Autolus

Developing Next Generation Programmed T Cell Therapies

August 2022

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Autolus Overview

Building a fully integrated CAR T company

Best-in-class lead asset

- Lead product obe-cel potentially best-in-class for relapsed/ refractory adult acute lymphoblastic leukemia (ALL)
- Pivotal phase 2 initial results expected H2 22

Pipeline

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

Scalable manufacturing

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

Collaboration

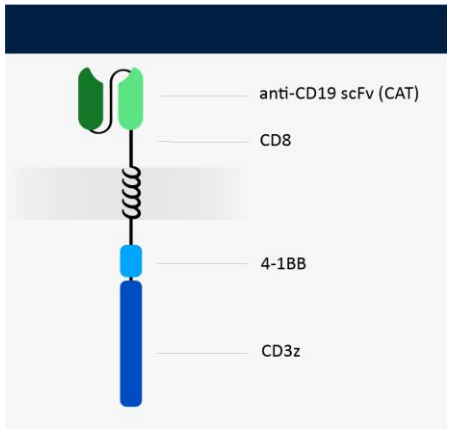
- Collaboration with Blackstone Life Sciences to develop obe-cel in adult ALL
- Moderna granted exclusive license for binders to up to four IO targets

LEAD CLINICAL PROGRAM

obe-cel

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

obe-cel has a unique mechanism of action



CD19 binder with fast off-rate

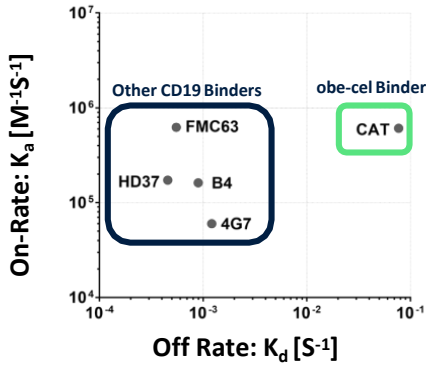
- **Improved potency, reduced toxicity**

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

Increased CAR T peak expansion
-> Improved persistence

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

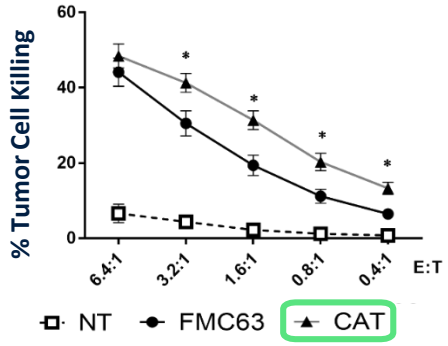
- **Fast off-rate**

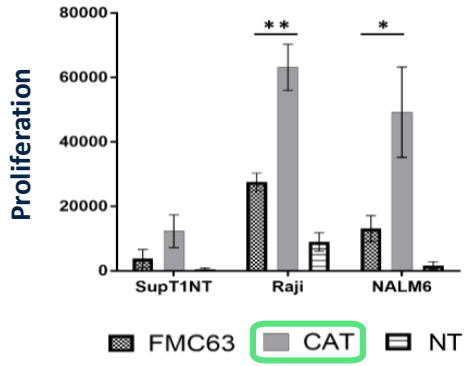


obe-cel has a shorter half-life of interaction compared to binders used in approved products

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

- **Enhanced cytotoxicity and proliferation**



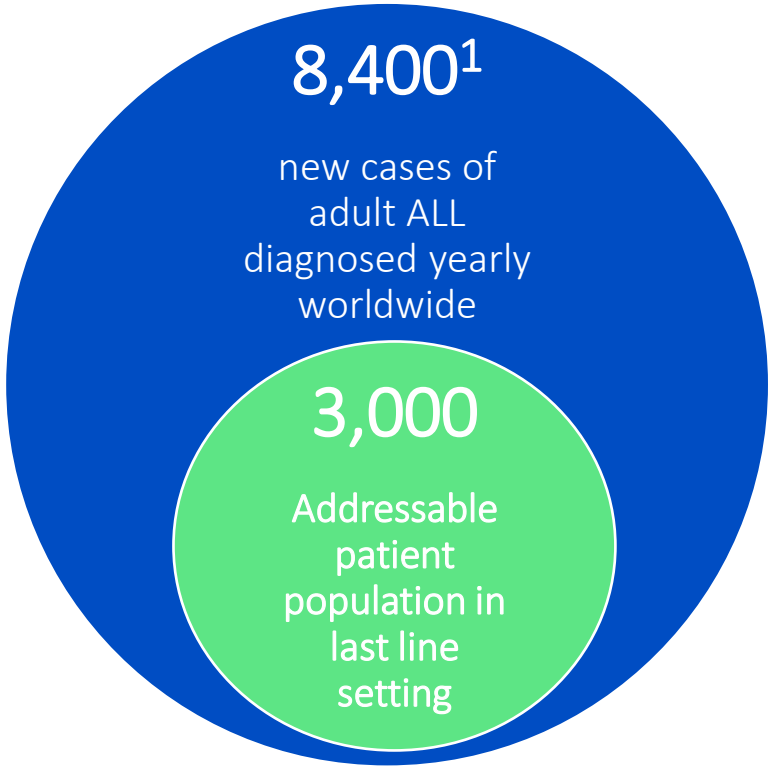


Ghorashian et al. *Nature Medicine* 2019

obe-cel 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 epi
2. Currently approved in US only

obe-cel is a potentially transformational therapy for adult ALL

Unique CAR T design drives 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 drives durability of effect
- Favorable safety profile:
  - No high-grade Cytokine Release Syndrome (CRS)
  - Limited immune effector cell-associated neurotoxicity syndrome (ICANS)

obe-cel

Orphan Drug designation by FDA for B-ALL

Orphan Medical 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 shows consistent clinical profile across three clinical studies

