public offering; (iii) the date on which we have issued more than $1.0 billion in nonconvertible debt during the previous three years; and (iv) the date on which we are deemed to be a large accelerated filer under the rules of the SEC.

Recently issued accounting pronouncements not adopted

In June 2016, the FASB issued ASU No. 2016-13, Measurement of Credit Losses on Financial Instruments (ASU 2016-13), The FASB has subsequently issued amendments to ASU 2016-13, which have the same effective and transition date of fiscal years beginning after December 15, 2019 for SEC filers other than small reporting companies, and fiscal years beginning after December 15, 2022 for all other entities. These standards require that credit losses be reported using an expected losses model rather than the incurred losses model that is currently used and establish additional disclosures related to credit risks. This standard requires a financial asset (or a group of financial assets) measured at amortized cost basis to be presented at the net amount expected to be collected. The allowance for credit losses is a valuation account that is deducted from the amortized cost basis of the financial asset(s) to present the net carrying value at the amount expected to be collected on the financial asset. The new standard is effective for the Company for fiscal years beginning after December 15, 2022. The Company is currently evaluating the impact of the pending adoption of the new standard on its financial statements and intends to adopt the standard as of January 1, 2023.

Note 3. License revenue

Revenue comprises of license revenue only for the years ended December 31, 2022, 2021 and 2020:

Total revenue by geographical location (in thousands):

	December 31,		
	2022	**2021**	**2020**
License revenue			
United Kingdom	$ —	$ —	$ 242
United States	6,194	1,507	—
Total License revenue	**$ 6,194**	**$ 1,507**	**$ 242**

Research, Option and License Agreement with Moderna:

On June 22, 2021, the Company entered into a Research, Option and License Agreement (the "Moderna Agreement") with ModernaTX, Inc. ("Moderna"), pursuant to which the Company granted to Moderna an exclusive research license to perform research and pre-clinical development activities relating to target sequences with respect to certain of the Company's research targets and products. The Company also granted Moderna on a research target-by-research target basis, the right to obtain an exclusive commercial license upon payment of a commercial option fee of $2.0 million (the "Commercial Option").

Pursuant to the Moderna Agreement, the Company received an upfront non-refundable cash payment of $1.5 million in October 2021 and are entitled to receive development milestones payments per product and in sales milestones payments per product from Moderna if certain clinical, regulatory and sales performance milestones are achieved. The Company is further eligible to receive royalties in the low to mid single digits on net sales on a product-by-product basis.

The Company identified the following material promises in the arrangement: the granting of an exclusive license to research and preclinical development activities as well as the initial transfer of know-how and information to Moderna. The Company determined the Commercial Option fee is not offered at a significant and incremental discount. Accordingly, the Commercial Option is an option granted to Moderna that does not represent a material right and, therefore, is not a performance obligation at the outset of the arrangement. The Company determined that the granting of the research license and the initial transfer of know-how were not distinct from one another and must be combined as a performance obligation (the “Moderna Combined Performance Obligation”). This is because Moderna requires the know-how to derive benefit from the research license. Based on these determinations, the Company identified one distinct performance obligation at the inception of the contract: the Moderna Combined Performance Obligation.

The Company further determined that the up-front payment of $1.5 million constituted the entirety of the consideration included in the transaction price at contract inception, which was allocated to the Combined Performance Obligation. The amount of the transaction price allocated to the Moderna Combined Performance Obligation is recognized as or when the Company satisfies the performance obligation. The Company determined that the Moderna Combined Performance Obligation was recognized at a point-in-time, upon the delivery of the transfer of know-how and research license to Moderna.

Upon execution of the Agreement, the transaction price included only the $1.5 million up-front payment was owed to the Company. The Company may receive further payments upon the exercise of the Commercial Option, the achievement of certain milestones, as detailed above, as well as royalty payments that reach mid-single digits based on future net sales. In September 2022, Moderna exercised its option, pursuant to the terms of the Moderna Agreement, to obtain the commercial license of the Company’s proprietary binders against an undisclosed immuno-oncology target for the development and commercialization of mRNA therapeutics resulting in the Company recognizing $2.0 million of license revenue for the year ended December 31, 2022.

The future milestones, which represent variable consideration, were evaluated under the most likely amount method, and were not included in the transaction price, because the amounts were fully constrained as of December 31, 2022 and 2021, respectively. As part of the Company’s evaluation of the constraint, it considered numerous factors, including that receipt of such milestones is outside the Company’s control. Separately, any consideration related to sales-based milestones, as well as royalties on net sales upon commercialization by Moderna, will be recognized when the related sales occur, and therefore, have also been excluded from the transaction price in accordance with the sales-based royalty exception. The Company will re-evaluate the transaction price in each reporting period, as uncertain events are resolved, or as other changes in circumstances occur.

Option and License Agreement with Bristol-Myers Squibb:

On October 3, 2022, the Company entered into an Option and License Agreement (the “BMS Agreement”) with Bristol-Myers Squibb Company (“BMS”), pursuant to which the Company granted to BMS a non-exclusive license to research, develop, manufacture, have manufactured, use, and commercialize products incorporating the Company's safety switch technology (RQR8 technology). Upon the execution of the BMS Agreement, the Company made available the RQR8 licensed know-how to BMS for a non-refundable upfront license fee of $3.5 million. Autolus has no further material performance obligations related to the BMS Agreement, as further discussed below. BMS have agreed to pay non-refundable development milestones and low single-digit royalties based on net sales of each product covered by the licensed intellectual property.

The Company further granted to BMS the option (the “Target Option”) to expand the rights and licenses granted hereunder to include the research, development, manufacture, use, or commercialization of licensed products up to a predetermined number of licensed targets upon payment of an option exercise fee ("Option Exercise Fee").

The Company identified the following material promises in the arrangement: the granting of a non-exclusive license for research and preclinical development activities as well as the initial transfer of know-how and information to BMS. The Company determined the Option Exercise Fee is not offered at a significant and incremental discount. Accordingly, the Commercial Option is an option granted to BMS that does not represent a material right and, therefore, is not a performance obligation at the outset of the arrangement. The Company determined that the granting of the research license and the initial transfer of know-how were not distinct from one another and must be combined as a performance obligation (the “BMS Combined Performance Obligation”). This is because BMS requires the know-how to derive benefit from the license. Based on these determinations, the Company identified one distinct performance obligation at the inception of the contract: the BMS Combined Performance Obligation. The Company further determined that the up-front payment of $3.5 million constituted the entirety of the consideration included in the transaction price at contract inception, which was allocated to the BMS Combined Performance Obligation. The amount of the transaction price allocated to the BMS Combined Performance Obligation is recognized as or when the Company satisfies the performance obligation. The Company determined that the BMS Combined Performance Obligation was recognized at a point-in-time, upon the delivery of the transfer of know-how and research license to BMS.

Upon execution of the BMS Agreement, the transaction price included only the $3.5 million up-front payment owed to the Company. The Company may receive further payments upon the exercise of the Target Option, the achievement of certain milestones, as well as royalty payments that reach low-single digit based on future net sales. The Company received an upfront non-refundable cash payment of $3.5 million in November 2022 and recognized license revenue of $3.5 million for the year ended December 31, 2022.

The future milestones, which represent variable consideration, were evaluated under the most likely amount method, and were not included in the transaction price, because the amounts were fully constrained as of December 31, 2022. As part of the Company's evaluation of the constraint, it considered numerous factors, including that receipt of such milestones is outside the Company's control. Separately, any consideration related to sales-based milestones, as well as royalties on net sales upon commercialization by BMS, will be recognized when the related sales occur, and therefore, have also been excluded from the transaction price in accordance with the sales-based royalty exception, as well as the Company's accounting policy. The Company will re-evaluate the transaction price in each reporting period, as uncertain events are resolved, or as other changes in circumstances occur.

For the years ended December 31, 2022, 2021 and 2020, the Company has not recognized any variable consideration with regards to the development milestones which are included in the revenue generating license agreements with customers. These development milestones are not yet probable and therefore no revenue has been recognized.

For the years ended December 31, 2022, 2021 and 2020 the Company has not recognized any royalty revenue from the license agreements that were executed in the current and prior periods.

Note 4. Prepaid expenses and other current assets

Prepaid expenses and other current assets consisted of the following (in thousands):

	December 31,	
	2022	**2021**
Research and development claims receivable	$ 24,685	$ 23,678
Accounts receivable	121	—
Prepayments	12,337	8,713
VAT receivable	2,701	1,849
Lease and lease deposit receivable	32	68
Other assets	203	240
Grant income receivable	2	384
Other receivable	1,435	271
Deferred cost	1,494	1,073
Total prepaid expenses and other current assets	**$ 43,010**	**$ 36,276**

Note 5. Property and equipment, net

Property and equipment, net consisted of the following (in thousands):

	December 31,	
	2022	**2021**
Lab equipment	$ 31,188	$ 34,091
Office equipment	3,573	3,463
Furniture and fittings	1,221	1,363
Leasehold improvements	13,583	14,904
Assets under construction	13,186	2,436
Less: accumulated depreciation	(27,542)	(22,716)
Total property and equipment, net	**$ 35,209**	**$ 33,541**

Depreciation expense recorded for the years ended December 31, 2022, 2021 and 2020 was $7.3 million, $8.6 million and $5.7 million, respectively.

