UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 8-K

CURRENT REPORT
Pursuant to Section 13 or 15(d)
of the Securities Exchange Act of 1934

Date of Report (Date of earliest event reported): December 9, 2023

Autolus Therapeutics plc
(Exact name of registrant as specified in its Charter)

England and Wales	**001-38547**	**Not applicable**
(State or other jurisdiction of incorporation or organization)	(Commission File Number)	(I.R.S. Employer Identification No.)

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

(44) 20 3829 6230
(Registrant's telephone number, including area code)

Not Applicable
(Former name or former address, if changed since last report)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions (see General Instruction A.2. below):

☐ Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)

☐ Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)

☐ Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))

☐ Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
American Depositary Shares, each representing one ordinary share, par value $0.000042 per share	AUTL	The Nasdaq Global Select Market

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (§230.405 of this chapter) or Rule 12b-2 of the Securities Exchange Act of 1934 (§240.12b-2 of this chapter).

Emerging growth company ☒

If an emerging growth company, 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. ☐

Item 7.01 Regulation FD Disclosure

On December 9, 2023, Autolus Therapeutics plc issued a press release announcing two oral presentations and two posters at the American Society of Hematology (ASH) Annual Meeting, December 9-12, 2023, including an oral presentation highlighting data from a pooled analysis of the FELIX Phase Ib/II study of obe-cel, an autologous fast off-rate CD19 CAR, in relapsed/refractory adult B-ALL; a long-term update on the ALLCAR19 Phase I study, testing obe-cel in adults with r/r B-ALL as well as patients with B-NHL and B-CLL and pre-clinical and Phase I clinical data from AUTO8, a BCMA/CD19 co-targeting CAR T cell candidate, in patients with refractory multiple myeloma. The press release is furnished as Exhibit 99.1 to this Current Report on Form 8-K.

From time to time, Autolus Therapeutics plc (the "Company") presents and/or distributes slides and presentations to the investment community to provide updates and summaries of its business. On December 10, 2023, the Company conducted an event for analysts and investors, from 8:00 to 09:30 AM PST, at the ASH Annual Meeting. The presentation from this event is furnished as Exhibit 99.2 to this Current Report on Form 8-K.

The information contained in the press release and presentation furnished as Exhibit 99.1 and Exhibit 99.2, respectively, shall not be deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and is not incorporated by reference into any of the Company's filings under the Securities Act of 1933, as amended, or the Exchange Act, whether made before or after the date hereof, except as shall be expressly set forth by specific reference in any such filing.

Item 9.01 Financial Statements and Exhibits

d) Exhibits

Exhibit No.	Description of Exhibit
99.1	Press release dated December 9, 2023
99.2	ASH corporate presentation dated December 10, 2023
104	Cover Page Interactive Data File (embedded within XBRL document)

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, as amended, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

AUTOLUS THERAPEUTICS PLC

Dated: December 11, 2023

By: /s/Christian Itin
Name: Christian Itin
Title: Chief Executive Officer

Exhibit 99.1

Autolus Therapeutics Presents Clinical Data Updates at the American Society of Hematology (ASH) Annual Meeting 2023

- Pooled analysis of the FELIX Phase Ib/II study demonstrated prolonged event free survival and low overall immunotoxicity across all cohorts in r/r B-ALL, and particularly in patients with low leukemic burden at lymphodepletion

- Longer-term data from a pooled analysis from the ALLCAR19 study and FELIX Phase Ib in r/r B-ALL showed durable remissions with obe-cel as a stand-alone therapy in a subset of patients after a median follow up of >3 years

- Additionally, ALLCAR19 extension cohorts demonstrated long-term responses with low immunotoxicity and prolonged persistence in patients with aggressive and indolent r/r NHL and r/r CLL

- Initial data from the MCARTY Phase I study in multiple myeloma showed AUTO8 was well tolerated, with responses observed in all patients

- Autolus will host an in-person and webcast Analyst/Investor event to discuss the data on Sunday, December 10, 2023 at 8:00 AM PT / 4.00 PM GMT

LONDON, December 9, 2023 -- Autolus Therapeutics plc (Nasdaq: AUTL), a clinical-stage biopharmaceutical company developing next-generation programmed T cell therapies, announces two oral presentations and two poster presentations at the American Society of Hematology (ASH) Annual Meeting, December 9-12, 2023, including an oral presentation highlighting data from a pooled analysis of the FELIX Phase Ib/II study of obe-cel, an autologous fast off-rate CD19 CAR T therapy, in relapsed/refractory adult B-ALL; and as a poster presentation a long-term update on the pooled ALLCAR19 and FELIX phase 1b studies, evaluating obe-cel in adult patients with r/r B-ALL as well from the ALLCAR19 study patients with B-NHL and B-CLL. Finally, in an oral presentation pre-clinical and Phase I clinical data from AUTO8, a BCMA/CD19 co-targeting CAR T cell candidate, evaluated in patients with refractory multiple myeloma.

“The FELIX study, with 127 patients, is one of the largest CAR T cell studies in adults with r/r B-ALL. Obe-cel had a favorable safety profile with very low rates of severe CRS and ICANS, in a clinical setting where these toxicities tend to be frequent and severe. A high proportion of patients responded, with many responses sustained, particularly in patients with low or intermediate disease-burden at lymphodepletion. The FELIX study shows that obe-cel has the potential to become an important therapeutic option in adults with r/r B-ALL.” **said Dr. Claire**

Roddie, MD, PhD, FRCPath, Associate Professor Haematology and Honorary Consultant Haematologist, Cancer Institute, University College London (UCL).

"The data we are sharing at ASH from our prior studies indicate that a subset of relapsed and refractory adult ALL patients treated with obe-cel as a single agent continue in remission with a median follow-up of more than three years. It is gratifying to see the excellent safety profile, high response rate and event-free survival we observed in our prior studies, reproduced in the FELIX study," **said Dr. Christian Itin, Chief Executive Officer of Autolus.** "We have recently submitted a Biologics License Application (BLA) for obe-cel to the U.S. Food and Drug Administration (FDA) for the treatment of patients with relapsed/refractory (r/r) adult B-cell Acute Lymphoblastic Leukemia (ALL) and we look forward to working with the FDA through the regulatory approval process."

Abstract #222 - oral presentation:

Title: Obecabtagene Autoleucel (obe-cel, AUTO1) for Relapsed/Refractory Adult B-cell Acute Lymphoblastic Leukemia (R/R B-ALL): Pooled Analysis of the Ongoing FELIX Phase Ib/II Study
Link to Presentation
Session Title: 704. Cellular Immunotherapies: Early Phase and Investigational Therapies: Expanding Disease Targets for CAR-T Cell Therapies
Session date and time: Saturday, December 9, 2023, 3:15 PM PT
Session room: San Diego Convention Center, Room 6B
Publication Number: 222
Presenting Author: Dr. Claire Roddie, MD, PhD, FRCPath, Associate Professor Haematology and Honorary Consultant Haematologist, Cancer Institute, University College London (UCL)

Summary:
Obe-cel is an autologous chimeric antigen receptor T cell product using a fast off-rate CD19 binding domain designed to reduce toxicity and increase long-term persistence. A pooled analysis of data from all patients across all cohorts in the FELIX Phase Ib/II study (morphologic disease, minimal residual disease (MRD), isolated extramedullary disease (EMD)) were presented (n=127, median follow-up time from first obe-cel infusion to data cut-off of 16.6 months). Median vein-to-release time was 22 days. Across all patients, treatment with obe-cel resulted in a high response rate with CR/CRi rate of 78% in evaluable patients. Additionally, obe-cel showed a favorable safety profile; grade ≥3 CRS was 2% and grade ≥3 ICANS was 7%, with most severe cases of immunotoxicity occurring in patients with high leukemic burden in the bone marrow (BM). The event free survival estimate (EFS) at 12-months was 50% across all patients, with only 17% of responders proceeding to stem cell transplant while in remission. For patients who had morphologic disease, defined as ≥5% BM blasts or presence of EMD regardless of BM blast status, at lymphodepletion, 74% responded with CR or CRi, and 95% of evaluated responders were MRD-negative‡. For patients who did not have morphologic disease at lymphodepletion, 100% were MRD-negative§ after obe-cel infusion. Subgroup analysis demonstrated that EFS and safety,

particularly rate of CRS and ICANS, were better in patients with lower disease burden at lymphodepletion (see table below). Cellular kinetic data shows high expansion and long-term persistence of CAR T cells in most responders.

Table: Summary EFS and safety by bone-marrow blasts prior to lymphodepletion

	Overall (n=127)	<5% BM blasts (n = 36)	5–75% BM blasts (n = 51)	>75% BM blasts (n = 40)
12-month EFS	50%	65%	55%	27%
≥G3 CRS	2%	0%	4%	3%
≥G3 ICANS	7%	0%	6%	15%

Event free survival (EFS; the time from date of first infusion to the earliest of treatment failure, relapse, or death from any cause); measurable residual disease (MRD); Bone marrow (BM); Extramedullary disease (EMD); complete remission (CR); Complete remission with incomplete count recovery (CRi); ‡ MRD status available for 64/73 patients; § MRD status available for 27/29 patients.

Abstract #350 – oral presentation

Title: Development of a Phase I Study Evaluating the Activity of Modular CAR T for Multiple Myeloma (MCARTY) Targeting BCMA and CD19 for Improved Persistence

Link to Presentation

Session Title: 703. Cellular Immunotherapies: Basic and Translational: Cellular Immunotherapy: Preclinical and Translational Insights

Date and time: Saturday, December 9, 2023, 4:15 PM PT

Session room: San Diego Convention Center, Room 6A

Publication Number: 350

Presenting Author: Dr. Lydia Lee, Consultant Haematologist & Senior Clinical Research Fellow, University College London, Research Department of Haematology (UCLH).