Data from 3 studies - range of ages and patient conditions

- obe-cel has a favourable safety profile with 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%

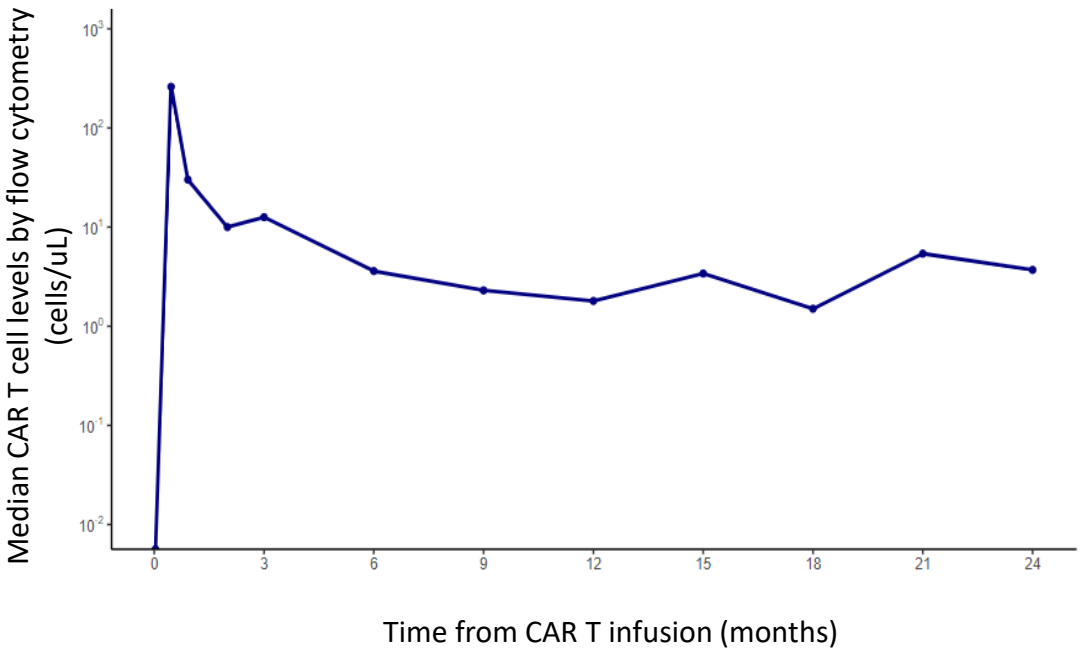
[1] CRS grading based on Lee et al (2014) for CARPALL and ALLCAR19, and ASTCT grading (Lee et al 2019) for FELIX
[2] Neurotoxicity grading based on CTCAE v4.03 for CARPALL and ALLCAR19, and ASTCT ICANS grading (Lee et al 2019) for FELIX

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

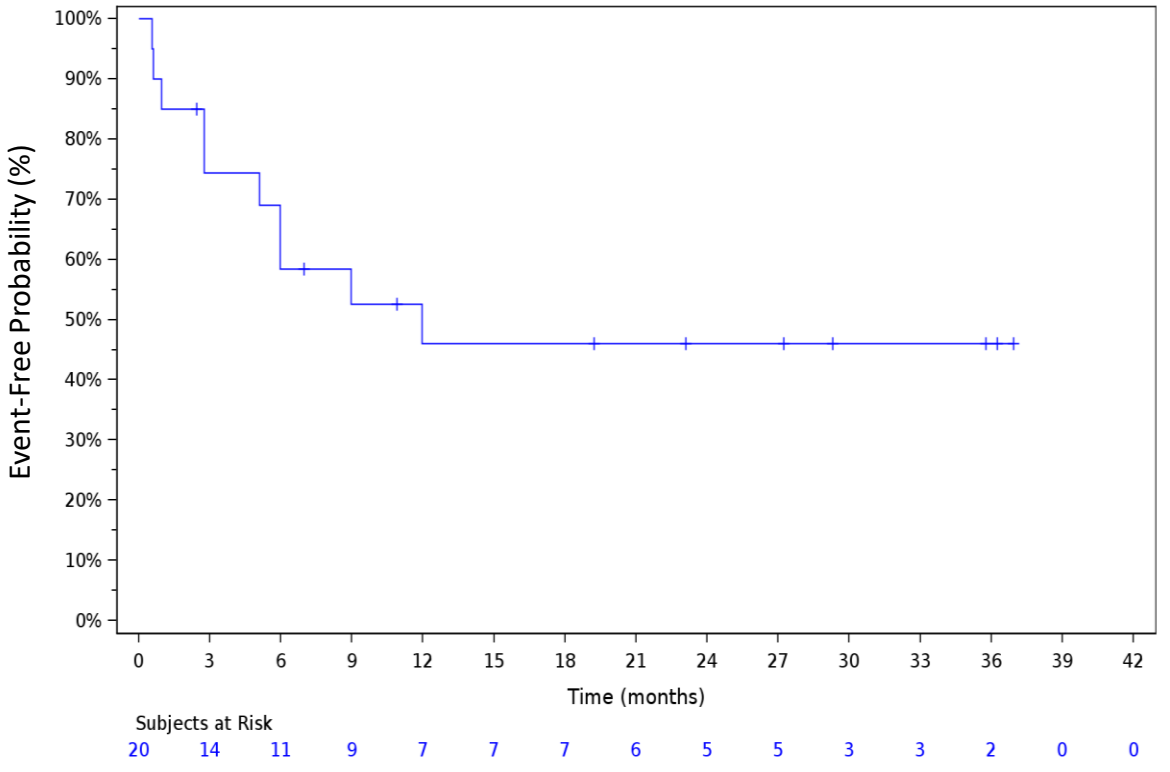
obe-cel shows sustained event-free survival beyond 30 months

