Autolus

Developing Next Generation Programmed T Cell Therapies

November 2022

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Autolus Overview

Building a fully integrated CAR T company

Promising lead asset

- Lead product candidate obe-cel potentially best-in-class for relapsed/ refractory adult acute lymphoblastic leukemia (ALL)
- Pivotal phase 2 initial results expected Q4 22

Pipeline

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

Scalable manufacturing

- In house cell manufacturing for clinical trial material
- Commercial fit-for-purpose cell manufacturing facility under construction with planned annual capacity of at least 2,000 patient products

Collaboration

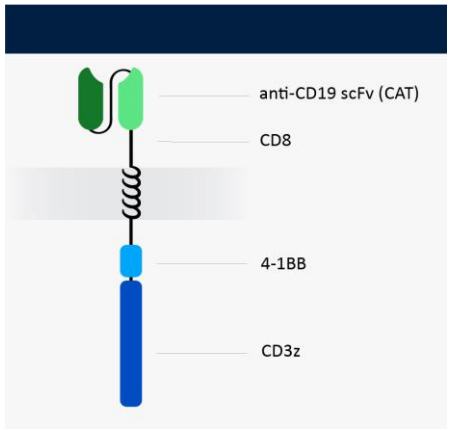
- Collaboration with Blackstone Life Sciences to develop obe-cel in adult ALL
- Collaboration with BMS
- Option exercised by Moderna

LEAD CLINICAL PROGRAM

obe-cel

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

We believe obe-cel has a unique mechanism of action



CD19 binder with fast off-rate

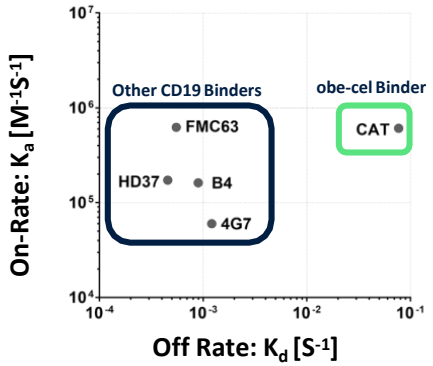
- **Potential for improved potency, reduced toxicity**

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

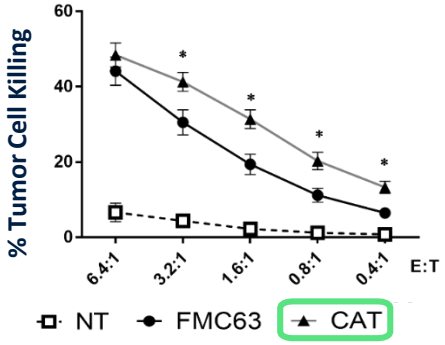
- **Fast off-rate**

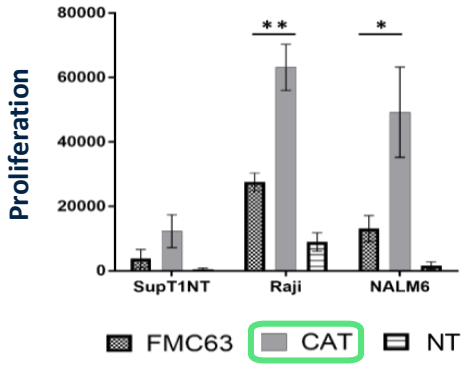


obe-cel has a shorter half-life of interaction compared to binders used in approved products

