Autolus

Developing Next Generation Programmed T Cell Therapies

J.P. Morgan Annual Healthcare Conference

January 2023

Disclaimer

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Building a fully integrated CAR T company

Expanding excellence in R&D and manufacturing to commercialization

Obe-cel met primary endpoint in pivotal study

- Lead product candidate obe-cel potentially best-in-class for relapsed/ refractory adult acute lymphoblastic leukemia (ALL)
- Pivotal phase 2 trial in ALL met primary endpoint
- Attractive profile in B-NHL indications

Pipeline

- Pipeline built on modular innovation targeting cancers with limited treatment options

Scalable manufacturing

- In house cell manufacturing for clinical trial supply
- Commercial fit-for-purpose cell manufacturing facility running through validation process
- Planned annual capacity of at least 2,000 batches to service global demand in ALL

Collaboration

- Collaboration worth $250 million with Blackstone Life Sciences, of which $220M already received, to develop obe-cel in adult ALL
- Established technology collaborations with Moderna, BMS and Cabaletta
- Opportunity for partnering of pipeline programs

Strong cash position

- Blue chip investor base with recent fundraise adding $163M
- Year end cash position of $382.7M
- Strong cash position to deliver on current strategy through approval of obe-cel

LEAD CLINICAL PROGRAM

Obe-cel

A standalone, potentially best-in-class CD19 CAR T cell therapy candidate

FELIX Phase 2 Study Overview

Interim analysis completed Q4 2022 – **met primary endpoint** – full study readout expected Mid 2023

FELIX 19

Pivotal phase 2 trial in relapsed / refractory (r/r) adult ALL patients (NCT04404660)

Mid 2023
Data at medical conference

Primary endpoint overall complete response rate (CR/CRi)

Secondary endpoints include MRD-negative CR, EFS and DoR

Phase 2 has up to 100 relapsed/refractory adult ALL patients with morphological disease:

- 34 sites in US, UK and Spain
- Phase 1b run-in study – completed
- Phase 2 study morphological cohort fully enrolled
- Phase 2 study interim analysis completed in Q4 2022 – primary end point reached
- Phase 2 study data presentation planned for Q2 2023

Patients with minimal residual disease (MRD) evaluated in separate study arm

FELIX Phase 2 Pivotal trial met primary endpoint

Positive data is a catalyst for the next stage of growth and preparation for commercialization

- Phase 2 pivotal FELIX study of obe-cel in r/r adult ALL has met its primary endpoint, based on an interim analysis of 50 patients with morphological disease, as verified by an IDMC
- The primary endpoint for the FELIX Phase 2 trial is the ORR, defined as CR and CRi
- Obe-cel demonstrated ORR of 70% in interim analysis of 50 patients with r/r ALL
- Encouraging tolerability data observed, with 3% ≥Grade 3 Cytokine Release Syndrome (CRS) and 8% ≥Grade 3 Immune effector cell-associated neurotoxicity syndrome (ICANS) in 92 patients evaluable for safety
- Screening completed for patients for entry into the morphological cohort
- Blackstone paid a development milestone of $35 million, earlier than anticipated, at this interim analysis

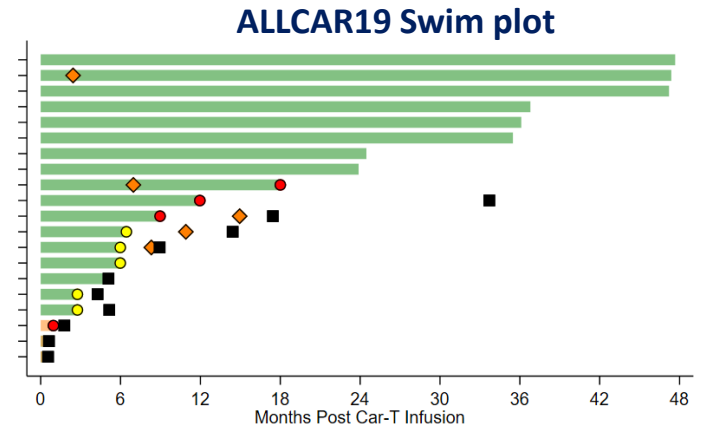
Obe-cel is a potentially transformational therapy for adult ALL

Unique CAR T design to drive differentiated product profile

Obe-cel – Key Properties

- Target engagement with fast off-rate drives unique product properties
- High Overall Remission Rate (ORR) across all patient populations evaluated[1,2]
- 35% of patients with long-term remission, without any further therapy[2]
- All patients with long term remissions have long-term persisting CAR T cells[2]
- Well manageable safety profile