Long term CAR T persistence drives durability of effect

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 were received SCT post obe-cel infusion are censored at date of SCT

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

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

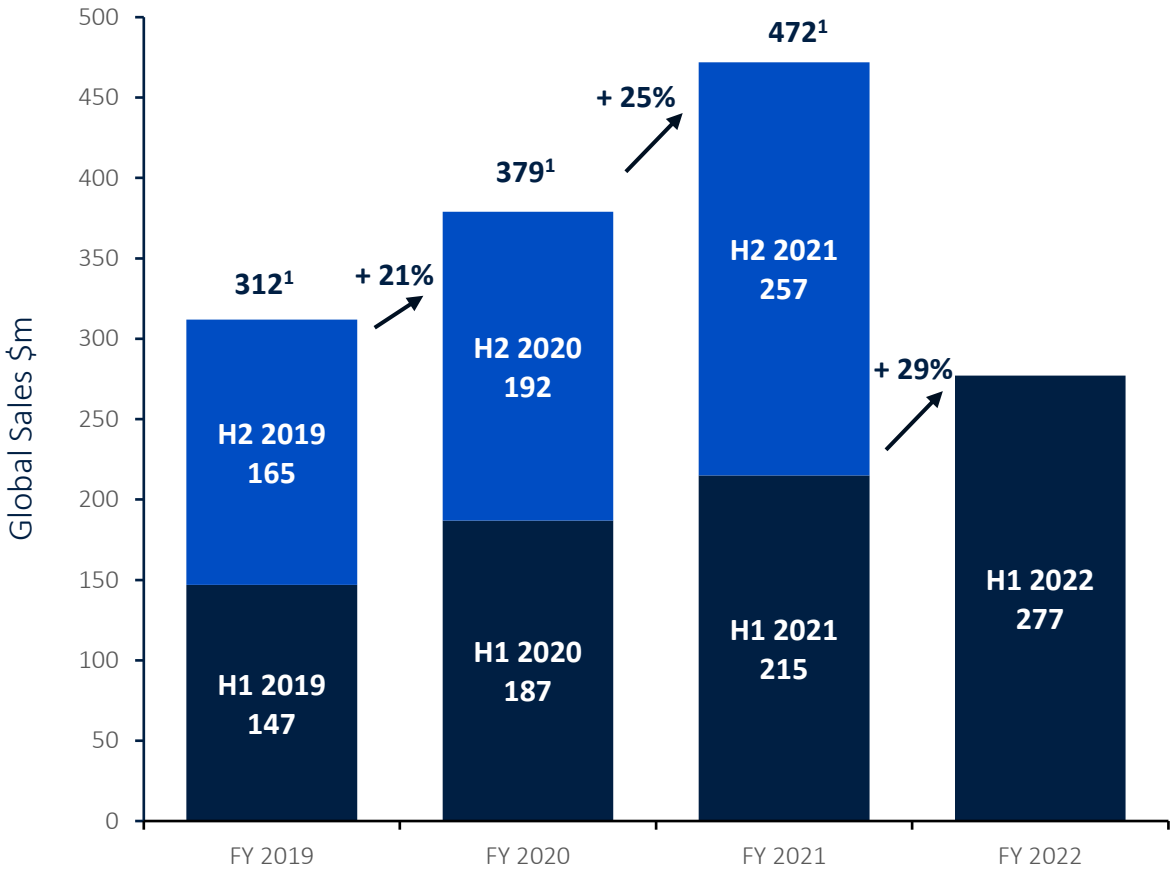
	Standard of Care		Recently FDA approved
	Blincyto[1]	Besponsa[2]	Tecartus[3]
N	271	109	54
ORR	44%	81%	65%
EFS/PFS	31% @ 6m ~10% @ 18m	~45% @ 6m ~20% @ 18m	~65% @ 6m ~25% @ 18m
median DoR	7.3m	4.6m	13.6m
median OS	7.7m	7.7m	18.2m
CRS ≥ Grade 3	5%	Not reported	26%
Neurotox any Grade	65%	Not reported	87%
Neurotox ≥ Grade 3	13%	Not reported	35%
Subsequent SCT post treatment	24%	41%	18%
Other notable observations	NA	14% Hepatic VoD	40% vasopressor use

1. Kantarjian et al., 2017/ USPI (product label) 2. Kantarjian et al., 2016/ USPI (product label) 3. Shah et al. Lancet 2021/ USPI (product label)
The estimates of EFS/PFS are read from the KM curves. The efficacy data in ZUMA-3 are based on the modified ITT population while the blinatumomab and inotuzumab data are based on the ITT population.

obe-cel could launch into an expanding ALL market

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 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
- 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

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

obe-cel is the first Autolus program to move into a pivotal program: full data expected in H1 2023

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

H2 2022
Initial results

Primary endpoint: overall complete response rate (CR/Cri)

H1 2023
Full data

Secondary endpoints: include MRD-negative CR EFS and DoR

Data in MRD population will enable obe-cel to maximise outcomes from the study

- Expansion arm initiated for Minimal Residual Disease (MRD) disease cohort of up to 50 additional patients
- Patients to be enrolled in parallel to the main Felix cohort
- The additional data aims to establish 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 broad applicability

Capitalising on the unique profile of obe-cel

- Clinical data supports differentiated product profile
  - High degree of activity and persistence -> drives long term outcomes
  - Attractive safety profile -> has 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