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

- **Enhanced cytotoxicity and proliferation**



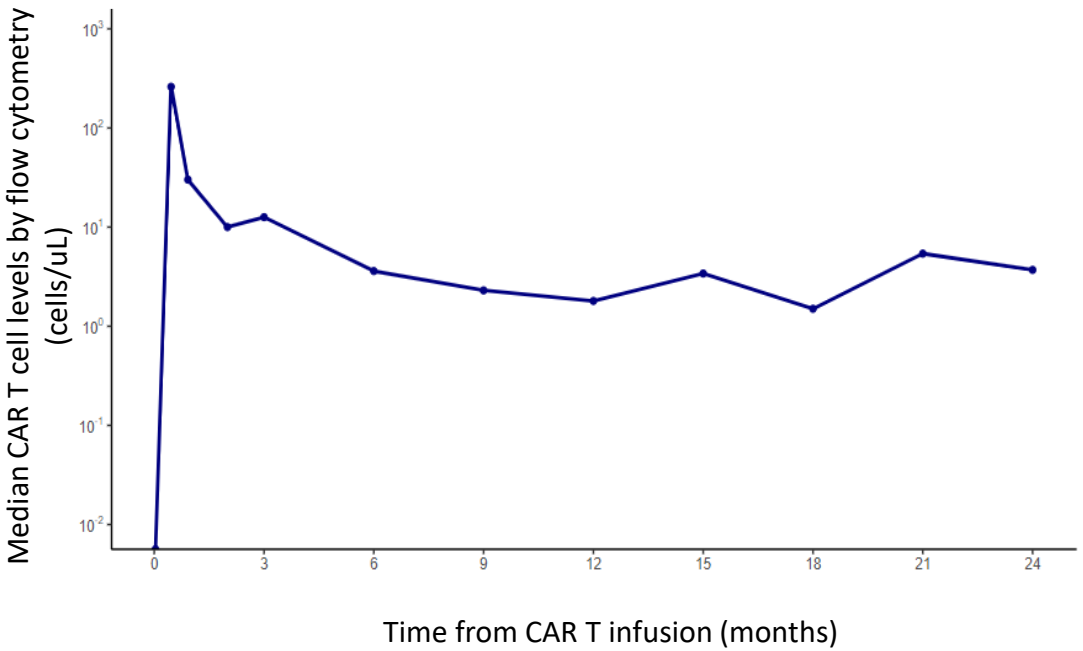


Ghorashian et al. *Nature Medicine* 2019

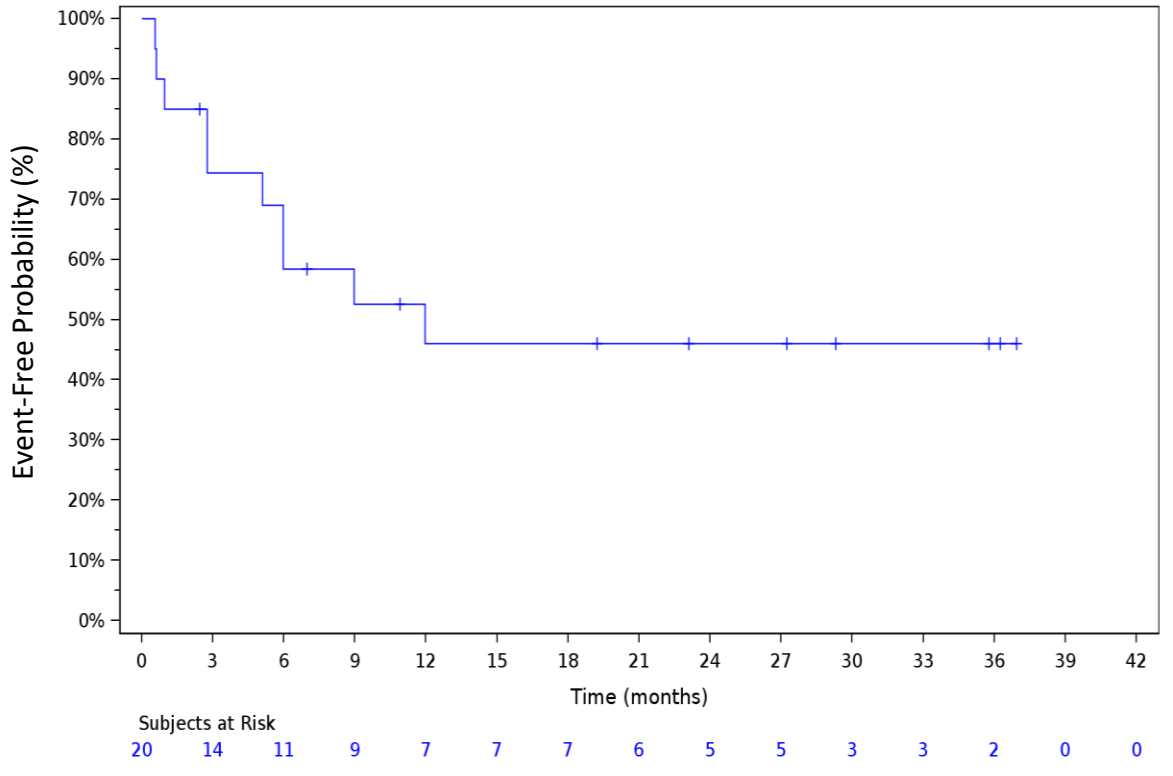
obe-cel showed sustained event-free survival beyond 30 months

Long term CAR T persistence may drive durability of response

Median CAR T cell levels in peripheral blood



ALLCAR19 Event-Free Survival



Median (range) follow-up time: 29.3 months (range 0.6 – 41.5)
Median (95% CI) EFS: 12 months [2.8, NE]
EFS starting from Month 12 going forward: 46% (95% CI [23%, 67%])

Data cut for ALLCAR19 study: 15-OCT-2021;
Patients who received SCT post obe-cel infusion are censored at date of SCT

obe-cel is a potentially transformational therapy for adult ALL

Unique CAR T design observed to drive differentiated product profile

- Unique mechanism of action built on a fast off-rate from CD19 target antigen
- High Overall Response Rate (ORR) across all patient populations evaluated[1]
- Sustained morphological Event Free Survival (EFS) of 46% with a median follow-up of 29.3 months[2]
- Long term CAR T persistence may drive durability of response
- Favorable tolerability profile:
  - No Grade 3 or above Cytokine Release Syndrome (CRS)[2]
  - Limited immune effector cell-associated neurotoxicity syndrome (ICANS)

obe-cel

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

[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

#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 for adult Acute Lymphoblastic Leukemia (ALL): high unmet need

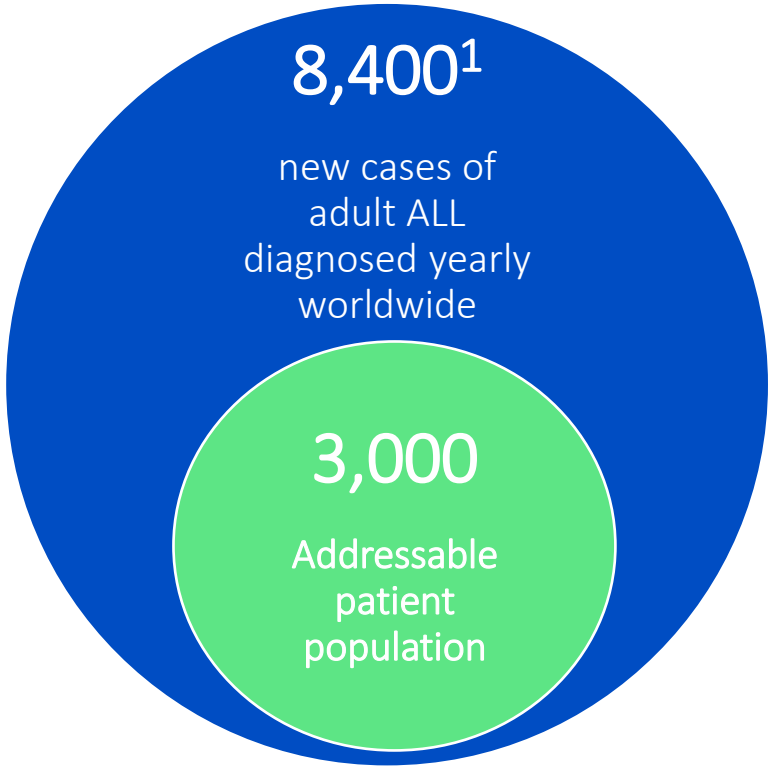
Successful therapy requires high level of activity and sustained persistence paired with good tolerability

- 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 Tecartus™ [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

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 FDA 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]