Note 6. Intangible assets, net

The following table summarizes the carrying amount of the Company's intangible assets, net of accumulated amortization (in thousands):

	December 31,	
	2022	2021
Software licenses	$ 258	$ 288
Less: accumulated amortization	(258)	(223)
Total intangibles assets, net	**$ —**	**$ 65**

Software licenses have an estimated useful life of 3 years. Amortization expense for the years ended December 31, 2022, 2021 and 2020 was $65,000, $90,000 and $91,000, respectively.

Note 7. Accrued expenses and other liabilities

Accrued expenses and other liabilities consisted of the following (in thousands):

	December 31,	
	2022	2021
Compensation and benefits	$ 10,181	$ 8,747
Research and development costs	26,478	11,311
Professional fees	3,745	3,449
Other liabilities	393	160
Total accrued expenses and other liabilities	**$ 40,797**	**$ 23,667**

Note 8. Liability related to future royalties and sales milestones, net

Blackstone Agreements

On November 6, 2021, the Company concurrently entered into a (i) Strategic Collaboration and Financing Agreement, (the “Blackstone Collaboration Agreement"), (ii) Securities Purchase Agreement (the “Blackstone Securities Purchase Agreement”), and (iii) Warrant Agreement (the “Blackstone Warrant”) and (iv) a Registration Rights Agreement (the “Blackstone Registration Rights Agreement”), collectively called the "Blackstone Agreements", with BXLS V - Autobahn L.P, ("Blackstone"). The Blackstone Agreements were entered into and in contemplation of one another and, accordingly, the Company assessed the accounting for these agreements in the aggregate.

Blackstone Securities Purchase Agreement

Pursuant to the Blackstone Securities Purchase Agreement, the Company sold 17,985,611 ADSs representing 17,985,611 ordinary shares, at a private placement price of $5.56 per ADS to Blackstone resulting in gross proceeds of $100 million. For further details on the Blackstone Securities Purchase Agreement, see Note 10. "Shareholders' equity".

Blackstone Warrant Agreement

Pursuant to the Blackstone Warrant, the Company issued Blackstone a warrant to purchase up to 3,265,306 ADSs representing 3,265,306 of the Company's ordinary shares, at an exercise price of $7.35 per ADS. The Blackstone Warrant is exercisable in whole or in part until November 6, 2026. For further details on the Warrant Agreement, see Note 9, “Warrants".

Blackstone Collaboration Agreement

Pursuant to the Blackstone Collaboration Agreement, Blackstone agreed to pay the Company up to $150 million to support the continued development of our CD19 CAR T cell investigational therapy product candidate, obecabtagene autoleucel (obe-cel), as well as next generation product therapies of obe-cel in B-cell malignancies. These payments include (i) an upfront payment of $50 million and (ii) up to $100 million payable based on the achievement of certain specified clinical, manufacturing and regulatory milestones (each such payment, a "Blackstone Development Payment" and collectively, the "Blackstone Development Payments")

In November 2021, the upfront payment of $50 million was paid by Blackstone upon execution of the Blackstone Collaboration Agreement. In December 2022, two Blackstone Development Payments were paid by Blackstone of $35 million each as a result of (i) the joint steering committee's review of Autolus' interim analysis of pivotal FELIX Phase 2 clinical trial of obe-cel in relapsed/refractory (r/r) adult Acute Lymphoblastic Leukemia (ALL) and (ii) achievement of a pre-agreed manufacturing milestone as a result of completion of planned activities demonstrating the performance and qualification of the Company's obe-cel's manufacturing process. The remaining $30 million will be payable to the Company on the achievement on certain specified regulatory milestones. The Company considers the regulatory approval as probable when actually achieved.

In exchange for the Blackstone Development Payments, the Company agreed to make payments to Blackstone (the "Revenue Share Payments") equal to a mid-single digit royalty, subject to the Aggregate Cap (as defined in the Blackstone Collaboration Agreement) on payments under the Blackstone Collaboration Agreement, based on net sales anywhere in the world of (i) Collaboration Products in B-cell malignancies, (ii) subject to certain conditions set forth in the Blackstone Collaboration Agreement, its CD19 and CD22 CAR T cell investigational therapy product candidate known as AUTO3 in B-cell malignancies, and (iii) certain Collaboration Products to the extent developed or commercialized in indications other than a B-cell malignancy ("Obe-cel Franchise Products"). The Company are also obligated to make payments (the "Sales Milestone Payments"), subject to the Aggregate Cap, if certain cumulative net sales levels are achieved.

The Company, and all of its subsidiaries have provided, and all of its future subsidiaries will provide, a guaranty to Blackstone of its obligations under the Blackstone Collaboration Agreement. In addition, the Company has granted a security interest in Autolus Limited to Blackstone in (a) intellectual property that is necessary or useful for the development, manufacture, use, commercialization, import, or export of Collaboration Products (the "Autolus IP Collateral"), (b) a segregated and blocked cash collateral account that will be established following regulatory approval of any Collaboration Product, solely for the purpose of receiving remittance of Revenue Share Payments and Sales Milestone Payments and disbursement thereof to Blackstone as provided in the Blackstone Collaboration Agreement, (c) a segregated cash collateral account established solely for the purpose of receiving Blackstone Development Payments and disbursing them for use by the Company in accordance with the terms of the Blackstone Collaboration Agreement, (d) all assets or property of the Company related to or arising from the Collaboration Products in any B-cell malignancy or the obe-cel Franchise Products in any indication other than a B-cell malignancy, and (e) all proceeds and products of each of the foregoing (collectively referred to as the "Collateral"). The security interest will be maintained until the earlier of (i) such time at which cumulative payments made by the Company under the Blackstone Collaboration Agreement equal $150 million and (ii) the first commercial sale in the United States of obe-cel or any other Lead Product (as defined in the Blackstone Collaboration Agreement) selected to replace obe-cel following a Program Failure (as defined in the Blackstone Collaboration Agreement) (such time, the "Release Time").

The Blackstone Collaboration Agreement contains negative covenants that restrict the Company from, among other things, (a) granting liens or otherwise encumbering its assets that constitute Collateral, (b) paying dividends or making distributions on account or, or redeeming, retiring or purchasing any capital stock, (c) other than certain permitted licensing transactions, transferring to third parties rights to commercialize any Collaboration Product or the Autolus IP Collateral anywhere in the world and (d) selling, transferring or assigning any rights to receive payments of royalties, returns on net sales, revenue share or other compensation or license fees with respect to a Collaboration Product in a B-cell malignancy and/or obe-cel Franchise Product in any indication other than a B-cell malignancy. Each of the negative covenants is subject to exceptions and carve outs set forth in the Blackstone Collaboration Agreement. The negative covenants will fall away upon the Release Time.

Termination of the Blackstone Collaboration Agreement by Blackstone due to certain breaches of the Blackstone Collaboration Agreement or other actions by the Company will require the Company to make liquidated damage payments to Blackstone in excess of the Blackstone Development Payments.

The Company has accounted for the Blackstone Collaboration Agreement as a liability primarily due to the Company's significant continuing involvement in generating the royalty stream. If and when obe-cel is commercialized and royalties or sales milestones become payable, the Company will recognize the portion of royalties paid to Blackstone as a decrease to the Collaboration Agreement liability with a corresponding reduction in cash.

The carrying amount of the Blackstone Collaboration Agreement liability is based on the Company's estimate of the future royalties and sales milestones to be paid to Blackstone and the Blackstone Development payment to be received over the life of the arrangement as discounted using an effective interest rate. The excess estimated present value of future royalties and sales milestone payments over the initial carrying amount and future Blackstone Development Payments received, is recognized as a cumulative catch-up method within interest expense using the initial effective interest rate. The imputed rate of interest on the unamortized portion of the Blackstone Collaboration Agreement liability was approximately 15.80% as of December 31, 2022 and 2021, respectively.

On a quarterly basis, the Company assesses the amount and timing of expected royalty and sales milestone payments using a combination of internal projections and forecasts from external sources. To the extent the present value of such payments are greater or less than its initial estimates or the timing of such payments is materially different than its original estimates, the Company will adjust the amortization of the Blackstone Collaboration Agreement liability using the catch-up method.

There are a number of factors that could materially affect the probability, amount and timing of royalty and sales milestone payments to be made by the Company and Blackstone Development payment to be received from Blackstone, respectively, most of which are not within the Company's control. The Blackstone Collaboration Agreement liability is recognized using significant unobservable inputs. These inputs are derived using internal management estimates developed based on third party data and reflect management's judgements, current market conditions surrounding competing products, and forecasts. The significant unobservable inputs include regulatory approvals, estimated patient populations, estimated selling price, estimated sales, estimated peak sales and sales ramp, timing of the expected launch and its impact on the royalties as well as the overall probability of a success.