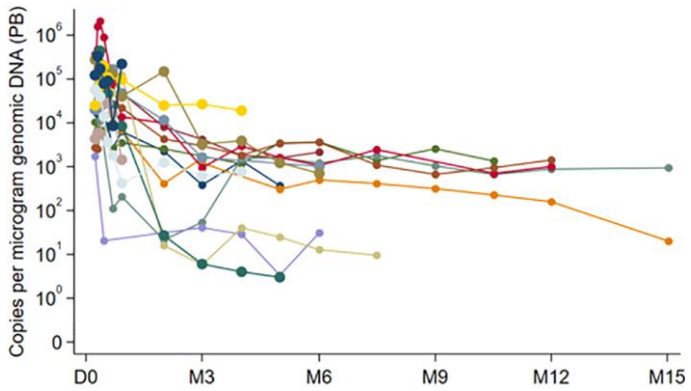
B Cell Malignancies

* Collaboration with UCL

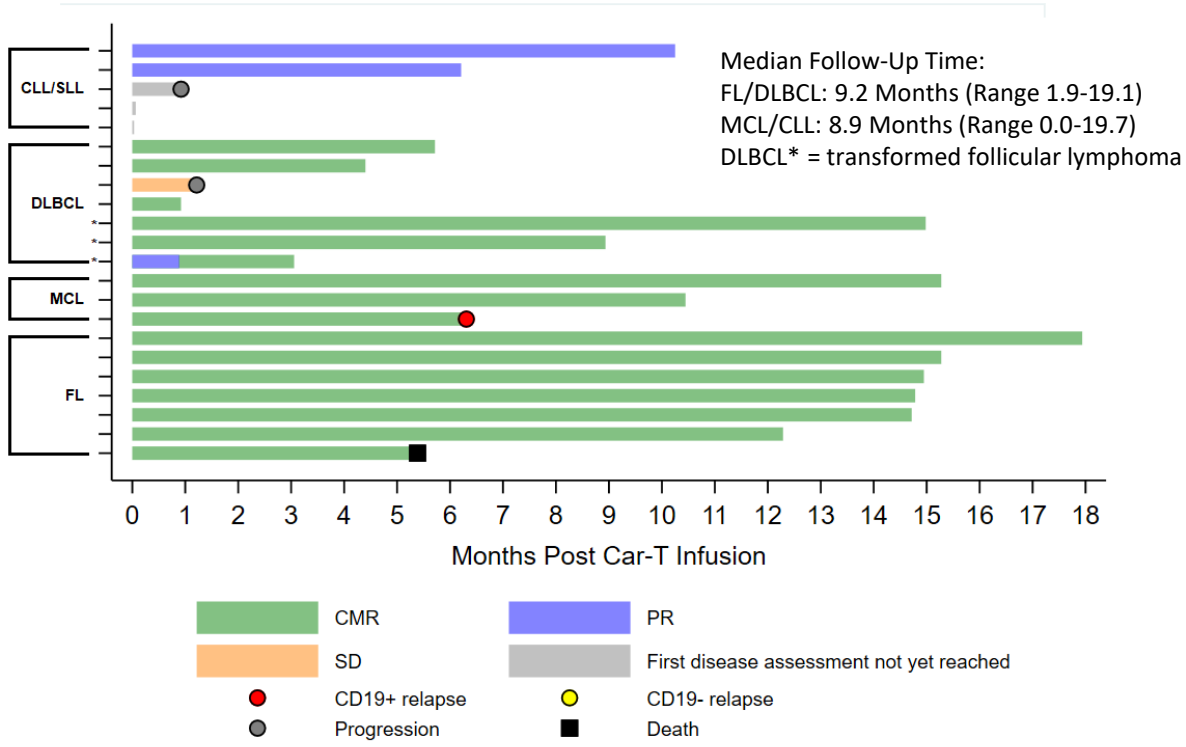
NHL/CLL: ALLCAR19 Phase 1 Study

High level of clinical activity with well manageable safety profile – follow up expected H2 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



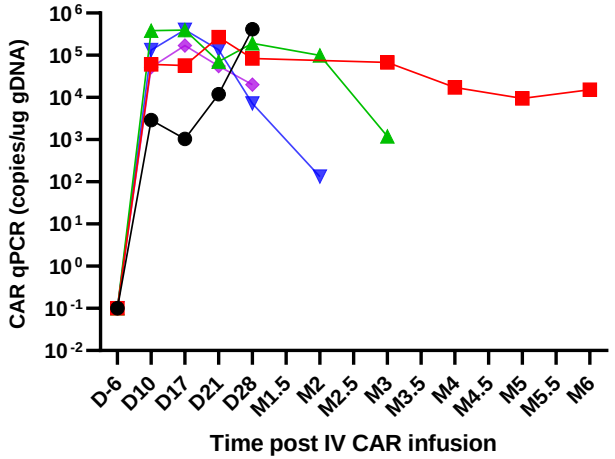
- **High ORR, with long term persistence driving durable outcomes.**
- **Favourable safety profile with no ICANS and no high grade CRS**

