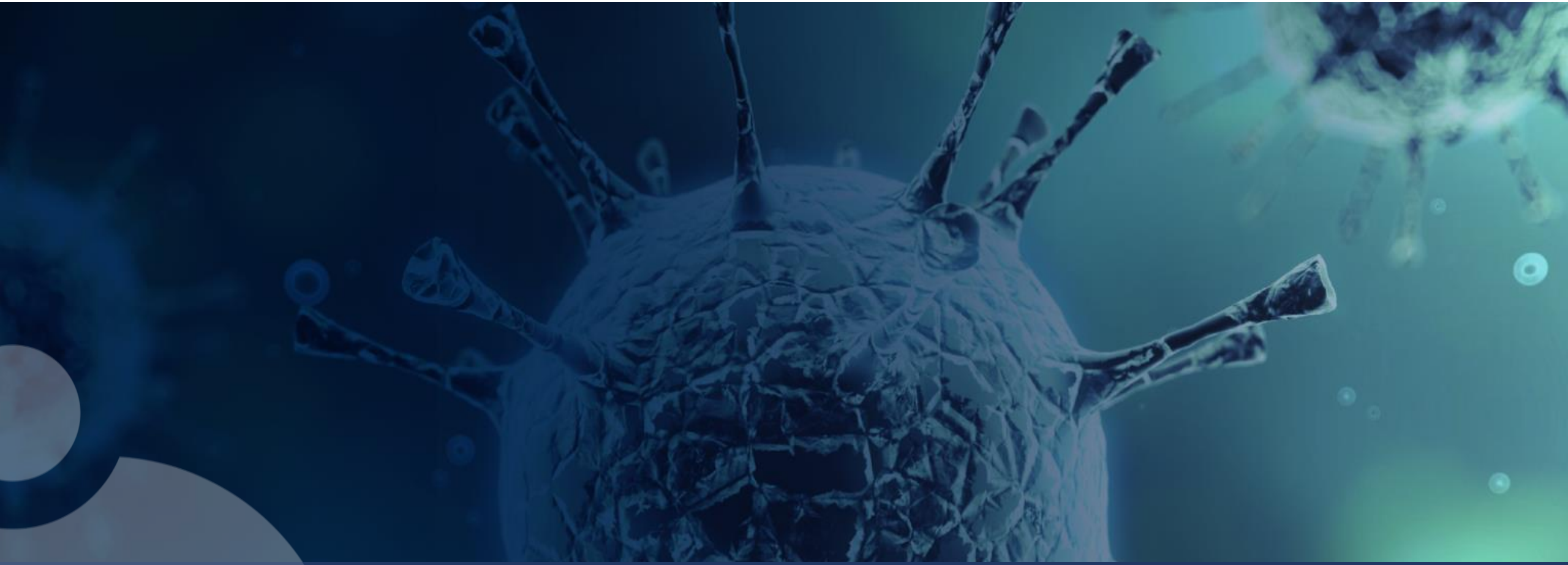
Autolus

Nasdaq: AUTL



Developing Next Generation Programmed T Cell Therapies

November 2021

Disclaimer

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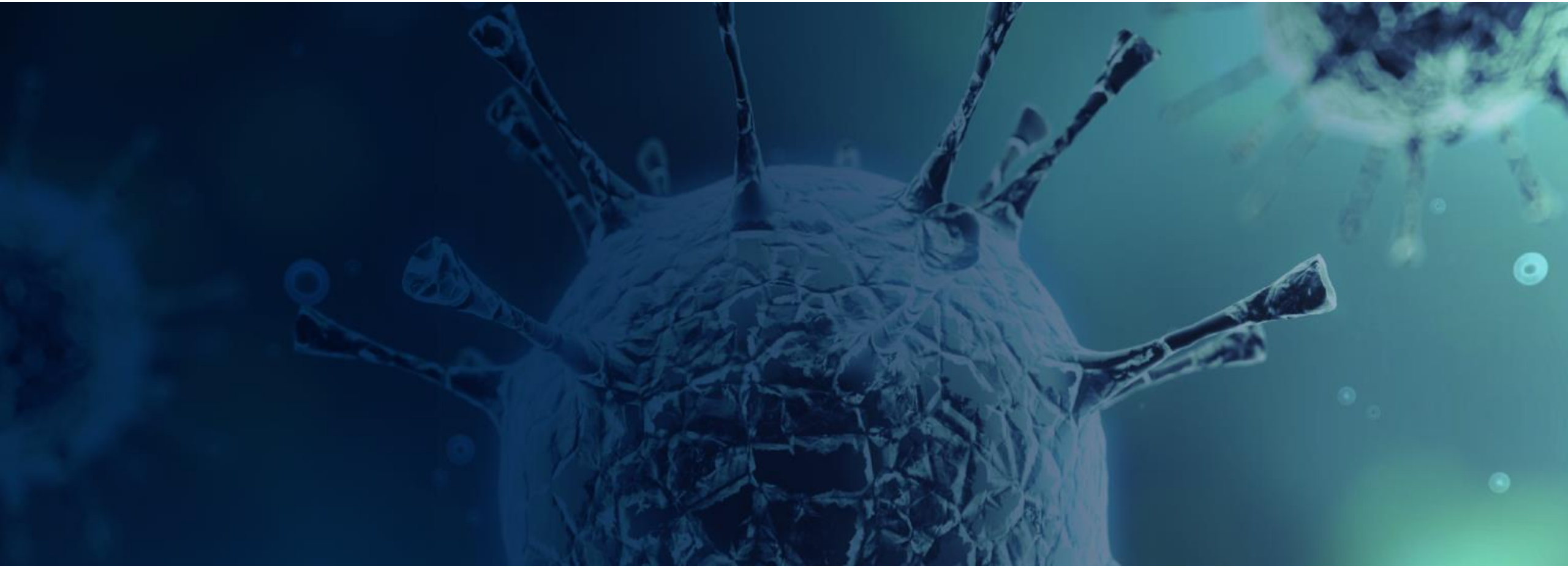


Blackstone Collaboration

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 has also agreed to purchase $100 million of Autolus' American Depositary Shares (ADS') in a private placement, which will close on or about November 12
- Blackstone has 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
- Autolus has agreed to pay Blackstone a capped single digit royalty plus milestone payments based on worldwide net sales of obe-cel
- Blackstone will receive a warrant to purchase up to $24 million worth of Autolus ADSs at an exercise price premium to market

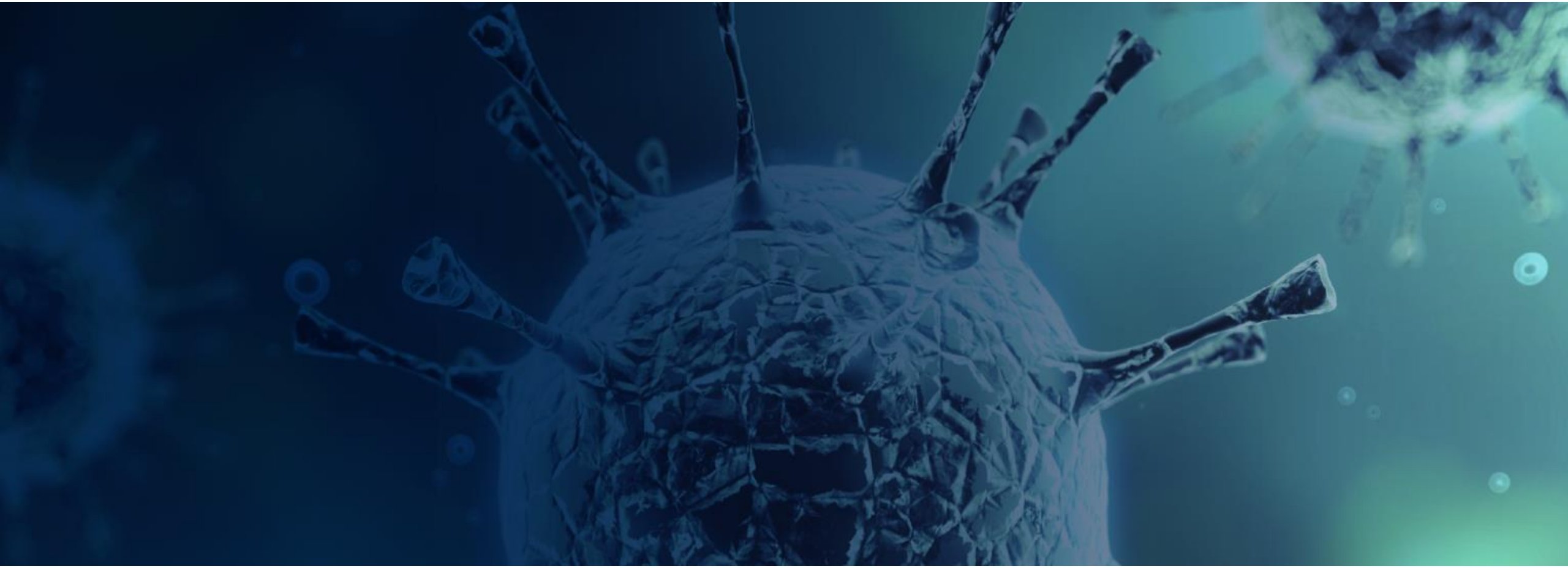
Strategic collaboration validates commercial opportunity in adult ALL