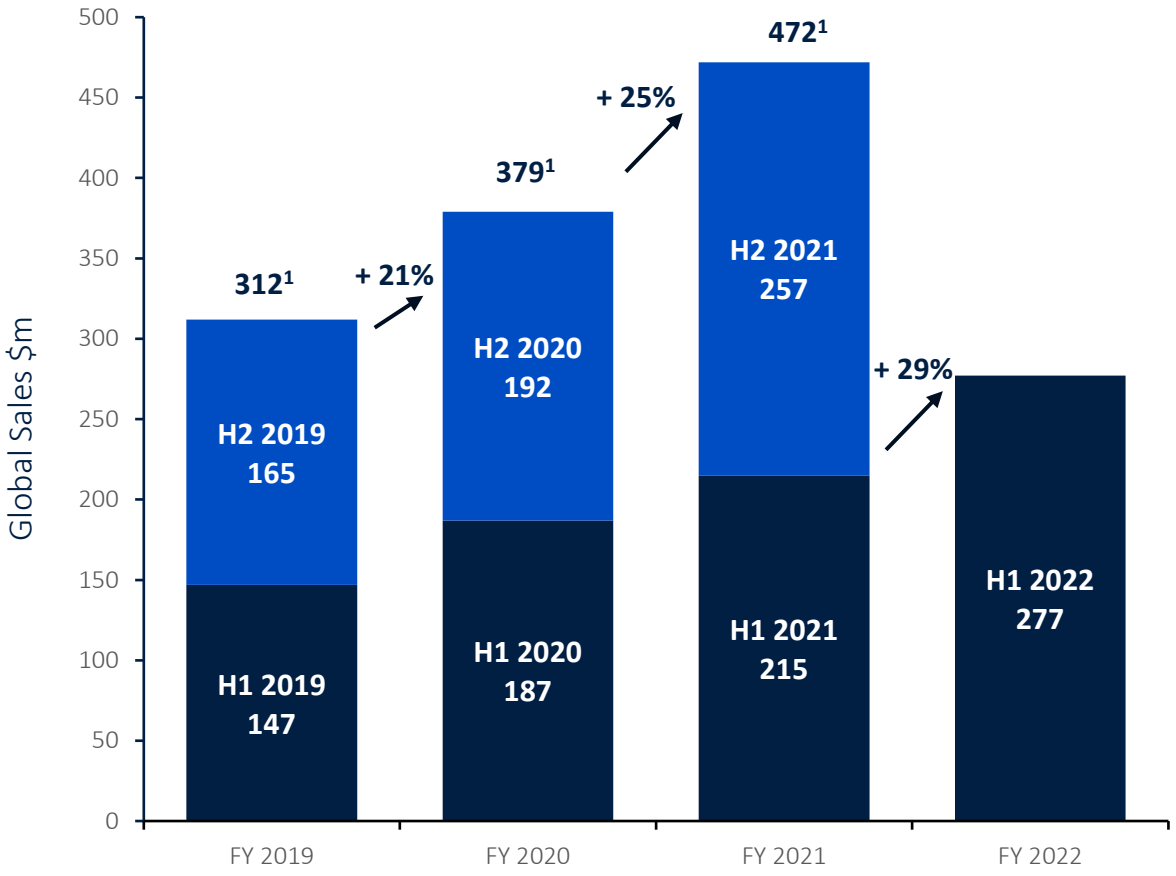
1. Data are not from head-to-head clinical testing and should not be viewed as comparative data

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 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 $178k[2] (for 2 cycles) supporting approx. >2,000 commercial adult ALL patients, growing at a rate of 25%
- Kymriah® is priced at $475k in pediatric ALL. Breyanzi® is priced at $410k 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 expanding use beyond academic transplant centers

NOTES

1. As per Amgen quarterly SEC filings
2. https://www.medscape.com/viewarticle/836879
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

Next steps: obe-cel initial results (FELIX) expected in Q4 2022

obe-cel is the first Autolus program to move into a pivotal program

FELIX 19

Pivotal Phase 2 trial in adult ALL ongoing since mid-2021 with sites in UK, Spain and US

Up to 100 relapsed/refractory adult ALL patients

Phase 1b run-in component, prior to single arm Phase 2 potential pivotal trial

Pre-determined futility analysis passed in Q1 2022

Q4 2022
Initial results

Primary endpoint: overall complete remission rate (CR/CRi)

Mid 2023
Expect to present data at medical conference

Secondary endpoints: include MRD-negative CR EFS and DoR

Data in MRD population expected to maximise outcomes from the study

- Expansion arm initiated for Minimal Residual Disease (MRD) disease cohort of up to 50 additional patients
- Patients enrolled in parallel to the main Felix cohort
- The additional data aims to evaluate the profile of obe-cel in patients across all levels of disease burden in adult ALL
- Data from the population has potential to support adoption as earlier line treatment

Building the obe-cel opportunity

Deep value program with potentially broad applicability

Capitalising on the unique profile of obe-cel

- Clinical data supports differentiated product profile
  - High degree of activity and persistence -> believed to drive long term outcomes
  - Attractive tolerability profile -> potential to drive adoption of obe-cel across B-cell malignancies
  - Initial NHL data is consistent with this profile

- Solid foundation for onward development

PRODUCT	INDICATION	TARGET	STUDY NAME	PHASE
obe-cel	Adult ALL	CD19	FELIX	Pivotal
obe-cel	B-NHL & CLL	CD19	ALLCAR19*	Phase 1
obe-cel	Primary CNS Lymphoma	CD19	CAROUSEL*	Phase 1
AUTO1/22	Pediatric ALL	CD19 & CD22	CARPALL*	Phase 1