Roddie et al., EHA 2022 abstract #P1459

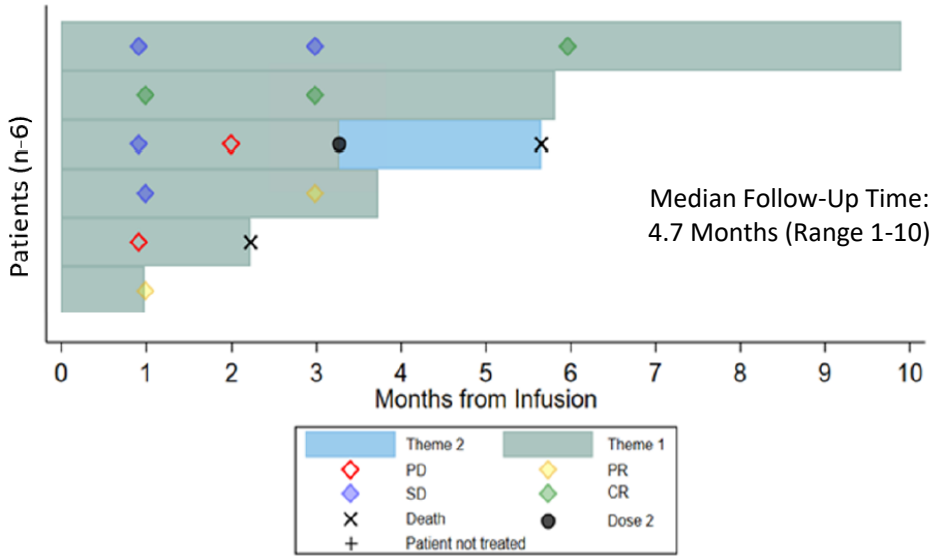
Primary CNS Lymphoma: CAROUSEL Phase 1 Study

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

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



CAR-T cell levels in peripheral blood



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

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

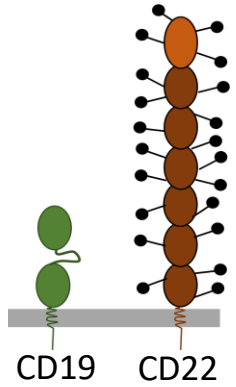
Roddie et al., EHA 2022 abstract #P1460

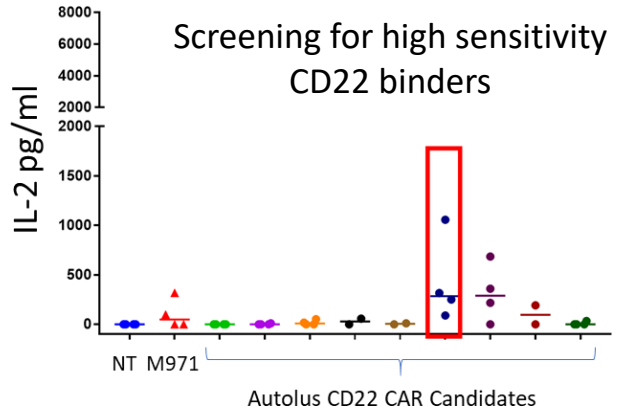
Pediatric Acute Lymphoblastic Leukemia: AUTO1/22 CARPALL study

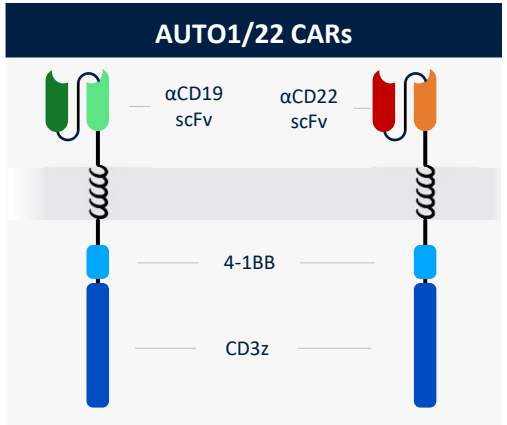
CD19 negative antigen escape is a common cause of treatment failure

CARPALL Study	
n	14
CR Rate	86%
EFS 12m	52% (95% CI, 16% to 72%)
No. of CD19 negative relapses	5/6
CRS ≥ G3	0%

- obe-cel (AUTO1) in r/r pALL is highly active and has a favourable safety 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







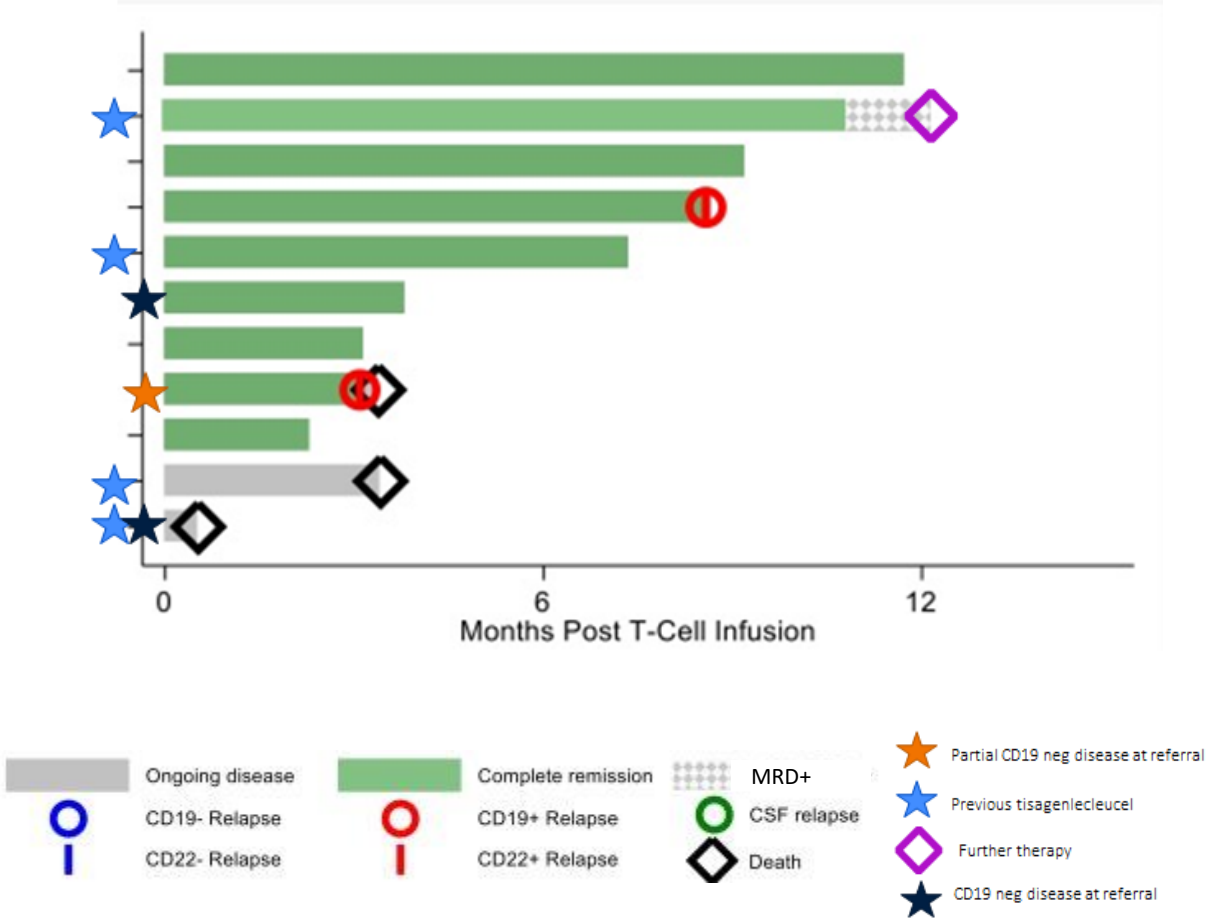
AUTO1/22 is a next generation program that builds on obe-cel and adds a highly potent CD22 CAR, capable of targeting low levels of CD22