Summary:

AUTO8 is a dual targeting autologous CAR T therapy targeting BCMA and CD19 using two independently expressed CARs (D8 BCMA CAR and AUTO1/obe-cel CAR respectively) for R/R multiple myeloma. The MCARTY study is an iterative, staggered design trial with two separate parallel cohorts for direct comparison of D8 BCMA CAR and AUTO8. As of November 13, 2023 (data cut-off), 11 patients have been infused with either BCMA CAR at 50 million (n=3) or 150 million (n=3) cells, or AUTO8 at 50 million (n=3) or 150 million (n=2). At a median follow-up of 6 months we observed 100% response rate (ORR), with 3 PR, 1 VGPR, 7 CR/sCR (all evaluable MRD negative). Two patients remained in ongoing sCR > 12 months. No cases of ICANS or CRS ≥ Gr 3 were observed across all subjects during the period. While persistence data from the dual targeting cohort is immature, it demonstrates expansion of three CAR populations and suggests a trend to increased persistence of D8 BCMA CAR expressing T cells. The MCARTY trial is ongoing and continues to recruit patients.

Poster Presentations:

Title: Long-Term Efficacy and Safety of Obecabtagene Autoleucel (obe-cel) in Adult Patients (pts) with Relapsed/Refractory B-cell Acute Lymphoblastic Leukemia ([R/R B- ALL]; Pooled Analysis from ALLCAR19 and FELIX Phase Ib Studies) or Other B-cell Malignancies (ALLCAR19 Extension Study)
Link to Poster
Session Title: 704. Cellular Immunotherapies: Early Phase and Investigational Therapies: Poster
Session date and time: Saturday, December 9, 2023, 5:30 PM - 7:30 PM PT
Session room: San Diego Convention Center, Halls G-H
Publication Number: 2114
Presenting Author: Dr. Claire Roddie, MD, PhD, FRCPath, Associate Professor Haematology and Honorary Consultant Haematologist, Cancer Institute, University College London (UCL)

Summary:
The clinical activity of obe-cel has been explored in adults with R/R B-ALL in a Phase I study (ALLCAR19), and a Phase Ib/II study (FELIX). Additionally, obe-cel has been tested in patients with R/R B-cell chronic lymphocytic leukemia (B-CLL) and R/R B-cell non-Hodgkin lymphoma (B-NHL). Data from the pooled analysis of r/r ALL patients (n=36) treated with obe-cel in the ALLCAR19 and FELIX Ib studies demonstrate high remission rates of 81% (29/36). After a median follow-up of 3 years and without subsequent transplant 41% of patients continue in complete remission. The estimated EFS rate with censoring of subsequent transplant or new treatment was 45% at 36 months; all patients in ongoing remission were MRD negative at last assessment and median duration of response was not reached. In the CLL and NHL cohorts of the ALLCAR19 study and with >2 years follow up, high response rates and durable responses were observed. Low grade or low frequency grade >3 CRS/ICANS was observed across all indications and all dosing regimens. Excellent expansion and persistence of CAR T cells was evident across the studies. In summary, obe-cel shows durable remissions in a range of B-cell malignancies with a consistent safety profile.

Title: Delivery of Obecabtagene Autoleucel (obe-cel, AUTO1) for the FELIX Pivotal Study Demonstrating Robust Cell Processing, Robust Release Testing, and Reliable Logistics, Together with Readiness for Sustainable Patient (pt) Care
Session Title: 711. Cell Collection and Processing: Poster III
Session date and time: Monday, December 11, 2023, 6:00 PM - 8:00 PM PT
Session room: San Diego Convention Center, Halls G-H
Publication Number: 4892
Presenting Author: Michael Merges VP, Process Development, Autolus

Analyst/Investor Event:

Date: Sunday, December 10, 2023
Time: The presentation will be from 8:00 AM PT / 4:00 PM GMT to 9:00 AM PT / 5:00 PM GMT. Onsite access to the event available from 7:45am PT
Venue: The Manchester Grand Hyatt, 1 Market Place, San Diego, CA 92101
Speakers: Dr. Claire Roddie, MD, PhD, FRCPath, Associate Professor Haematology and Honorary Consultant Haematologist, Cancer Institute, University College London (UCL); Dr. Christian Itin, Chief Executive Officer, Autolus.
Webcast Registration: A live webcast will be held alongside the event. To register for the webcast please follow this link.

A recording of the event together with the presentation materials will be available on the Company's website after the event.

Note that due to the ASH embargo policy details specific to Publication 4892 will not be included in the Analyst/Investor event.

About Autolus Therapeutics plc
Autolus is a clinical-stage biopharmaceutical company developing next-generation, programmed T cell therapies for the treatment of cancer and autoimmune disease. Using a 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 target cells, break down their defense mechanisms and eliminate these cells. Autolus has a pipeline of product candidates in development for the treatment of hematological malignancies, solid tumors and autoimmune diseases. For more information, please visit www.autolus.com.

About obe-cel (AUTO1)
Obe-cel is a CD19 CAR T cell investigational therapy designed to overcome the limitations in clinical activity and safety compared to current CD19 CAR T cell therapies. Obe-cel is designed with a fast target binding off-rate to minimize excessive activation of the programmed T cells. Clinical trials of obe-cel have demonstrated that this "fast off-rate" profile reduces toxicity and T cell exhaustion, resulting in improved persistence and leading to high levels of durable remissions in r/r Adult ALL patients. Autolus has filed a BLA with the FDA for obe-cel in relapsed/refractory adult B-ALL and is preparing a regulatory submission with EMA. In collaboration with Autolus' academic partner, UCL, obe-cel is currently being evaluated in a Phase I clinical trials for B-NHL.

About obe-cel FELIX clinical trial
Autolus' Phase Ib/2 clinical trial of obe-cel enrolled adult patients with relapsed / refractory B-precursor ALL. The trial had a Phase Ib component prior to proceeding to the single arm, Phase 2 clinical trial. The primary endpoint is overall response rate, and the secondary endpoints include duration of response, MRD negative CR rate and safety. The trial enrolled over 100 patients across 30 of the leading academic and non-academic centers in the United States, United Kingdom and Europe. [NCT04404660]

About AUTO8
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.

Forward-Looking Statements
This press release contains forward-looking statements within the meaning of the "safe harbor" provisions of the Private Securities Litigation Reform Act of 1995. Forward-looking statements are statements that are not historical facts, and in some cases can be identified by terms such as "may," "will," "could," "expects," "plans," "anticipates," and "believes." These statements include, but are not limited to, statements regarding the development of Autolus' product candidates, the status of clinical trials (including, without limitation, expectations regarding the data that is being presented, the expected timing of data releases and development, as well as completion of clinical trials) and development timelines for the Company's product candidates. Any forward-looking statements are based on management's current views and assumptions and involve risks and uncertainties that could cause actual results, performance, or events to differ materially from those expressed or implied in such statements. These risks and uncertainties include, but are not limited to, the risks that Autolus' preclinical or clinical programs do not advance or result in approved products on a timely or cost effective basis or at all; the results of early clinical trials are not always being predictive of future results; the cost, timing, and results of clinical trials; that many product candidates do not become approved drugs on a timely or cost effective basis or at all; the ability to enroll patients in clinical trials; and possible safety and efficacy concerns. For a discussion of other risks and uncertainties, and other important factors, any of which could cause Autolus' actual results to differ from those contained in the forward-looking statements, see the section titled "Risk Factors" in Autolus' Annual Report on Form 20-F filed with the Securities and Exchange Commission on March 7, 2023, as well as discussions of potential risks, uncertainties, and other important factors in Autolus' subsequent filings with the Securities and Exchange Commission. All information in this press release is as of the date of the release, and Autolus undertakes no obligation to publicly update any forward-looking statement, whether as a result of new information, future events, or otherwise, except as required by law.

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Autolus

Developing Next Generation Programmed T Cell Therapies

ASH Analyst Meeting and Webcast

December 2023

Disclaimer

These slides contain forward-looking statements within the meaning of the "safe harbor" provisions of the Private Securities Litigation Reform Act of 1995. Forward-looking statements are statements that are not historical facts, and in some cases can be identified by terms such as "may," "will," "could," "expects," "plans," "anticipates," and "believes." These statements include, but are not limited to, statements regarding Autolus' development of the obe-cel program; the profile and potential application of obe-cel in additional disease settings; the future clinical development, efficacy, safety and therapeutic potential of the Company's product candidates, including progress, expectations as to the reporting of data, conduct and timing and potential future clinical activity and milestones; expectations regarding the initiation, design and reporting of data from clinical trials; expectations regarding the regulatory approval process for any product candidates; the benefits of the collaboration between Autolus and Blackstone, including the potential and timing to receive milestone payments and pay royalties under the terms of the strategic collaboration; the Company's current and future manufacturing capabilities; and the Company's anticipated cash runway. Any forward-looking statements are based on management's current views and assumptions and involve risks and uncertainties that could cause actual results, performance, or events to differ materially from those expressed or implied in such statements. These risks and uncertainties include, but are not limited to, the risks that Autolus' preclinical or clinical programs do not advance or result in approved products on a timely or cost effective basis or at all; the results of early clinical trials are not always being predictive of future results; the cost, timing and results of clinical trials; that many product candidates do not become approved drugs on a timely or cost effective basis or at all; the ability to enroll patients in clinical trials; possible safety and efficacy concerns. For a discussion of other risks and uncertainties, and other important factors, any of which could cause Autolus' actual results to differ from those contained in the forward-looking statements, see the section titled "Risk Factors" in Autolus' Annual Report on Form 20-F filed with the Securities and Exchange Commission on March 7, 2023, as well as discussions of potential risks, uncertainties, and other important factors in Autolus' subsequent filings with the Securities and Exchange Commission. All information in this presentation is as of the date of the release, and Autolus undertakes no obligation to publicly update any forward-looking statement, 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 the Company's views as of any date subsequent to the date of this presentation.