Obe-cel – Key Data



Regulatory Designations

Orphan Drug designation by FDA for B-ALL

Orphan Medicinal Product designation by EMA in ALL

RMAT designation by FDA in R/R B-ALL

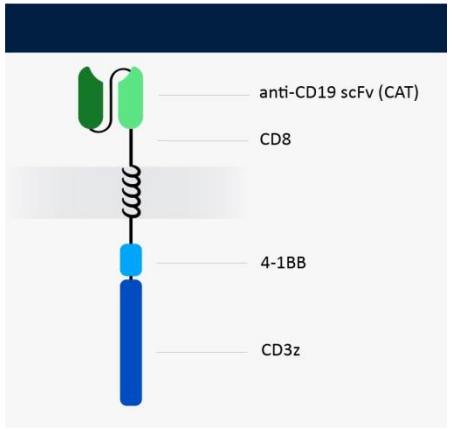
Prime designation by EMA in R/R B-ALL

ILAP designation by MHRA in Adult R/R B-ALL

NOTES

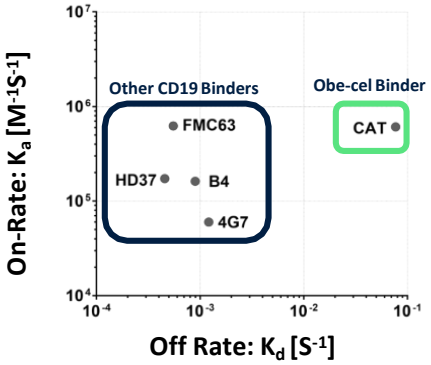
1. FELIX study
2. ALLCAR19 study

Obe-cel has a unique mechanism of action



CD19 binder with fast off-rate

Fast off-rate



Obe-cel has a shorter half-life of interaction compared to binders used in approved products

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

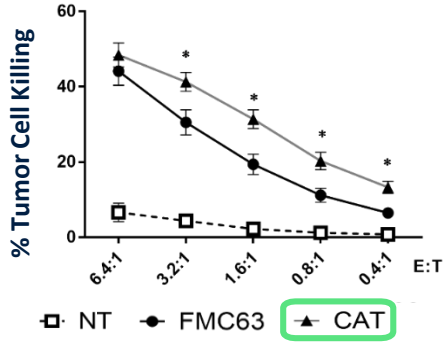
Potential for improved potency, reduced toxicity

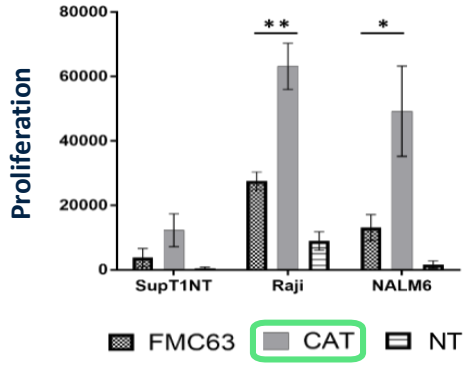
Avoided over-activation of CAR T cells
-> Reduced toxicities

Increased CAR T peak expansion
-> Improved persistence

Avoided exhaustion of CAR T cells
-> Improved engraftment
-> Improved persistence

Enhanced cytotoxicity and proliferation





Ghorashian et al. *Nature Medicine* 2019

Obe-cel showed consistent clinical profile across three clinical studies

Data from 3 studies - range of ages and patient conditions

Obe-cel demonstrated a favourable tolerability profile: no high-grade CRS and limited ICANS

	CARPALL [#1] Peds ALL	ALLCAR19 [#2] Adult ALL	FELIX P1b [#3] Adult ALL	FELIX P2 Adult ALL
n	14	20	16	50 (92)*
ORR (CR & CRi) (95% CI)	86% (57%, 98%)	85% (62%, 97%)	75% (48%, 93%)	70%
CRS [1] ≥ Grade 3	0%	0%	0%	3%
CRS [1] any Grade	93%	55%	56%	ND
Neurotox [2] ≥ Grade 3	7%	15%	6%	8%
Neurotox [2] any Grade	50%	20%	13%	23%
Median Age	9	42	42	ND
Bone marrow blast >20% at LD	21%	60%	75%	ND
Bone marrow blast <5% at LD	71%	35%	25%	ND
Prior blinatumomab	7%	25%	56%	ND

[1] CRS grading based on Lee et al (2014) for CARPALL and ALLCAR19, and ASTCT grading (Lee et al 2019) for FELIX
[2] Neurotoxicity grading based on CTCAE v4.03 for CARPALL and ALLCAR19, and ASTCT ICANS grading (Lee et al 2019) for FELIX
* Efficacy analysis for FELIX 2 trial conducted in 50 patients whereas safety analysis conducted in 92 patients