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

(1) NCT02443831 (2) Ghorashian et al., Nat Med 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 expected H2 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 demonstrate that dual CD19/22 targeting CAR T cells show a favourable safety profile, with robust expansion/persistence and early efficacy in a heavily pre-treated cohort
  - Favorable safety 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

Summary and next steps for obe-cel

Building an opportunity through broad applicability

- ✓ Favorable and consistent safety profile demonstrated across all indications
- ✓ Of patients evaluable for efficacy across MCL, DLBCL, FL and CLL the ORR was 18/20 (90%)
- ✓ In the B-NHL cohorts, the CRR was 16/17 (94%)
- ✓ In the CLL cohort a best response of a PR was achieved in 2/3 patients, notably both achieved MRD-negativity in their marrow and both remain in PR at 10 and 6 months respectively
- ✓ Of the responding MCL, DLBCL, FL and CLL patients, 17/18 (94%) are without disease progression at last follow-up
- ✓ Encouraging initial data in PCNSL with 4/6 patients (2 CR and 2 PR) in ongoing responses at last follow up

Next steps…

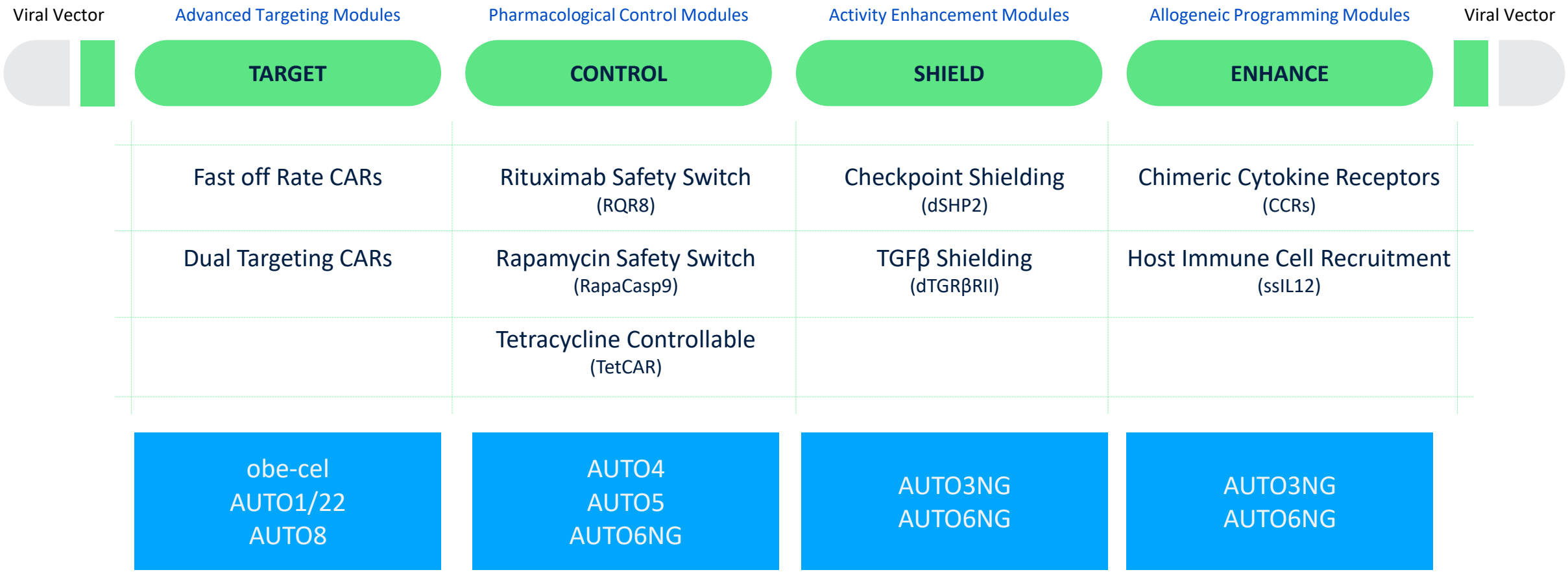
- Longer follow-up and enrolment of additional MCL, FL, DLBCL and CLL/SLL patients is ongoing
- Follow up data expected H2 2022/2023