Agenda

- Welcome and Introduction: Rob Dolski, CFO
- Opening Remarks: Dr. Christian Itin, CEO
- FELIX pooled analysis in B-ALL: Dr. Claire Roddie, Associate Professor Haematology and Honorary Consultant Haematologist, Cancer Institute, University College London
- Building the obe-cel Opportunity and Next Steps: Dr. Christian Itin, CEO
- Q&A: Dr. Christian Itin and Dr. Claire Roddie

Building a leading CAR T company developing transformational therapies for cancer and autoimmune diseases

Obe-cel continues to demonstrate a potential best-in-class risk/benefit ratio in r/r adult ALL

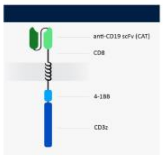
- Clinical data updates at 2023 American Society of Hematology (ASH)
  - Obe-cel: oral presentation – pooled analysis of the ongoing FELIX Phase Ib/II study
  - Obe-cel: poster presentation – pooled analysis from ALLCAR19 and FELIX Phase Ib studies in B-ALL and ALLCAR19 extension in B-NHL and CLL
  - Obe-cel: poster presentation – manufacturing for the FELIX study*
  - AUTO8: oral presentation – MCARTY Phase I study
- Recent corporate updates
  - Announced November 27th our submission of obe-cel's Biologics License Application (BLA) to the FDA

* Poster to be presented at ASH on Monday, December 11, 2023, 6:00 PM - 8:00 PM PT.

Reminder of obe-cel's unique mechanism of action

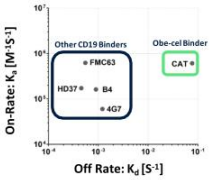
Designed for increased activity and reduced toxicity

Differentiated CD19 binder



CD19 binder with fast off-rate

Fast off-rate



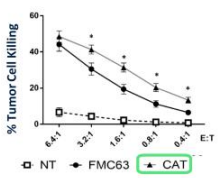
Shorter half-life of interaction compared to binders used in approved products

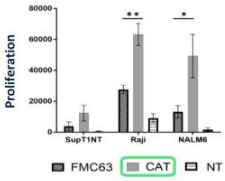
- obe-cel = 9.8 seconds
- Kymriah® = 21 minutes

Potential for improved potency, reduced toxicity

- Avoids over-activation of CAR T cells → Reduced toxicities
- Increases CAR T peak expansion → Improved persistence
- Avoids exhaustion of CAR T-cells → Improved engraftment, Improved persistence

Enhanced cytotoxicity and proliferation





Ghorashian et al. *Nature Medicine 2019*

ASH 2023

FELIX pooled analysis

Dr. Claire Roddie, Associate Professor Haematology and Honorary Consultant Haematologist, Cancer Institute, University College London

Publication Number: 222

OBECABTAGENE AUTOLEUCEL (OBE-CEL, AUTO1) FOR RELAPSED/REFRACTORY ADULT B-CELL ACUTE LYMPHOBLASTIC LEUKEMIA (R/R B-ALL): POOLED ANALYSIS OF THE ONGOING FELIX PHASE IB/II STUDY

Claire Roddie,[1] Karamjeet S. Sandhu,[2] Eleni Tholouli,[3] Paul Shaughnessy,[4] Pere Barba,[5] Manuel Guerreiro,[6] Michael R. Bishop,[7] Jean A. Yared,[8] Armin Ghobadi,[9] Deborah Yallop,[10] Aaron C. Logan,[11] Amer M. Beitinjaneh,[12] Jeremy M. Pantin,[13] Martha L. Arellano,[14] Sridhar Chaganti,[15] Ram Malladi,[16] Tobias Menne,[17] Virginia Escamilla Gómez,[18] Katharine Hodby,[19] Krishna Gundabolu,[20] Luke Mountjoy,[21] Kristen M. O'Dwyer,[22] Sameem Abedin,[23] Hassan B. Alkhateeb,[24] Bijal D. Shah,[25] Pierre Lao-Sirieix,[26] Gianfranco Pittari,[27] Kapil Saxena,[28] Yiyun Zhang,[28] Wolfram Brugger,[29] Martin A. Pule,[26] Jae H. Park,[30] Daniel J. DeAngelo,[31] Elias Jabbour[32]

[1]University College London Cancer Institute, London, UK; [2]City of Hope National Medical Center, Duarte, CA, USA; [3]Manchester Royal Infirmary, Manchester, UK; [4]Sarah Cannon Transplant and Cellular Therapy Program, Methodist Hospital, San Antonio, TX, USA; [5]Hospital Universitari Vall d'Hebron-Universitat Autònoma de Barcelona, Barcelona, Spain; [6]Hospital Universitari I Politècnic La Fe, Valencia, Spain; [7]The David and Etta Jonas Center for Cellular Therapy, University of Chicago, Chicago, IL, USA; [8]University of Maryland, Baltimore, MD, USA; [9]Washington University School of Medicine, St. Louis, MO, USA; [10]King's College Hospital London, UK; [11]Hematology, Blood and Marrow Transplantation, and Cellular Therapy Program, University of California at San Francisco, San Francisco, CA, USA; [12]University of Miami, Miami, FL, USA; [13]Sarah Cannon Transplant and Cellular Therapy Program, Nashville, TN, USA; [14]Winship Cancer Institute of Emory University, Atlanta, GA, USA; [15]University Hospitals Birmingham NHS Foundation Trust, Birmingham, UK; [16]Cambridge University Hospitals NHS Foundation Trust, Cambridge, UK; [17]Newcastle Upon Tyne NHS Hospitals Foundation Trust, Newcastle, UK; [18]Hospital Universitario Virgen del Rocío Sevilla, Seville, Spain; [19]University Hospital Bristol, Bristol, UK; [20]University of Nebraska Medical Center, Omaha, NE, USA; [21]Colorado Blood Cancer Institute, Denver, CO, USA; [22]University of Rochester Medical Center, Rochester, NY, USA; [23]Medical College of Wisconsin, Milwaukee, WI, USA; [24]Mayo Clinic, Rochester, MN, USA; [25]Moffitt Cancer Center, Tampa, FL, USA; [26]Autolus Therapeutics, London, UK; [27]Autolus Therapeutics, Basel, Switzerland; [28]Autolus Therapeutics, Rockville, MD, USA; [29]Autolus Therapeutics, Munich, Germany; [30]Memorial Sloan Kettering Cancer Center, New York, NY, USA; [31]Dana-Farber Cancer Institute, Boston, MA, USA; [32]University of Texas MD Anderson Cancer Center, Houston, TX, USA

Background

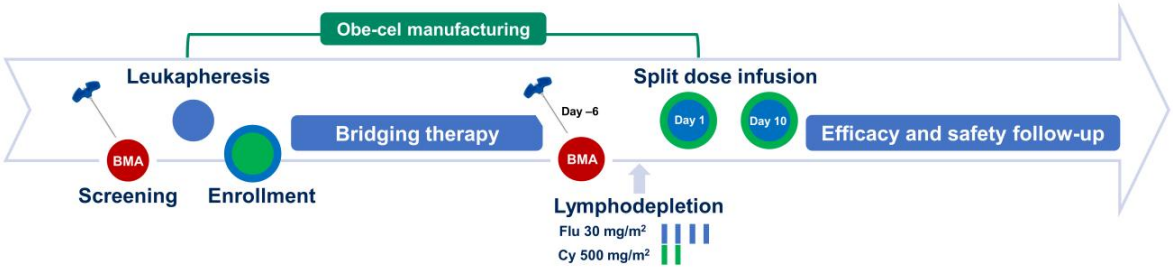
- Obecabtagene autoleucel (obe-cel) is an autologous CAR-T cell product, which utilizes a fast off-rate CD19 binder to reduce toxicity and improve persistence[1,2]
- The clinical activity of obe-cel has been evaluated in Phase I studies in R/R pediatric[1] and adult B-ALL,[2] and other B-cell malignancies including B-NHL and B-CLL[3]
- The FELIX study (NCT04404660) is a pivotal study of obe-cel in R/R adult B-ALL; preliminary results from the Phase IIA cohort were recently presented[4]

We present results from the FELIX Phase Ib/II study as a pooled analysis of all patients treated to date with obe-cel, including patients with low leukemic burden* at treatment

*Defined as morphological remission per investigator assessment (<5% BM blasts without EMD) as measured at screening and lymphodepletion
B-ALL, B-cell acute lymphoblastic leukemia; B-CLL, B-cell chronic lymphocytic leukemia; BM, bone marrow; B-NHL, B-cell non-Hodgkin lymphoma; CAR-T, chimeric antigen receptor T-cell; CD19, cluster of differentiation 19; EMD, extramedullary disease; R/R, relapsed/refractory
1. Ghorashian S, et al. Nat Med 2019;25(9):1408–14; 2. Roddie C, et al. J Clin Oncol 2021;39(30):3352–63; 3. Roddie C, et al. Blood 2022;140(Suppl. 1):7452–3, ASH abstract; 4. Roddie C, et al. J Clin Oncol 2023;41(16 Suppl):7000

FELIX: obe-cel tested in adults with R/R B-ALL

Study design with leukemic burden-adjusted split dosing



B-ALL, B-cell acute lymphoblastic leukemia; BM, bone marrow; BMA, bone marrow analysis; CAR-T, chimeric antigen receptor T-cell; CRS, cytokine release syndrome; cy, cyclophosphamide; flu, fludarabine; ICANS, immune effector cell-associated neurotoxicity syndrome; obe-cel, obecabtagene autoleucel; R/R, relapsed/refractory

FELIX: patient eligibility and endpoints

Key eligibility criteria
- R/R adult B-ALL*
- Age ≥18 years

Cohort A	Cohort B	Cohort C
≥5% BM blasts at screening	MRD-positive at screening	Isolated EMD at screening