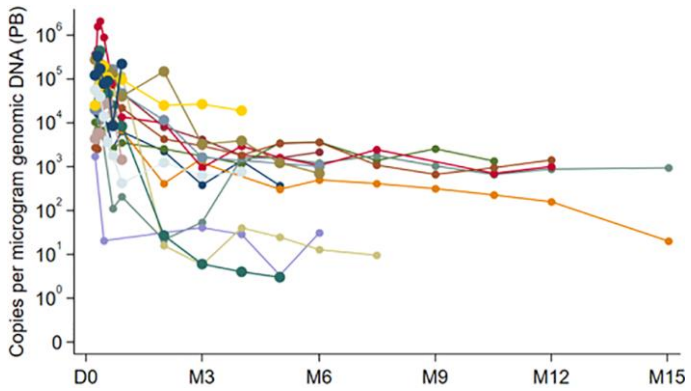
B Cell Malignancies

* Collaboration with UCL

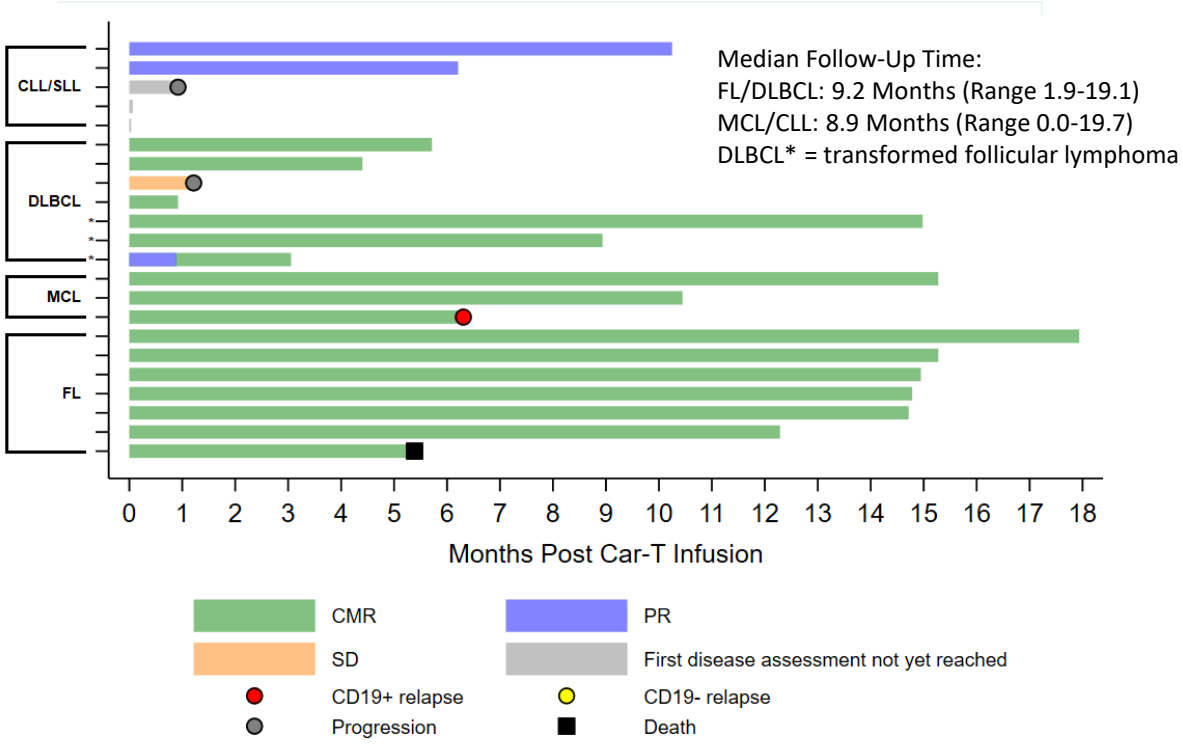
NHL/CLL: ALLCAR19 Phase 1 Study

High level of clinical activity with favorable tolerability profile – follow up at ASH, December 2022

ALLCAR19 – B-NHL and CLL	
n	20
ORR	
All patients	90%
Follicular Lymphoma	100%
Mantle Cell Lymphoma	100%
DLBCL	84%
CLL/SLL	67%
CRS ≥ Grade 3	0%
CRS any grade	50%
Neurotox/ICANS ≥ Grade 3	0%
Neurotox/ICANS any Grade	0%



CAR-T cell levels in peripheral blood



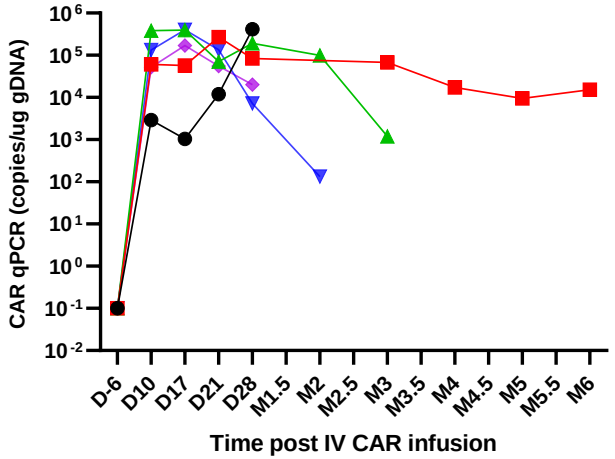
- **High ORR, with long term persistence observed to drive durable outcomes**
- **Favorable tolerability profile with no ICANS and no high grade CRS**

Roddie et al., EHA 2022 abstract #P1459

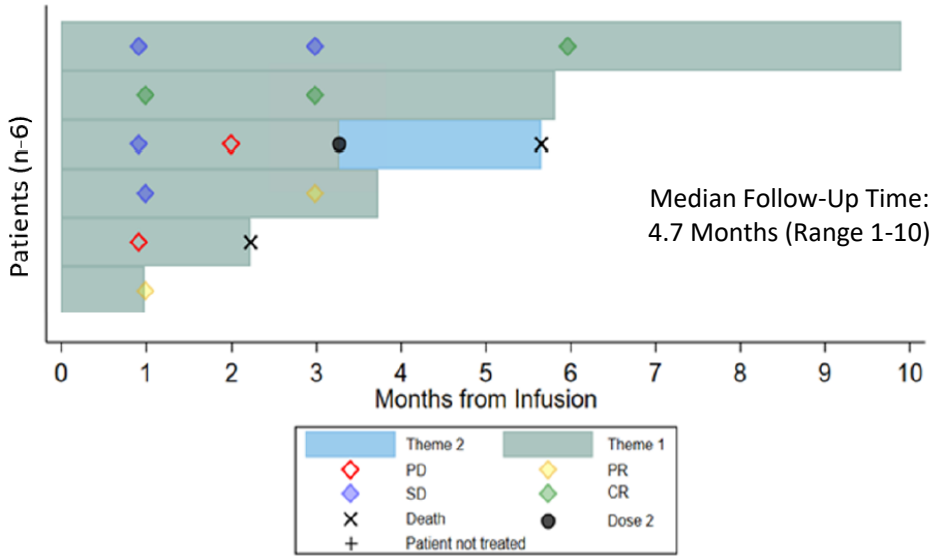
Primary CNS Lymphoma: CAROUSEL Phase 1 Study