The Company concluded the Blackstone Agreements comprised of the following three units of accounting for the consideration received: (i) the Blackstone Collaboration Agreement, (ii) the purchase of ADSs, representing our ordinary shares, and (iii) Blackstone Warrants. The three units of accounting are recorded at relative fair value upon initial recognition and are not subsequently measured at fair value.

During 2021, the Company allocated the initial total gross proceeds arising from the Blackstone Collaboration Agreement and the Blackstone Securities Purchase Agreement along with the issuance of the Blackstone Warrant among the three units of accounting on a relative fair value basis at the time of the transaction as follows:

Units of Accounting	Gross proceeds *(in millions)*	Initial fair value *(in millions)*	Allocated consideration based on relative fair value *(in millions)*	Net allocated consideration based on relative fair value after transaction costs* *(in millions)*
Liability related to future royalties and sales milestones, net (Blackstone Collaboration Agreement)	$ 50.0	$ 49.6	$ 46.4	$ 45.9
ADSs, representing ordinary shares	100.0	100.0	93.6	91.6
Warrants	—	10.7	10.0	9.9
Total	**$ 150.0**	**$ 160.3**	**$ 150.0**	**$ 147.4**

***** In addition, the total shared transaction costs of $1.7 million, relating to the Blackstone Agreement have been allocated to the three units of accounting on a relative fair value basis.

The Company allocated the consideration and issuance costs on a relative fair value basis to the Collaboration Agreement, securities purchased and warrants issued to Blackstone which resulted in the Blackstone Collaboration Agreement being initially recognized at $46.4 million (relative fair value of $45.9 million, net of issuance costs,).

The two Blackstone Development Payments received during the year ended December 31, 2022 were allocated solely to the Blackstone Collaboration Agreement liability.

Changes to the Blackstone Collaboration Agreement liability related to future royalties and sales milestones are as follows:

	Amount in thousands
Balance at December 31, 2020	**$ —**
Liability related to future royalties and sales milestones, net of issuance costs	45,923
Non-cash interest expense on liability related to future royalties and sales milestones	1,093
Balance at December 31, 2021	**47,016**
Proceeds from Blackstone Development Payments received	70,000
Non-cash interest expense on liability related to future royalties and sales milestones	8,005
Cumulative catch-up adjustment	879
Balance at December 31, 2022	**$ 125,900**

Note 9. Warrants

On November 6, 2021, in connection with the Blackstone Agreement, pursuant to the Blackstone Warrant, the Company issued Blackstone a warrant to purchase up to 3,265,306 ADSs representing 3,265,306 of the Company's ordinary shares, at an exercise price of $7.35 per ADS. The Blackstone Warrant is exercisable in whole or in part until November 6, 2026.

The Blackstone Warrant’s mechanism does not create any obligation to transfer cash to the investor but a fixed amount of ordinary shares upon exercise. Therefore, the Company has accounted for the Blackstone Warrant as equity-classified instruments (recognized within additional paid-in capital), per ASC 815-40. The assessment considers whether the warrants are freestanding financial instruments, meet the definition of a liability or whether the warrants meet all of the requirements for equity classification, including whether the warrants are indexed to the Company’s own shares, among other conditions for equity classification. On November 6, 2021, the Blackstone Warrant had a relative fair value of approximately $10.0 million. As a result, the Company recorded a discount on the Blackstone Collaboration Agreement of $3.6 million during the year ended December 31, 2021. In addition, the Company also applied an offset to additional paid-in capital in an amount of $6.4 million related to the issuance of the Company’s ordinary shares arising from the Blackstone Securities Purchase Agreement. Refer to Note 10, "Shareholders' equity"

The fair value of each Blackstone Warrant issued was estimated on the date of issuance using the Black-Scholes option pricing model. The assumptions used in the Black Scholes option pricing model relating to the Blackstone Warrant issued in 2021 included the following:

Expected volatility. The Company lacks company-specific historical and implied volatility information for our ADSs for expected terms greater than 4.5 years. Therefore, the Company uses a combination of the historical volatility of its ADSs and also the expected share volatility based on the historical volatility of publicly traded peer companies and expect to continue to do so until such time as the Company has adequate historical data regarding the volatility of its own traded security price.

Expected term. The expected term of the Company’s warrants has been determined utilizing the contractual term of the warrants.

Risk-free interest rate. The risk-free interest rate is determined by reference to the U.S. Treasury yield curve in effect at the time of granting of the warrant for time periods that are approximately equal to the expected term of the award.

Expected dividend. Expected dividend yield of zero is based on the fact that the Company has never paid cash dividends on ordinary shares and does not expect to pay any cash dividends in the foreseeable future.

Fair value of ordinary shares. The fair value of each ordinary share was based on the closing price of the Company's publicly traded ordinary shares as reported on date of issuance.

The assumptions used in the Black-Scholes option pricing model to determine the fair value of the warrants issued to Blackstone as at November 6, 2021 were as follows:

Expected warrant life (years)	5
Risk-free interest rate	1.04%
Expected volatility	80.23%
Expected dividend yield	0%

The Company determined the initial fair value of Blackstone Warrant using the Black-Scholes option pricing model to be $10.7 million.

Note 10. Shareholders' equity

Ordinary Shares

Each holder of ordinary shares is entitled to one vote per ordinary share and to receive dividends when and if such dividends are recommended by the board of directors and declared by the shareholders. As of December 31, 2022, the Company has not declared any dividends.

The Company have obtained shareholder approval to allot additional ordinary shares for a period of five years from June 2022 (being the date on which the Company's shareholders, at the Company's Annual General Meeting of Shareholders, approved an ordinary resolution containing the relevant authorization), up to a maximum nominal amount of $8,400, which authorization will need to be renewed upon expiration (*i.e.*, at least every five years) but may be sought more frequently for additional five-year terms (or any shorter period).

As of December 31, 2022, the Company's issued capital share consisted of 173,074,510 ordinary shares, with a nominal value of $0.000042 per share, (ii) 34,425 deferred shares, with a nominal value of £0.00001 per share, (iii) 88,893,548 B deferred shares, with a nominal value of £0.00099 per share and (iv) one C deferred share, with a nominal value of £0.000008. Each issued share has been fully paid.

Initial Public Offering and Impact of Corporate Reorganization

On June 18, 2018, Autolus Therapeutics Limited re-registered as a public limited company and its name was changed from Autolus Therapeutics Limited to Autolus Therapeutics plc.

On June 26, 2018, the Company closed its IPO. In the IPO, the Company sold an aggregate of 10,147,059 ADSs representing the same number of ordinary shares at a public offering price of $17.00 per ADS, which included the full exercise by the underwriters of their option to purchase additional ADSs. Net proceeds were approximately $156.5 million, after deducting underwriting discounts, and commissions and offering expenses paid by the Company of $16.0 million. Upon the closing of the IPO, each separate class of ordinary shares of Autolus Therapeutics plc was converted into a single class of ordinary shares of Autolus Therapeutics plc as described further below.

Prior to the Company's June 2018 reorganization and IPO, the Company had issued series A preferred shares, ordinary B shares, and ordinary C shares to fund its operations and upon the completion of the IPO, the different classes of shares were converted into a single class of ordinary shares on a 3.185-for-1 basis and created various classes of deferred shares.

The following deferred share classes were created:

Deferred Shares - The 34,425 deferred shares, aggregate nominal value less than $1.00, existed in Autolus Limited and were re-created in Autolus Therapeutics plc as part of the share exchange to place Autolus Therapeutics as the ultimate parent entity. The Company was required to replicate the shares to ensure the existing share has the correct nominal value to ensure stamp duty mirroring relief is available on the subsequent share for share exchange. These deferred shares have no voting rights.

Deferred B Shares - The deferred shares were the product of the reorganization of the series A preferred shares and ordinary B shares into ordinary shares. The nominal residual value was utilized by management as the required £50,000 of share capital to re-register Autolus Therapeutics Limited as Autolus Therapeutics plc. The resulting 88,893,548 deferred shares, aggregate nominal value of $118,000, is presented as a separate class of equity on the balance sheet and statement of shareholder's equity. These deferred B shares have no voting rights.

Deferred C Share - The deferred share, nominal value less than $1.00, was created when the shares in the Company were redenominated from pounds sterling to U.S. Dollars as part of the capital reduction to deal with rounding issues that would otherwise have unbalanced the company's nominal share capital. This deferred C share has no voting rights.

April 2019 public offering

On April 15, 2019, the Company completed an underwritten public offering of 4,830,000 ADSs representing 4,830,000 ordinary shares, at a public offering price of $24.00 per ADS, which includes an additional 630,000 ADSs issued upon the exercise in full of the underwriters' option to purchase additional ADSs. Aggregate net proceeds to the Company, after underwriting discounts and offering expenses, were $108.8 million.

January 2020 public offering

On January 27, 2020, the Company completed an underwritten public offering of 7,250,000 ADSs representing 7,250,000 ordinary shares, at a public offering price of $11.00 per ADS. Aggregate net proceeds to the Company, after underwriting discounts and offering expenses, were $74.0 million.