Collaboration funds development and filing of BLA for obe-cel in r/r adult ALL

- Provides validation of Autolus technology and commercial opportunity in Adult ALL
- Fully funds development and filing of obe-cel in r/r adult ALL, as well as funding commercial and manufacturing infrastructure build
- Allows Autolus to consider strategic advancement of pipeline outside of Adult ALL, including additional expansion indications for obe-cel as well as pediatric development
- Transaction strengthens balance sheet and provides runway into 2024*
- Blackstone received the right to nominate a member to Autolus' board of directors

Blackstone

*assuming all milestones received



Lead Clinical Program

Striving for best-in-class therapies

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

Focused on delivering obe-cel, a potentially transformational treatment for Adult ALL

- Full data for obe-cel (FELIX) trial in adult ALL expected in 2022
- obe-cel data in B-NHL indications in Q4 2021
- Next generation AUTO1/22 data in pALL in Q4 2021

- 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 2021/2022
- Building on a scalable, fully enclosed manufacturing platform

Broad pipeline of clinical programs

Designed to address limitations of current T cell therapies

PRODUCT	INDICATION	TARGET	PHASE 1/2	PIVOTAL*
obe-cel	Adult ALL	CD19	ALLCAR19	FELIX
obe-cel	NHL †	CD19	ALLCAR19	
obe-cel	PCNSL † †	CD19	CAROUSEL	
AUTO1/22	Pediatric ALL	CD19 & CD22	CARPALL	
AUTO4	TRBC1+ Peripheral TCL	TRBC1	LibrA T1	

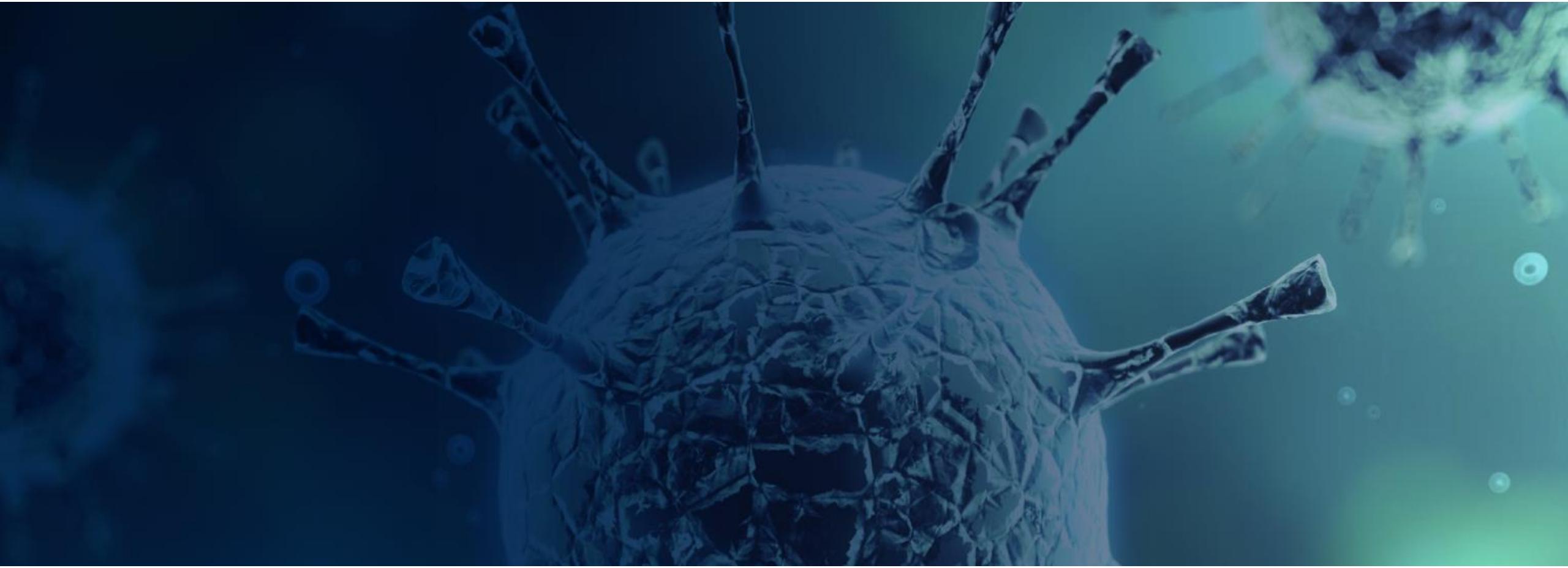
B Cell Malignancies

T Cell Lymphoma

*Subject to confirmation by regulatory authorities

† Non-Hodgkin lymphoma

† † PCNSL = Primary CNS Lymphoma



Adult Acute Lymphoblastic Leukemia

Obe-cel— Potential as a standalone therapy

High unmet need remains for adult ALL patients

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

Autolus

ALL is a significant opportunity

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

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

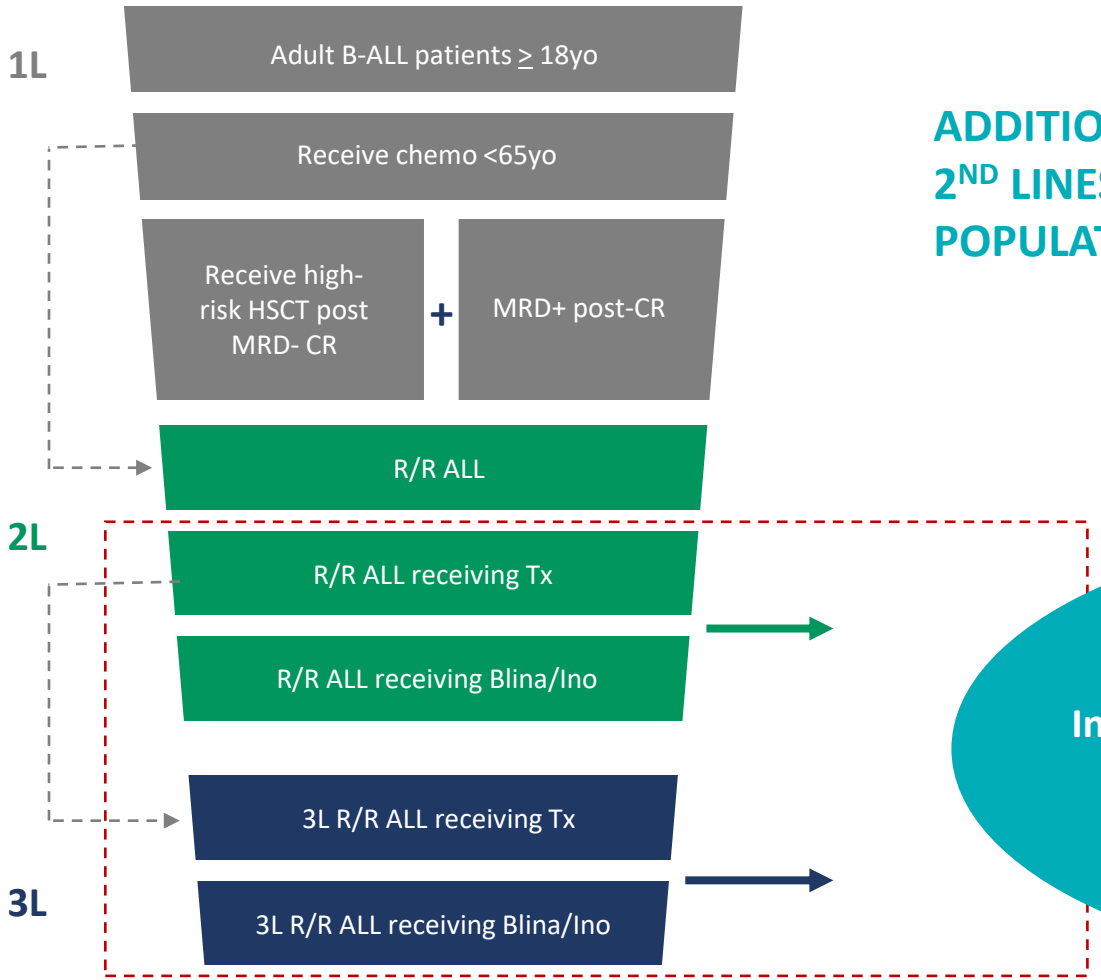
HIGH UNMET MEDICAL NEED

- 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 ALL, PRIME DESIGNATION IN R/R B-ALL BY EMA AND ILAP DESIGNATION BY MHRA IN ADULT R/R B-ALL

*SEER and EUCAN estimates (respectively) for US and EU epi

Adult ALL is a promising commercial opportunity with limited competition



ADDITIONAL POTENTIAL FOR OBE-CEL TO MOVE TO 1ST AND 2ND LINES **, WHICH INCREASES THE ADDRESSABLE PATIENT POPULATION TO APPROX. 5,000 ADULT ALL PATIENTS

Initial Market Opportunity in 2L+ R/R aALL
~3000 patients in US/EU/JP

*Company estimate, based on US, EU5 and Japan
**Subject to successful clinical progress