Favorable tolerability profile with encouraging initial response rates and durability – follow up expected 2023

CAROSUEL – PCNSL	
n	6
CR + PR CR PR	4 (67%) 2 (33%) (1 SD -> CR) 2 (33%) (1 SD -> PR)
CRS [2] ≥ Grade 3	0 (0%)
Neurotox/ICANS ≥ Grade 3	2* (33%)



CAR T cell levels in peripheral blood



- **Strong T cell expansion and engraftment**
- **Favourable tolerability profile**
  - No high grade CRS via IV or intraventricular delivery
  - Limited high grade ICANS
- **Encouraging initial response rates and observed durability with 4/6 patients in ongoing responses at last follow up**

Roddie et al., EHA 2022 abstract #P1460

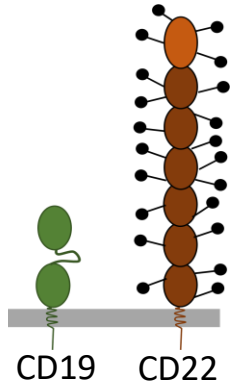
* One patient improved with steroids / toci and the second patient had several neurological deficits consistent with progressive disease and didn't respond to steroids / toci

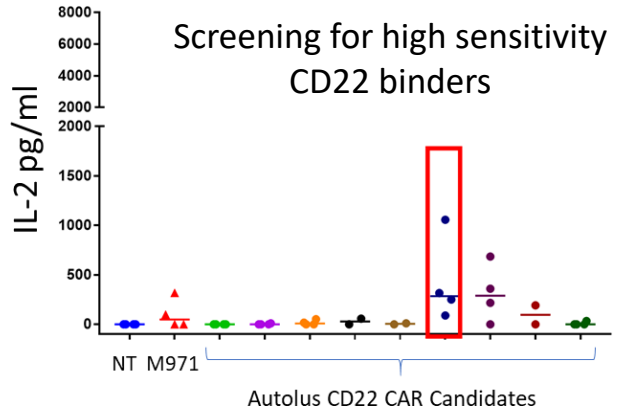
Pediatric Acute Lymphoblastic Leukemia: AUTO1/22 CARPALL study

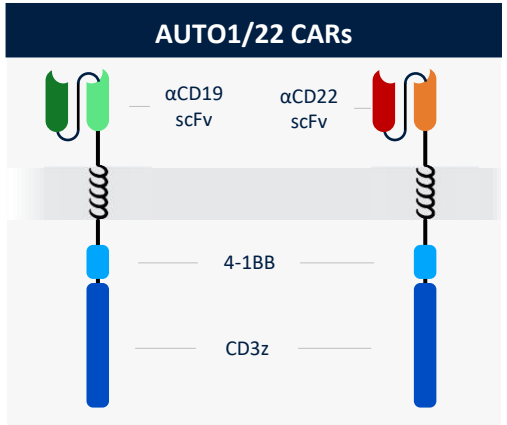
CD19 negative antigen escape is a common cause of treatment failure

CARPALL Study	
n	14
CR Rate	86%
EFS 12m	54% (95% CI, 24% to 76%)
No. of CD19 negative relapses	5/6
CRS ≥ G3	0%

- obe-cel (AUTO1) in r/r pALL was highly active and had a favourable tolerability profile - CARPALL study[1,2]
- Medical need in pALL is to minimize rates of antigen-loss–driven relapses and improve long-term outcomes[3] – points to need for a dual targeting CAR T