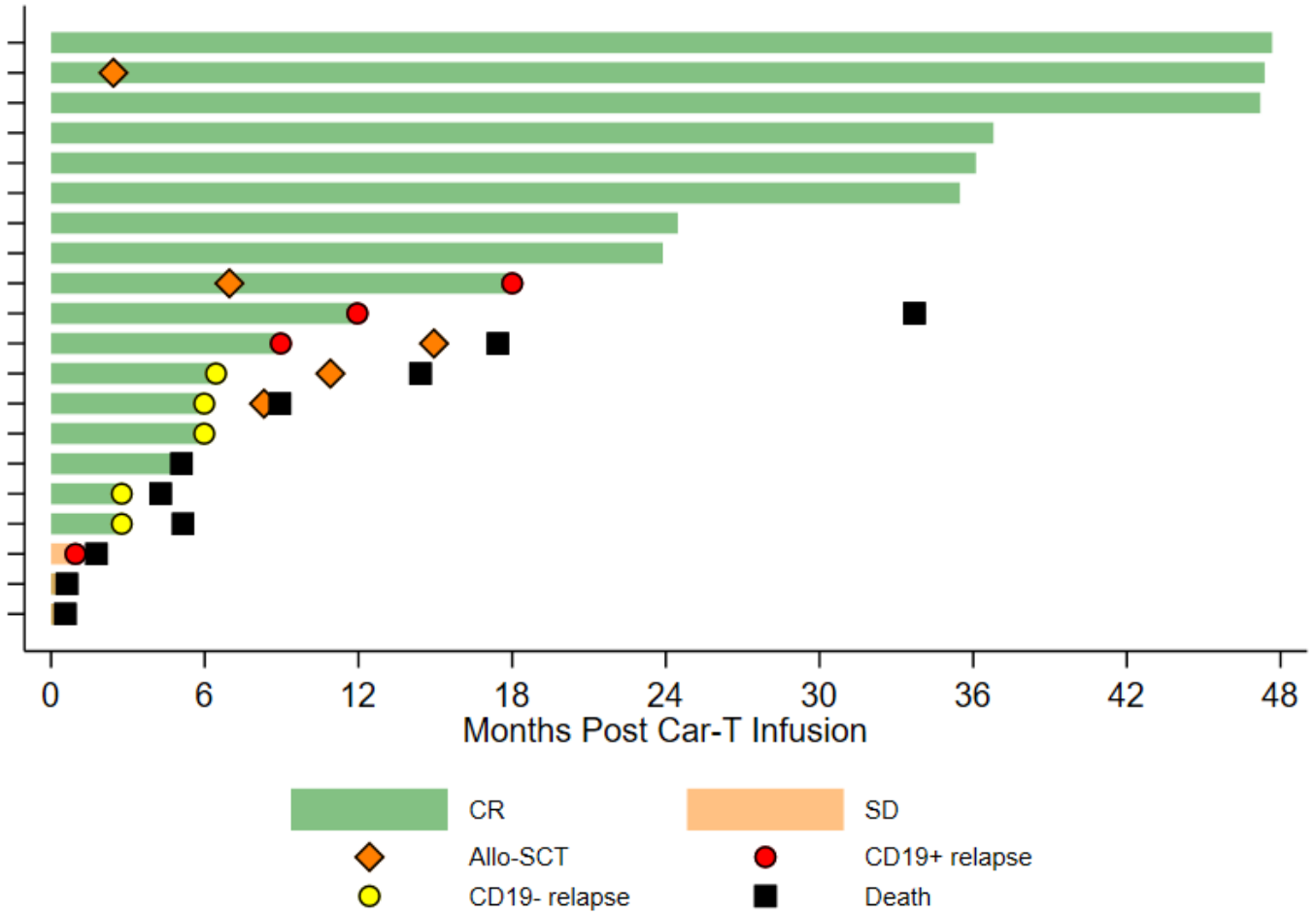
#1 Ghorashian et al. Nature Medicine 2019
#2 Roddie et al. J Clin Oncol, 2021
#3 Culshaw et al, ASH 2021, abstract #477

Obe-cel at ASH 2022 – B-ALL long term follow up from Ph1 ALLCAR19 trial

'Safety, Efficiency and Long-Term Follow-up of obe-cel, a Fast-Off Rate CD19 CAR in Relapsed/Refractory B-Cell Acute Lymphoblastic Leukaemia and Other B-Cell Malignancies'

B-ALL patients

- Of the 20 infused B-ALL patients, 8/20 (40%) are in ongoing CR at a median FU of 36 months (IQR 24-47) post obe-cel
- 7/8 (35%) maintain remission without any further therapy (including TKI)
- All patients with long term remissions have long term persisting CAR T cells



ALLCAR19 data cut: 2-NOV-2022

Unmet medical need in r/r adult ALL despite approved agents

Current standard of care and recently approved agents in r/r adult ALL[1]

	STANDARD OF CARE		RECENTLY APPROVED
	Blincyto®[2] (blinatumomab)	**Besponsa®[3] (inotuzumab ozogamicin)**	**Tecartus™[4] (brexucabtagene autoleucel)**
N	271	109	54
ORR	44%	81%	65%
EFS/PFS	31% @ 6m ~10% @ 18m	~45% @ 6m ~20% @ 18m	~65% @ 6m ~25% @ 18m
median DoR	7.3m	4.6m	13.6m
median OS	7.7m	7.7m	18.2m
CRS ≥ Grade 3	5%	Not reported	26%
Neurotox any Grade	65%	Not reported	87%
Neurotox ≥ Grade 3	13%	Not reported	35%
Subsequent SCT post treatment	24%	41%	18%
Other notable observations	NA	14% Hepatic VoD	40% vasopressor use[5]

1. Data are not from head-to-head clinical testing and should not be viewed as comparative data

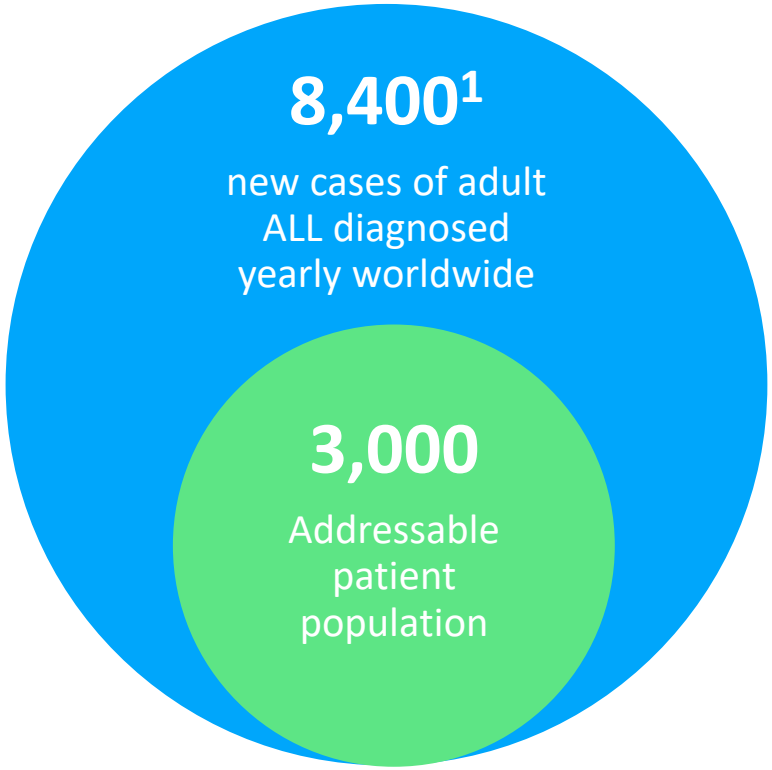
2. Kantarjian et al., 2017/ USPI (product label) 3. Kantarjian et al., 2016/ USPI (product label) 4. Shah et al. Lancet 2021/ USPI (product label) 5. Shah et al. ASCO 2021