February 2021 public offering

On February 12, 2021, the Company completed an underwritten public offering of 14,285,715 ADSs representing 14,285,715 ordinary shares at a public offering price of $7.00 per ADS. In addition, the underwriters exercised their right to purchase an additional 2,142,857 ADSs representing 2,142,857 ordinary shares, at a public offering price of $7.00 per ADS. Aggregate net proceeds to the Company, after underwriting discounts and offering expenses, were $106.9 million.

Blackstone Securities Purchase Agreement

On November 6, 2021, pursuant to the Securities Purchase Agreement (the “Blackstone Securities Purchase Agreement”), the Company sold 17,985,611 ADSs, representing 17,985,611 ordinary shares, at a private placement price of $5.56 per ADS to BXLS V - Autobahn L.P, ("Blackstone") resulting in gross proceeds of $100 million. Aggregate net proceeds to the Company after, offering expenses, were $98.0 million. Net allocated consideration based on relative fair value after deducting direct and allocated shared transaction costs relating to the issuance of ADSs, were $91.6 million. For further details of the Blackstone Agreements, see Note 8, “Liability related to future royalties and sales milestones, net" and Note 9." Warrants".

December 2022 public offering

In December 2022, the Company completed an underwritten public offering of 81,927,012 ADSs representing 81,927,012 ordinary shares, which includes the partial exercise by the underwriters to purchase an additional 6,927,012 ADSs, at a public offering price of $2.00 per ADS. Aggregate net proceeds to the Company, after underwriting discounts and offering expenses, were $152.4 million.

Open Market Sale Agreement

In September 2020, the Company entered into an Open Market Sale Agreement, or the Sales Agreement, with Jefferies LLC, or Jefferies, under which the Company may, at its option, offer and sell ADSs having an aggregate offering price of up to $100.0 million from time to time through Jefferies, acting as sales agent. Any such sales made through Jefferies can be made by any method that is deemed an “at-the-market offering” as defined in Rule 415 promulgated under the Securities Act, or in other transactions pursuant to an effective shelf registration statement on Form F-3. The Company agreed to pay Jefferies a commission of 3.0% of the gross proceeds of any sales of ADSs sold pursuant to the Sales Agreement. During the year ended December 31, 2021, the Company issued an aggregate of 3,787,972 ADSs under the Sales Agreement for net proceeds, after underwriting discounts and offering expenses of $29.6 million. There were no similar sales in 2022.

Note 11. Share-based Compensation

In February 2017, the Board adopted the 2017 Share Option Plan, or the 2017 Plan. The 2017 Plan was set to expire on February 21, 2027. The 2017 Plan provided for the grant of potentially tax-favored Enterprise Management Incentives, or EMI, options to the Company's U.K. employees and for the grant of options to its U.S. employees.

In June 2018, as part of the Company's reorganization and IPO, the Company’s board of directors and shareholders approved the 2018 Equity Incentive Plan, or the 2018 Plan. The initial maximum number of ordinary shares that may be issued under the 2018 Plan was 3,281,622. This number consists of 3,025,548 new ordinary shares and 256,074 ordinary shares that would have otherwise remained available for future grants under the 2017 Plan. The number of ordinary shares reserved for issuance under the 2018 Plan will automatically increase on October 1st of each year, for a period of not more than ten years, commencing on October 1, 2018 and ending on (and including) October 1, 2027, by an amount equal to the lesser of (i) 4% of the total number of ordinary shares outstanding on September 30th of the same calendar year or (ii) such fewer number of ordinary shares as the board of directors may designate prior to the applicable October 1st date.

The updated maximum number of ordinary shares that may be issued under the 2018 Plan is 15,340,772 as of December 31, 2022. The total shares issued under the 2018 Plan may be authorized but unissued shares, shares purchased on the open market, treasury shares or ADSs.

Share options granted under the 2018 Plan and 2017 Plan, as well as restricted shares granted as employee incentives, typically vest over a four-year service period with 25% of the award vesting on the first anniversary of the commencement date and the balance vesting monthly over the remaining three-years, unless the award contains specific performance vesting provisions.

For equity awards issued that have both a performance vesting condition and a services condition, once the performance criteria is achieved, the awards are then subject to a four-year service vesting with 25% of the award vesting on the first anniversary of the performance condition being achieved and the balance vesting monthly over the remaining three-years.

Share options granted under the 2018 Plan and 2017 Plan generally expire ten-years from the date of grant. For certain senior members of management and directors, the board of directors has approved an alternative vesting schedule.

Share Option Valuation

The assumptions (see Note 2) used in the Black-Scholes option pricing model to determine the fair value of the share options granted to employees and directors during the years ended December 31, 2022, 2021 and 2020 were as follows:

	Year Ended December 31,		
	2022	**2021**	**2020**
Expected option life (years)	5.27 to 6.08	5.27 to 6.08	5.27 to 6.08
Risk-free interest rate	2.20% to 4.23%	0.62% to 1.34%	0.31% to 1.66%
Expected volatility	78.73% to 84.79%	80.05% to 82.03%	76.38% to 81.45%
Expected dividend yield	0%	0%	0%

Share Options

The table below summarizes activity for the years ended December 31, 2022 and 2021.

	Number of Options	**Weighted-Average Exercise Price**	**Weighted-Average Remaining Contractual Term (Years)**	**Aggregate Intrinsic Value (in thousands)**
Outstanding as of December 31, 2020	5,611,429	$ 17.19	7.96	$ 4,262
Granted	4,155,375	7.11	—	—
Exercised	(196,069)	0.64	—	—
Forfeited	(1,798,280)	17.12	—	—
Outstanding as of December 31, 2021	7,772,455	$ 12.24	8.30	$ 1,007
Granted	3,792,160	3.19	—	—
Exercised	(162,864)	0.72	—	193
Forfeited	(1,090,951)	14.02	—	1
Outstanding as of December 31, 2022	10,310,800	$ 8.90	8.18	$ 96
Exercisable as of December 31, 2022	3,836,926	$ 15.22	6.81	$ 96
Vested and expected to vest as of December 31, 2022	10,310,800	$ 8.90	8.18	$ 96

The aggregate intrinsic value of share options is calculated as the difference between the exercise price of the share options and the fair value of the Company's underlying ordinary shares for those share options that had exercise prices lower than the fair value of the Company's underlying ordinary shares.

The weighted average grant-date fair value of share options granted was $2.24, $4.91 and $7.82 per option for the years ended December 31, 2022, 2021 and 2020 respectively.

As of December 31, 2022, the total unrecognized compensation expense related to unvested share options without performance conditions was $8.9 million, which the Company expects to recognize over a weighted average vesting period of 3.11 years.

Performance based share options

During the year ended December 31, 2021, the Company granted 1,602,500 share options with performance conditions related to specified clinical milestones of which 222,500 share options with performance conditions were forfeited. During the year ended December 31, 2021, 80,000 of these share options were modified to remove the performance conditions, thereby accelerating the vesting.

During the year ended December 31, 2022, the Company did not grant any share options with performance conditions. However, during the year ended December 31, 2022, 222,500 share options with performance conditions were forfeited. In addition, 120,000 performance based share options were modified during the year ended December 31, 2022 to remove the performance conditions, thereby accelerating the vesting, and associated share based compensation expense of $0.3 million.

As of December 31, 2022 and 2021, a performance condition related to these performance based share options was deemed probable. As a result, $1.1 million and $1.4 million share-based compensation expense was recognized for the years ended December 31, 2022 and 2021, respectively. As at December 31, 2022, the total unrecognized share-based compensation expense related to unvested share options with performance conditions was $3.9 million, which the Company expects to recognize over a weighted average vesting period of 2.81 years.

Restricted Ordinary Shares

The assumptions used in the Black Scholes option pricing model to determine the fair value of the ordinary shares for the following dates are as follows, refer to Note 2, "Summary of Significant Accounting Policies":

	March 2, 2016	April 26, 2017	September 25, 2017	March 31, 2018	May 31, 2018
Expected term	2.8 years	1.2 years	0.8 years	1.8 years	1.8 years
Risk-free interest rate	1.0 %	1.0 %	1.3 %	2.1 %	2.1 %
Expected volatility	73.2 %	76.6 %	71.0 %	71.0 %	71.0 %
Expected dividend yield	0 %	0 %	0 %	0 %	0 %

A summary of the changes in the Company’s restricted ordinary shares during the years ended December 31, 2022 and 2021 are as follows and reflect the conversion of ordinary shares in the current and previous years.

	Number of restricted shares	Weighted average grant date fair value
Unvested and outstanding at December 31, 2020	90,383	$ 4.17
Granted	—	
Vested	(90,383)	4.17
Forfeited	—	
Unvested and outstanding at December 31, 2021	—	—

There are no changes to Company’s restricted ordinary shares during the year ended December 31, 2022. As of December 31, 2022 and 2021, there was no unrecognized share-based compensation expense related to restricted ordinary shares.