Key features of a successful CAR T Cell therapy for adult ALL

Obe-cel is uniquely placed to address current limitations of therapy

Challenge	Product Property	CAR T Feature	Potential Benefit
Fast proliferating disease	Very high level of anti-leukemic activity	Rapid CAR T mediated kill and high level of CAR T expansion	High response rates
Almost stem cell like nature of leukemic cells	Sustain long term pressure on leukemia	Long CAR T persistence	Durable responses
Poor patient condition	Good tolerability	Minimize high grade CRS and NT	Manageable AE profile

Obe-cel has potential for transformational outcomes in Adult ALL

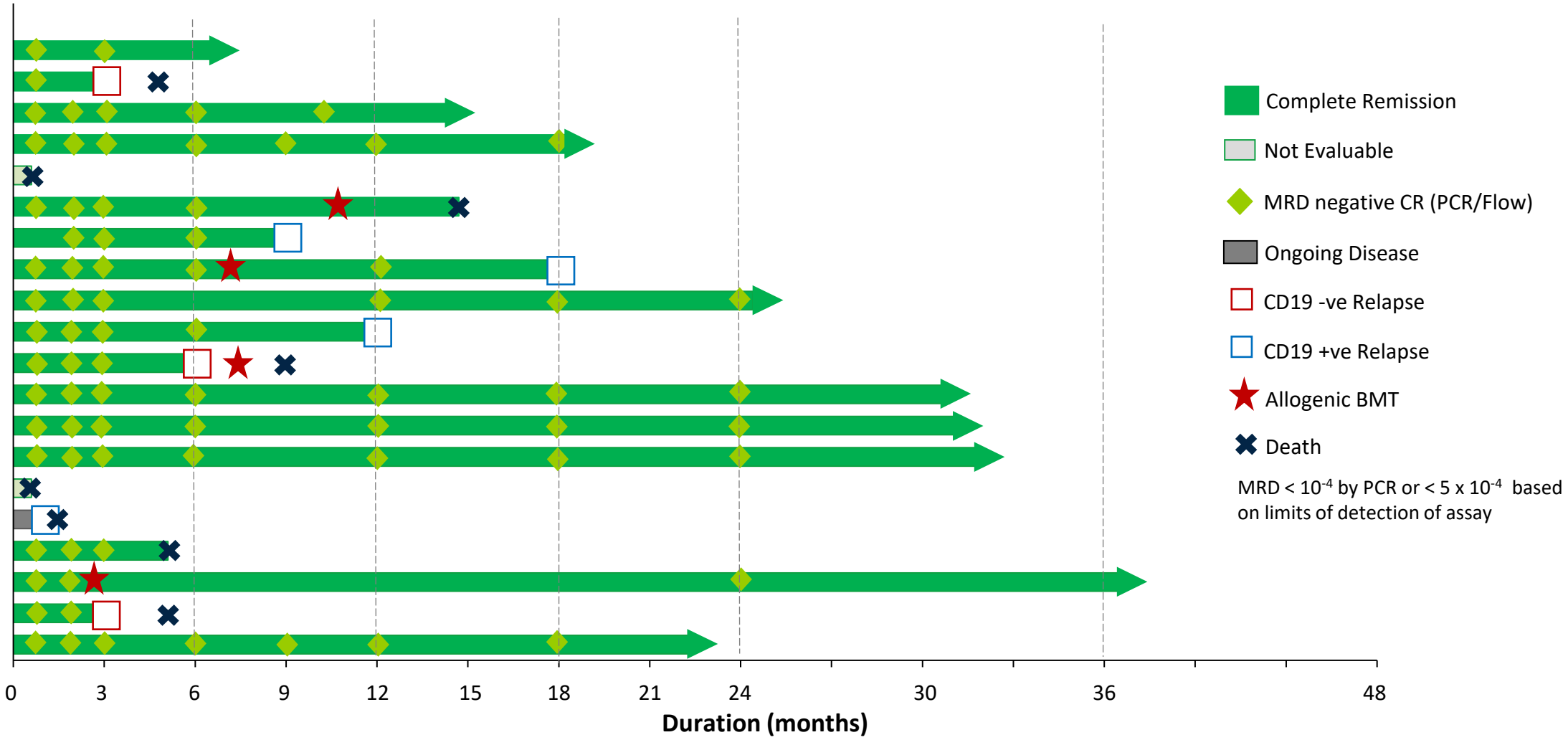
Data cut-off date May 17, 2021

- In a subset of patients sustained CRs are without subsequent stem cell transplant
- Durability of remissions highly encouraging
  - Across all treated patients, EFS at twelve and twenty-four months of 50%
- Obe-cel well tolerated, despite heavily pre-treated patients with high disease burden
  - No patients experienced ≥ Grade 3 cytokine release syndrome (CRS)
  - 20% of patients experienced any grade ICANS*, swiftly resolved with steroids
- Initial phase 1b data of Felix trial is consistent with the data from ALLCAR19
- Phase 2 trial underway, expect full data in 2022
- Adult ALL represents a sizeable market opportunity addressable with focused commercial footprint

*Immune effector cell-associated neurotoxicity syndrome

Obe-cel shows sustained stand-alone activity in adult ALL patients

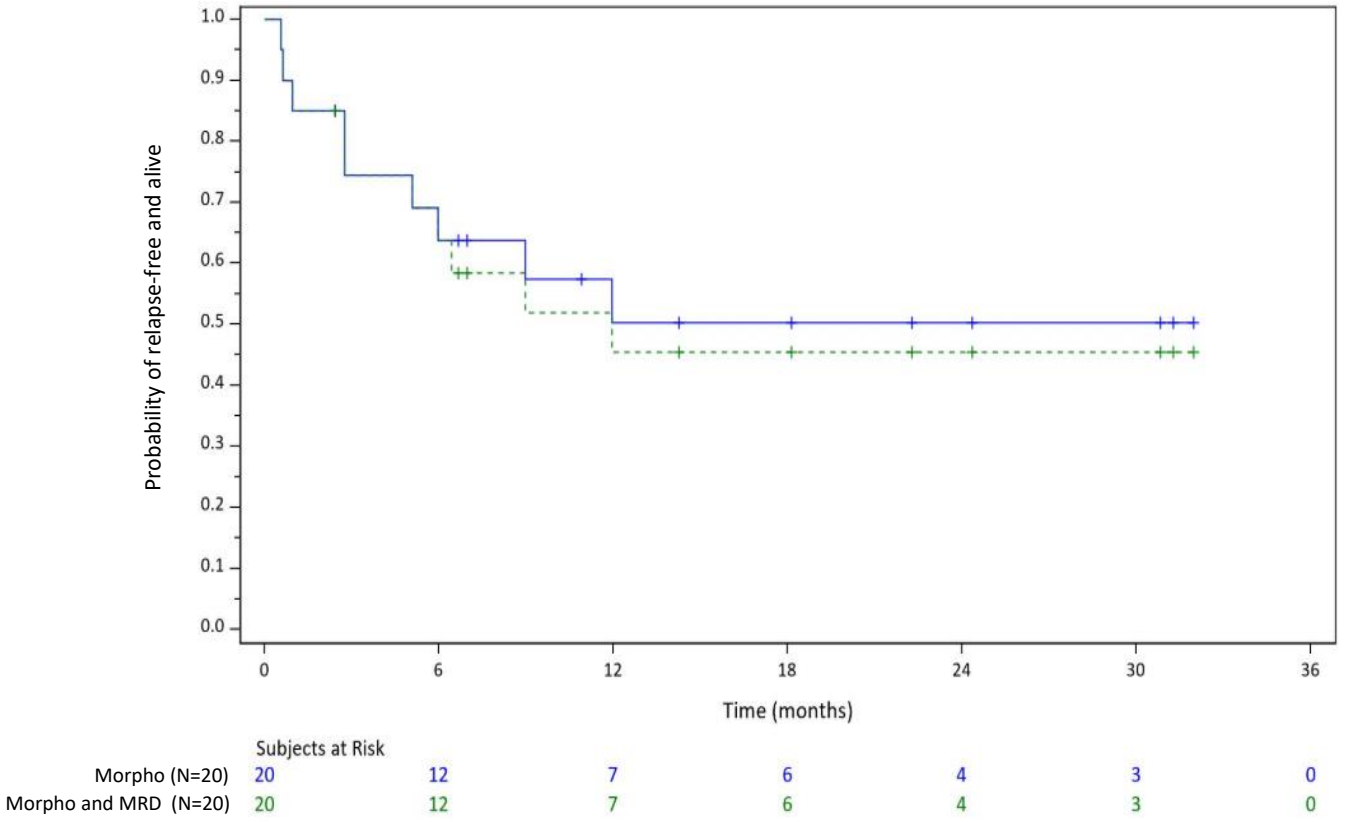
ALLCAR-19 Phase 1 EHA data cut - May 17 2021



Obe-cel morphological event-free survival of 50.2% at 24 months

MRD and morphological EFS curves are superimposable with a plateau seen from 12 months

