Autolus

Developing Next Generation Programmed T Cell Therapies

January 2022

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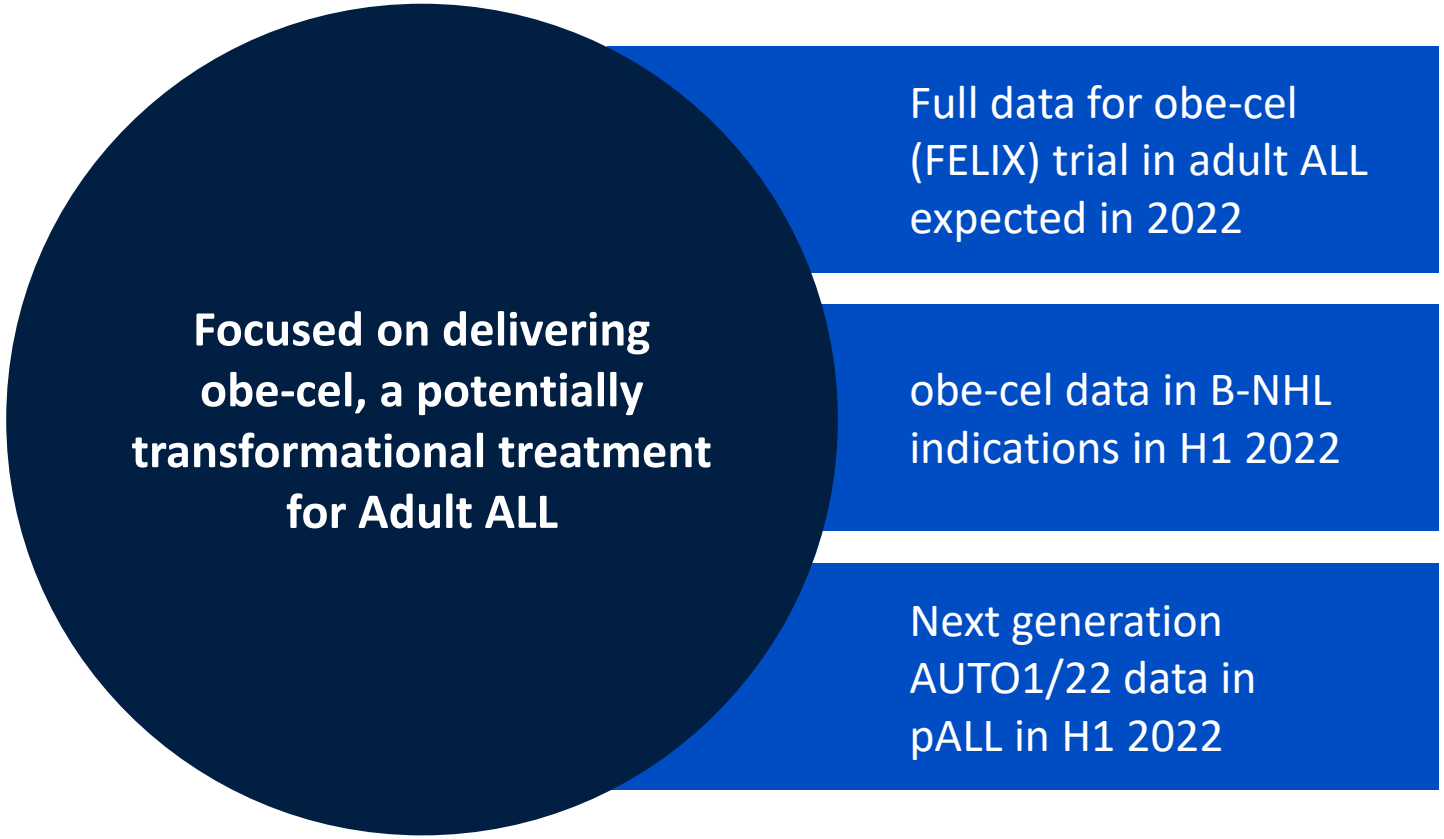
LEAD CLINICAL PROGRAM