Restricted Stock Units

A restricted stock unit (“RSU”) award represents the right to receive one of the Company’s ADSs upon vesting of the RSU. The fair value of each RSU award is based on the closing price of the Company’s ADSs on the date of grant. The Company historically granted RSU awards with service conditions that vest over a three-year service period with 50% of the award vesting one-and-half years from grant date and the remaining 50% of the award vesting at the end of the third year. In January 2021, the Company awarded RSU awards that contained a performance condition based on a condition related to a specified clinical milestone. In March 2021, the Company awarded RSU awards with service conditions that vest over a four-year service period with 25% on the first anniversary of the grant date, and the balance vesting quarterly over the remaining three-years. In July 2021, the Company awarded RSU awards with service conditions that vest over a two-year period with 100% of the award vesting on the second anniversary of the grant date.

In 2022, RSUs awarded during the year typically vest over a four-year service period with 25% of the award vesting on the first anniversary of the commencement date and the balance vesting monthly over the remaining three-years. However, in September 2022, the Company awarded RSU awards with service conditions that vest over an eleven month period with 50% of the award vesting eight months from grant date and the remaining 50% of the award vesting at the end of the eleventh month. In addition, in December 2022, the Company awarded RSU awards with service conditions that vest over an fifteen month period with 50% of the award vesting twelve months from grant date and the remaining 50% of the award vesting at the end of the fifteenth month.

The following is a summary of RSU activity for the 2018 Plan for the years ended December 31, 2022 and 2021, respectively:

	Number of restricted units	Weighted average grant date fair value
Unvested and outstanding at December 31, 2020	415,000	$ 12.09
Granted	1,215,650	8.27
Vested	(204,500)	11.49
Forfeited	(336,500)	10.22
Unvested and outstanding at December 31, 2021	1,089,650	$ 8.63
Granted	294,800	2.43
Vested	(785,511)	8.61
Forfeited	(195,608)	9.25
Unvested and outstanding at December 31, 2022	403,331	$ 3.50

As of December 31, 2022, there was $0.7 million of unrecognized share-based compensation expense related to unvested RSUs without performance conditions, which are expected to be recognized over a weighted average period of 1.5 years.

During the year ended December 31, 2021, the Company awarded an aggregate of 1,020,000 RSU awards with a performance condition related to a specified clinical milestone. As of December 31, 2021, the related clinical milestone performance condition was determined to be probable and accordingly, $4.4 million share-base compensation expense was recognized.

During the year ended December 31, 2022, 617,500 of these RSU awards vested due to the achievement of a specified clinical milestone resulting in the recognition of $1.2 million share-based compensation expense. A further 60,000 of these RSU awards were modified during the year ended December 31, 2022 by removing the performance condition, thereby accelerating the vesting, and related share-based compensation expense of $0.2 million. An aggregate of 152,500 and 222,500 performance based RSU awards with performance conditions were forfeited during the year ended December 31, 2022 and 2021, respectively. As of December 31, 2022 there was no unrecognized share-based compensation expense.

During the year ended December 31, 2022, 749,832 RSU awards vested but were not issued as of December 31, 2022, and as such are not included in the Company's outstanding shares at December 31, 2022.

Share-based compensation expense

Share-based compensation expense recorded as research and development and general and administrative expenses is as follows (in thousands):

	Year Ended December 31,		
	2022	2021	2020
Research and development	$ 7,171	$ 5,241	$ 12,992
General and administrative	4,849	4,696	7,115
Capitalized to intangible assets, net / property and equipment	(6)	—	(86)
Total share-based compensation expense	**$ 12,014**	**$ 9,937**	**$ 20,021**

Note 12. Net loss per share

Basic and diluted net loss per share attributable to ordinary shareholders was calculated as follows (in thousands, except share and per share amounts):

	Year Ended December 31,		
	2022	2021	2020
Numerator			
Net loss	$ (148,839)	$ (142,096)	$ (142,094)
Net loss attributable to ordinary shareholders - basic and diluted	**$ (148,839)**	**$ (142,096)**	**$ (142,094)**
Denominator			
Weighted-average number of ordinary shares used in net loss per share - basic and diluted	94,993,400	72,084,078	51,558,075
Net loss per share - basic and diluted	**$ (1.57)**	**$ (1.97)**	**$ (2.76)**

For all periods presented, outstanding but unvested restricted shares, unvested restricted share units, share options and warrants have been excluded from the calculation, because their effects would be anti-dilutive. Therefore, the weighted average number of ordinary shares used to calculate both basic and diluted loss per share are the same for all periods presented.

The following potentially dilutive securities have been excluded from the calculation of diluted net loss per share due to their anti-dilutive effect:

	December 31,		
	2022	2021	2020
Unvested restricted shares and units	403,331	1,089,650	505,383
Share options	10,310,800	7,772,455	5,611,429
Warrants	3,265,306	3,265,306	—
Total	**13,979,437**	**12,127,411**	**6,116,812**

Note 13. License Agreements

University College of London Business Ltd. (UCLB) License

In September 2014, the Company entered into an exclusive license agreement (the “License”) with UCL Business Ltd. (“UCLB”), the technology transfer company of University College London (“UCL”), to obtain licenses to certain technology rights in the field of cancer therapy and diagnosis. In March 2016, the License was amended to include additional rights.

As part of the consideration for the License in September 2014, the Company issued 1,497,643 ordinary shares to UCLB. The Company paid upfront fees of $0.3 million and issued an additional 313,971 ordinary shares to UCLB when the License was amended in March 2016.

In March 2018, the License was further amended and restated to include a license to the Company's product candidate, AUTO1, for which UCL is conducting Phase 1 clinical trials of AUTO1 in pediatric and adult ALL patients. The Company paid an upfront fee of £1.5 million for consideration for the amended and restated License and paid the additional £0.35 million in connection with UCLB's transfer of clinical data to the Company in December 2020. No equity was issued as part of the upfront fee consideration.

In October 2020, the License was further amended and restated to reflect the Company's election to have various patent rights assigned to the Company, and to include a license to new technology and further licenses to AUTO1 for which UCL is conducting Phase 1 clinical trials in primary CNS Lymphoma patients.

Additionally, the Company may be obligated to make payments to UCLB under the amended and restated License upon the initiation of certain clinical activities in an aggregate amount of £0.18 million, the receipt of specified regulatory approvals in an aggregate amount of £37.5 million, the start of commercialization in an aggregate amount of £18.0 million, and the achievement of net sales levels in an aggregate amount of £51.0 million, as well as royalty payments based on possible future sales resulting from the utilization of the licensed technologies. On a per-product basis, these milestone payments range from £1.0 million to £18.5 million, depending on which T cell programming modules are used in the product achieving the milestone. The Company considers the regulatory approval and commercial milestones probable when actually achieved.

Under the terms of the license, we have the right to grant sub-licenses to third parties, subject to certain restrictions. If we receive any income in connection with such sublicenses, we must pay UCLB a percentage of the income allocable to the value of the sublicensed intellectual property rights ranging from the low twenties to mid-single digits percent, decreasing based on the development expenses incurred by us and the passage of time. During the year ended December 31, 2022, £0.1 million was payable to UCLB by the Company relating to the income allocable to the value of the sublicensed intellectual property rights. UCLB has retained the right to use the licensed T cell programming modules for academic research purposes at UCL and with other academic institutions, subject to certain restrictions.

Upon commercialization of any of the Company's products that use the in-licensed patent rights, the Company will be obligated to pay UCLB a flat royalty for each licensed product ranging from the low- to mid-single digits, depending on which technologies are deployed in the licensed product, based on worldwide annual net sales of each licensed product, subject to certain reductions, including for the market entry of competing products and for loss of patent coverage of licensed products. The Company may deduct from the royalties payable to UCLB one-half of any payments made to a third party to obtain a license to such third party's intellectual property that is necessary to exploit any licensed products. Once net sales of a licensed product have reached a certain specified threshold, the Company may exercise an option to buy out UCLB's rights to the remaining milestone payments, royalty payments, and sublicensing revenue payments for such licensed product, on terms to be negotiated at the time.

The License expires on a product-by-product and country-by-country basis upon the expiration of the royalty term with respect to each product in each country. The Company may unilaterally terminate the license agreement for any reason upon advance notice to UCLB. Either party may terminate the License for the uncured material breach by the other party or for the insolvency of the other party. If UCLB terminates the License following the Company's insolvency or the Company's material breach of the License, or if the Company terminates the License unilaterally, all rights and licenses granted to the Company will terminate, and all patent rights and know-how transferred to the Company pursuant to the License will revert back to UCLB, unless and to the extent the Company has exercised its option to acquire ownership of the licensed patent rights. In addition, UCLB has the right to negotiate with the Company for the grant of an exclusive license to the Company's improvements to the T cell programming modules the Company has licensed on terms to be agreed upon at the time.

Noile-Immune Biotech Inc.

In November 2019, the Company entered into an exclusive license agreement with Noile-Immune Biotech Inc. ("Noile") under which the Company will have the right to develop CAR T cell therapies incorporating Noile's PRIME (proliferation-inducing and migration-enhancing) technology. The PRIME technology is designed to improve proliferation and trafficking into solid tumors of both engineered CAR T cells as well as the patient's own T cells.