Morphological and Molecular EFS among all infused patients in ALLCAR19



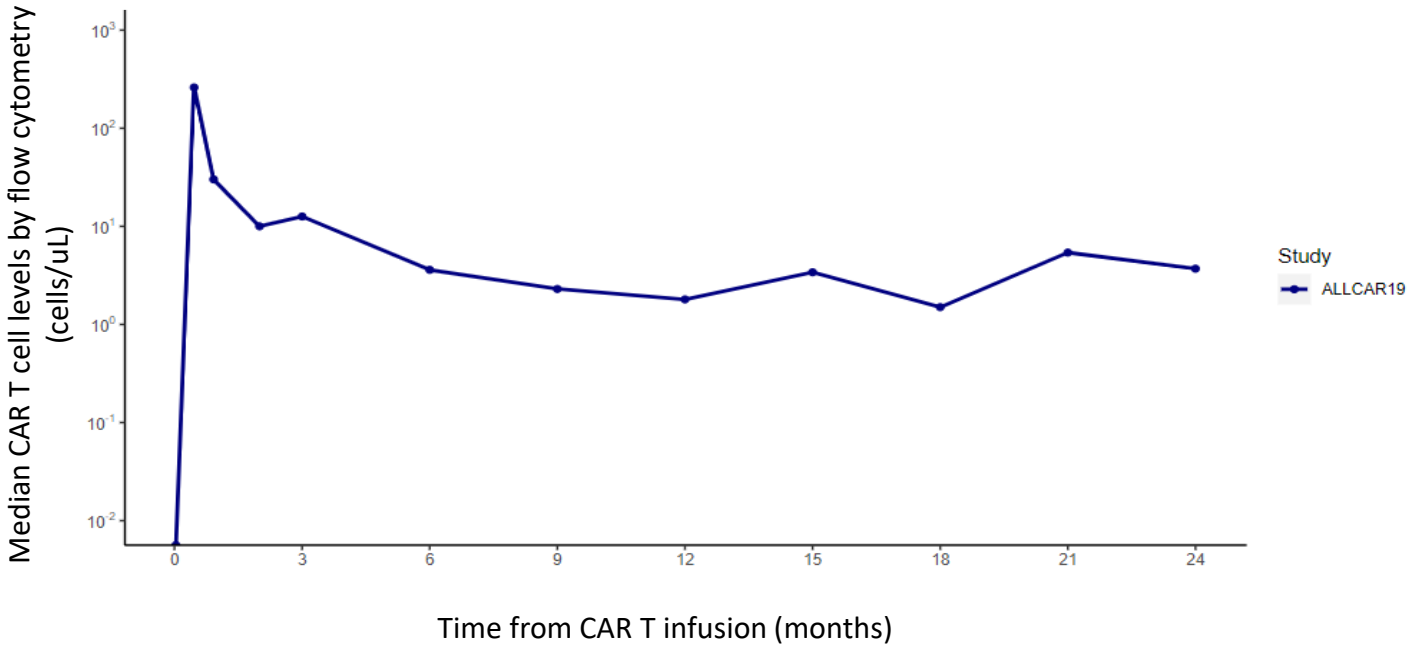
		All infused patients	Closed Process
	N	20	14
	ORR	85%	93%
	MRD Neg CR	85%	93%
DOR			
	Median	Not reached	Not reached
	12 months	64%	64%
Morph. EFS			
	Median	Not reached	Not reached
	12 months	50.2%	60%
	24 months	50.2%	60%
Molecular EFS			
	Median	12 months	Not reached
	12 months	45%	54%
	24 months	45%	54%

Event for morphological EFS = death or morphological relapse
Event for molecular EFS = death, morphological relapse, or molecular relapse (i.e. MRD > 0.01%)
Data Cut-off 17-May-2021

Obe-cel expansion characteristics support its differentiated profile

Obe-cel shows long persistence and well manageable safety profile

Median CAR T cell levels in peripheral blood



	ALLCAR-19 trial
N	**20**
CRS Any Grade	**55%**
CRS Grade ≥ 3	**0**
NE / ICANS Any Grade	**20%**
NE / ICANS Grade ≥ 3	**15%**
Treatment for CRS and/or ICANS	
Tocilizumab	35%
Steroids	20%
Vasopressor	0

Current standard of care in r/r adult ALL

Obe-cel showed 50.2% EFS at 24 months

	Standard of Care	
	Blinatumumab[1]	**Inotuzumab[2]**
N	271	109
ORR (CR/CRi)	44%	80.7%
EFS	31% (6 m)	mPFS 5m
median DoR	7.3m	5.4m
median OS	7.7m	7.7m
CRS ≥ Grade 3	3%	0%
Neurotox any Grade	65%	Not reported
Neurotox ≥ Grade 3	13%	0%
Other notable observations	NA Approx. 50% of blinatumumab patients received subsequent HSCT	14% Hepatic VoD Approx. 50% of inotuzumab patients received subsequent HSCT

1. Kantarjian et al., 2017/ USPI (product label)
2. Kantarjian et al., 2016/ USPI (product label)

Footnote: Information presented is based on publicly available data. No head-to-head studies were conducted.

Tecartus ® approved for adults with relapsed or refractory B-cell precursor ALL

Obe-cel showed 50.2% EFS at 24 months

	ZUMA-3 Phase 2 Lancet publication[1]	ZUMA-3 Phase 2 USPI (Label) [2]
N	55	54
ORR (CR/CRi)	71%	65%
EFS[#]	~45% (12 m), ~25% (18 m)	-
median DoR, 95% CI	13.6m (9.4, NE)	13.6m (8.7, NE)
median OS, 95% CI	18.2m (15.9, NE)	-
CRS ≥ Grade 3	24%	24%
Neurotox any Grade	60%	87%
Neurotox ≥ Grade 3	25%	35%
Other notable observations	40% vasopressor use 18% pts received alloSCT after Tecartus infusion	-

[#] EFS for ZUMA-3 were estimated based on the KM curve

1. Shah et al. Lancet 2021
2. Tecartus USPI (label)

Footnote: Information presented is based on publicly available data. No head-to-head studies were conducted.

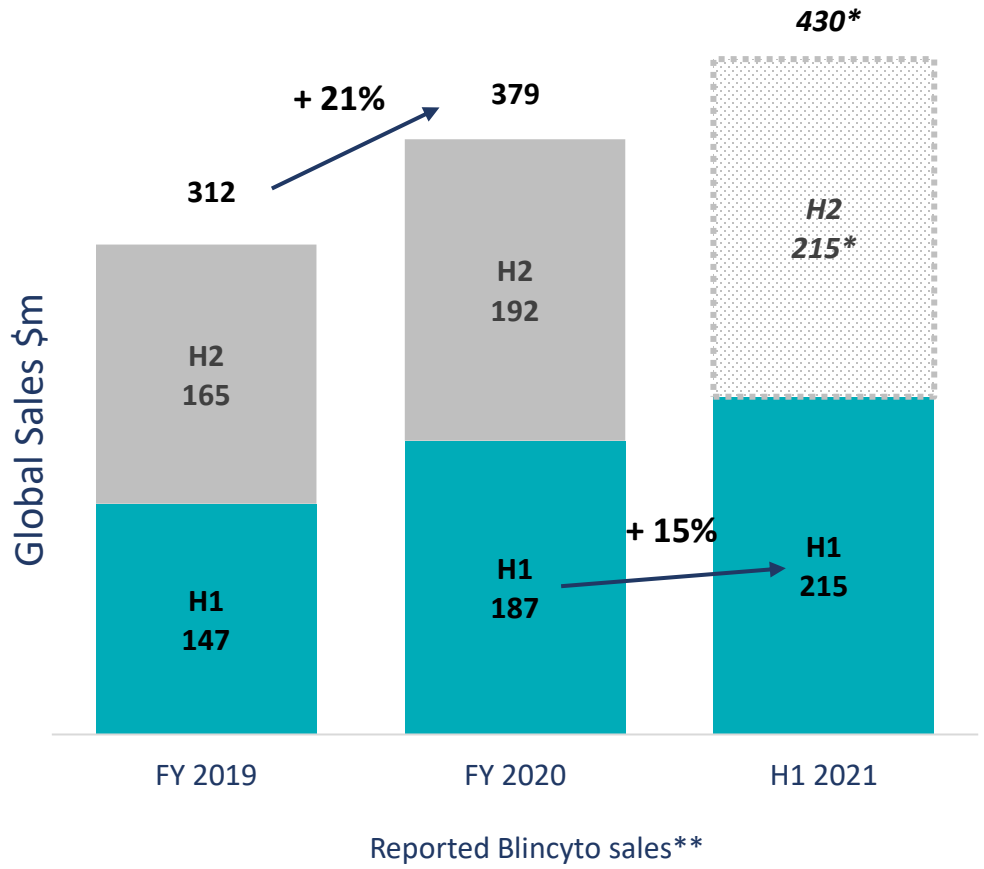
Obe-cel potentially differentiated on efficacy, durability and safety

Unique CAR T design drives differentiated product profile

- Obe-cel has a high level of MRD-negative CR (85%)
- Morphological EFS for obe-cel at 24 months was 50.2%
- Long term CAR T persistence drives durability of effect
- Obe-cel has a favorable safety profile

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**

- Blincyto sales price estimated to be $178k± (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±±. 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

**As per Amgen quarterly SEC filings

* H2 2021 is not reported, this is just an extrapolation based on H1 2021 reported sales

Komodo Health 2015 – 2020

± https://www.medscape.com/viewarticle/836879

± ± Bristol Myers finally wins FDA approval for cancer cell therapy | BioPharma Dive