obe-cel

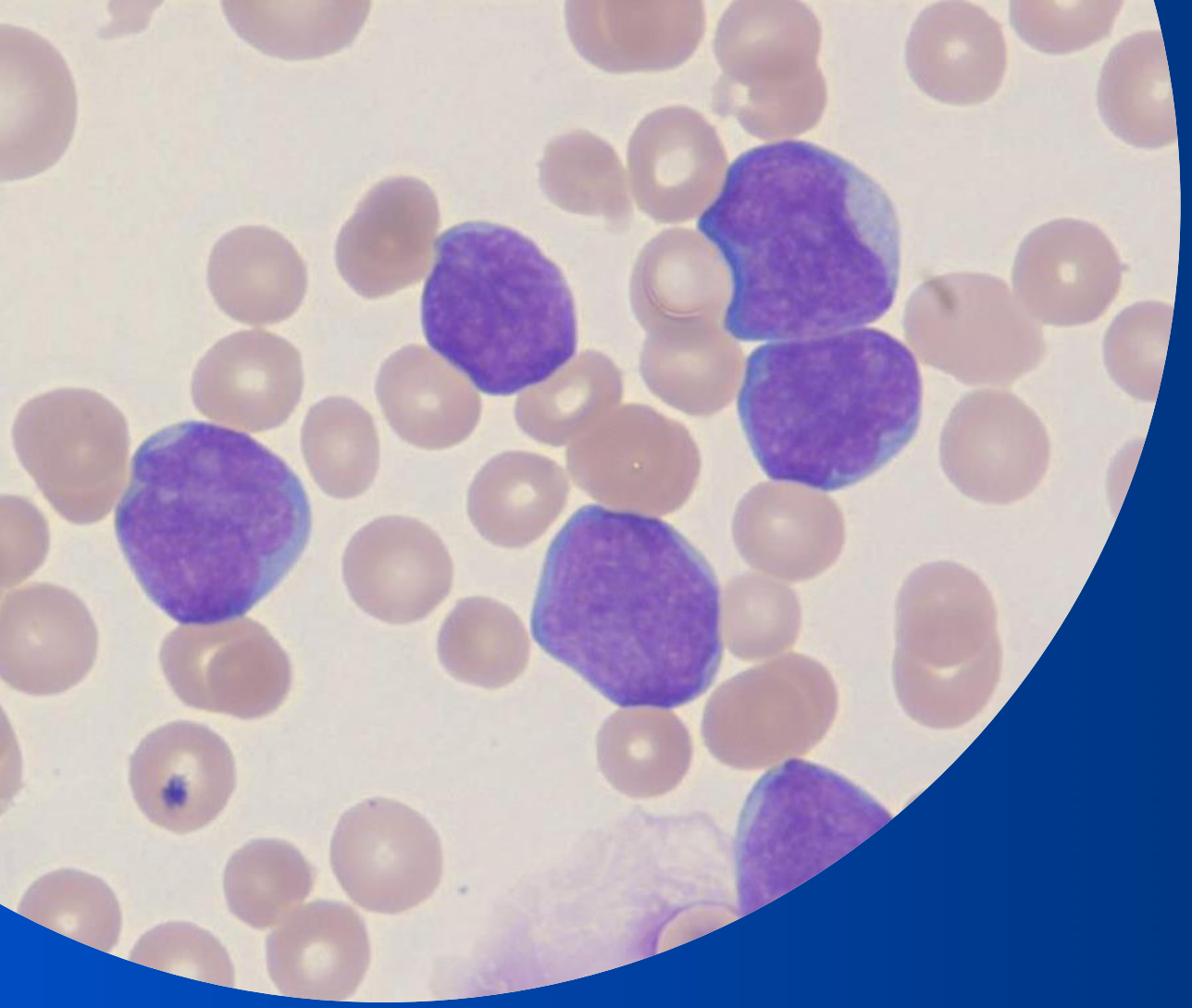
For treatment of B-ALL and B-NHL

Driving value with potential best-in-class adult ALL program

Multiple clinical data read-outs in 2022



- Additional value steps in T cell lymphoma and first solid tumor indication in 2022 and 2023
- Broad preclinical pipeline of next generation programs expected to transition to clinical stage in 2022
- Building on a scalable, fully enclosed manufacturing platform



Adult Acute Lymphoblastic Leukemia

obe-cel — Potential as a standalone therapy

High unmet need for adult ALL patients

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

ALL is a significant opportunity

Up to **8,400**[1] new cases of adult ALL diagnosed yearly worldwide

Estimated R/R patients in US & EU **3,000** addressable patient population in last line setting

HIGH UNMET MEDICAL NEED

- Combination chemotherapy enables 90% of adult ALL patients to experience CR, but only 30% to 40% will achieve long-term remission
- Median overall survival is < 1 year in r/r adult ALL
- Only redirected T cell therapies for adult patients are blinatumomab and brexucabtagene autoleucel
- CAR T therapies are highly active, but require subsequent allograft to achieve durability
- Patients are generally more fragile with co-morbidities, yet CAR T toxicities in this setting have been notable with high incidences of severe CRS and cases of fatal neurotoxicity
- Opportunity to expand the addressable patient population in earlier lines of therapy

Obe-cel granted Orphan Drug designation by FDA for B-ALL, Prime designation in R/R B-ALL by EMA And ILAP designation by MHRA in Adult R/R B-ALL

NOTES

1. SEER and EUCAN estimates (respectively) for US and EU epi

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
	Blinatumumab[1]	Inotuzumab[2]	ZUMA-3 Study [3]
N	271	109	54
ORR (CR & CRi) (95% CI)	44% (38%, 50%)	81% (72%, 88%)	65% (51%, 77%)
EFS/PFS	31% @ 6m ~10% @ 18m	~45% @ 6m ~20% @ 18m	~65% @ 6m ~25% @ 18m
median DoR (95% CI)	7.3m (5.8, 9.9)	4.6m (3.9, 5.4)	13.6m (8.7, NE)
median OS (95% CI)	7.7m (5.6, 9.6)	7.7m (6.0, 9.2)	18.2m (15.9, NE)
CRS any Grade	14%	Not reported	92%
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

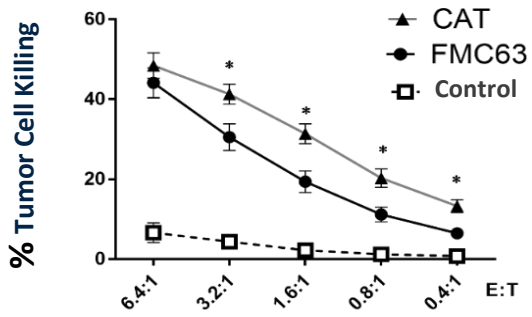
1. Kantarjian et al., 2017/ USPI (product label) 2. Kantarjian et al., 2016/ USPI (product label) 3. Shah et al. Lancet 2021/ USPI (product label)
The estimates of EFS/PFS are read from the KM curves. The efficacy data in ZUMA-3 are based on the modified ITT population while the blinatumomab and inotuzumab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

obe-cel has a unique mechanism of action

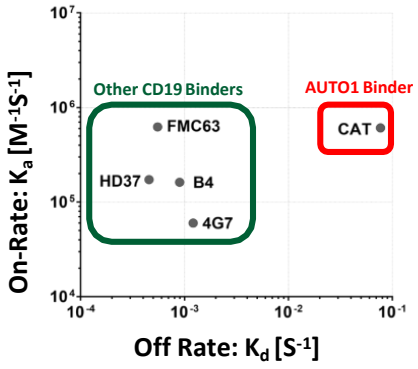
Fast off rate supports physiological engagement of target cells and avoids over-activation and exhaustion of CART cells

- AUTO1 is designed to improve potency and persistence while reducing immunological toxicity
- AUTO1 (CAT) binder with lower affinity for CD19
- Half-life of target interaction very short compared to Kymriah® (FMC63) binder:
  - AUTO1 = 9.8 seconds
  - Kymriah® = 21 minutes