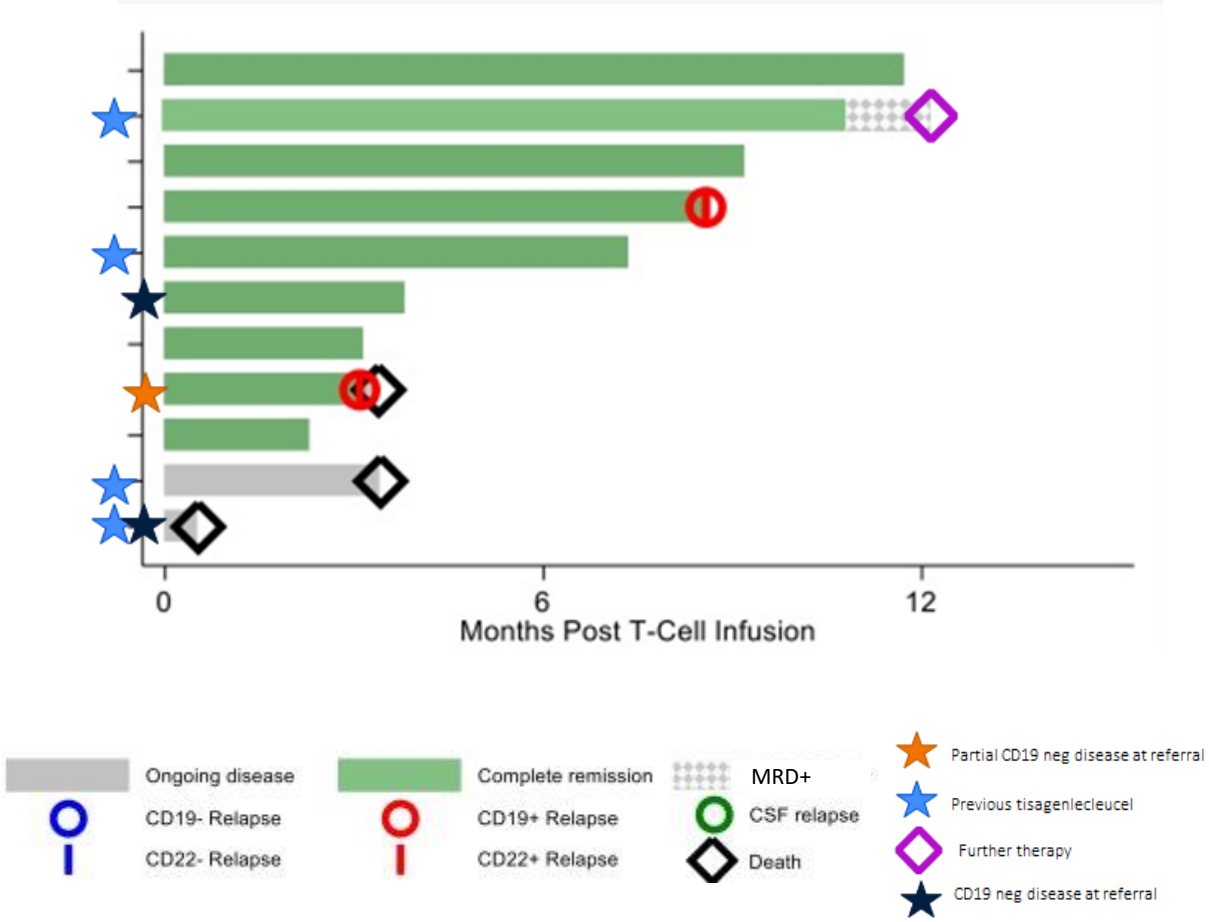
AUTO1/22 is a next generation program that builds on obe-cel and adds a highly potent CD22 CAR, potentially capable of targeting low levels of CD22

- AUTO1/22 is being evaluated in Phase 1 study in r/r paediatric patients

(1) NCT02443831 (2) Ghorashian et al., ASH 2019, (3) Shah et al., JCO 2020, Spiegel et al., Nat Med 2021

Pediatric Acute Lymphoblastic Leukemia: AUTO1/22

Efficacy data presented at EHA June 2022 – longer follow up at ASH, December 2022



Total	N=11
Molecular MRD neg CR/Cri by d60	9 (82%)
Disease progression	2 (18%)
Events in responders	3
Emergence of molecular MRD	1
CD19+/CD22+ relapse	2

- The study results demonstrated that dual CD19/22 targeting CAR T cells showed a favourable tolerability profile, with robust expansion/persistence and early activity in a heavily pre-treated cohort
  - Favourable tolerability profile to date: no severe CRS, 1 Grade 4 ICANS but atypical
  - No antigen negative relapse was seen in responding patients
  - At median follow up of 8.7 months, 6 of 9 responding patients were in MRD-ve complete response (1-12 mo)