The Company paid an upfront fee and may be obligated to make additional payments to Noile upon the achievement of development milestones and receipt of regulatory approvals, product sales milestones, as well as royalty payments based on possible future sales resulting from the utilization of the licensed technology. The Company considers the regulatory approval and commercial milestones probable when actually achieved.

Note 14. Income Taxes

The Company recorded an income tax benefit of $24.4 million, $23.9 million and $24.2 million, for the years ended December 31, 2022, 2021 and 2020, respectively.

A reconciliation of income tax expense (benefit) at the statutory corporate income tax rate to the income tax expense (benefit) at the Company's effective income tax rates is as follows (in thousands):

	Year ended December 31,		
	2022	2021	2020
Net loss before taxes	$ (173,205)	$ (165,988)	$ (166,257)
U.K. statutory tax rate	19.0%	19.0%	19.0%
Income tax benefit at U.K. statutory tax rate	(32,909)	(31,580)	(31,589)
Tax incentives / credits	(25,124)	(24,023)	(23,076)
Non-deductible expenses	3,071	302	797
Adjustments in respect of prior years	496	233	(1,088)
Operating losses	28,671	28,497	28,672
Tax on property, plant, equipment and intangibles	828	935	547
Other, net	583	1,727	1,552
Foreign rate differential	18	17	22
Total income tax benefit	$ (24,366)	$ (23,892)	$ (24,163)
Current income tax benefit	(24,154)	(23,782)	(22,819)
Deferred income tax benefit	(212)	(110)	(1,344)
Effective rate of income tax	14.1%	14.4%	14.5%

The effective tax rates in the above table for the years ended December 31, 2022, 2021 and 2020, is lower than the main rate of U.K. tax primarily due to administration of the U.K. research and development tax credit, which is included within the tax incentive/credits line in the table above.

Deferred tax assets and liabilities consisted of the following at December 31, 2022 and 2021 (in thousands):

	December 31,	
	2022	2021
Deferred tax assets:		
Other differences	$ 13,576	$ 10,909
Tax losses	80,203	69,642
Fixed assets	4,252	6,779
Total deferred tax assets	98,031	87,330
Valuation allowances	(95,955)	(85,504)
Net deferred tax asset (liability)	$ 2,076	$ 1,826

Deferred tax assets resulting from loss carryforwards, fixed assets and retirement benefits, with total deferred tax assets increasing by $0.3 million in 2022. The Company has recorded a valuation allowance against the net deferred tax asset where the recoverability due to future taxable profits is unknown. The $2.1 million deferred tax asset balance is related to the Company's U.S. entity.

At December 31, 2022, the Company had U.K. trading losses carryforward of $320.8 million. These losses are carried forward indefinitely under local law, but are subject to numerous utilization criteria and restrictions.

As required by the authoritative guidance on accounting for income taxes, the Company evaluates the realizability of deferred tax assets at each reporting date. Accounting for income taxes guidance requires that a valuation allowance be established when it is more likely than not that all or a portion of the deferred tax assets will not be realized. In circumstances where there is sufficient negative evidence indicating that the deferred tax assets are not more likely than not realizable, the Company establishes a valuation allowance. The Company recorded valuation allowances in the amounts of $96.0 million and $85.5 million at December 31, 2022 and 2021, respectively.

Note 15. Leases

The Company leases certain office space, laboratory space, and equipment. At the inception of an arrangement, the Company determines whether the arrangement is or contains a lease based on the unique facts and circumstances present. The Company does not recognize right-of-use assets or lease liabilities for leases determined to have a term of 12 months or less. Many of the Company's leases contain variable non-lease components such as maintenance, taxes, insurance, and similar costs for the spaces it occupies. For new and amended leases beginning in 2019, the Company has elected the practical expedient not to separate these non-lease components of leases for classes of all underlying assets and instead account for them as a single lease component for all leases. The Company recognizes on a straight-lines basis the net fixed payments of operating leases over the lease term.

Variable executory costs, as it relates to net leases, are excluded from the calculation of the lease liability. Variable executory costs include costs relating to utilities, repairs, maintenance, insurance, common area expenses, and taxes paid for the leased asset during its economic life. The Company expenses the variable lease payments in the period in which it incurs the obligation to pay such variable amounts and will be included in variable lease costs in the leases footnote disclosure. These variable lease payments are not included in the Company's calculation of its right-of-use assets or lease liabilities.

In adopting ASC 842, the Company elected the package of practical expedients which, among other things, allowed it to retain the classification of its leases in place at the effective date of ASC 842.

The Company identified and assessed the following significant assumptions in recognizing its right-of-use assets and corresponding lease liabilities during the adoption of ASC 842:

- As the Company's leases do not provide an implicit rate, it estimated the incremental borrowing rate for each lease based on a yield curve analysis, utilizing the interest rate derived from the fair value analysis of its existing leases and adjusting it for factors that appropriately reflect the profile of secured borrowing over the lease term. For leases existing as of the adoption date, the Company has utilized its incremental borrowing rate based on the remaining lease term as of the adoption date. For leases that commenced after the adoption date, the Company determined the incremental borrowing rate based on the lease term as determined at the commencement date of the lease.
- The expected lease terms include both contractual lease periods and, when applicable, cancellable option periods where failure to exercise such options would result in an economic penalty.
- Since the Company elected to account for each lease component and its associated non-lease components as a single combined lease component, all contract consideration was allocated to the combined lease component.

The Company leases certain office space, laboratory space, and equipment. At the inception of an arrangement, the Company determines whether the arrangement is or contains a lease based on the unique facts and circumstances present.

The Company leased space at Forest House from Imperial Limited under a ten-year lease, the term of which commenced in September 2015. The lease included an option for the Company to lease additional space within a fifteen months period, which the Company exercised in October 2016. The exercise of the option resulted in a separate new lease with a concurrent term through August 2025. In addition to base rent, the Company is obligated to pay its proportionate share of building operating expenses and real estate taxes in excess of base year amounts. These costs are considered to be variable lease payments and are not included in the determination of the lease’s right-of-use asset or lease liability. The Company and the landlord had the option to early terminate both leases in September 2020 and the landlord had the option to give notice to terminate the lease from September 2020 onward. The Company had measured its right-of-use assets and lease liabilities based on lease terms ending in September 2025. The lease related to this facility is classified as an operating lease. The landlord exercised its option to give notice in September 2020 to terminate the Forest House lease and pay the Company a break-lease payment fee in September 2021. The Company recorded a $1.3 million gain upon the notice of lease termination and lease incentive receivable of $1.2 million in the third quarter of 2020. The Company did not have a lease incentive receivable as of December 31, 2021. The Company no longer has any obligations related to this lease from termination date of the lease.

In September 2017, the Company executed an arrangement with Cell Therapy Catapult Limited to lease a manufacturing suite at the Cell and Gene Therapy Catapult manufacturing center in Stevenage, United Kingdom for a term through May 2021, at which time the Company had the option to renew or terminate the lease. The lease had a six-month rent-free period. In December 2018, the Company executed an additional lease arrangement for additional manufacturing space for a term through September 2023, at which time the Company has the option to renew or terminate the lease. In addition, in May 2020, the Company executed an arrangement with Cell Therapy Catapult Limited to lease a manufacturing suite at the Cell and Gene Therapy Catapult manufacturing center in Stevenage, United Kingdom for a term through April 2024. In July 2022 the Company and Cell Therapy Catapult Limited mutually agreed: (i) to extend the lease term of a manufacturing suite leased by the Company from April 2024 to February 2025, and (ii) to reduce the lease term of a different manufacturing suite leased by the Company from July 2024 to June 2023.

In October 2018, the Company executed an agreement to sublease office space in Rockville, Maryland for a term through October 2021. The Company then terminated the sublease in February 2020 and immediately entered into a five-year lease for the same space with the landlord. As a result of the sublease termination, the Company recognized a $0.2 million gain in other (expense) income in March, 2020. The lease related to this facility is classified as an operating lease. The Company is obligated to pay its proportionate share of building operating expenses and real estate taxes in excess of base year amounts. These costs are considered to be variable lease payments and are not included in the determination of the lease’s right-of-use asset or lease liability.

In January 2019, the Company executed a lease agreement with Whitewood Media Village GP Limited and Whitewood Media Village Nominee Limited to lease the fifth floor of MediaWorks including laboratory space. The Company has the option to terminate the lease in November 2026. In August 2021, MediaWorks became the Company's main corporate headquarters. In addition to base rent, the Company is obligated to pay its proportionate share of building operating expenses and real estate taxes in excess of base year amounts. These costs are considered to be variable lease payments and are not included in the determination of the lease’s right-of-use asset or lease liability. The lease agreement includes an option to lease additional space. The lease term is nine years and eleven months with an eighteen-month rent free period at the beginning of the lease term.