Preliminary Phase 1 data supports development as a stand-alone therapy

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

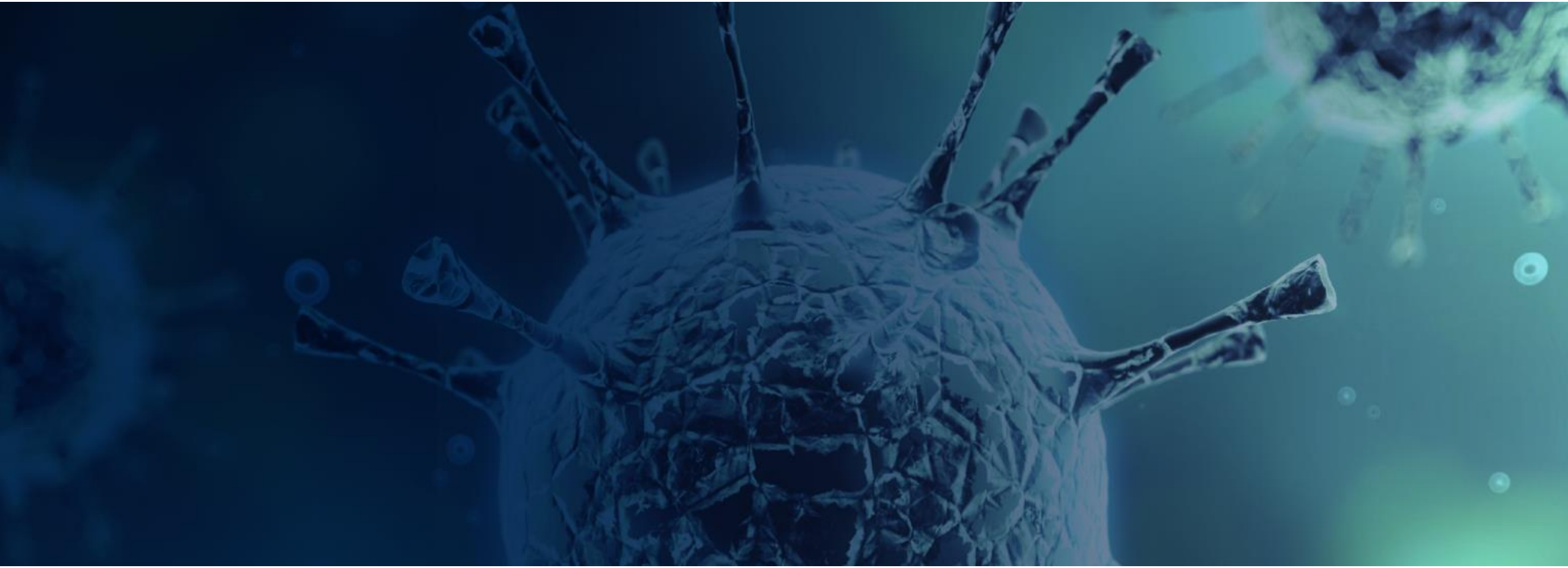
Unique profile of obe-cel offers potential across broader indications

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

PRODUCT	INDICATION	TARGET	PHASE 1	PHASE 1B/2
Obe-cel	Adult ALL	CD19	**ALLCAR-19 ***	**FELIX**
Obe-cel	B-NHL & CLL	CD19	**ALLCAR-19 Ext ***	
Obe-cel	Primary CNS Lymphoma	CD19	**CAROUSEL ***	
AUTO1/22	Pediatric ALL	CD19 & CD22	**CARPALL ***	

OPPORTUNITY TO PURSUE IN EARLIER LINES OF THERAPY AND INDICATIONS OF ADULT ALL

* Collaboration with UCL



Pediatric ALL

AUTO1/22 CD19 & CD22 targeting CAR-T for r/r pediatric ALL

Adding a high sensitivity CD22 CAR to AUTO1 to minimize relapses due to CD19 antigen loss

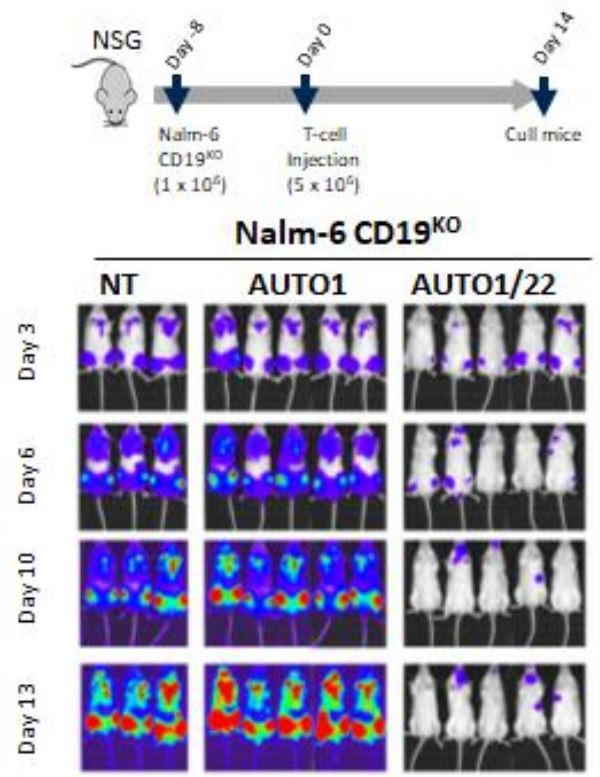
Primary driver for relapse in pALL is CD19 antigen loss

	pALL	
	*AUTO1	#Kymriah
n	14	75
CR Rate	86%	81%
EFS 12m	54% (95% CI, 24 to 76)	50% (95% CI, 35 to 64)
No. of CD19 negative relapses	5/6	15/22
CRS ≥ G3	0%	47%
NTX ≥ G3	7%	13%

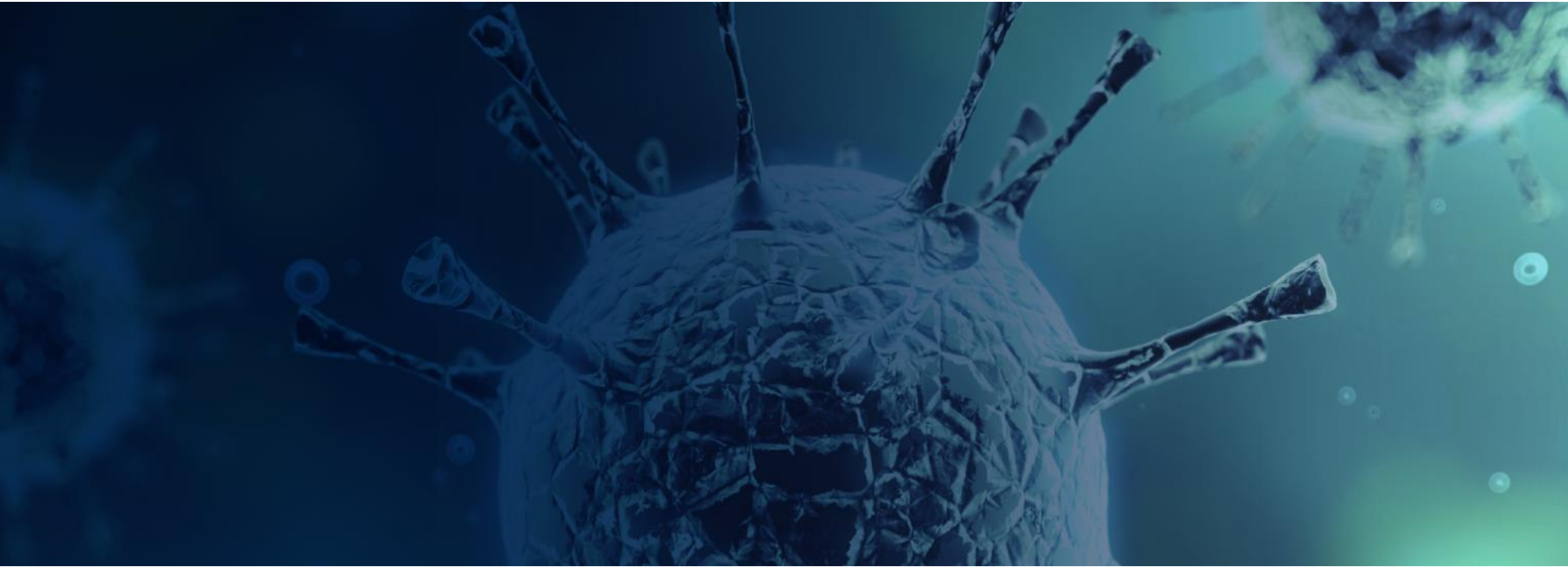
*Ghorashian S, Pule MA, Amrolia P et al. *Nature Medicine* 201