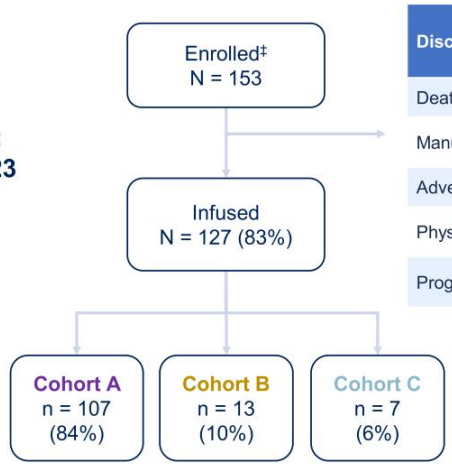
Selected endpoints‡
- CR/CRi rate per IRRC
- DoR
- EFS§
- OS
- MRD-negativity rate($<10^{-4}$)
- Safety
- CAR-T expansion/persistence
- Manufacture feasibility

*R/R B-ALL: primary refractory; first relapse if first remission ≤12 months; R/R disease after ≥2 lines of systemic therapy; R/R disease after allogeneic transplant; R/R Philadelphia chromosome-positive ALL if intolerant to/failed two lines of any TKI or one line of second-generation TKI, or if TKI therapy is contraindicated
‡Primary endpoints: Cohorts A and C, ORR defined as the proportion of patients achieving CR or CRi; Cohort IIB, the proportion of patients achieving MRD-negative remission ($<10^{-4}$ leukemic cells)
§EFS: the time from date of first infusion to the earliest of treatment failure, relapse, or death from any cause
ALL, acute lymphoblastic leukemia; B-ALL, B-cell acute lymphoblastic leukemia; BM, bone marrow; CAR-T, chimeric antigen receptor T-cell; CR, complete remission; CRi, CR with incomplete hematologic recovery; DoR, duration of remission; EFS, event-free survival; EMD, extramedullary disease; IRRC, Independent Response Review Committee; MRD, measurable residual disease; ORR, overall remission rate; OS, overall survival; R/R, relapsed/refractory; TKI, tyrosine kinase inhibitor

FELIX: patient disposition

127/153 (83%) enrolled patients received obe-cel*

Data cut-off date: September 13, 2023



Discontinued	n (%)
	26 (17)
Death	15 (10)
Manufacturing-related	7 (5)
Adverse event	2 (1)
Physician decision	1 (0.7)
Progressive disease	1 (0.7)

*Seven patients received Dose 1 only
‡All eligibility criteria met and the leukapheresate accepted for manufacturing obe-cel, obecabtagene autoleucel

FELIX: baseline characteristics

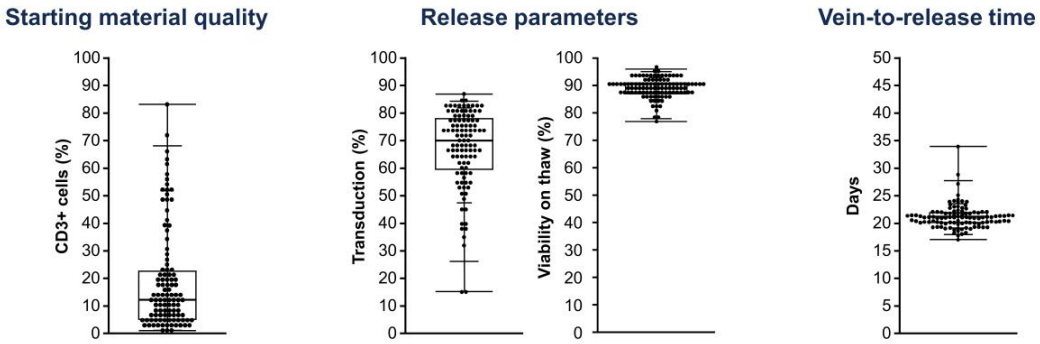
Heavily pre-treated patients (many post-allogeneic SCT)

	All treated patients (N = 127)
	n (%)*
Median age, years (range)	47 (20–81)
Male/female	66/61 (52/48)
Asian Black or African American White Unknown Hispanic or Latino	16 (13) 2 (2) 94 (74) 15 (12) 38 (30)
Philadelphia chromosome-positive	36 (28)
Prior therapies, median (range) ≥3 prior lines	2 (1–6) 44 (35)
Prior allogeneic SCT	56 (44)
Prior blinatumomab Prior inotuzumab Prior blinatumomab and inotuzumab	53 (42) 40 (31) 21 (17)
BM blasts % at screening, median (range)	36 (0–100)
EMD at screening	29 (23)

*Data reported are n (%) unless otherwise stated
BM, bone marrow; EMD, extramedullary disease; SCT, stem cell transplant

FELIX: obe-cel manufacturing

Robust and rapid manufacturing, despite variable starting material

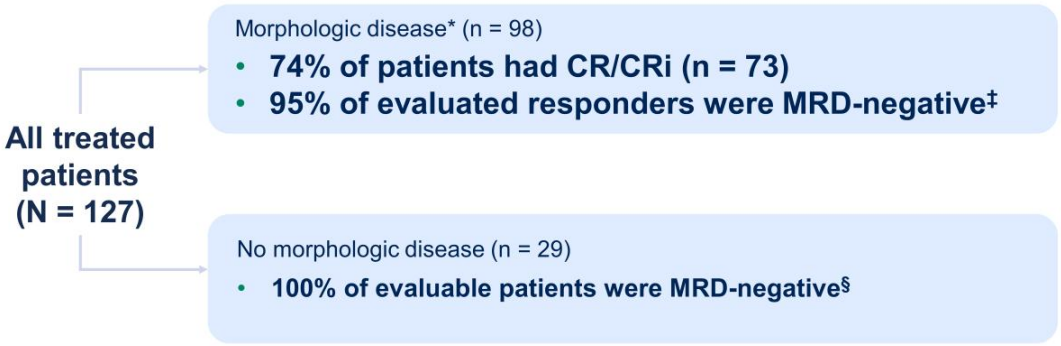


- Obe-cel was released for 95% of patients, with a median time from vein-to-release of 22 days
- Consistent manufacturing was observed, despite leukapheresis from patients with multiple lines of prior therapy (many with prior allogeneic SCT) and high leukemic burden

For more details on obe-cel manufacturing, please see poster 4892
CD3, cluster of differentiation 3; obe-cel, obecabtagene autoleucel; SCT, stem cell transplant

FELIX: remission rate and MRD by status at lymphodepletion

High MRD-negative remission rates were observed after obe-cel

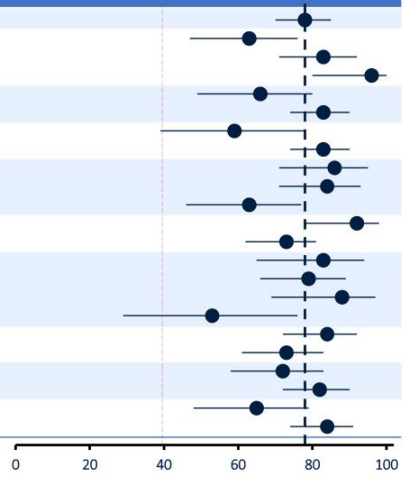


*Morphologic disease defined as ≥5% BM blasts or presence of EMD regardless of BM blast status
‡MRD status available for 64/73 patients, as assessed by NGS or flow cytometry
§MRD status available for 27/29 patients, as assessed by NGS or flow cytometry
BM, bone marrow; CR, complete remission; CRi, CR with incomplete hematologic recovery; EMD, extramedullary disease; MRD, measurable residual disease; NGS, next-generation sequencing; obe-cel, obecabtagene autoleucel

FELIX: CR/CRi subgroup analysis per IRRC

Obe-cel demonstrated high CR/CRi rates across all subgroups

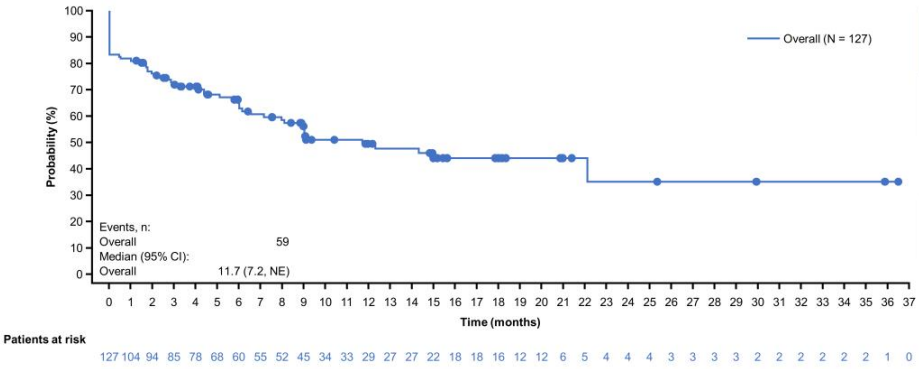
Subgroup		Total, n (%)	ORR, % (95% CI)
Overall		**127 (100)**	**78 (70, 85)**
Age, years	18–39	48 (38)	63 (47, 76)
	40–64	54 (43)	83 (71, 92)
	≥65	25 (20)	96 (80, 100)
Hispanic or Latino	Yes	38 (30)	66 (49, 80)
	No/Unknown	89 (70)	83 (74, 90)
EMD at lymphodepletion	Yes	27 (21)	59 (39, 78)
	No	100 (79)	83 (74, 90)
BM blasts % at lymphodepletion	<5	36 (28)	86 (71, 95)
	≥5–≤75	51 (40)	84 (71, 93)
	>75	40 (31)	63 (46, 77)
Philadelphia chromosome-positive	Yes	36 (28)	92 (78, 98)
	No	91 (72)	73 (62, 81)
Prior therapies	1	30 (24)	83 (65, 94)
	2	53 (42)	79 (66, 89)
	3	25 (20)	88 (69, 97)
	≥4	19 (15)	53 (29, 76)
Prior allogeneic SCT	Yes	56 (44)	84 (72, 92)
	No	71 (56)	73 (61, 83)
Prior blinatumomab	Yes	53 (42)	72 (58, 83)
	No	74 (58)	82 (72, 90)
Prior inotuzumab	Yes	40 (31)	65 (48, 79)
	No	87 (69)	84 (74, 91)