Pipeline

A broad portfolio of 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

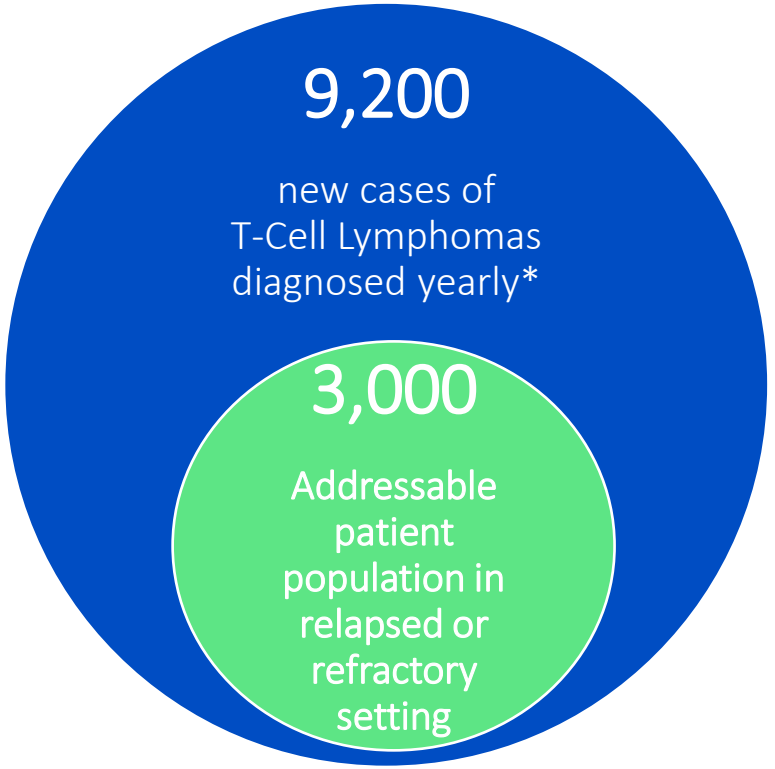
	PRODUCT	INDICATION	TARGET	STUDY	PRE CLINICAL	PHASE 1	PHASE 2/ PIVOTAL	BLA
Autolus	obe-cel	Adult ALL	CD19	FELIX				
UCL	obe-cel	B-NHL & CLL	CD19	ALLCAR19 Ext*				
UCL	obe-cel	Primary CNS Lymphoma	CD19	CAROUSEL*				
UCL	AUTO1/22	Pediatric ALL	CD19 & CD22	CARPALL*				
Autolus	AUTO4	TRBC1+ Peripheral TCL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

*Collaboration with UCL

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%)[3]
- Standard of care is variable and often based on high-dose chemotherapy and stem cell transplants:
  - Median 5 yrs OS: 32% [1]
- Relapsed/refractory patients have a worse prognosis
  - Median PFS approximately 3 months/ Median OS < 6 months [2,3]
- 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 (DRG Epidemiology Data)

[1] Weisenburger et al., Blood 2011; [2]Mak et al, JCO 2013; [3]Bellei M et al, Haematologica 2018, [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 de-risked for development