The estimates of EFS/PFS are read from the KM curves. The efficacy data in ZUMA-3 evaluating brexucabtagene autoleucel are based on the modified ITT population while the blinatumomab and inotuzumab ozogamicin data are based on the ITT population

Obe-cel for adult Acute Lymphoblastic Leukemia (ALL): high unmet need

Successful therapy requires high level of activity and sustained persistence paired with good tolerability

- Median overall survival is < 1 year in r/r adult ALL
- Combination chemotherapy enables 90% of adult ALL patients to experience Complete Response (CR)
  - Only 30% to 40% achieve long-term remission
- Current T cell therapies in for adult patients are Blincyto® and TecartusTM [2]
  - Both therapies are highly active, but frequently followed by subsequent treatments (e.g. alloSCT)
  - Blincyto®: favourable safety profile, few patients experiencing severe CRS and ICANS, but limitations on convenience - continuous i.v. infusion during 4 week treatment cycles
  - Tecartus™: more challenging to manage - induces elevated levels of severe CRS, a high level of ICANS, and requires vasopressors for many patients
- Opportunity to expand the addressable patient population in earlier lines of therapy

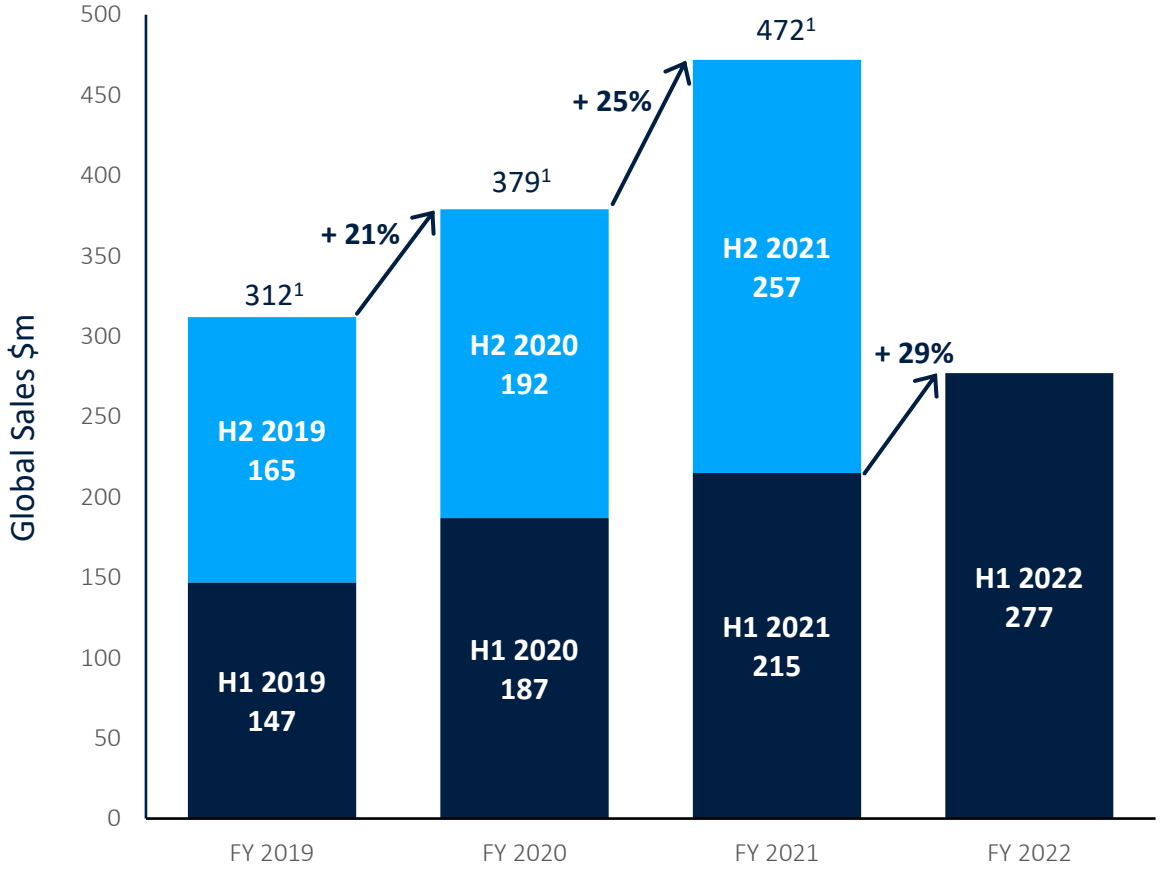


NOTES
1. SEER and EUCAN estimates (respectively) for US and EU
2. Currently approved in US only