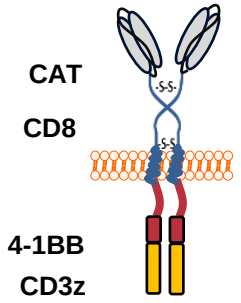
Enhanced Cytotoxicity



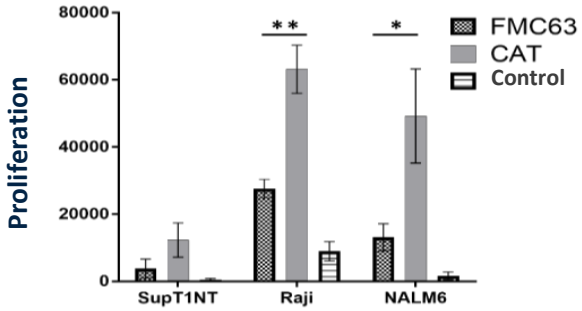
Fast Off-Rate



Lentiviral Vector



Enhanced Proliferation



*Ghorashian S, Pule MA, Amrolia P et al. *Nature Medicine* 2019

obe-cel shows consistent safety and efficacy across ALL studies

Data from 3 studies across range of age groups and patient conditions

	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%

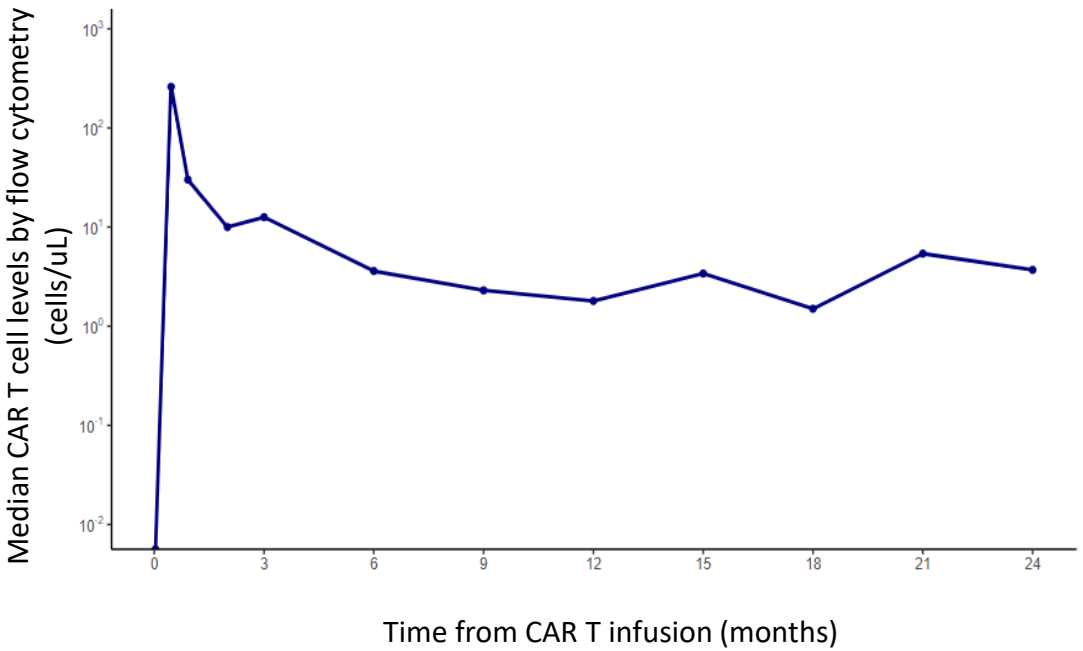
[1] CRS grading based on Lee et al (2014) for CARPALL and ALLCAR19, and ASTCT grading (Lee et al 2019) for FELIX
[2] Neurotoxicity grading based on CTCAE v4.03 for CARPALL and ALLCAR19, and ASTCT ICANS grading (Lee et al 2019) for FELIX

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

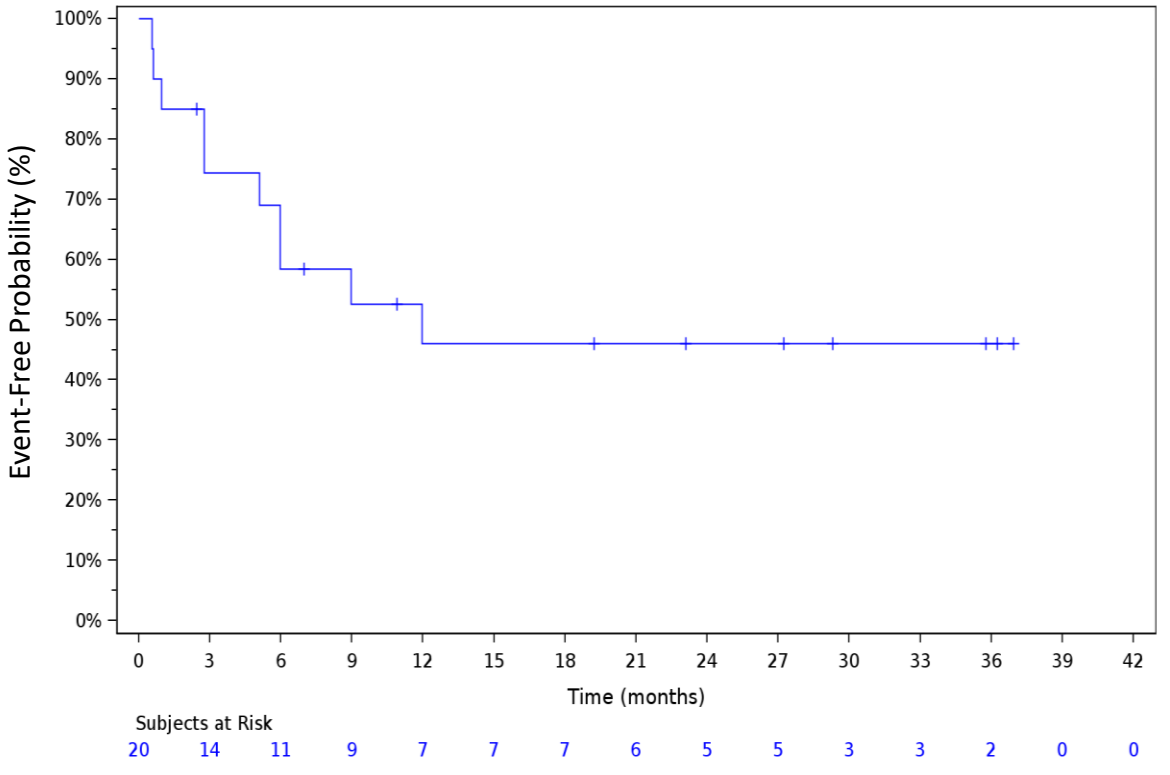
obe-cel shows sustained event-free survival beyond 30 months

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

obe-cel has the potential for a transformational therapy in adult ALL

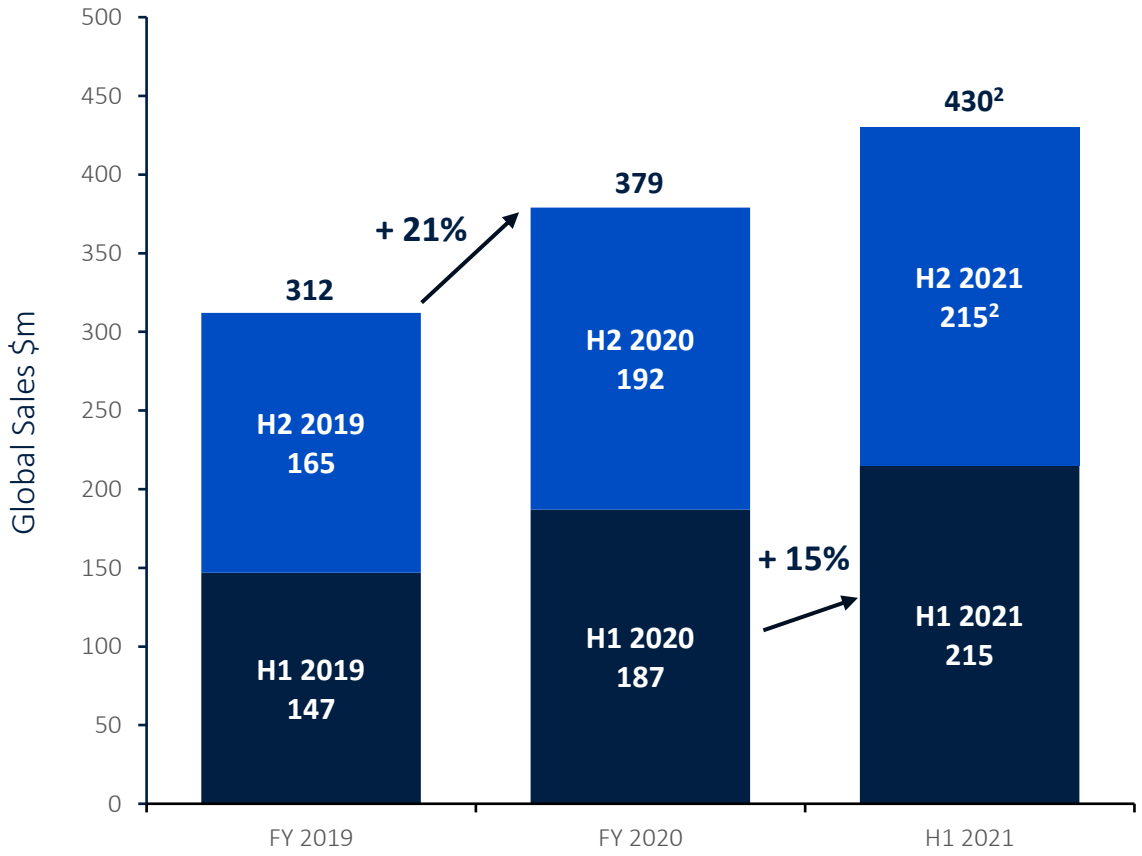
Unique CAR T design drives differentiated product profile