In January 2019, the Company executed a lease agreement to lease additional office and manufacturing space in Rockville, Maryland. The lease agreement required the Company to enter into a lease provided that the landlord completed the required leasehold improvements described in the agreement. The lease commenced in August 2020 for a term through June 2036. In March 2021, the Company announced plans to move the site of its global manufacturing headquarters to the United Kingdom from the United States. As a part of this strategy, the Company entered into a termination agreement with the landlord of its Rockville, Maryland property to terminate the lease for office and manufacturing space. As a result, the Company recognized a $2.0 million termination fee gain from the landlord, a $2.3 million gain from the removal of the leased right of use asset and corresponding lease liability, and expensed $2.4 million of leasehold improvements for the year ended December 31, 2021 within other expense (income). The $2.0 million termination fee was received from the landlord in April 2021.

In February 2019, the Company agreed to enter into a fifteen-year lease for manufacturing space units located in Enfield, United Kingdom, provided that the landlord completed the required leasehold improvements described in the agreement. The Company executed these lease agreements for 3 manufacturing space units, each for fifteen-year lease terms upon such completion. The leases commenced in February 2019, with the option to terminate the lease in February 2029. In addition to base rent, the Company is obligated to pay its proportionate share of building operating expenses and real estate taxes in excess of base year amounts. These costs are considered to be variable lease payments and are not included in the determination of the lease’s right-of-use asset or lease liability. The Company reduced the right-of-use asset and lease liability based on the contractual option termination date. The Company expensed $4.1 million of leasehold improvements from assets under construction as of December 31, 2019 as a result of discontinuing the fit-out of the manufacturing facility. In March 2021, one of the units was split in two separate units and the Company surrendered one of those units back to the landlord. Upon the surrender of the unit, the Company recognized a $0.1 million gain in other (expense) income after recognizing a termination fee of $0.2 million. The Company has no further obligations for the surrendered unit and the right of use asset and lease liability which were recorded for this unit have been written off during the year ended December 31, 2021. In October 2021, the Company subleased two of the three remaining units to third parties with lease terms ending in February 2029 and October 2026, respectively. The Company received $0.1 million in rental deposits arising from the sub-lease agreements, which have been classified as restricted cash. The Company is actively seeking to sublease or assign the lease arrangements relating to the final unit. The Company completed an asset impairment analysis of the right-of-use lease concluding the undiscounted cash flows exceeded the carrying value as of December 31, 2022.

In September 2021, the Company entered into an arrangement for lease with Forge Life Sciences Nominee, an affiliate of the Reef Group, for the design, construction and lease of a new 70,000 square foot manufacturing facility in Stevenage, United Kingdom. Under this arrangement, the landlord will lease the facility to the Company on agreed terms, upon satisfaction of certain conditions and completion of construction. This facility will form the basis of the Company's new commercial manufacturing facility. In November 2022, the landlord handed over the first of three clean rooms thereby providing access by the Company to a portion of the facility, thus meeting the definition of a lease in accordance with ASC 842. The remaining portions of the facility will be handed over by the landlord upon satisfaction of certain conditions and completion of the remaining construction. A lease agreement will be signed upon handover of the entire facility. The Company has started the fit out of the first of three clean rooms for which the Company is responsible. These fit out costs and subsequent fit out costs in other areas of the building, will be required to be removed at the end of the lease term and represent an Asset Retirement Obligation ('ARO'). At December 31, 2022, the fit out of the handed over clean room was still in progress. Once the fit-out and full hand over of facility has been completed a full estimate of the associated ARO will be made. Given the ongoing work, it was not possible to estimate an ARO as at 31 December 2022. The Company has appropriately assessed the impact of the handover of the first clean room on the lease term thereby resulting in the recognition of a right-of-use asset and lease liability for the year ended December 31, 2022. The Company is required to pay a pro-rated rent for each portion of the facility handover upon its handover. The Company contributed $6.4 million as part as of landlord works and tenant contributions towards the lease as of December 31, 2022 resulting in these payments being taken into account in the determination of the right of use asset for this facility.

The following table shows the lease balance sheet classification of leases for the years ended December 31, 2022 and 2021 (in thousands):

	As of December 31,	
	2022	**2021**
Assets		
Operating lease right-of-use assets, net of accumulated amortization	$ 23,210	$ 18,775
Liabilities		
Current		
Operating lease liabilities, current	5,038	4,453
Non-current		
Operating lease liabilities, non-current	19,218	16,545
Total lease liabilities	**$ 24,256**	**$ 20,998**

The following table shows the lease costs for the years ended December 31, 2022 and 2021 (in thousands):

		Year ended December 31,	
Lease costs	**Statement of Operations classification**	**2022**	**2021**
Operating lease costs	Operating expenses: research and development	$ 3,733	$ 4,801
Variable costs	Operating expenses: research and development	769	1,144
Short term lease costs	Operating expenses: research and development	270	193
Operating lease costs	Operating expenses: general and administrative	984	1,178
Variable costs	Operating expenses: general and administrative	45	147
Short term lease costs	Operating expenses: general and administrative	86	12
Total lease costs		**$ 5,887**	**$ 7,475**

Other information	Year ended December 31, 2022	Year ended December 31, 2021
Cash paid for amounts included in the measurement of lease liabilities:		
Operating cash outflows from operating leases (in thousands)	$ 4,575	$ 4,619
Right-of-use assets obtained in exchange for new operating lease liabilities (in thousands)	$ —	$ (38,335)
Weighted-average remaining lease term - operating leases (in years)	10.4 years	5.80 years
Weighted-average discount rate - operating leases	6.77 %	7.15 %

Future fixed payments for non-cancellable operating leases in effect as of December 31, 2022 are payable as follows:

Maturity of lease liabilities for the years ending December 31,	Operating Leases (in thousands)
2023	$ 6,492
2024	4,391
2025	3,453
2026	3,176
2027	3,176
Thereafter	12,573
Total lease payments	33,261
Less: imputed interest	(9,005)
Present value of lease liabilities	**$ 24,256**

Sub-lease agreements

In October 2021, the Company entered into separate two sub-lease agreements with two third parties for two manufacturing spaces in Enfield which is currently leased by the Company. The annual lease payments to be received for each of sub-leased units is £97,000 and £109,000, over lease terms from October, 2021 to February 2029 and October 2026, respectively. In October 2021, the Company received $127,000 in rental deposits, arising from the sub-lease agreements which have been classified as restricted cash as of December 31, 2022 and 2021, respectively. Both sub-leases have been classified as operating leases. The Company recognized the sub-lease payments on a straight line basis from the commencement of the sub-lease agreements.

The following table shows the sub-lease rental income for the years ended December 31, 2022 and 2021 (in thousands):

Sub-lease rental income	Statement of Operations classification	Year ended December 31, 2022	Year ended December 31, 2021
Sub-lease rental income	Other income (expense)	$ 240	$ 49
Total sub-lease rental income		**$ 240**	**$ 49**

Future fixed receipts for non-cancellable operating sub-leases in effect as of December 31, 2022 are receivable as follows:

	Operating Leas (in thousands)
2023	$
2024	
2025	
2026	
2027	
Thereafter	
Total lease payments receivable	**$ 1**

Note 16. Commitments and Contingencies

License Agreements

The Company has entered into an exclusive license agreement, as amended, with UCLB (Refer to Note 13, "License Agreements"). In connection with the UCLB license agreement, the Company is required to make annual license payments and may be required to make payments upon the achievement of specified milestones. The Company has estimated the probability of the Company achieving each potential milestone in accordance with ASC 450, *Contingencies*.

In November 2019, the Company entered into an exclusive license agreement with Noile-Immune Biotech Inc. ("Noile") under which the Company will have the right to develop CAR T cell therapies incorporating Noile's PRIME (proliferation-inducing and migration-enhancing) technology. The Company may be obligated to make additional payments to Noile upon the achievement of development milestones and receipt of regulatory approvals, product sales milestones, as well as royalty payments based on possible future sales resulting from the utilization of the licensed technology.

In July 2022, the Company renegotiated a master services agreement with Adaptive Biotechnologies Corporation ("Adaptive"), under which Adaptive's assay is used to analyze patient samples from relapsed/refractory B Cell Acute Lymphoblastic Leukaemia (rrB-ALL) patients. Under the agreement, the Company is obligated to make specified payments to Adaptive upon the achievement and receipt of certain regulatory approvals and achievement of commercial milestones in connection with the Company's use of the Adaptive assay.

The Company has estimated the probability of the Company achieving each potential milestone in relation to the UCLB, Noile License Agreements and Adaptive in accordance with ASC 450, *Contingencies*. The Company considers the regulatory approval and commercial milestones probable when actually achieved. The Company concluded that, as of December 31, 2022, there were no milestones for which the likelihood of achievement was currently probable.

Legal Proceedings

From time to time, the Company may be a party to litigation or subject to claims incident to the ordinary course of business. Regardless of the outcome, litigation can have an adverse impact on the Company because of defense and settlement costs, diversion of management resources and other factors. The Company was not a party to any litigation and did not have contingency reserves established for any liabilities as of December 31, 2022.

Blackstone Strategic Collaboration and Financing Agreement

Refer to Note 8, "Liability related to future royalties and sales milestone, net" for further details to the Blackstone Collaboration Agreement.

Leases

Lease payments under operating leases as of December 31, 2022 and information about the Company's lease arrangements are disclosed in Note 15, "Leases".