Obe-cel could launch into an expanding ALL market if approved

Blincyto®, current market leader, shows annual revenue growth of c.25%

Reported Blincyto® sales[1]



- Blincyto® sales price estimated to be $207k[2] (for 2 cycles) supporting approx. >2,000 commercial adult ALL patients, growing at a rate of 25%
- Kymriah® is priced at $508k in pediatric ALL. Breyanzi® is priced at $447k in DLBCL[3]. Tecartus™ is priced at $424k[4] for adult ALL
- Breyanzi® and other CAR T cell therapies are expanding delivery center footprint
- Tecartus™ is expected to establish CAR T use in adult ALL
- If approved obe-cel has the potential to be best-in-class curative therapy and expanding use beyond academic transplant centers

NOTES

1. As per Amgen quarterly SEC filings
2. https://www.cms.gov/medicare/medicare-part-b-drug-average-sales-price/2022-asp-drug-pricing-files
3. Bristol Myers finally wins FDA approval for cancer cell therapy | BioPharma Dive
– Komodo Health 2015 – 2020
4. Red Book pricing database https://www.ibm.com/products/micromedex-red-book/pricing

Obe-cel next steps to commercialization

Data and path to approval

- FELIX – clinical data presentation planned for Q2 2023
- Filing of Biologics License Application (BLA) to U.S. Food and Drug Administration (FDA) planned for end of 2023
- Filings of EU and UK marketing authorization applications planned for 1H 2024

Manufacturing

- Bespoke commercial manufacturing facility built in Stevenage UK
- Operational start up in 1H 2023 (qualification and validation)
- GMP license from MHRA planned for Q3 2023
- Facility has initial capacity to produce up to 2000 batches PA; sufficient for global demand in ALL

Commercialization

- Focus in 2023 on Medical affairs, HTA dossier compilation and center onboarding
- Focus in 2024 on launch preparation and execution
- Consider EU partner for launch

Building the obe-cel opportunity

Deep value program with potentially broad applicability

Obe-cel lifecycle outlook - NHL/CLL and Pediatric ALL - ASH 2022

High level of clinical activity with well manageable safety profile

- Clinical data supports differentiated product profile in Adult ALL, B-NHL (obe-cel) and Pediatric ALL (AUTO 1/22)
- Potential to drive adoption of obe-cel across B-cell malignancies

ALLCAR19 – B-NHL and CLL

N		25
ORR		
	All patients	92%
	Follicular Lymphoma	100%
	Mantle Cell Lymphoma	100%
	DLBCL	88%
	CLL/SLL	80%
CRS ≥ Grade 3		0%
CRS any grade		56%
Neurotox/ICANS ≥ Grade 3		0%
Neurotox/ICANS any Grade		4%

- Median Follow-Up time from infusion in NHL/CLL cohort: 12.9 months (IQR 7.4-18.0)
- High ORR, with long term persistence driving durable outcomes
- Favourable safety profile with low ICANS and no high grade CRS

CARPALL (AUTO1/22 cohort (n=12))

Molecular MRD neg CR/Cri by d30		10 (83%)
Disease progression		2
Relapse		
	Antigen negative relapse	0
	Emergence of molecular MRD	3
	CD19+/CD22+ relapse	2
CRS ≥ Grade 3		0
Neurotox/ ICANS ≥ Grade 3		1 (8%)

- Patient population ineligible for commercial CAR T therapy
  - Including patients with CD19-ve disease and patients with isolated extramedullary disease
- Est. molecular CR rate for obe-cel in this patient group approx. 40%
- 1 year EFS 60% despite the high-risk patient cohort
- No antigen-ve relapse seen in responding patients
- At median FU 8.7 months, 5 of 10 responding patients were in MRD-ve CR (4-12 months)