#Maude et al., NEJM 2018

AUTO1/22 Dual Targeting CAR T to CD19 and CD22



Phase 1 CARPALL study in r/r pALL ongoing, initial PoC data expected Q4 2021



Indolent NHL

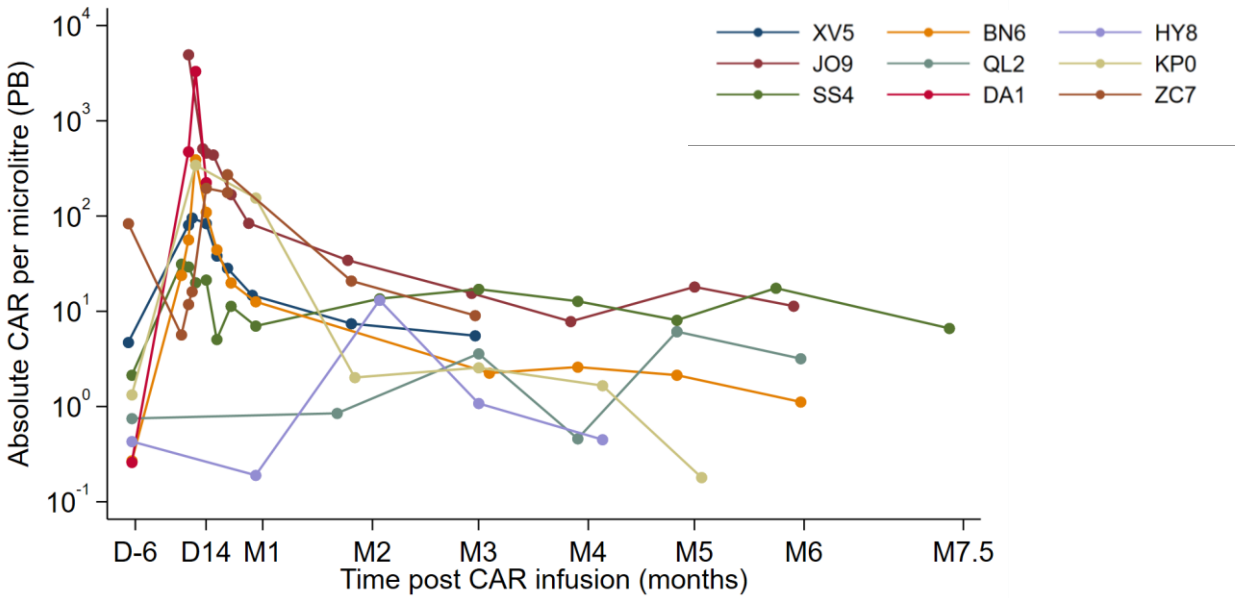
obe-cel

ALLCAR-19 cohort D - iNHL patient characteristics, persistence and safety

Obe-cel shows excellent T cell expansion and engraftment with a manageable safety profile

Baseline Characteristics	N=9
Median age, years (range)	56 (39 - 68)
Gender	7M/ 2F
Disease • Follicular Lymphoma • Mantle Cell Lymphoma	 7(78%) 2 (22%)
Lines of treatment • Median (range) • Prior autograft • Prior allo-HSCT	 3 (2-5) 4 (44%) 1 (11%)
Stage of disease at screening • Stage I/II • Stage III/IV	 0/9 9/9
Bridging therapy • Chemotherapy alone • Radiotherapy + steroids • Chemo + Radiotherapy • Nil	 7 2 0 0

CAR T Cell Expansion in Cohort D (B-NHL)



Immunotoxicity in Cohort D (B-NHL)

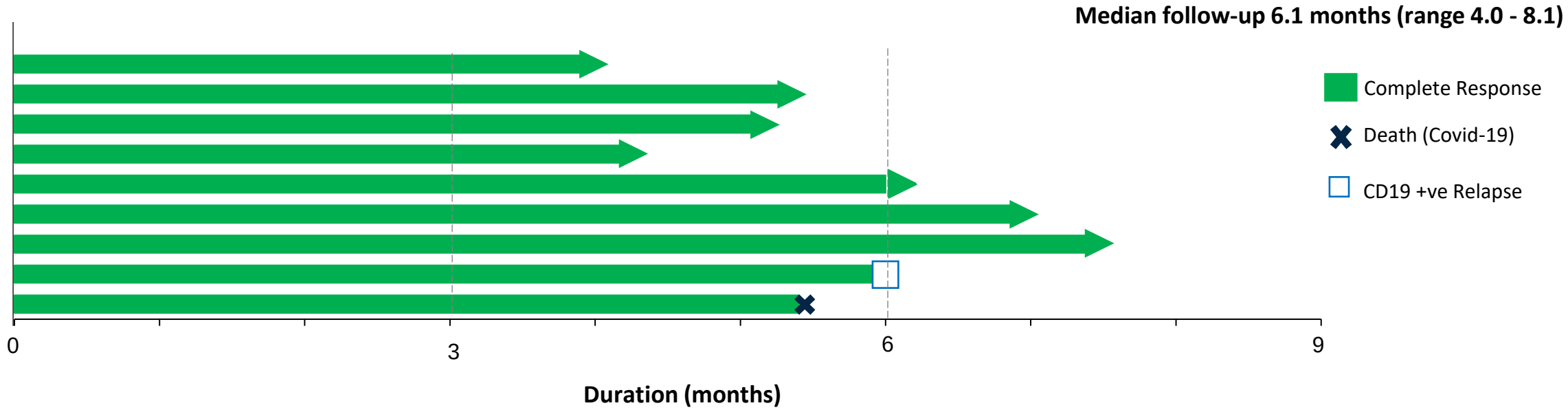
CRS (ASTCT criteria#)	Neurotoxicity (ICANS)
• CRS (any) in 5/9 • Grade 2 in 1/9 • ≥ Grade 3 CRS in 0/9 • Tocilizumab used in 2 patients	• ICANS in 0/9 • Grade 2 in 0/9 • Grade 3 in 0/9

Lee et al. ASBMT Consensus Grading for Cytokine Release Syndrome and Neurologic Toxicity Associated with Immune Effector Cells. Biol Blood Marrow Transplant J Am Soc Blood Marrow Transplant. 2018

Data cut-off date May 17, 2021

ALLCAR-19 cohort D – clinical responses in other relapsed/refractory B-NHL

All patients treated achieved a metabolic Complete Response (CR)

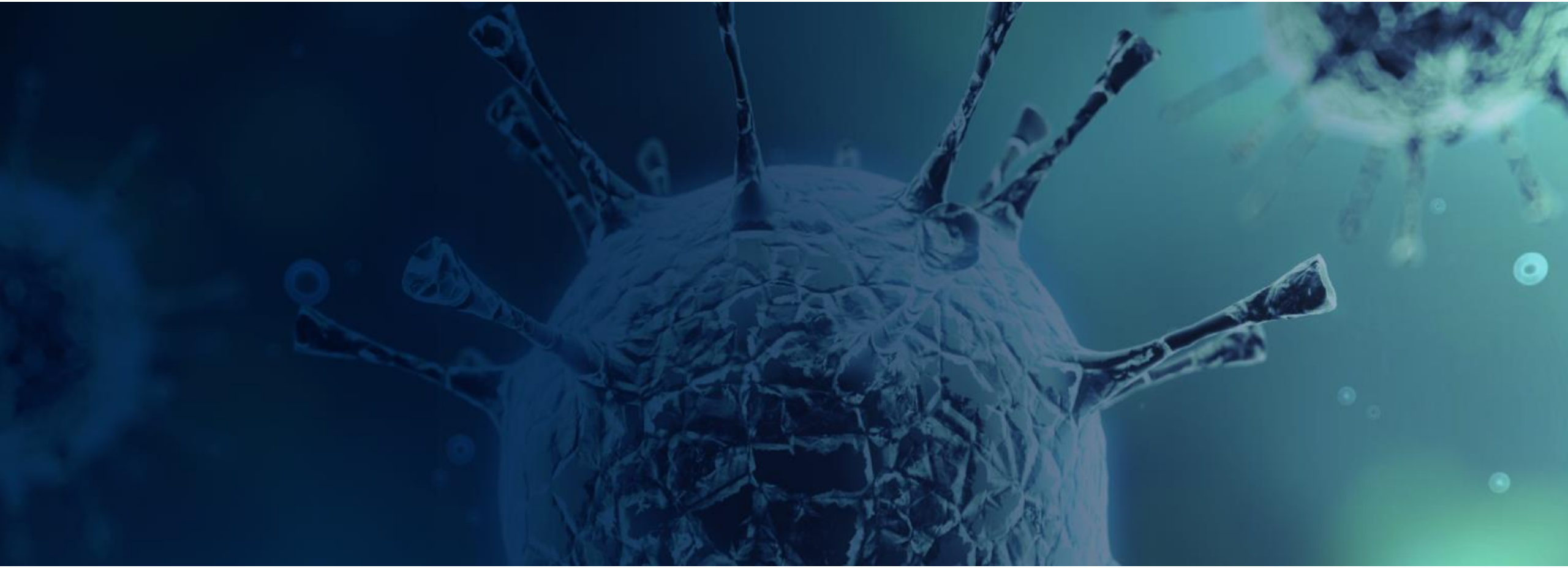


- 9/9 patients in the indolent B-NHL cohort achieved metabolic CR by month 3
- 8/9 disease-free at last follow-up (median F/U = 6.1 months; range 4.0 - 8.1m)
- 1/9 patients died on study from COVID-19 whilst in remission at month 6 of follow-up
- 1/9 relapsed with small volume subcutaneous CD19+ disease, salvaged with radiotherapy
- 0/9 patients experienced ICANS of any grade or ≥ grade 3 CRS

Data cut-off date May 17, 2021

Summary and next steps for obe-cel outside of adult ALL

- Initial obe-cel efficacy data in the iNHL cohort is encouraging
- Obe-cel continues to show a consistent and favorable safety profile across all indications evaluated
- Additional cohorts being explored, and further data planned for Q4 2021
- CAROUSEL study in PCNSL open with data expected in Q1 2022
- AUTO1/22 (CARPALL study) in pediatric ALL open with data expected in Q4 2021