*The red dashed line denotes the Phase IIA null hypothesis (40%)
‡The black dashed line denotes the ORR among all treated patients (ORR=CR+CRi)
BM, bone marrow; CR, complete remission; CRi, CR with incomplete hematologic recovery; EMD, extramedullary disease; IRRC, Independent Response Review Committee; obe-cel, obecabtagene autoleucel; ORR, overall remission rate; SCT, stem cell transplant

FELIX: EFS in all treated patients*

The event-free survival estimate at 12 months was 50%



Patients at risk

127 104 94 85 78 68 60 55 52 45 34 33 29 27 27 22 18 18 16 12 12 6 5 4 4 4 3 3 3 3 2 2 2 2 2 2 1 0

All treated patients (N = 127)	
Median EFS (95% CI), months	**11.7** (7.2, NE)
6-month EFS (95% CI), %	**65** (56, 73)
12-month EFS (95% CI), %	**50** (39, 59)

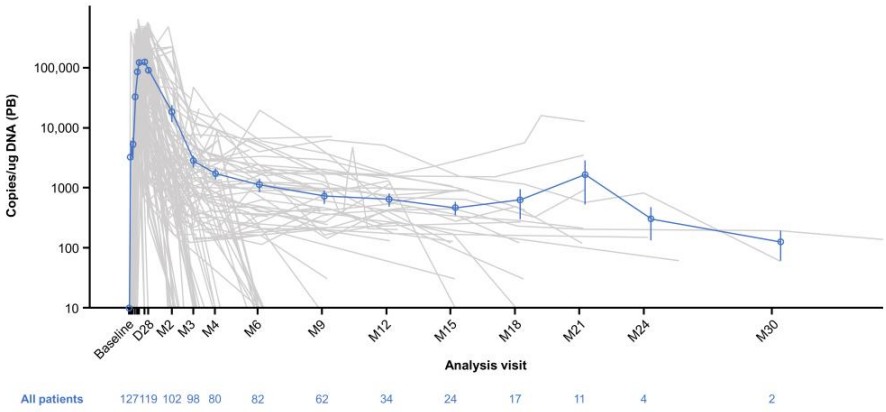
- The median follow-up time was 16.6 months (range: 3.7−36.6 months)
- 17/99 (17%) responders proceeded to SCT while in remission
- A pooled analysis from the ALLCAR19 and FELIX Phase Ib studies will be presented as a poster on Saturday, December 9, 2023 5:30–7:30pm (Roddie C, et al. Abstract 2114)

*Censoring new non-protocol anti-cancer therapies including SCT with disease assessment by IRRC (data cut-off date: September 13, 2023)
Median EFS: ITT population – 9.8 months (95% CI: 5.9, 12.9)
CI, confidence interval; EFS, event-free survival; IRRC, Independent Response Review Committee; ITT, intent-to-treat; NE, not evaluable; obe-cel, obecabtagene autoleucel; SCT, stem cell transplant

FELIX: obe-cel persistence in responders

Obe-cel has high expansion and long-term persistence

	All treated patients (N = 127)
C_{max}, copies/ug Geo-Mean, CV%	110,896 (254)
T_{max}, days Median, range	14 (2–55)
$AUC_{0–28d}$, copies/ug×d Geo-Mean, CV%	1,105,176 (212)



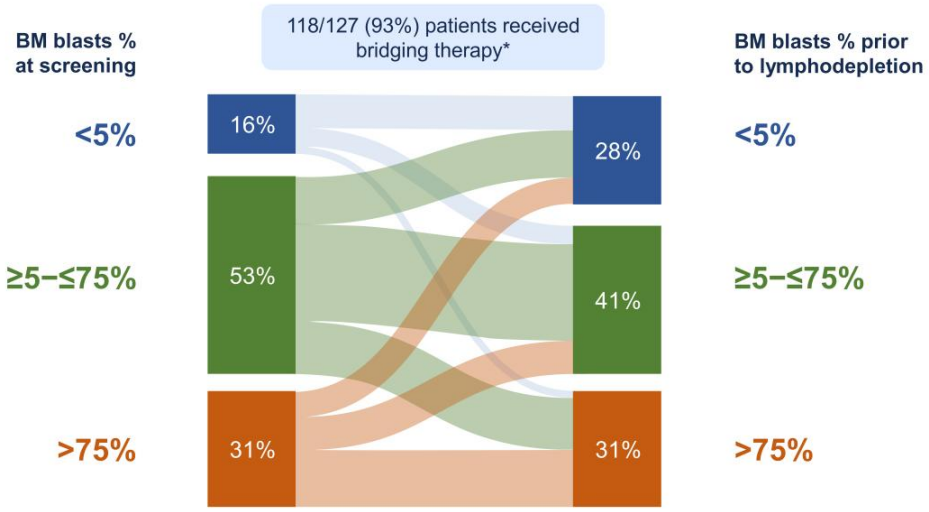
All patients	127	119	102	98	80	82	62	34	24	17	11	4	2

- CAR-T persistence was detected in 72% of ongoing responders at the latest follow-up

AUC, area under the curve; CAR-T, chimeric antigen receptor T-cell; C_{max}, maximum concentration; CV, coefficient of variation; d, day; D, day; Geo, geometric; M, month; obe-cel, obecabtagene autoleucel; PB, peripheral blood; T_{max}, time to maximum concentration

FELIX: leukemic burden in all treated patients

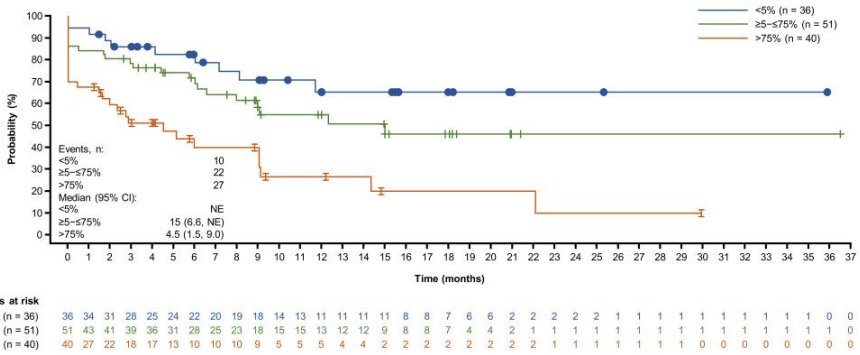
Leukemic burden at screening is not predictive of leukemic burden prior to lymphodepletion



*Bridging therapy per physician's choice, including inotuzumab ozogamicin
BM, bone marrow

FELIX: EFS by leukemic burden prior to lymphodepletion*

Lower leukemic burden is associated with better outcomes



Patients at risk

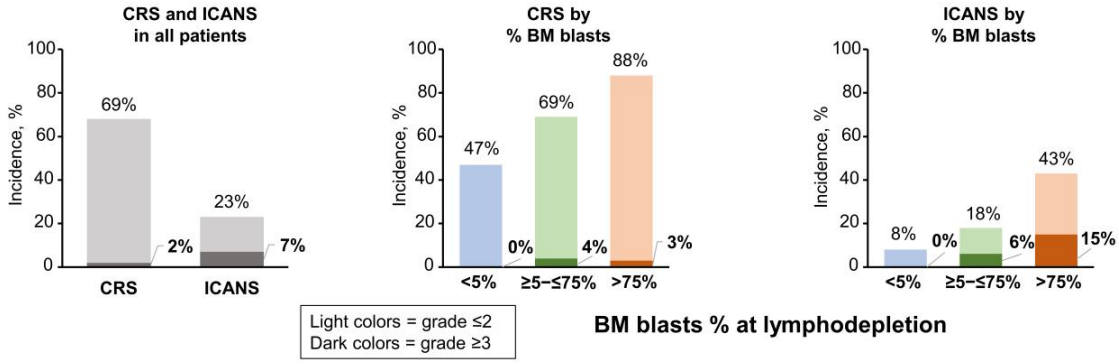
<5% (n = 36)	36	34	31	28	25	24	22	20	19	18	14	13	11	11	11	11	8	8	7	6	6	2	2	2	2	1	1	1	1	1	1	1	0	0
≥5–≤75% (n = 51)	51	43	41	39	36	31	28	25	23	18	15	15	13	12	12	9	8	8	7	4	4	2	1	1	1	1	1	1	1	1	1	1	1	0
>75% (n = 40)	40	27	22	18	17	13	10	10	10	9	5	5	5	4	4	2	2	2	2	2	2	2	2	1	1	1	1	1	1	0	0	0	0	0	0	0

BM blasts % prior to lymphodepletion	<5% (n = 36)	≥5–≤75% (n = 51)	>75% (n = 40)
Median EFS (95% CI), months	**NE**	**15.0** (6.6, NE)	**4.5** (1.5, 9.0)
6-month EFS (95% CI), %	**83** (65, 92)	**72** (57, 82)	**40** (23, 56)
12-month EFS (95% CI), %	**65** (44, 80)	**55** (38, 69)	**27** (12, 44)

*Censoring new non-protocol anti-cancer therapies including SCT with disease assessment by IRRC (data cut-off date: September 13, 2023)
BM, bone marrow; CI, confidence interval; EFS, event-free survival; IRRC, Independent Response Review Committee; NE, not evaluable; SCT, stem cell transplant

FELIX: CRS and ICANS

Low rates of Grade ≥3 CRS and/or ICANS were observed



- No grade ≥3 CRS and/or ICANS were observed in patients with <5% BM blasts at lymphodepletion
- Vasopressors were used to treat CRS in 2.4% of patients

BM, bone marrow; CRS, cytokine release syndrome; ICANS, immune effector cell-associated neurotoxicity syndrome; ICU, intensive care unit