ALLCAR19 data cut: 2-NOV-2022

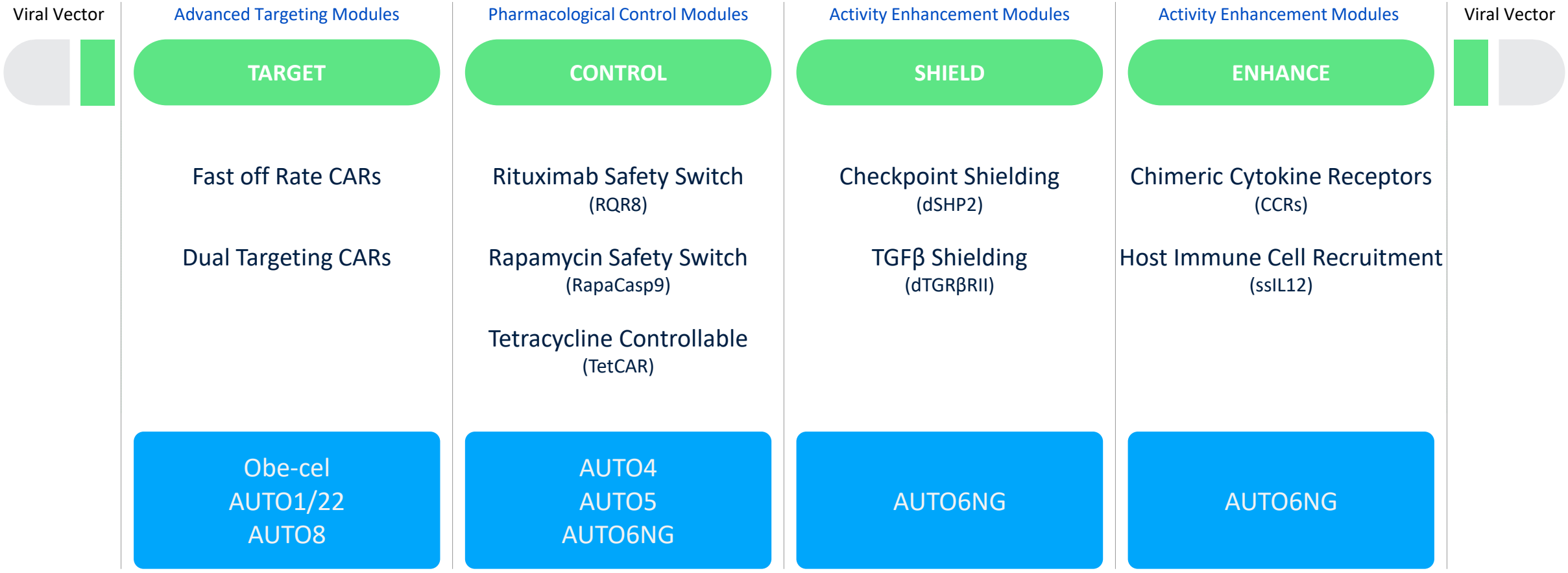
CARPALL data cut: 30-OCT-2022

Pipeline

A broad portfolio of potential next generation modular T cell therapies

A broad toolkit which is core to our strategy of modular innovation

Advanced T cell programming



Leveraging our industry leading technology platform via partnerships

Technology partnerships

- Leveraging our modular programming technology to generate safer and more effective therapies
- Tumor targeting, pharmacological control and activity enhancement for cellular therapies
- Validating collaborations with leading pharma and biotech companies
- Potential for value creation through near term option exercise fees, milestone payments and royalties from net sales

- Moderna Tx
  - Access to propriety binders for the development of mRNA-based therapeutics for the treatment of cancer
- Bristol Myers Squibb
  - Access to the RQR8 safety switch for selected cell therapy programs for the treatment of cancer
- Cabaletta Bio
  - Access to the RQR8 safety switch for selected cell therapy programs for the treatment of autoimmune diseases

Early-stage pipeline

Leveraging academic collaborations to generate opportunity for non-dilutive funding opportunities

PRODUCT	INDICATION	TARGET	STUDY NAME	PHASE
AUTO4	TRBC1+ Peripheral TCL	TRBC1	LibrA T1	Phase 1
AUTO5	TRBC2+ Peripheral TCL	TRBC2		Preclinical
AUTO6NG	Neuroblastoma; Other tumor types	GD2		Preclinical
AUTO8	Multiple Myeloma	BCMA & CD19	MCARTY*	Phase 1

T-Cell Lymphoma Solid Tumors Multiple Myeloma

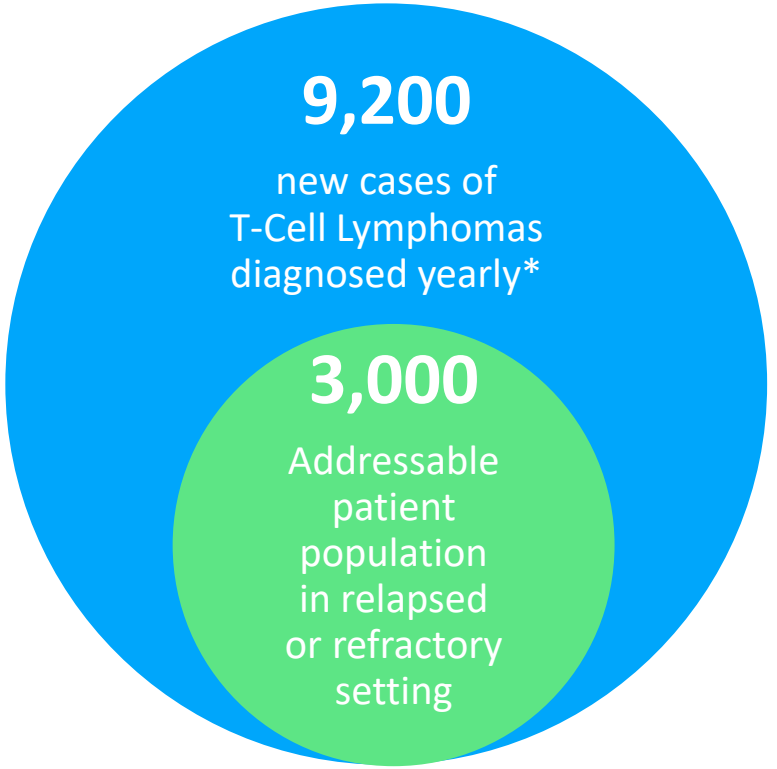
* Collaboration with UCL

Next data readouts expected in 2023/2024

AUTO4 and AUTO5 for Peripheral T-Cell Lymphoma

T-Cell Lymphoma is an aggressive disease with a very poor prognosis

- A large portion of T-Cell Lymphoma patients are refractory/relapse following first-line treatment (68%)[1]
- Standard of care is variable and often based on high-dose chemotherapy and stem cell transplants:
  - Median 5 yrs OS: 32%[2]
- Relapsed/refractory patients have a worse prognosis
  - Median PFS approximately 3 months/ Median OS < 6 months[1,3]
- Brentuximab survival benefit restricted to CD30 positive ALCL subtype[4]
  - approx. 12% of total PTCL patient population[4,5]
- T cell lymphoma has not benefited from advances in immunotherapy
  - Pan T-cell depletion highly toxic; few/no tumor-specific antigen targets