- Obe-cel has a unique mechanism of action built on a fast-off rate from CD19 target antigen
- Obe-cel has a high ORR across all patient populations evaluated
- Obe-cel shows a sustained morphological EFS of 46% with a median follow-up of 29.3 months
- Long term CAR T persistence drives durability of effect
- Obe-cel has a favorable safety profile with no high-grade CRS and limited ICANS

obe-cel could potentially launch into an expanding ALL market

Blincyto, current market leader, revenues show annual growth of c.15-20%

Reported Blincyto sales[1]



- Blincyto sales price estimated to be $178k[3] (based on 2 cycles) supporting approx. 2,000 commercial adult ALL patients, growing at a rate of c.15-20%
- Kymriah is priced at $475k in pediatric ALL. Breyanzi (lisocabtagene maraleucel) is priced at $410k in DLBCL[4]. Tecartus is priced at $399k for adult ALL.
- Breyanzi and other CAR T cell therapies are expanding delivery center footprint
- Tecartus (brexucabtagene autoleucel) 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. H2 2021 is not yet reported, this is just an extrapolation based on H1 2021 reported sales
3. https://www.medscape.com/viewarticle/836879
4. Bristol Myers finally wins FDA approval for cancer cell therapy | BioPharma Dive – Komodo Health 2015 – 2020

FELIX Phase 2 study is under way with data expected in 2022

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

Pivotal program, FELIX, in adult ALL enrolling with full data targeted in 2022

CTA approved by the MHRA in January 2020 and US IND has been open since April 2020

- Phase 1b run-in component, prior to single arm Phase 2 potential pivotal trial
- 100 relapsed/refractory adult ALL patients
- Primary endpoint: Overall Complete Response Rate (CR/CRi)
- Secondary endpoints: include MRD-negative CR EFS and DoR

Unique profile of obe-cel offers potential across broader indications

Evaluation of obe-cel activity in additional B-Cell malignancies to capitalize on potential market opportunity

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

Opportunity to pursue in earlier lines of therapy and indications of Adult ALL

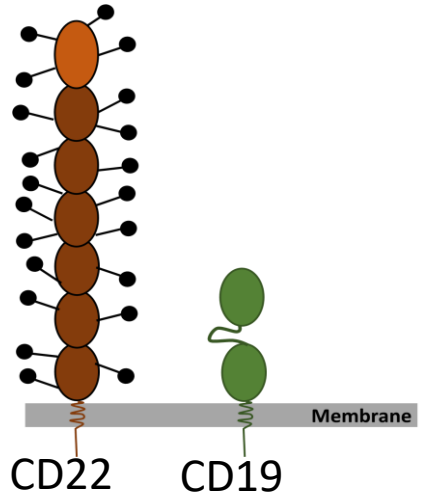
Pediatric ALL

Autolus CAR T approach to treating pediatric ALL

CD19 negative antigen escape is a common cause of treatment failure

- obe-cel (AUTO1) in relapsed / refractory pediatric ALL is highly active and has a favourable safety profile - CARPALL study#[1,2]
- Medical need in pediatric ALL is to minimize rates of antigen-loss–driven relapses and improve long-term outcomes – points to need for a dual targeting CAR-T
- CD22 is challenging to target with a CAR as it is a rigid bulky molecule, expressed at a low density and can be downregulated further in response to CD22 targeting#[3]
- AUTO1/22 builds on obe-cel and adds a highly potent CD22 CAR, capable of targeting low levels of CD22

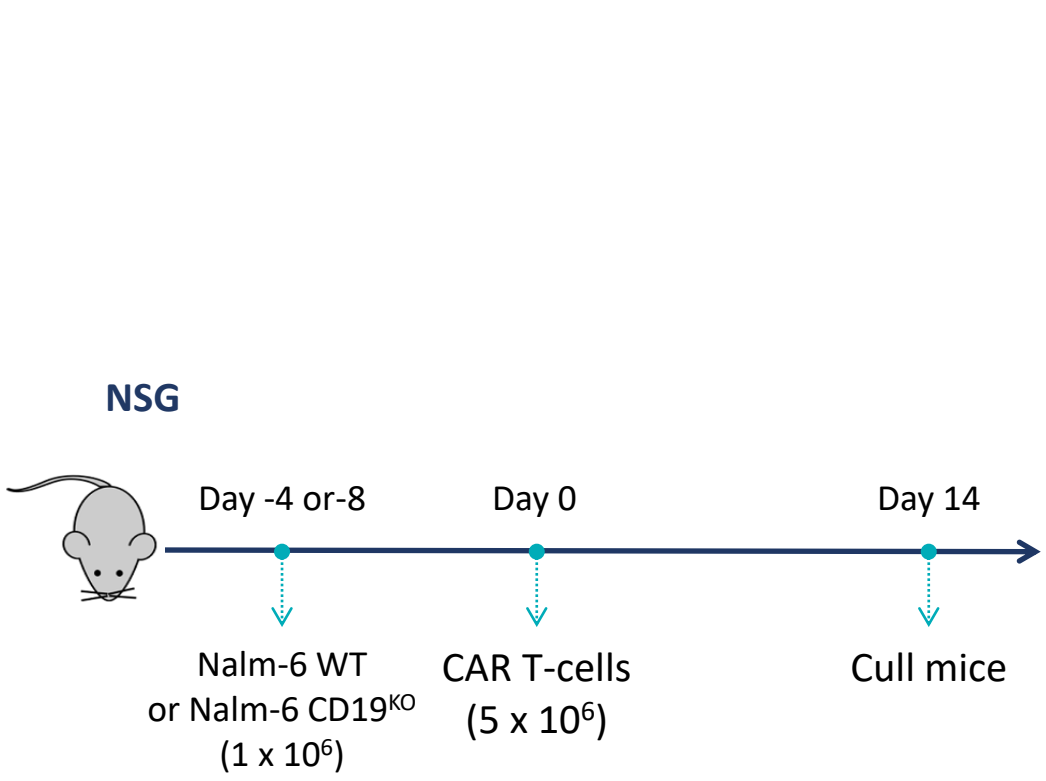
	CARPALL Study
n	14
CR Rate	86%
EFS 12m	52% (95% CI, 16% to 72%)
No. of CD19 negative relapses	5/6
CRS ≥ G3	0%
NTX ≥ G3	7%