FELIX: Phase Ib/II conclusions

- Obe-cel successfully manufactured in 95% of leukapheresed patients
- High remission rates independent of leukemic burden at lymphodepletion
- 50% EFS estimate at 12 months, with only 17% of responders proceeding to SCT while in remission
- Favorable safety profile: 2% grade ≥3 CRS and 7% grade ≥3 ICANS
  - Severe toxicity mostly limited to patients with high leukemic burden at lymphodepletion
- Durable remission rates and toxicity inversely correlated with leukemic burden at lymphodepletion
  - Assessment of leukemic burden at lymphodepletion is essential for risk/benefit stratification

Obe-cel is effective treatment for R/R adult B-ALL, with better outcomes observed in patients with lower leukemic burden at lymphodepletion; longer follow-up is required

B-ALL, B-cell acute lymphoblastic leukemia; CRS, cytokine release syndrome; EFS, event-free survival; ICANS, immune effector cell-associated neurotoxicity syndrome; obe-cel, obecabtagene autoleucel; R/R, relapsed/refractory; SCT, stem cell transplant

FELIX: TEAEs

Favorable safety profile

TEAEs that occurred in ≥20% of patients regardless of causality	All treated patients (N = 127)	
	Any grade, %	Grade ≥3, %
Patients with any TEAE	100	81
CRS	69	2
Pyrexia	29	2
Nausea	26	2
Diarrhea	25	2
Febrile neutropenia	24	24
Anemia	24	21
Headache	24	0
Neutropenia	23	21
ICANS	23	7
Hypotension	22	5
Hypokalemia	21	6
Neutrophil count decreased	20	20

- 15% of patients were admitted to the ICU
- Two deaths were considered treatment-related per investigator assessment: neutropenic sepsis (n = 1); acute respiratory distress syndrome and ICANS (n = 1)

CRS, cytokine release syndrome; ICANS, immune effector cell-associated neurotoxicity syndrome; TEAE, treatment emergent adverse event

Acknowledgments

- The authors would like to acknowledge:
  - Patients, families, friends, and caregivers
  - Study investigators and coordinators
  - Healthcare staff at the study sites
  - Autolus Therapeutics Teams

Contact: Dr Claire Roddie c.roddie@ucl.ac.uk

ASH 2023

Longer-term follow up in B-ALL

Pooled analysis from ALLCAR 19 Phase 1b and FELIX Phase 1b trials in B-ALL

Dr. Christian Itin, CEO, Autolus

ALLCAR19 and FELIX are investigating obe-cel in adults with B-cell malignancies

- Obe-cel is an autologous CD19 CAR T-cell product with a fast off-rate CD19-binding domain designed to reduce toxicity and improve persistence[1–3]
- **ALLCAR19** (NCT02935257) is a multicenter, non-randomized, open-label Phase I study of obe-cel in patients aged ≥16 years with B-cell malignancies[1,2]
- **FELIX** (NCT04404660) is a global, open-label, single-arm Phase Ib/II study of obe-cel in patients aged ≥18 years with R/R B-ALL[3]

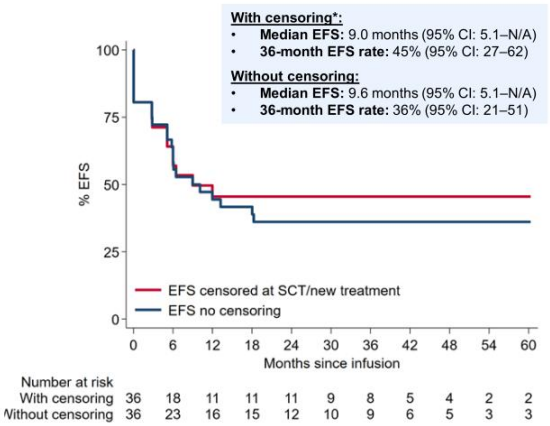
Here, we report long-term obe-cel data from a pooled analysis of the ALLCAR19* and FELIX† Phase Ib studies in R/R B-ALL, and from the ALLCAR19* extension phase in R/R B-CLL and B-NHL

*Data cut-off: November 01, 2023; †Data cut-off: September 13, 2023.
B-ALL, B-cell acute lymphoblastic leukemia; B-CLL, B-cell chronic lymphocytic leukemia; B-NHL, B-cell non-Hodgkin lymphoma; CAR, chimeric antigen receptor; obe-cel, obecabtagene autoleucel; R/R, relapsed/refractory.

1. Roddie C, et al. *J Clin Oncol* 2021;39(30):3352–63
2. Roddie C, et al. *Blood* 2022;140(Suppl 1):7452–3
3. Roddie C, et al. *J Clin Oncol* 2023;41:16_suppl, 7000

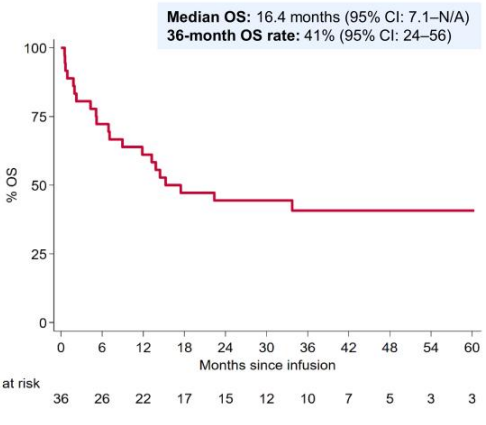
Long-term follow up in R/R B-ALL demonstrates favorable EFS and OS

Median follow up 36.5 months; pooled analysis of Ph. 1b ALLCAR19 and Ph. 1b FELIX study in r/r B-ALL



Number at risk

With censoring	36	18	11	11	11	9	8	5	4	2	2
Without censoring	36	23	16	15	12	10	9	6	5	3	3



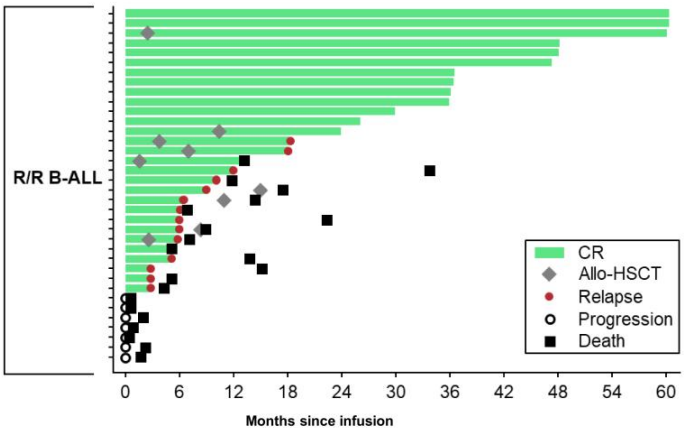
Number at risk

	36	26	22	17	15	12	10	7	5	3	3

*Censored for allo-HSCT and other anti-cancer treatment. Investigator-assessed disease evaluations were performed locally by CT and BM biopsy for B-ALL. Allo-HSCT, allogeneic hematopoietic stem cell transplant; B-ALL, B-cell acute lymphoblastic leukemia; BM, bone marrow; CI, confidence interval; CT, computed tomography; EFS, event-free survival; N/A, not available; obe-cel, obecabtagene autoleucel; OS, overall survival; R/R, relapsed/refractory. Roddie et al, ASH 2023, Poster 2114.

Durable remissions in patients with R/R B-ALL and no new safety signals

All patients in ongoing remission were MRD negative at the last assessment



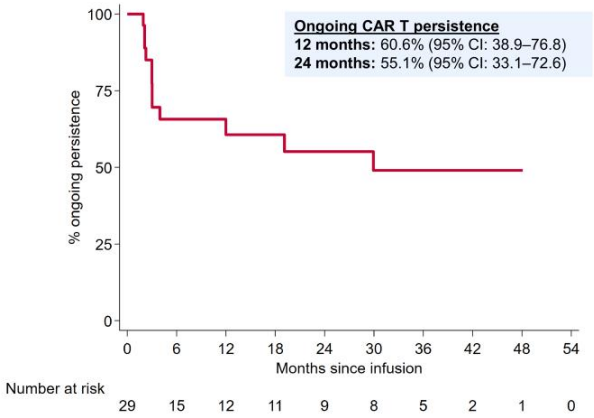
- **ORR:** 80.6% (95% CI: 64.0–91.8)
- **All patients in ongoing remission were MRD-negative at the last assessment**
- **Median DOR (n = 29):** Not reached (95% CI: 5.1–N/A)

- No ≥ grade 3 CRS reported
- 4/36 ≥ grade 3 ICANS reported
- No new safety signals or deaths related to obe-cel in R/R B-ALL

Investigator-assessed disease evaluations were performed locally by CT and BM biopsy for B-ALL. MRD status was determined using flow cytometry or IgH PCR/NGS (MRD-negative: $<10^{-4}$ [<0.01%]). Allo-HSCT, allogeneic hematopoietic stem cell transplant; B-ALL, B-cell acute lymphoblastic leukemia; BM, bone marrow; CI, confidence interval; CR, complete remission; CT, computed tomography; DOR, duration of response; MRD, measurable residual disease; N/A, not available; NGS, next-generation sequencing; ORR, overall response rate; PCR, polymerase chain reaction; R/R, relapsed/refractory. Roddie et al, ASH 2023, Poster 2114.