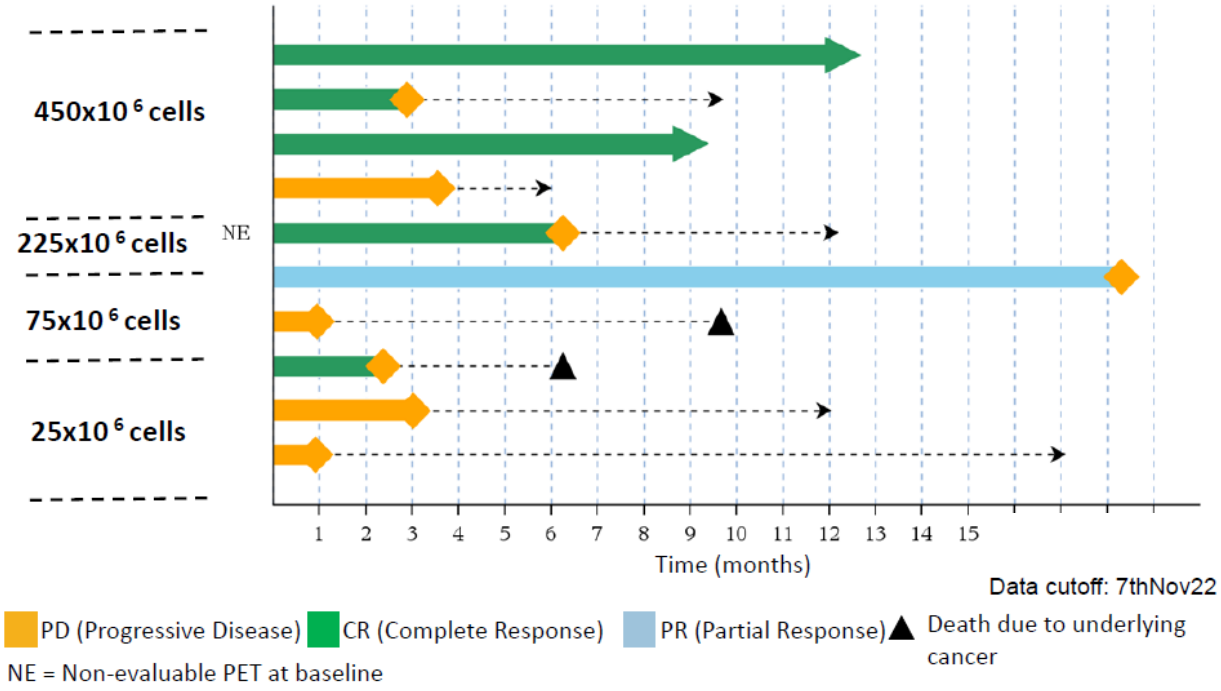
*Japan, US and EU5 (2020 DRG Epidemiology Data)

[1]Bellei M et al, Haematologica 2018, [2] Weisenburger et al., Blood 2011; [3]Mak et al, JCO 2013;, [4]Horwitz et al, Lancet, 2019, [5]Vose et al., JCO 2008

AUTO4 for Peripheral T-Cell Lymphoma: ASH 2022

Patients achieve durable metabolic complete responses

- AUTO4 treatment was well tolerated with no dose-limiting toxicities
- Ongoing responses at 9 and 12 months post-dosing at the highest dose tested (450x106) 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
- The study is ongoing, with additional patients due to be treated to define the recommended phase 2 dose