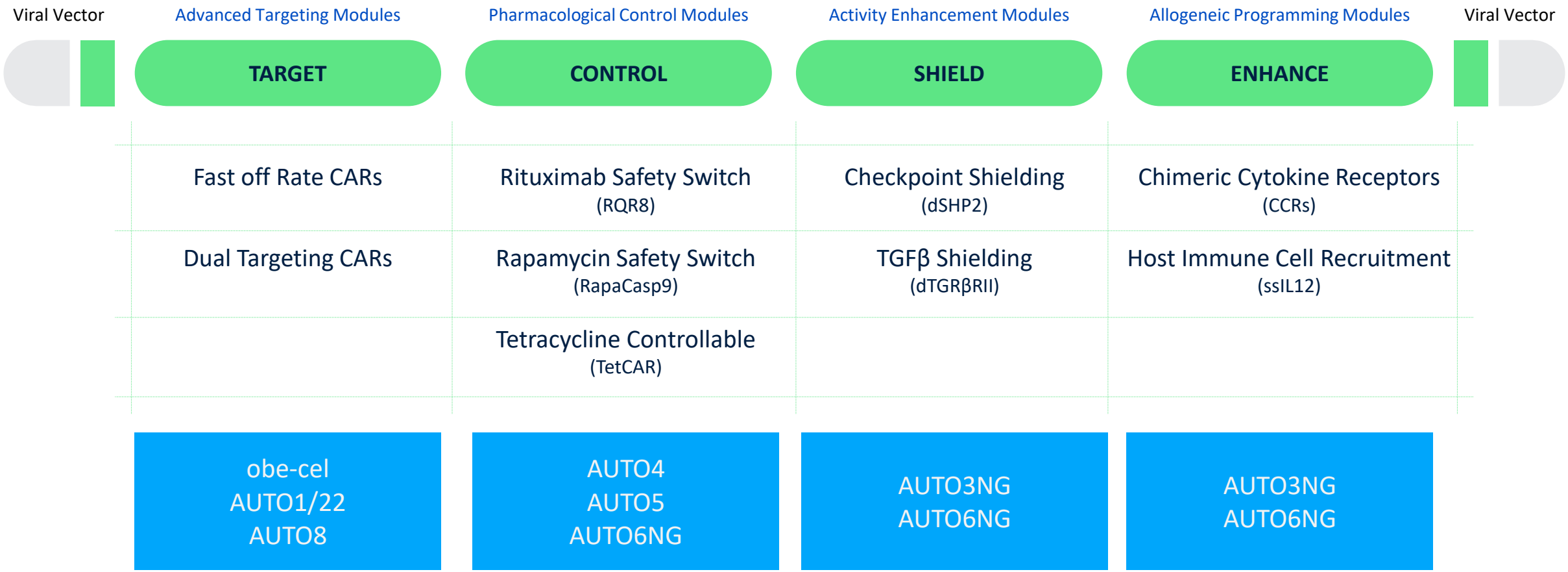
Data Cut-off: 27-May-2022

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



Pipeline

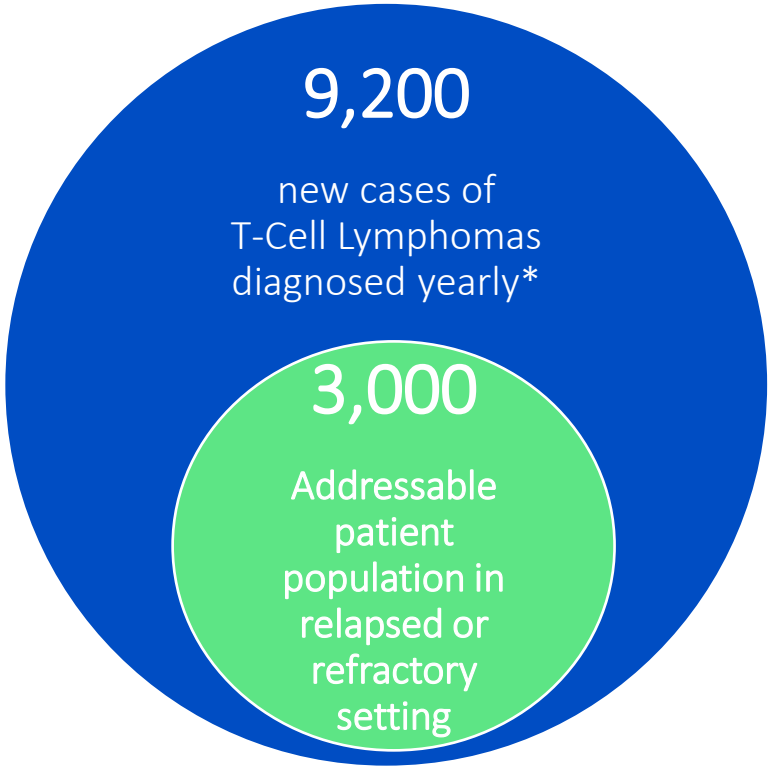
Designed to address limitations of current T cell therapies

PARTNER	PRODUCT	INDICATION	TARGET	STUDY	PRE CLINICAL / PHASE 1 / PHASE 2/ PIVOTAL / BLA
Autolus	obe-cel	Adult ALL	CD19	FELIX	
UCL	obe-cel	B-NHL & CLL	CD19	ALLCAR19 Ext	
UCL	obe-cel	Primary CNS Lymphoma	CD19	CAROUSEL	
UCL	AUTO1/22	Pediatric ALL	CD19 & CD22	CARPALL	
Autolus	AUTO4	TRBC1+ Peripheral TCL	TRBC1	LibrA T1	
Autolus	AUTO5	TRBC2+ Peripheral TCL	TRBC2		
Autolus	AUTO6NG	Neuroblastoma; Other tumour types	GD2		
UCL	AUTO8	Multiple Myeloma	BCMA & CD19	MCARTY	

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

Three key elements to address T-Cell Lymphomas

A companion diagnostic: AUTO4 and AUTO5

Multiple approaches assessed for development

Companion Diagnostic

Stratify into TRBC1 + and TRBC2 + lymphoma

> ~40% of T cell lymphomas are TRBC1+ [1]

AUTO4 – TRBC1+ TCL

AUTO5 – TRBC2+ TCL

> ~60% of T cell lymphomas are TRBC2+ [1]

Current Development Milestone

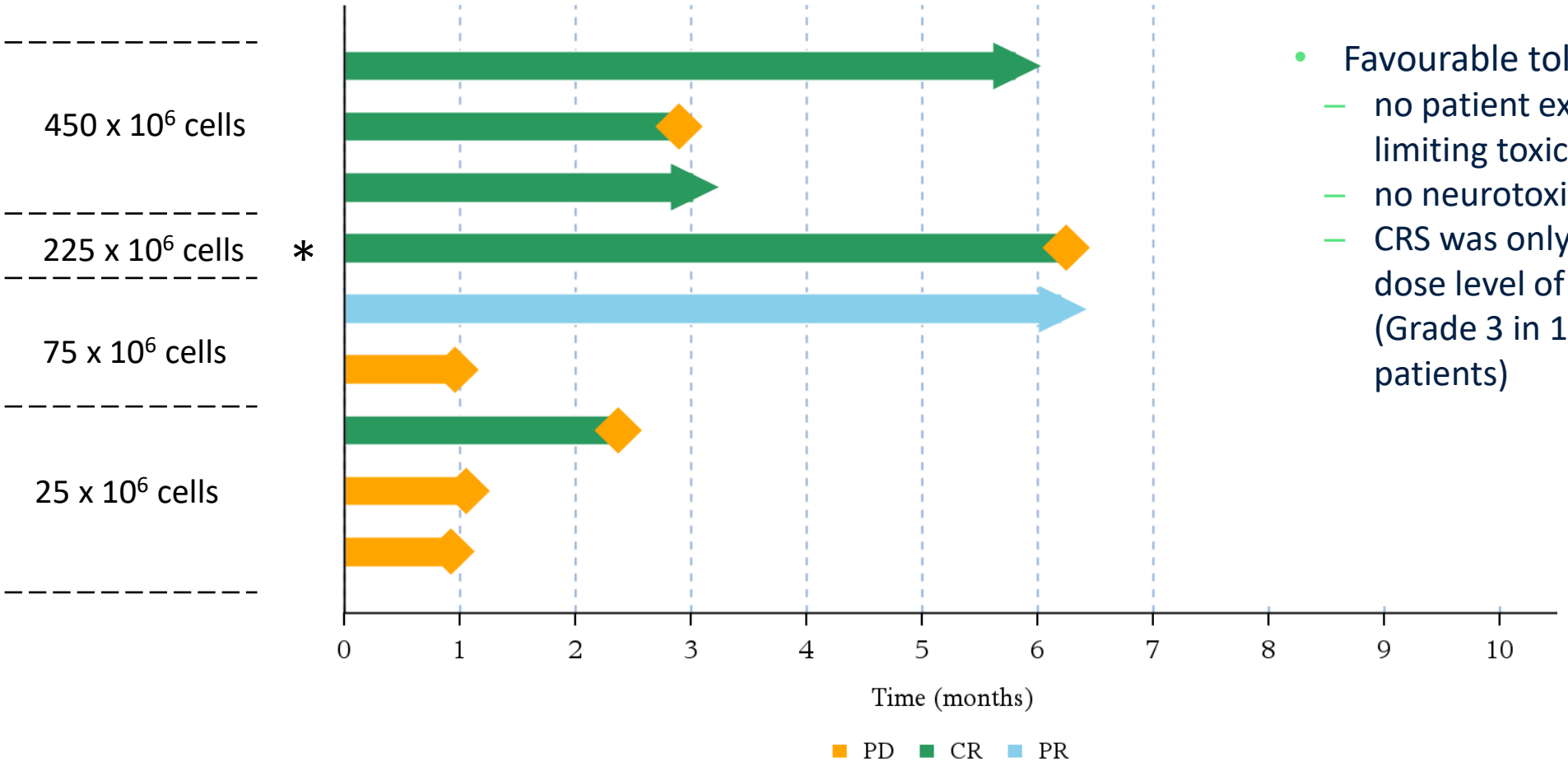
- Phase 1 dose escalation
- Process improved