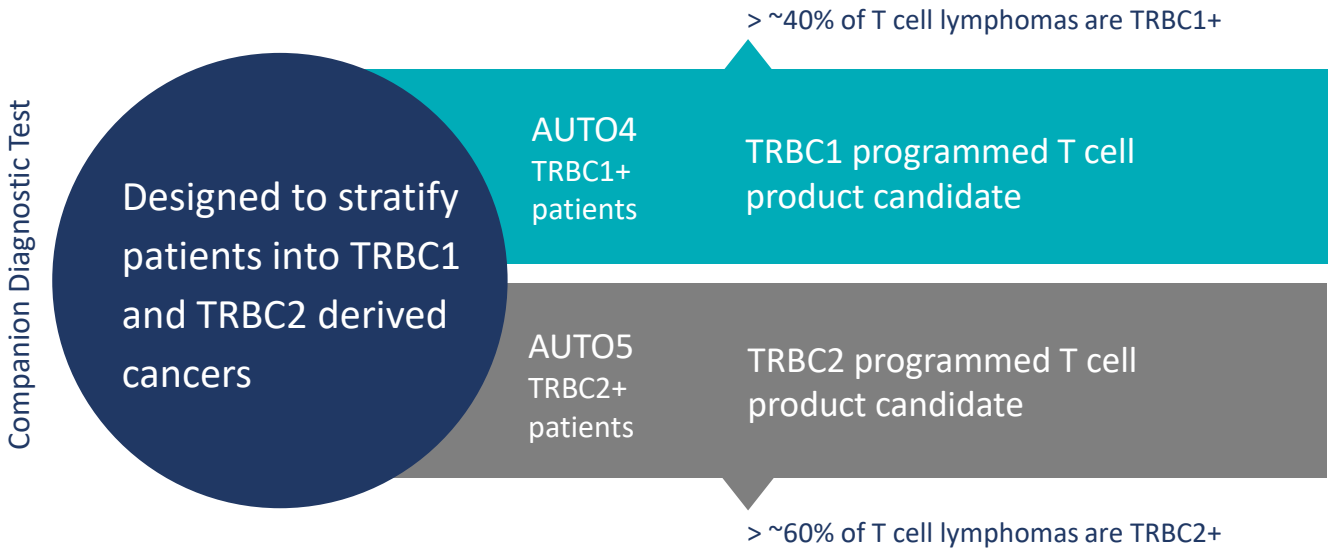
T Cell Lymphoma

AUTO4 and AUTO 5 — tailored for T Cell Lymphoma

T Cell Lymphoma

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

AUTOLUS USES THREE KEY ELEMENTS TO ADDRESS T CELL LYMPHOMAS—AUTO4, AUTO5 AND A COMPANION DIAGNOSTIC TEST

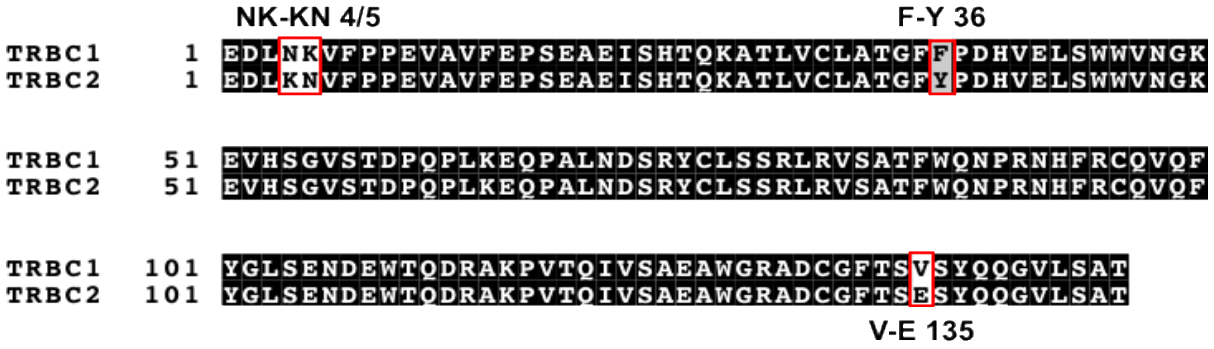


- T cell lymphoma is an aggressive disease with a very poor prognosis for patients
- Median 5 yrs OS: 32%
- Standard of care is variable and often based on high-dose chemotherapy and stem cell transplants
- A large portion of T cell lymphoma patients are refractory to or relapse following treatment with standard therapies
- T cell lymphomas have not, so far, benefited from advances in immunotherapeutic approaches
- AUTO4 Phase 1 interim data expected in H1 2022
- AUTO5 to enter Phase 1 study in H1 2022

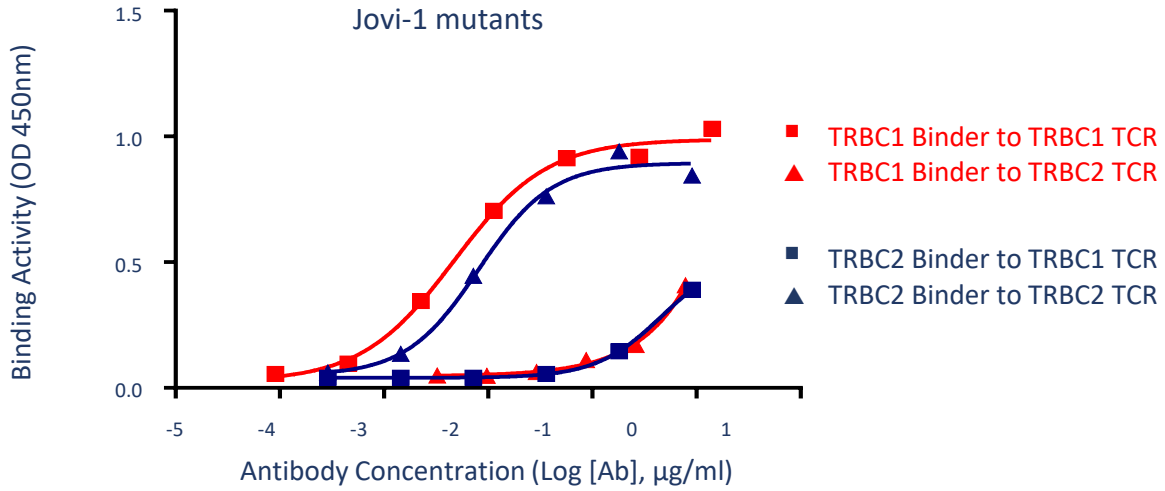
Unique targeting of TRBC1 & TRBC2 opens new therapeutic approach