Companion Diagnostic

Stratify into TRBC1 + and TRBC2 + lymphoma

> ~40% of T cell lymphomas are TRBC1+

AUTO4 – TRBC1+ TCL

AUTO5 – TRBC2+ TCL

> ~60% of T cell lymphomas are TRBC2+

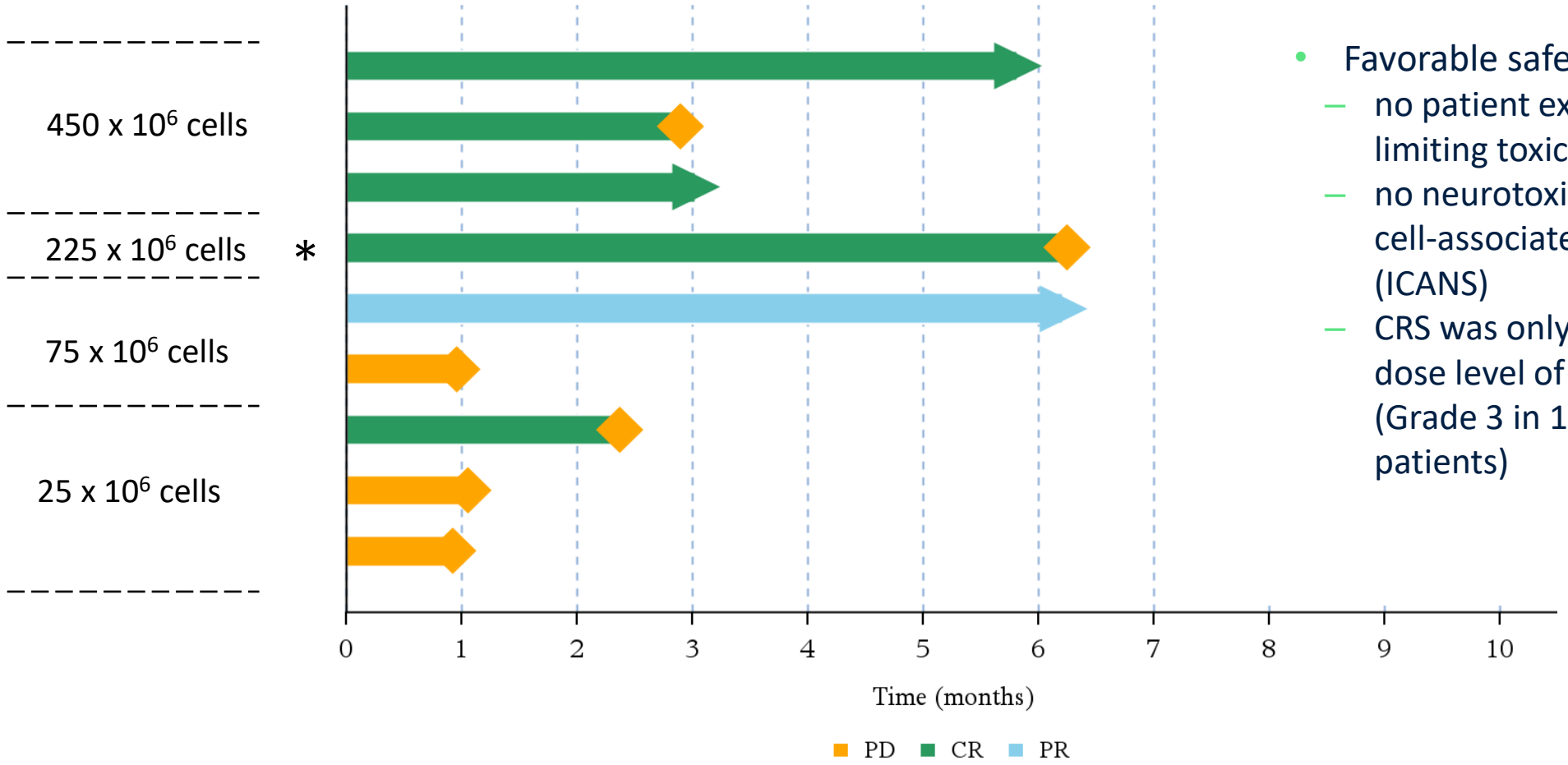
Current Development Milestone

Phase 1 dose escalation

Candidate selected

AUTO4 in T cell lymphoma: Initial data encouraging

All patients treated at highest dose level had a complete metabolic response – EHA June 2022, longer follow up H2 2022



- Favorable safety profile
  - no patient experienced any dose limiting toxicity
  - no neurotoxicity/immune effector cell-associated 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

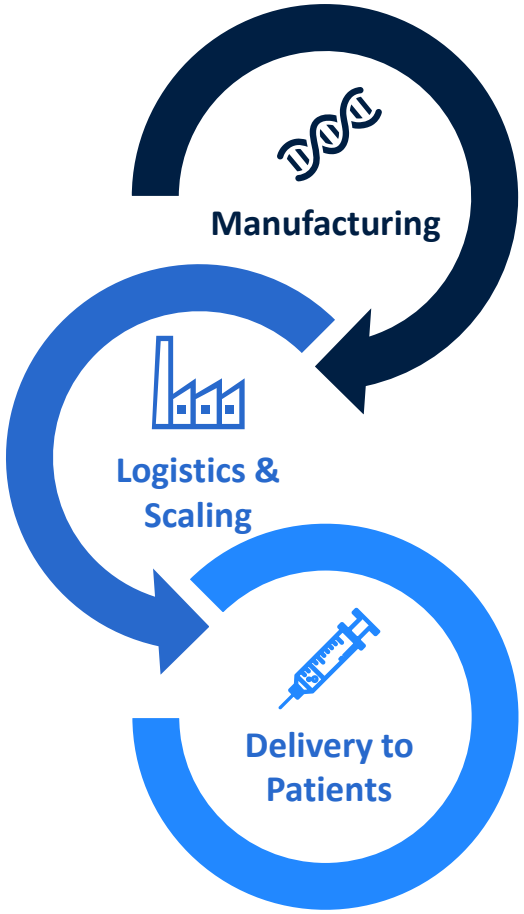
AUTO4 summary and next steps

- AUTO4 treatment generally well tolerated
- Early efficacy is encouraging, particularly with all patients responding at higher dose levels
- CAR T-cells detected in lymph node but no expansion observed in peripheral blood
- Study ongoing, with additional patients due to be treated to define recommended Phase 2 dose
- Longer follow up H2 2022

Manufacturing

Manufacturing capabilities to accelerate assets into the clinic and beyond

Building a fully integrated manufacturing and logistics platform that aims to bring assets to market



Product Delivery

- Highly skilled Autolus manufacturing operations housed in UK at the Cell and Gene Therapy Catapult
- Established clinical supply and launch capacity – industrial 4 shift / 7d operation

- Strategic and long term supply arrangements with all critical supply partners
- Purpose built Autolus facility to for commercial scale supply – GMP certified by mid-2023

- Pilot systems for product delivery at product launch
- High level of service and scientific engagement at specialised treatment centres

150+ highly skilled manufacturing staff

Clinical capacity of 350 batches p.a.

70,000 sq. foot manufacturing facility

Commercial capacity of 2000 batches p.a.

Robust UK/EU/US vein to delivery platform

In collaboration with treatment centers network

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 agreed to purchase $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 all milestones received

Summary

Autolus Newsflow

- obe-cel
  - FELIX pivotal Phase 2 study in adult ALL ongoing; first results expected in Q4 2022 and full data in H1 2023
  - Evaluation in r/r B-NHL and CLL ongoing, follow up data expected in H2 2022
  - Evaluation in Primary CNS Lymphoma ongoing, follow up data expected in 2023
- AUTO1/22
  - AUTO1/22 Phase 1 (CARPALL) study in Pediatric ALL ongoing
  - Longer term follow-up data in H2 2022
- AUTO4 /AUTO5
  - AUTO4 Phase 1 (LibrA T1) study in Peripheral T cell lymphoma ongoing, follow up data expected H2 2022
- Pipeline transitioning to Phase 1 in 2022
  - AUTO8 Phase 1 study dosed first patient
  - AUTO6NG in Neuroblastoma – start Phase 1 H2 2022
- Cash balance at June 30, 2022, $216.4 million

Autolus

Thank you