Prolonged persistence seen in most long-term R/R B-ALL responders

Obe-cel persistence since infusion



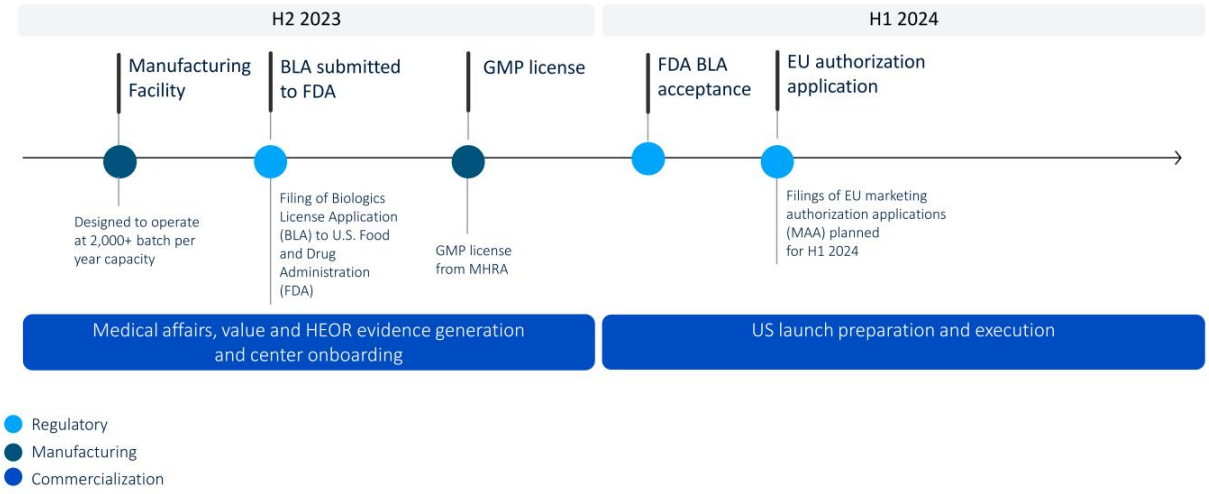
Loss of CAR T persistency was defined as the time from first obe-cel infusion to undetectable CAR T transgene (copies/µg DNA) in peripheral blood. Patients who proceeded to allo-HSCT with ongoing CAR T persistency were censored at the last result prior to receiving allo-HSCT. Allo-HSCT, allogeneic hematopoietic stem cell transplant; B-cell acute lymphoblastic leukemia; CAR T, CD19 chimeric antigen receptor (CAR) T-cell; CI, confidence interval; DNA, deoxyribonucleic acid; obe-cel, obecabtagene autoleucel; R/R, relapsed/refractory. Roddie et al, ASH 2023, Poster 2114.

Obe-cel Next Steps

Commercial Launch Readiness in r/r aALL
Starting Phase 1 SLE study
Dr. Christian Itin, CEO, Autolus

Obe-cel steps to commercialization in r/r adult ALL

Roadmap to a 2024 commercial launch



- Regulatory
- Manufacturing
- Commercialization

Plan to start SLE Phase 1 study in early 2024

Uniquely positioned to deliver CAR T therapy in autoimmune disease

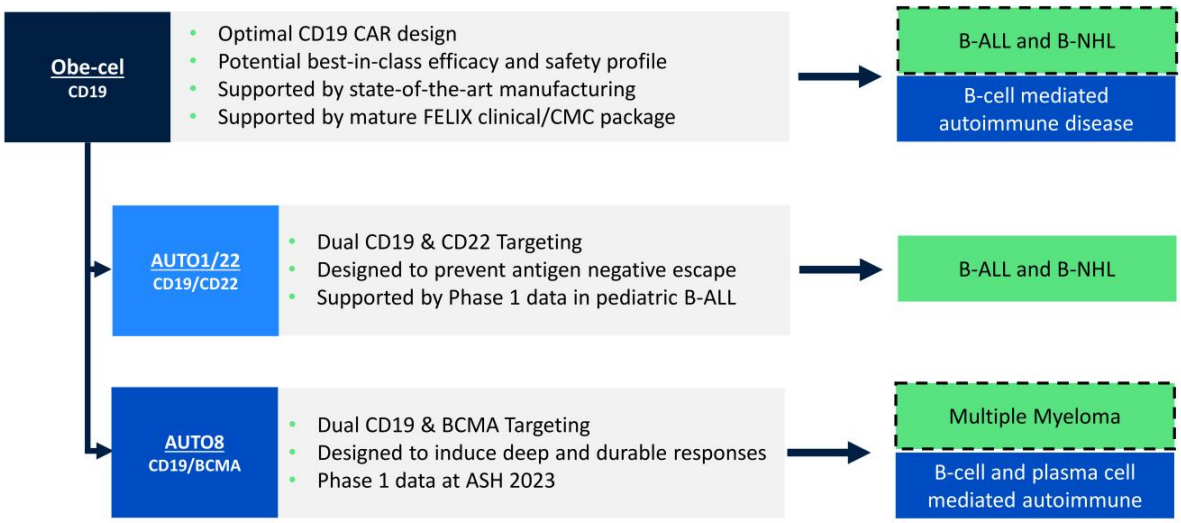
Obe-cel's potential advantages	Supporting evidence
Outstanding tolerability to drive physician and patient acceptability in rheumatology settings	✓ Potential best-in-class risk/benefit profile in pivotal FELIX trial in adult ALL ✓ Low rates of high-grade CRS and ICANS across all patients
Deep cut into the CD19+ B and plasma cell compartment to remove all autoreactive clones	✓ Demonstrated in B-ALL with very high rate of MRD negative complete remissions (97% of responders) in FELIX Phase 2 study
Development of robust, economical and scalable manufacturing and commercial infrastructure	✓ Potential approved, commercial manufacturing facility in adult ALL with attractive cost of goods at launch for SLE ✓ Commercial systems and CAR T center services established with potential adult ALL launch
High treatment effect enables smaller clinical program and accelerated regulatory path to launch	✓ Treatment effect demonstrated in Erlangen proof-of concept ✓ Clinical safety data from ALLCAR19 and FELIX as well as potential commercial patient data to supplement SLE pivotal study

Expanding the obe-cel opportunity

Deep value program with potentially broad applicability

The obe-cel product family and franchise opportunity

= ASH 2023 updates



Obe-cel in B-NHL/B-CLL: High response rates with durable remissions

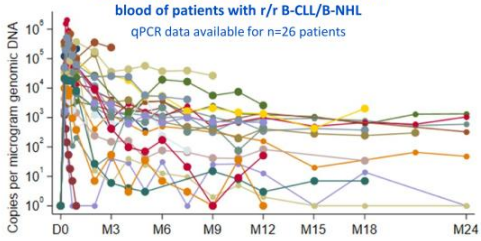
Data from ALLCAR19 extension: Long term persistence driving durable outcomes

Responses by subtype

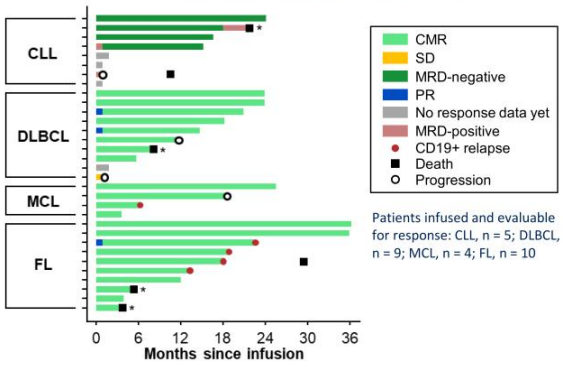
Subtype	ORR, n/N (%)
R/R CLL	4/5 (80)
R/R DLBCL	8/9 (89)
R/R MCL	4/4 (100)
R/R FL	10/10 (100)

Post infusion kinetics of obe-cel in peripheral blood of patients with r/r B-CLL/B-NHL

qPCR data available for n=26 patients



Median follow-up 20.9 months (range 0.9 – 36.2)



Patients infused and evaluable for response: CLL, n = 5; DLBCL, n = 9; MCL, n = 4; FL, n = 10

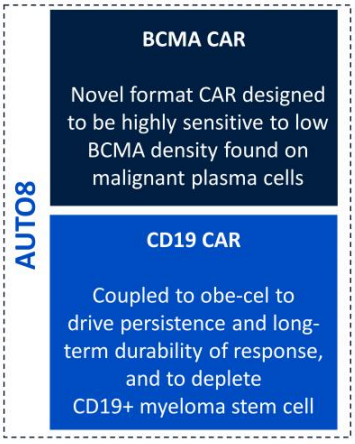
- No ≥ grade 3 CRS and ICANS reported

Collaboration with UCL

Analysis of ALLCAR19 extension phase in R/R B-CLL and B-NHL, data cut-off date September 13, 2023. *Patient death unrelated to obe-cel and without relapse or disease progression (COVID-19 [DLBCL and FL, n = 1 each]; grade 5 appendicitis on a background of myelodysplastic syndrome [FL, n = 1]; unrelated esophageal cancer [CLL, n = 1]). Roddie et al., ASH 2023 Poster 2114.

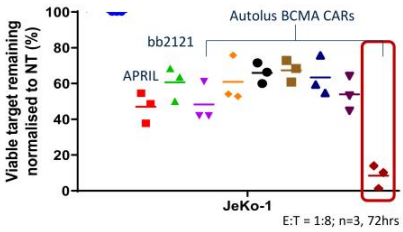
AUTO8: combining a sensitive BCMA CAR with the CD19 CAR from obe-cel

Designed to induce deep and durable responses



Collaboration with UCL

Screening for high sensitivity BCMA binders



Phase 1 Design

Cohort 1: BCMA CAR — 50MM — 150MM

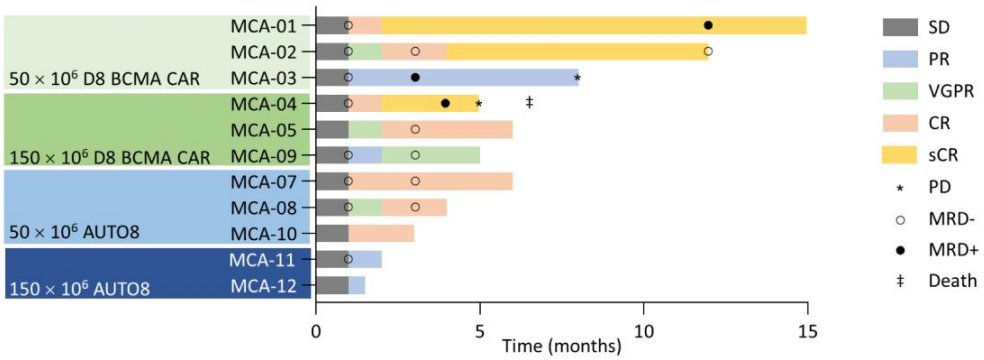
Cohort 2: BCMA CAR + CD19CAR — 50MM — 150MM

Initial data at ASH 2023; study ongoing

Initial data from MCARTY Phase 1 showed clinical responses in all patients

Both D8 BCMA CAR and AUTO8 associated with high response rate

- ORR 100%; 3 PR, 1 VGPR, 7 CR/sCR (all evaluable MRD-)
- Two patients remained in sCR at >12 months; overall PFS was not reached



Collaboration with UCL

AUTO8, D8 BCMA + obe-cel CARs; Median follow up 6 months (range 1–15); Lee et al., ASH 2023, Publication number 350.