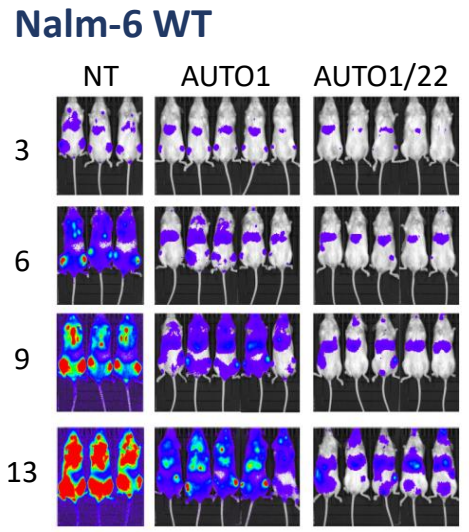


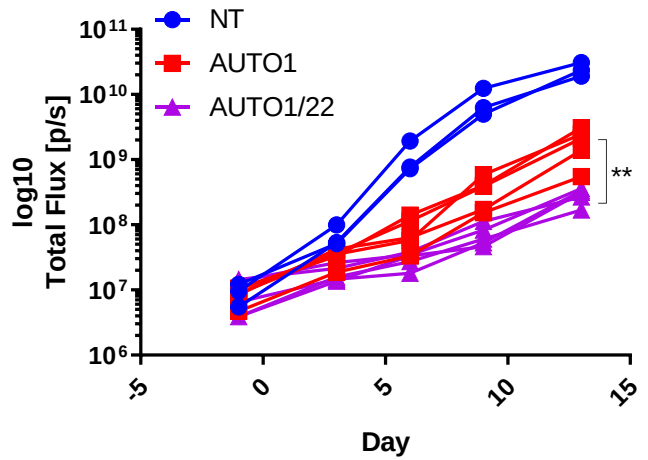
#1 NCT02443831
#2 Ghorashian et al., Nat Med 2019
#3 Shah et al., JCO 2020, Spiegel et al., Nat Med 2021

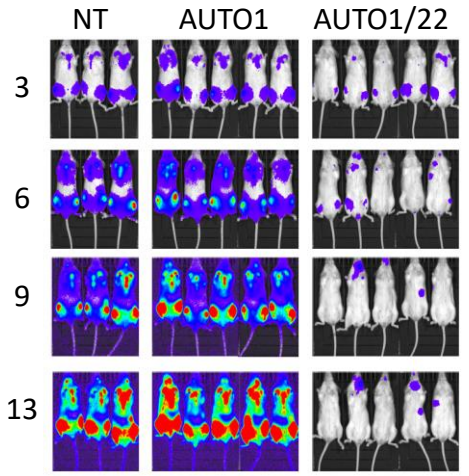
AUTO1/22: enhanced in vivo anti-tumor efficacy

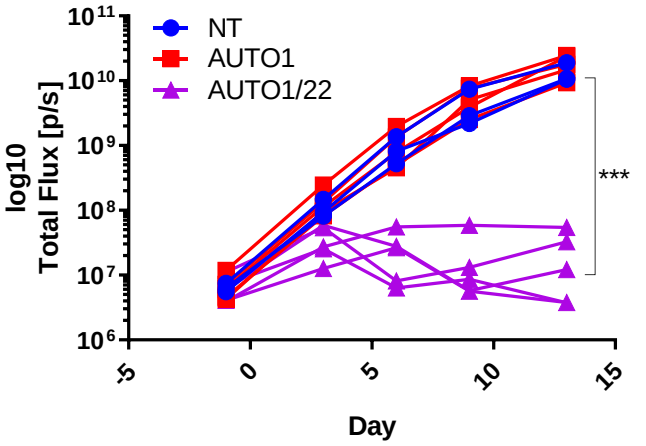
Dual targeting of CD19 and CD22 addresses CD19-negative target cells and enhances overall activity