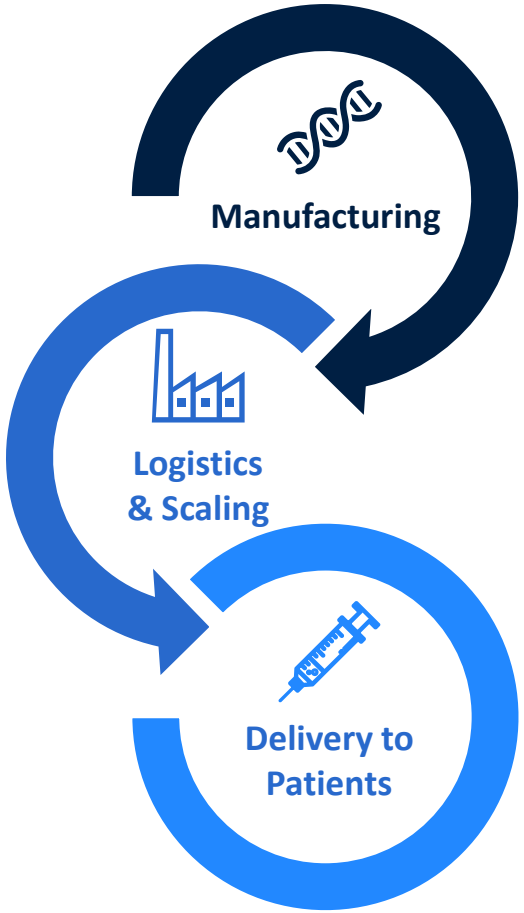


AUTO4 data cut: 7-NOV-2022

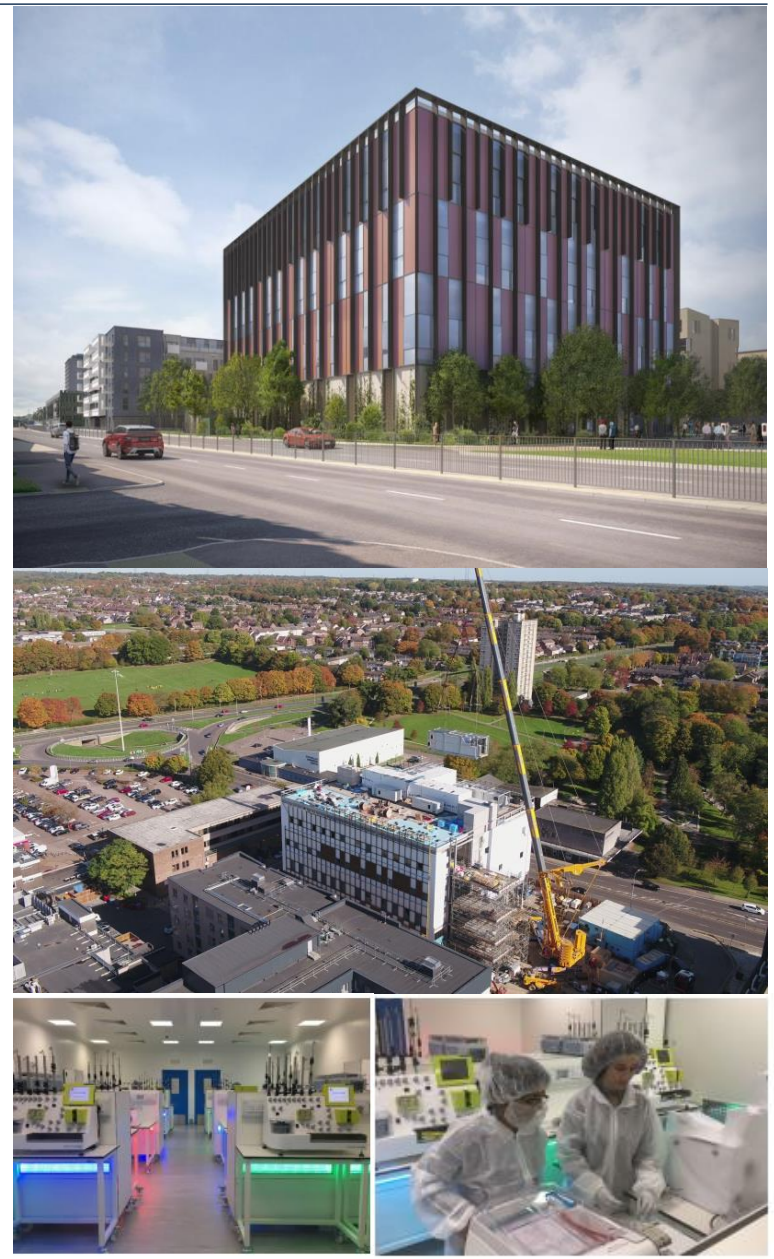
Manufacturing

Commercial manufacturing facility on track

Building a fully integrated manufacturing and logistics platform



- Phase 1 of build project completed in Q4 2022 – handover of first clean rooms to Autolus on Nov 25, 2022
- Equipment installations and qualification by Autolus on track for Good Manufacturing Practice (GMP) operations by H2 2023
- Tried and tested manufacturing process within an established regulatory framework
- Planned annual capacity of at least 2,000 batches to service global demand in ALL
- CMC package for submission to FDA progressing per plan



Strong cash position with key financing partner

Strong cash position to deliver on current strategy through to approval/early 2025

$382.7m
Cash at Dec 31, 2022
(unaudited)

Autolus is funded into 2025

- *BLA filing with FDA end of 2023*
- *MAA filings with EMA and MHRA in 1H 2024*
- *Expected initial approvals in 2024/2025*

Q4 2022 Cash inflows

$163.9m
December public offering

$19.3m
R&D tax credits from HMRC

$70m
Obe-cel program progress triggered $70M in milestones

Blackstone collaboration

- *$100m in equity 2021*
- *$120m of $150m in project financing*
- *$30m milestone remaining*

Summary

Autolus planned news flow

Obe-cel

- FELIX - phase 2 clinical data presentation planned for Q2 2023
- Biologics License Application (BLA) to U.S. Food and Drug Administration (FDA) by end of 2023
- Longer term follow up data planned for ASH 2023 and medical conferences in 1H 2024

Pipeline

- Updates on AUTO1/22 and AUTO 4 planned for 2023
- Multiple academic clinical studies ongoing expected to generate additional news flow in 2023/2024
- Opportunity for news flow related to collaborations and technology licensing

Manufacturing

- Qualification of Nucleus facility in H1 2023
- Commencement of GMP operations in H2 2023

The Autolus opportunity

Building a fully integrated CAR T company - Expanding excellence in R&D and manufacturing to commercialization

- Obe-cel, a potentially best in class product candidate, met primary endpoint of ORR in adult patients with r/r ALL
- Planned BLA filing end of 2023
- Additional opportunity for obe-cel in B-NHL indications
- Highly valuable pipeline with potential broad applicability in cancers with limited treatment options
- Purpose-built commercial manufacturing facility ready for qualification and validation activities in 1H 2023 with an initial capacity of up to 2000 batches per year, sufficient to serve global demand in ALL
- Validating collaborations with leading pharma and biotech companies – BMS, Moderna and Cabaletta Bio
- Strong cash position with $382.7 million (Dec 31st 2022)

Autolus

J.P. Morgan Annual Healthcare Conference
January 2023

Thank you

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