- Candidate selected

[1]Maciocia et al., Nature Medicine, 2017

AUTO4 in T cell lymphoma: Initial data encouraging

All patients treated at highest dose level had a complete metabolic response – follow up to be presented at ASH, Dec 2022



- Favourable tolerability profile
  - no patient experienced any dose limiting toxicity
  - no neurotoxicity/ICANS
  - CRS was only seen at the highest dose level of 450 x 10^6 CAR T cells (Grade 3 in 1 patient; Grade 1-2 in 3 patients)

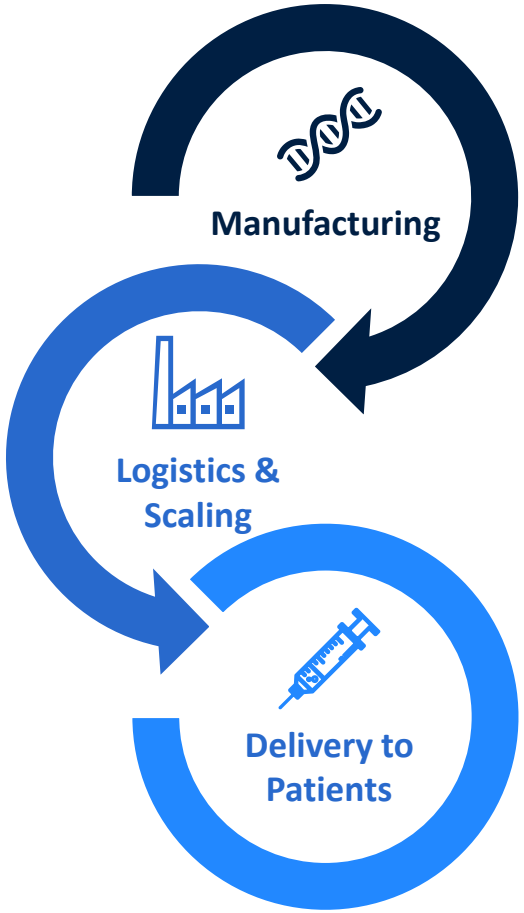
Efficacy assessments were performed by the Investigators according to the Lugano Classification.
† Evaluable Set consists of patients who have received an infusion of AUTO4 treatment and completed the Day 28 evaluation.
All patients had relapsed/refractory disease at time of Part B screening and enrolment.
* Patient was PET-negative at the start of pre-conditioning therapy.

Data Cut off: 26 April 2022

Manufacturing

Build of facility in Stevenage, UK, progressing on track

Building a fully integrated manufacturing and logistics platform



- Phase 1 of build project on schedule to complete in Q4 2022
- CMC package for submission to FDA progressing per plan
- 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

Blackstone Collaboration

Blackstone Life Sciences to invest up to $250m to develop obe-cel in adult ALL

Investment of $100m in equity and up to $150 million in product financing

- Blackstone purchased $100 million of Autolus' American Depositary Shares (ADS') in a private placement, priced at market
- Blackstone also committed to invest up to $150 million in product financing to support obe-cel development and preparation for commercialization
  - $50 million paid upon closing of the transaction
  - Remainder payable based on achievement of certain development and regulatory milestones
- Blackstone received a warrant to purchase up to $24 million worth of Autolus ADSs at an exercise price premium to market
- Autolus to pay Blackstone a capped single digit royalty plus milestone payments based on net sales of obe-cel
- Transaction provides runway into 2024[1]

NOTES

1. Assuming milestones received in relevant period

Summary

Autolus Planned Newsflow

- **obe-cel**
  - FELIX - Phase 2 trial in adult ALL first update expected in Q4 2022; data in mid-2023
  - ALLCAR19 Phase 1b trial in adult ALL trial follow up data expected at ASH, Dec 2022
  - ALLCAR19 Phase 1 extension trial in r/r B-NHL and CLL ongoing, follow up data expected at ASH, Dec 2022
  - CAROUSEL Phase 1 trial in Primary CNS Lymphoma ongoing, follow up data expected in 2023

- **Pipeline**
  - CARPALL - Phase 1 trial of AUTO1/22 in Pediatric ALL ongoing; follow up data at ASH, Dec 2022
  - LibrA T1 Phase 1 study of AUTO4 in peripheral T cell lymphoma ongoing; follow up data at ASH, Dec 2022
  - AUTO8 Phase 1 study dosed first patient, first data expected H2 2023
  - AUTO6NG in Neuroblastoma – start Phase 1 H1 2023

- **Manufacturing**
  - Phase 1 of manufacturing site on schedule for handover to Autolus in Q4 2022
  - Final equipment installations on track for commencement of GMP operations in H2 2023

- **Cash balance at September 30, 2022, $163.1m (excluding $19.1m R&D tax credit received October 2022)**

Autolus

Thank you