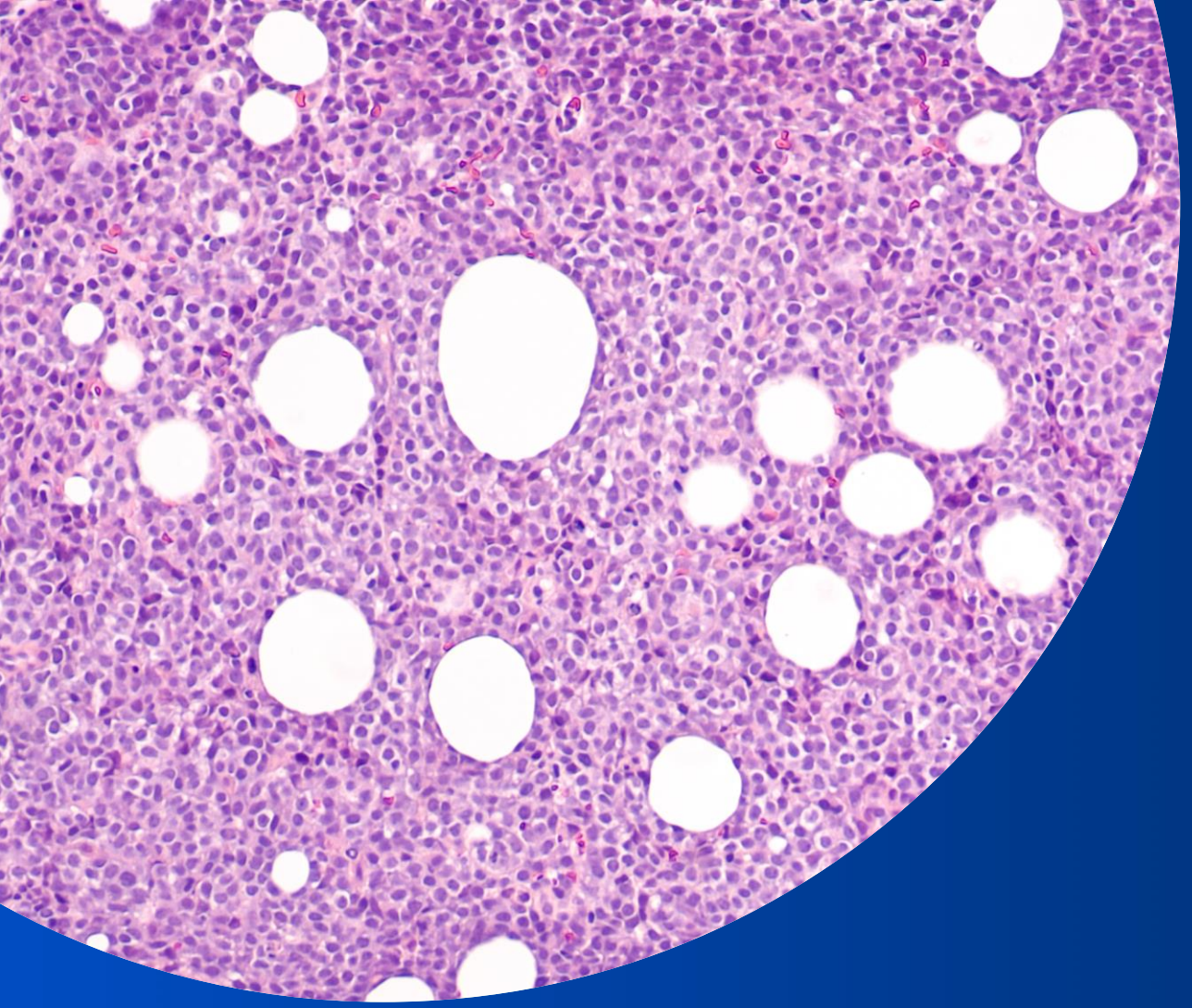


AUTO1/22 – A dual targeting CAR T therapy

Currently being tested in pediatric ALL

- AUTO1/22 builds on excellent CD19 targeting of obe-cel with its high activity and good safety profile and adds potent second CAR to target CD22
- AUTO1/22 eliminates target cells that express low density CD22 molecules
- AUTO1/22 is effective in in-vivo models of CD19 negative escape
- AUTO1/22 is being evaluated in pediatric patients and data will be presented in 2022

* As of the cut-off date of October 21, 2021



B-NHL

Obe-cel

Favorable tolerability profile of obe-cel reproduced in B-NHL

No ICANS or severe CRS

AEs of Special Interest

Event N = 16 patients	All Grades n (%)	Grade 1 n (%)	Grade 2 n (%)	Grade 3 n (%)	Grade 4 n (%)
CRS*	9 (56%)	6 (38%)	3 (19%)	0	0
ICANS	0	0	0	0	0

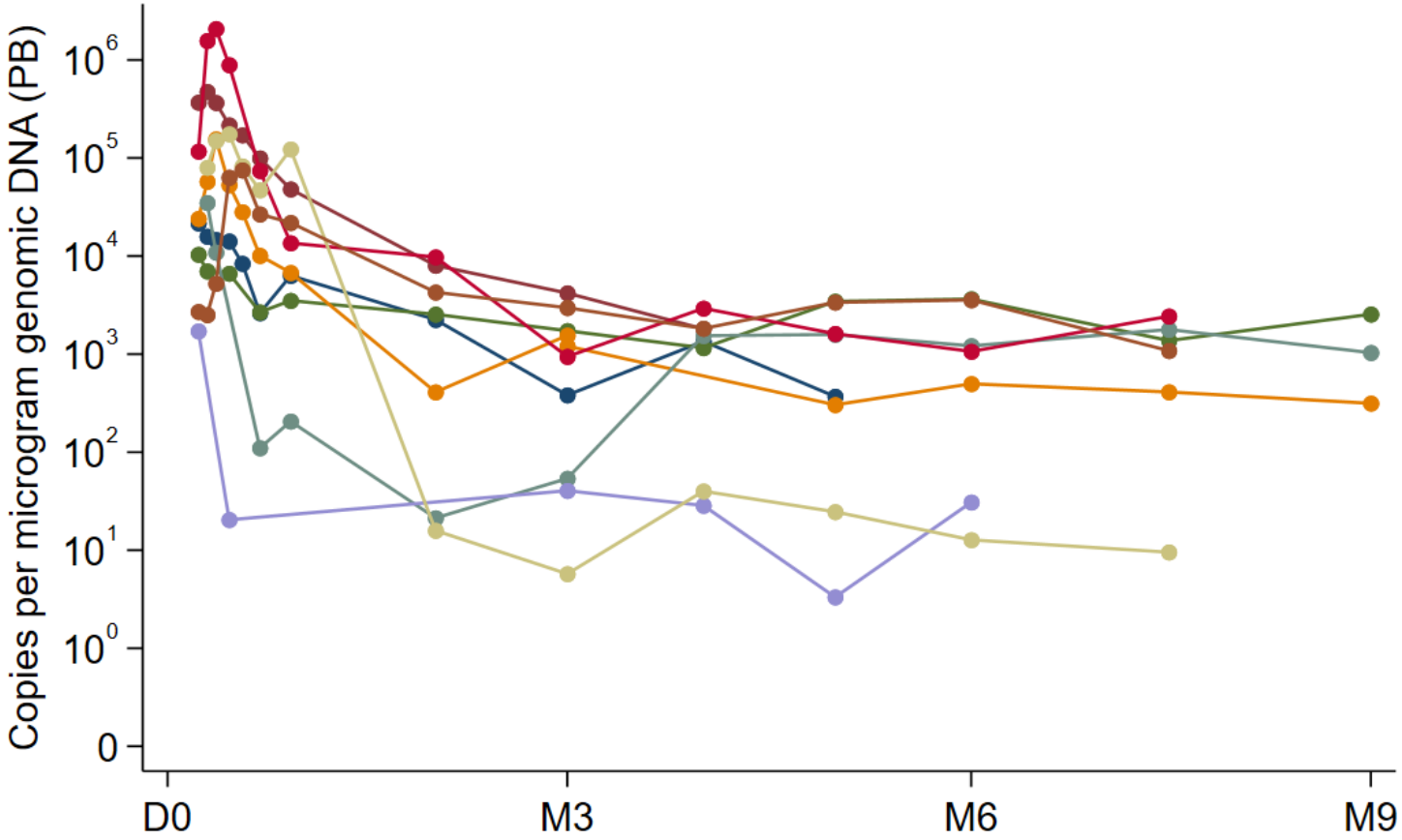
*CRS grading by Lee et al 2018
Data cut: 15-OCT-2021

- Consistent safety profile for obe-cel across indications tested
  - No ICANS
  - No high grade CRS