Note 17. Employee Benefit Plans

In the United Kingdom and Switzerland, the Company makes contributions to defined contribution pension schemes on behalf of its employees. The Company expensed $1.7 million, $1.6 million and $1.3 million, in the years ended December 31, 2022, 2021 and 2020, respectively.

In the United States, the Company established a defined contribution savings plan under Section 401(k) of the Internal Revenue Code subsequent to September 30, 2018. The plan covers substantially all U.S. employees who meet minimum age and service requirements and allows participants to defer a portion of their annual compensation on a pre-tax basis. The Company matches employee contributions up to five percent of the employee's annual salary. The Company expensed $0.3 million, $0.3 million and $0.3 million in contributions in the years ended in the years ended December 31, 2022, 2021 and 2020, respectively. The Company pays all administrative fees related to the Plan.

Note 18. Severance Plan

During January 2021 there was a restructuring program executed by the Company leading to a reduction in workforce and resulting in a corresponding severance charge of $1.2 million which has been presented on a proportionate basis within research and development expenses and general and administration expenses.

There have been no similar severance charges incurred during the year ended December 31, 2022.

Note 19. Related party transactions

Blackstone

On November 6, 2021, the Company concurrently entered into the Blackstone Agreements. Refer to Note 8, "Liability relating to future royalties and sales milestones, net", Note 9, "Warrants" and Note 10, "Shareholders Equity". Subsequent to the execution of the Blackstone Agreements, Blackstone became a related party as Blackstone owns more than 10% of the Company's outstanding voting securities and is therefore one of the principal owners of the Company. In addition, Blackstone received the right to nominate one director to the board of directors of the Company; William Young was appointed to our board of directors as Blackstone's designee pursuant to this right.

On November 6, 2021, pursuant to the Securities Purchase Agreement, the Company sold 17,985,611 ADSs representing 17,985,611 ordinary shares of the Company to Blackstone at a price of $5.56 per ADS, for gross proceeds of $100.0 million. Aggregate net proceeds to the Company after commission fees and issuance costs, were $98.0 million.

In addition, pursuant to the Blackstone Warrant, the Company issued Blackstone a warrant to purchase up to 3,265,306 ADSs representing 3,265,306 of the Company's ordinary shares, at an exercise price of $7.35 per ADS. The Blackstone Warrant is exercisable in whole or in part until November 6, 2026.

As of December 31, 2022, the carrying amount of the Blackstone Collaboration Agreement liability was $125.9 million which included cumulative non-cash interest expense (including cumulative catch-up adjustments), of $8.9 million and $1.1 million for the years ended December 31, 2022 and 2021, respectively.

In the Company's December 2022 public offering, Blackstone purchased 2,500,000 ADSs, representing 2,500,000 ordinary shares. This purchase was made through the underwriters at the public offering price.

Syncona Portfolio Limited

Syncona Portfolio Limited is a related party as Syncona Portfolio Limited owns more than 10% of the Company's outstanding voting securities and is therefore one of the principal owners of the Company. In addition, the chief executive officer of the ultimate parent company of Syncona Portfolio Limited is also member of the board of directors of the Company.

In the Company's February 2021 public offering, Syncona Portfolio Limited purchased 3,571,428 ADSs, representing 3,571,428 ordinary shares. This purchase was made through the underwriters at the public offering price.

In the Company's December 2022 public offering, Syncona Portfolio Limited purchased 14,000,000 ADSs, representing 14,000,000 ordinary shares. This purchase was made through the underwriters at the public offering price.

Entities affiliated with Syncona

In September 2020, the Company entered into a license agreement with an investee company of Syncona Portfolio Limited, a holder of more than 10% of the Company's share capital. This agreement generated $242,000 of license revenue which is recognized in the Consolidated Statement of Operations for the year ended December 31, 2020. There was no license revenue recognized relating to the investee of Syncona Portfolio Limited for the year ended December 31, 2022 and 2021, respectively.

Deep Track Capital, LP

In the Company's December 2022 public offering, Deep Track Capital, LP purchased 15,000,000 ADSs, representing 15,000,000 ordinary shares. This purchase was made through the underwriters at the public offering price.

Qatar Investment Authority

In the Company's December 2022 public offering, Qatar Investment Authority purchased 15,000,000 ADSs, representing 15,000,000 ordinary shares. This purchase was made through the underwriters at the public offering price.

Armistice Capital, LLC

In the Company's December 2022 public offering, Armistice Capital, LLC purchased 10,000,000 ADSs, representing 10,000,000 ordinary shares. This purchase was made through the underwriters at the public offering price.

Note 20. Subsequent Events

The Company evaluated subsequent events through to March 07, 2023 the date on which these financial statements were issued.

In January 2023, the Company entered into a non-exclusive license agreement with Cabaletta Bio, Inc. ("Cabaletta"). The agreement allows Cabaletta to incorporate Autolus' proprietary RQR8 safety switch into a cell therapy program for the treatment of autoimmune disease, with an option for Cabaletta to incorporate the safety switch for a predetermined number of additional cell therapy programs.

Certification by the Principal Executive Officer pursuant to
Securities Exchange Act Rules 13a-14(a) and 15d-14(a)
as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002

I, Christian Itin, certify that:

1. I have reviewed this annual report on Form 20-F of Autolus Therapeutics plc (the "***Company***");

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the Company as of, and for, the periods presented in this report;

4. The Company's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the Company and have:

(a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the Company, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

(b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

(c) Evaluated the effectiveness of the Company's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

(d) Disclosed in this report any change in the Company's internal control over financial reporting that occurred during the period covered by the annual report that has materially affected, or is reasonably likely to materially affect, the Company's internal control over financial reporting; and

5. The Company's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the Company's auditors and the audit committee of the Company's board of directors (or persons performing the equivalent functions):

(a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the Company's ability to record, process, summarize and report financial information; and

(b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the Company's internal control over financial reporting.

Date: March 7, 2023

/s/ Christian Itin, Ph.D.
Name: Christian Itin, Ph.D.
Title: Chief Executive Officer
(*Principal Executive Officer*)

Certification by the Principal Financial Officer pursuant to
Securities Exchange Act Rules 13a-14(a) and 15d-14(a)
as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002

I, Lucinda C. Crabtree, certify that:

1. I have reviewed this annual report on Form 20-F of Autolus Therapeutics plc (the "***Company***");

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the Company as of, and for, the periods presented in this report;

4. The Company's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the Company and have:

(a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the Company, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

(b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

(c) Evaluated the effectiveness of the Company's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

(d) Disclosed in this report any change in the Company's internal control over financial reporting that occurred during the period covered by the annual report that has materially affected, or is reasonably likely to materially affect, the Company's internal control over financial reporting; and

5. The Company's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the Company's auditors and the audit committee of the Company's board of directors (or persons performing the equivalent functions):

(a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the Company's ability to record, process, summarize and report financial information; and

(b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the Company's internal control over financial reporting.

Date: March 7, 2023

/s/ Lucinda C. Crabtree
Name: Lucinda C. Crabtree
Title: Senior Vice President and Chief Financial Officer
(Principal Financial Officer)

Certification by the Principal Executive Officer and Principal Financial Officer pursuant to
18 U.S.C. Section 1350, as adopted pursuant to
Section 906 of the Sarbanes-Oxley Act of 2002

Pursuant to the requirement set forth in Rule 13a-14(b) of the Securities Exchange Act of 1934, as amended (the "Exchange Act") and Section 1350 of Chapter 63 of Title 18 of the United States Code (18 U.S.C. §1350), Christian Itin, Chief Executive Officer of Autolus Therapeutics plc (the "Company"), and Lucinda C. Crabtree, Senior Vice President and Chief Financial Officer of the Company, each hereby certifies that, to the best of his knowledge:

(1) The Company's Annual Report on Form 20-F for the year ended December 31, 2022, to which this Certification is attached as Exhibit 13.1 (the "Report") fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: March 7, 2023

/s/ Christian Itin, Ph.D.
Name: Christian Itin, Ph.D.
Title: Chief Executive Officer
(*Principal Executive Officer*)

/s/ Lucinda C. Crabtree
Name: Lucinda C. Crabtree
Title: Senior Vice President and Chief Financial Officer
(Principal Financial Officer)

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the following Registration Statements:

(1) Registration Statement (Form S-8 No. 333-226457) pertaining to the Autolus Limited 2017 Share Option Plan and Autolus Therapeutics plc 2018 Equity Incentive Plan,
(2) Registration Statement (Form F-3 No. 333-258556) of Autolus Therapeutics plc and in the related Prospectus,
(3) Registration statement (Form F-3 No. 333- 264304) of Autolus Therapeutics plc and in the related Prospectus, and
(4) Registration statement (Form F-3 No. 333- 264650) of Autolus Therapeutics plc and in the related Prospectus

of our report dated March 7, 2023, with respect to the consolidated financial statements of Autolus Therapeutics plc included in this Annual Report (Form 20-F) of Autolus Therapeutics plc for the year ended December 31, 2022.

/s/ Ernst & Young LLP
Reading, United Kingdom
March 7, 2023