Initial safety data Phase 1 MCARTY study

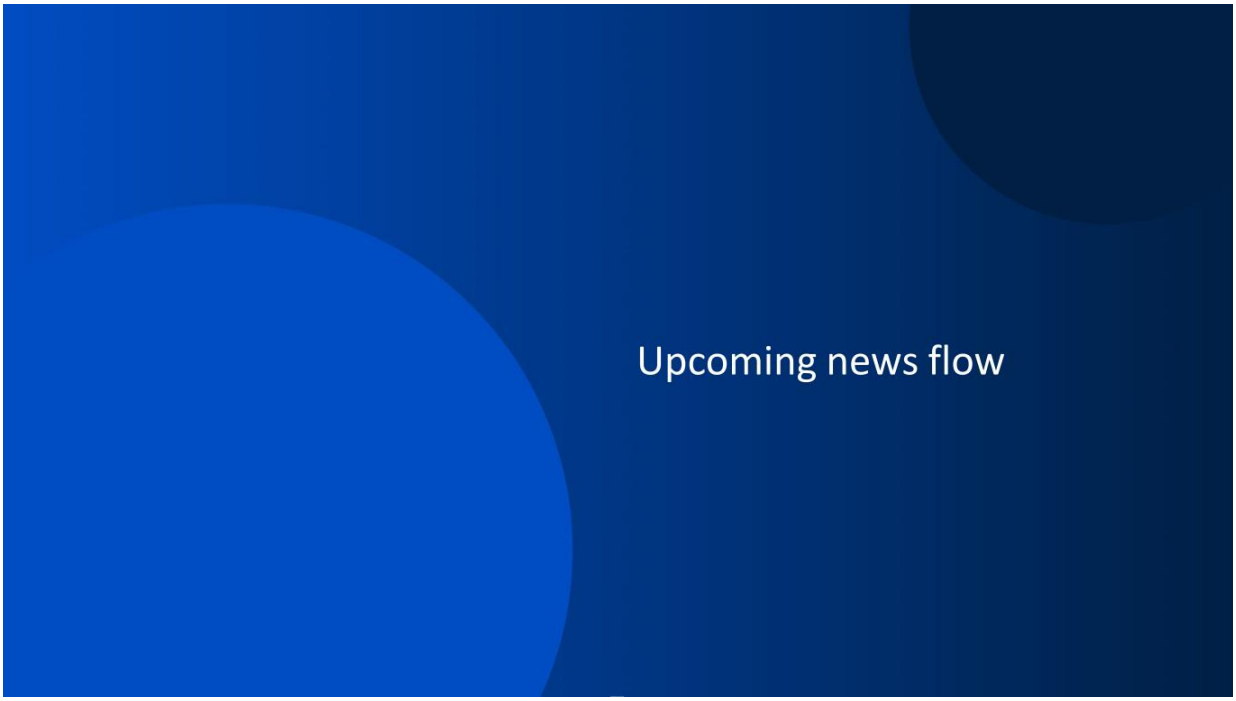
D8 BCMA CAR and AUTO8 did not result in severe ICANS/CRS and were well tolerated with no DLTs

Adverse events, n (%)	D8 BCMA CAR 50×10^6 (N = 3)		D8 BCMA CAR 150×10^6 (N = 3)		AUTO8 50×10^6 (N = 3)		AUTO8 150×10^6 (N = 2)	
	Grade 1–2	Grade ≥3	Grade 1–2	Grade ≥3	Grade 1–2	Grade ≥3	Grade 1–2	Grade ≥3
Hematological								
Anemia	0	1 (33)	1(33)	2(67)	0	2 (67)	1(50)	1(50)
Neutropenia	0	3 (100)	0	3 (100)	0	3 (100)	0	2 (100)
Thrombocytopenia	1 (33)	1 (33)	1 (33)	2 (67)	0	2 (67)	0	1 (50)
CRS	3 (100)	0	3 (100)	0	2 (67)	0	2 (100)	0
ICANS	0	0	0	0	0	0	0	0

- CRS in 10 patients (91%) and all low grade; no patients reported ICANS
- Tocilizumab given to 7 patients (64%) and steroids to 2 patients (18%)

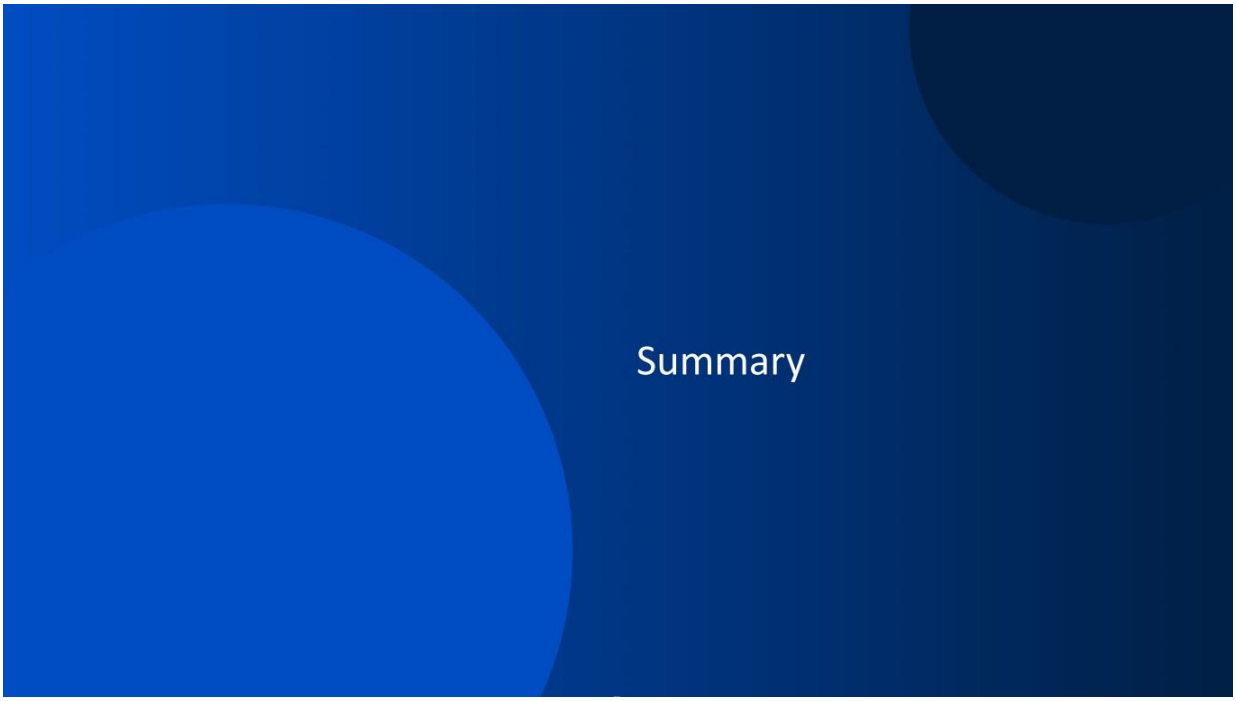
Collaboration with UCL

AUTO8, D8 BCMA + obe-cel CARs; Lee et al., ASH 2023, Publication number 350.


Upcoming news flow

Autolus planned news flow

Anticipated Milestone or Data Catalysts	Timing
Obe-cel Biologics License Application (BLA) to FDA	**Complete**
Obe-cel FELIX data update at ASH	**Complete**
AUTO8 update (MCARTY) at ASH	**Complete**
AUTO6NG Phase 1 study start (MAGNETO)	**By end 2023**
Obe-cel in autoimmune disease – refractory SLE Phase 1 study start	**Early 2024**
Obe-cel 60-day FDA feedback on BLA submission	**January 2024**
Obe-cel Marketing Authorization Application (MAA) to EMA	**First half 2024**


Summary

Building a leading CAR T company developing transformational therapies for cancer and autoimmune diseases

Established excellence in R&D and Manufacturing; scaling company toward commercialization

Obe-cel potentially best in class CAR T for r/r adult ALL

- FELIX pivotal trial showed high ORR, encouraging EFS and favourable tolerability with low levels of high-grade CRS and ICANS
- BLA submitted to FDA
- EMA submission planned for 1H 2024

Pipeline expansion strategy

- Expand obe-cel opportunity in B cell malignancies, autoimmune diseases & life cycle strategy
  - SLE
  - B-NHL indications
  - Bi-specific therapies (CD19 /CD22; CD19/BCMA)
- Expand to additional indications with novel CAR T therapies, alone or with partners

Scalable manufacturing and in-house facility

- Demonstrated reliable clinical trial supply (96% target dose reached in FELIX pivotal study)
- New commercial cell manufacturing facility in qualification stage; planned annual capacity 2,000+ batches
- Vein-to-delivery time at launch of ~16 days

Strategic collaborations

- Established technology collaborations with Moderna, BMS and Cabaletta
- Longstanding academic collaboration with University College London
- Partnering opportunities on pipeline programs and platform technology

Strong cash position

- Cash $256.4M (Q3 2023)
- Runway into 2025
- Enables execution on current strategy through approval of obe-cel

Abbreviations and notes: r/r ALL - relapsed/refractory acute lymphoblastic leukemia; B-NHL – B-cell non-Hodgkin's lymphoma; SLE – systemic lupus erythematosus

Autolus

Thank you

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