Data cut: 15-OCT-2021

obe-cel shows excellent T cell expansion and engraftment

ALLCAR19 – B-NHL Patients

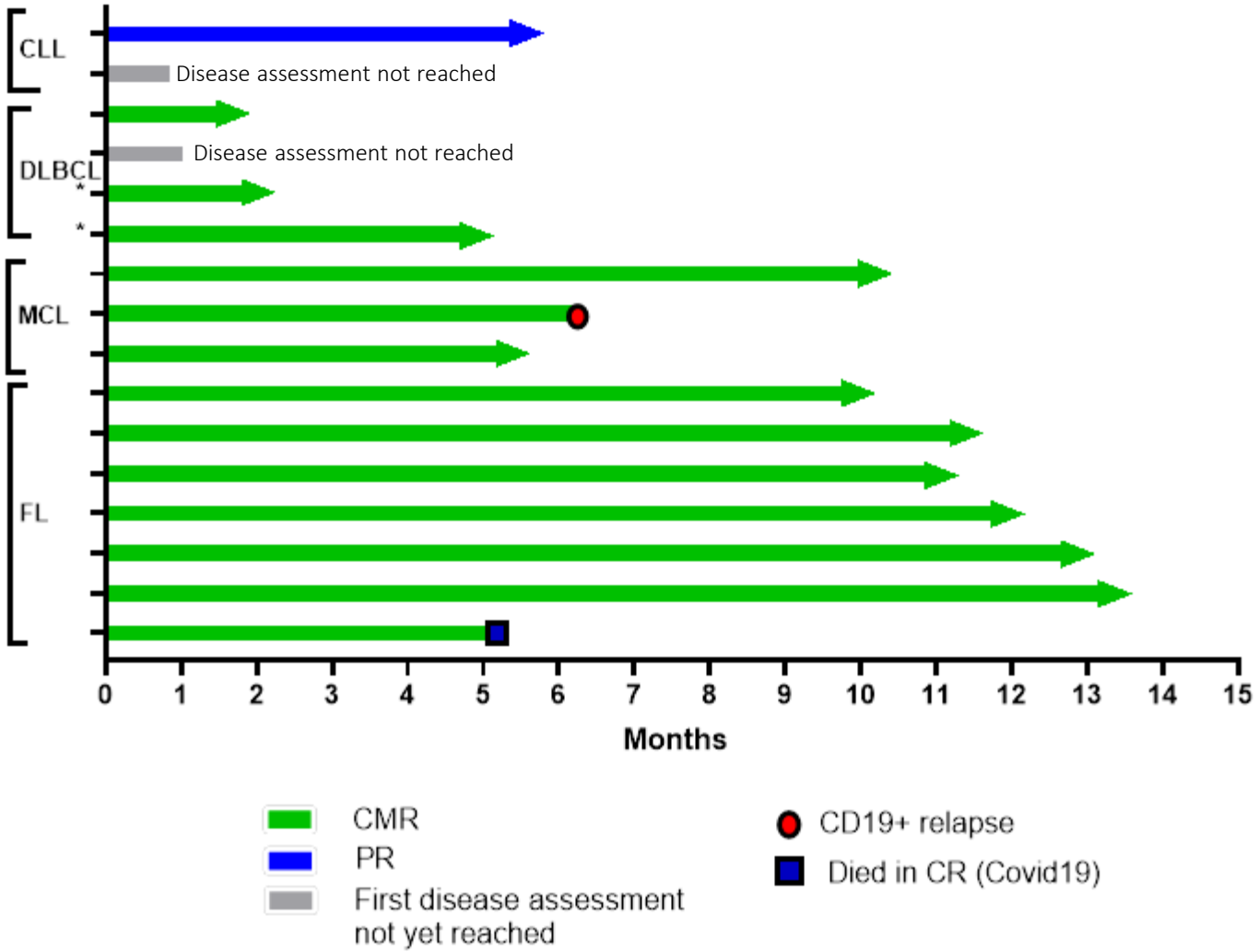


Cmax (CAR transgene per ug gDNA)	
n	9
Mean	336234
CV%	50.2%
Time to Cmax (Days)	
n	9
Median	9
Range	7-17
Time last measurable in Blood (Days)	
n	9
Median	228
Range	122-274

CAR, chimeric antigen receptor; VCN, vector copy number; qPCR, quantitative polymerase chain reaction, CV% , coefficient of variation

Data cut: 15-OCT-2021

obe-cel shows encouraging efficacy and duration of response in NHL/CLL



	N (%)
Follicular Lymphoma	
CR + PR	7 (100%)
CR	7 (100%)
DLBCL	
CR + PR	3 (100%)
CR	3 (100%)
Pending	1
MCL	
CR + PR	3 (100%)
CR	3 (100%)
CLL/SLL	
CR + PR	1 PR (BM MRD-neg.)
Pending	1
Non-Response	0
Relapse	1 (MCL at 6 mos)

Median (Range) Follow-Up Time:

- FL/DLBCL: 11.8 Months (Range 2.0-14.2)
- MCL/CLL: 7.4 Months (Range 1.1-14.8)

Data cut: 15-OCT-2021

DLBCL* = transformed follicular lymphoma

Summary and next steps for obe-cel in B-NHL

- Favorable safety profile in B-NHL with no ICANS or severe Grade ≥ 3 CRS events, consistent with safety profile observed in r/r B-ALL
- Out of 14 patients evaluable for efficacy, 100% ORR and 13/14 (93%) in complete metabolic response
- Long term persistence of obe-cel demonstrated by qPCR
- 15/16 patients are ongoing without disease progression
  - 6/7 FL patients in CR for more than 10 months (10-14 months), 1 patient died in CR from COVID
  - Longer follow-up and enrolment of additional DLBCL and CLL patients ongoing, further data planned for Q1 2022

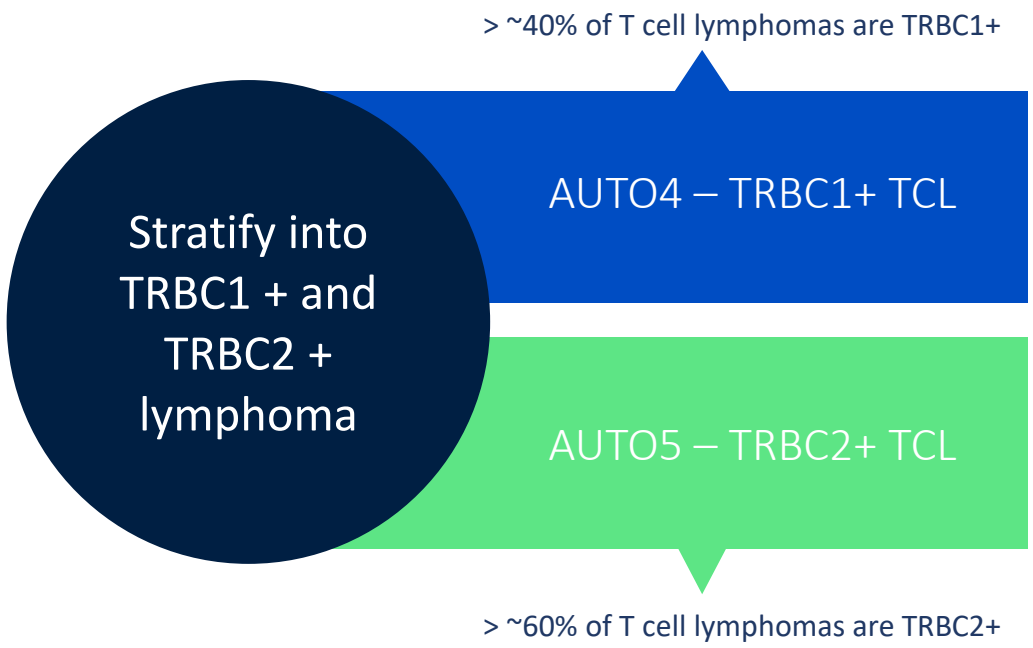
Pipeline

A broad portfolio of next generation modular T cell therapies

T Cell Lymphoma

No standard of care after first relapse and no T cell therapy approved

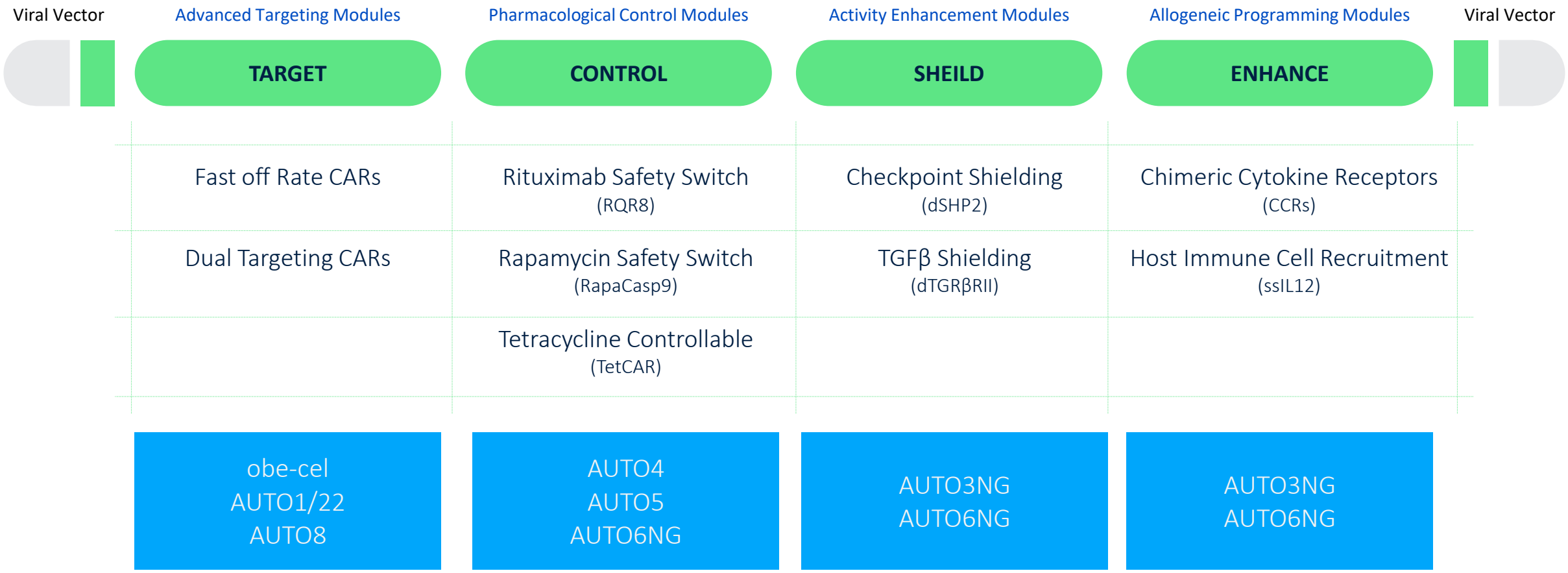
Three key elements to address T cell lymphomas: AUTO4, AUTO5 and a companion diagnostic test



- T cell lymphoma is an aggressive disease with a very poor prognosis for patients
- Median 5 yrs OS: 32%
- Standard of care is variable and often based on high-dose chemotherapy and stem cell transplants
- A large portion of T cell lymphoma patients are refractory to or relapsed following treatment with standard therapies
- T cell lymphomas have not, so far, benefited from advances in immunotherapeutic approaches
- AUTO4 Phase 1 interim data expected in H1 2022

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

Advanced T cell programming



Next generation programs

Designed to address limitations of current T cell therapies

PRODUCT	INDICATION	TARGET	STUDY NAME	PHASE
AUTO1/22	Pediatric ALL	CD19 & CD22	CARPALL*	Phase 1
AUTO4	TRBC1+ Peripheral TCL	TRBC1	LibrA T1	Phase 1/2
AUTO5	TRBC2+ Peripheral TCL	TRBC2		Preclinical
AUTO6NG	Neuroblastoma; Other tumor types	GD2		Preclinical
AUTO8	Multiple Myeloma	BCMA & CD19	MCARTY*	Phase 1

B Cell Malignancies T-Cell Lymphoma Solid Tumors Multiple Myeloma

* Collaboration with UCL

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
- Blackstone also committed to invest up to $150 million in product financing to support obe-cel development and commercialization
  - $50 million payable upon closing of the transaction
  - Remainder payable based on achievement of certain development and regulatory milestones
- Blackstone will receive a warrant to purchase up to $24 million worth of Autolus ADSs at an exercise price premium to market
- Autolus agreed to pay Blackstone a capped single digit royalty plus milestone payments based on worldwide net sales of obe-cel
- Fully funds development and filing of obe-cel in r/r adult ALL, as well as funding commercial and manufacturing infrastructure build
- Transaction strengthens balance sheet and provides runway into 2024[1]

NOTES

1. Assuming all milestones received

Next Steps

Autolus poised for potential value inflection

obe-cel pivotal data in adult ALL in 2022

obe-cel

- FELIX Phase 2 study in adult ALL full data expected in 2022
- Evaluation in relapsed/refractory B-NHL and CLL ongoing, with next data update expected in H1 2022
- Evaluation in Primary CNS Lymphoma ongoing with initial data update expected in Q1 2022

AUTO1/22

- Pediatric ALL – AUTO1/22 Phase initial 1 data expected in H1 2022 and longer follow-up data in H2 2022

Pipeline

- AUTO4: Peripheral T cell lymphoma - interim phase 1 data expected in H1 2022
- AUTO6NG: Neuroblastoma – start phase 1 in H1 2022
- AUTO8: Multiple Myeloma – start phase 1 in H1 2022

Cash balance at September 30, 2021, $173.1 million:

- +$25M R&D tax credit received in October 2021
- +$150M from Blackstone in November 2021
- Cash runway including project financing payments from Blackstone into 2024

Autolus

Thank you