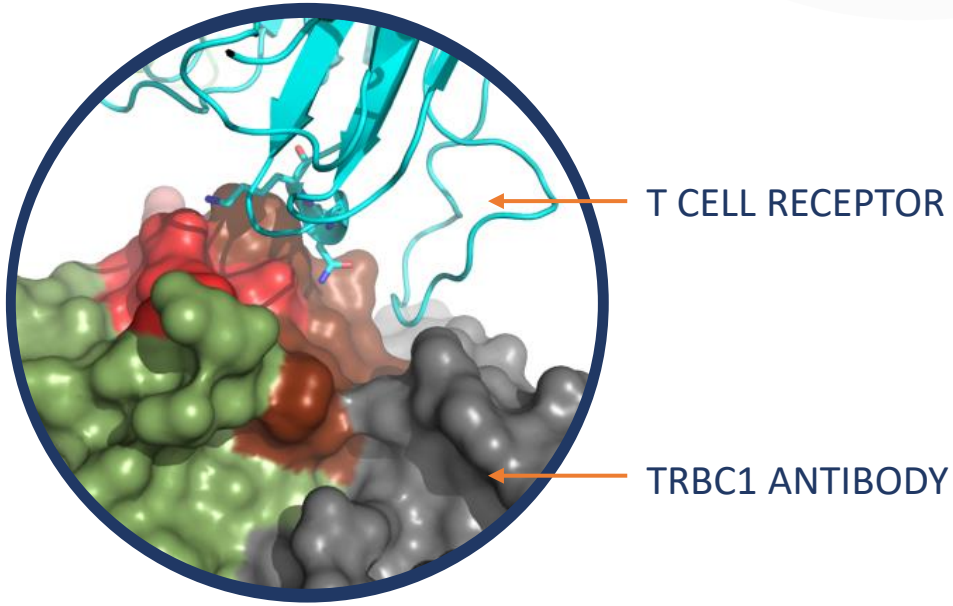
AUTO4/5 in Peripheral T Cell Lymphoma

DIFFERENCES BETWEEN TRBC1 AND TRBC2 ARE SMALL

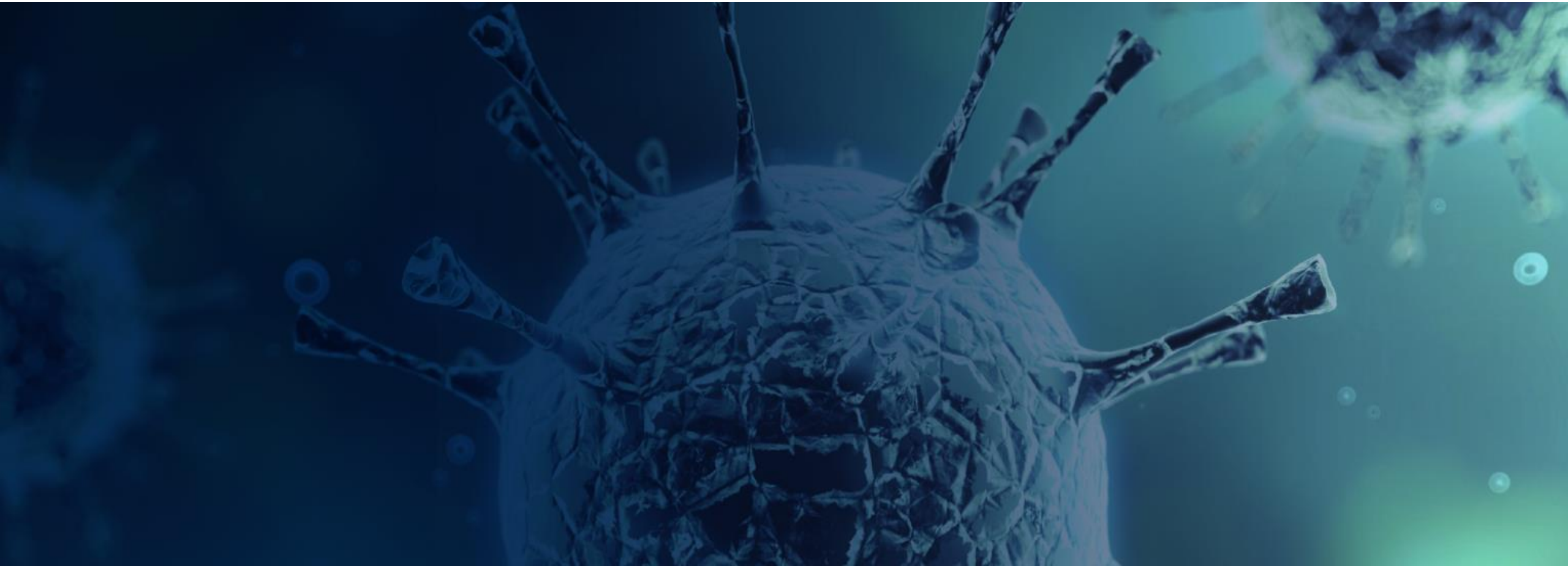


ANTIBODY BINDING DATA





- AUTO4 clinical study, LibrA T1, in progress
- AUTO5 in late preclinical development
- Preclinical study package demonstrating selective binding and anti-tumor activity of TRBC1 and TRBC2 CARs *in vitro* and *in vivo*

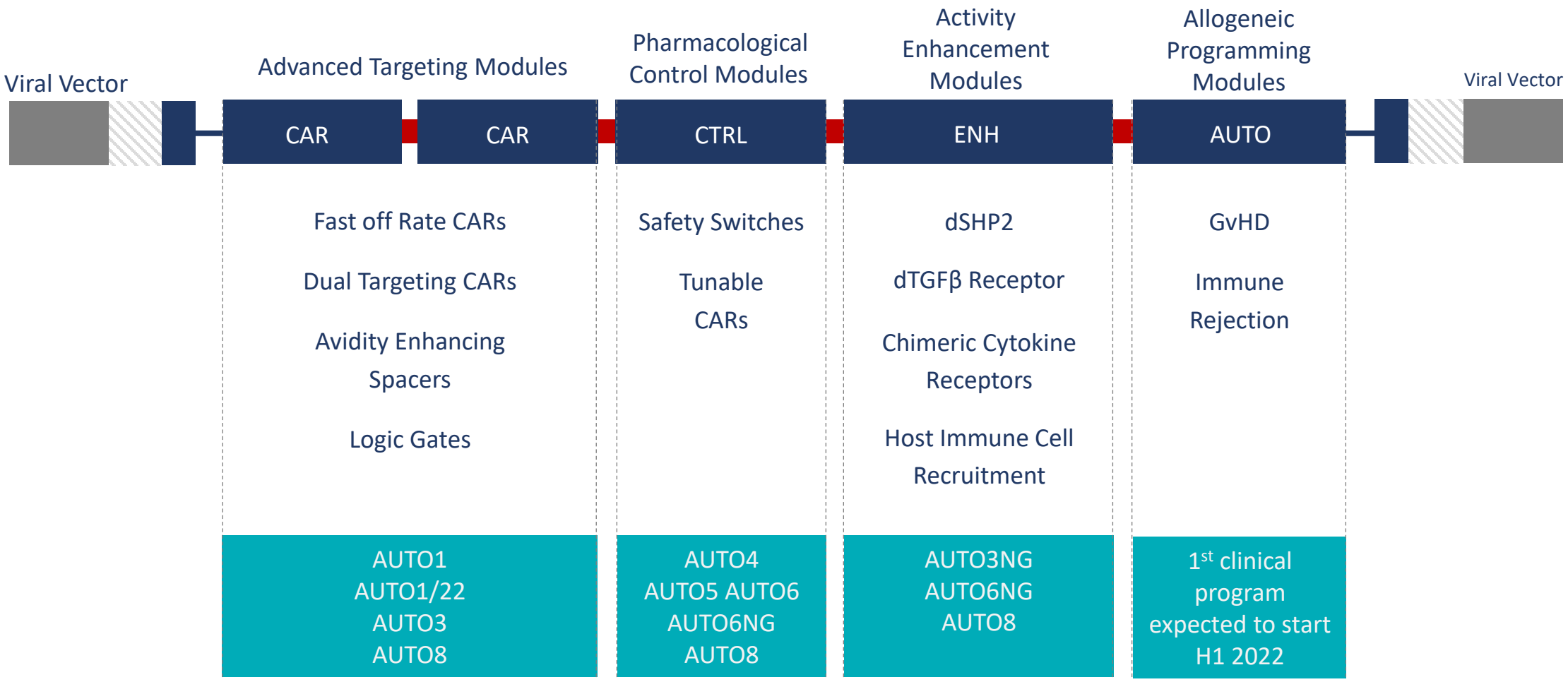


Pipeline

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



Broad pipeline of next generation programs

Designed to address limitations of current T cell therapies

PRODUCT	INDICATION	TARGET	PRECLINICAL	PHASE 1*
AUTO1/22 **	Pediatric ALL	CD19 & CD22		Started Q4 2020
AUTO5	TRBC2+ Peripheral TCL	TRBC2		H1 2022
AUTO6NG **	Neuroblastoma; Other tumor types	GD2		H1 2022
AUTO8	Multiple Myeloma	BCMA & CAR X		Q4 2021

B Cell Malignancies T Cell Lymphoma GD2+ Tumors Multiple Myeloma

*Planned Trial Initiations
** Collaboration with UCL
NG = Next Generation

Modular approach designed to enhance AUTO6NG for solid tumor environment

Next generation programs powered by our proprietary technology toolbox

GD2 CAR

To provide anti-tumor activity and potential to help address neurotoxicity and pain syndrome

dSHP2

To overcome multiple checkpoint pathways

dnTGFβRII Receptor

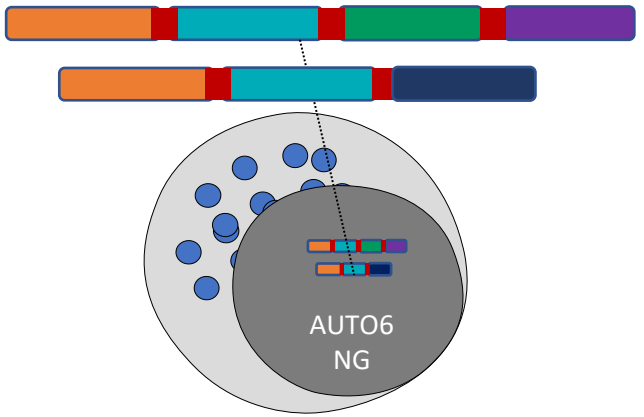
To overcome inhibitory effect of TGFβ in microenvironment

AUTO6

SAFETY SWITCH
To eliminate the therapy in the event of unexpected toxicities

Cytokine Signal

IL7 CCR chimeric protein designed to improve CAR T cell persistence



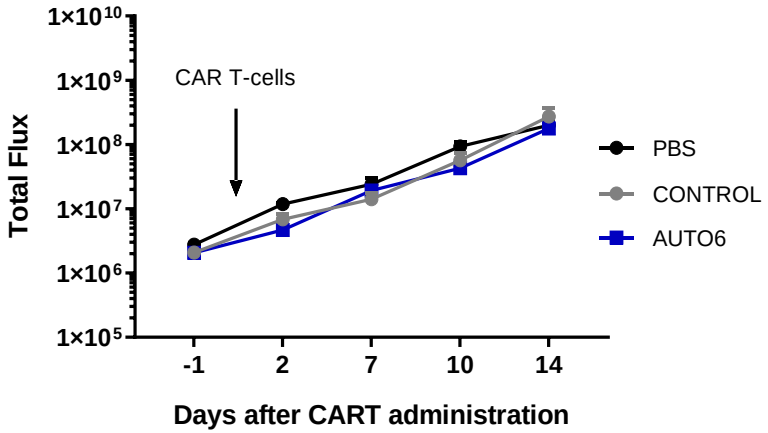
AUTO6NG:

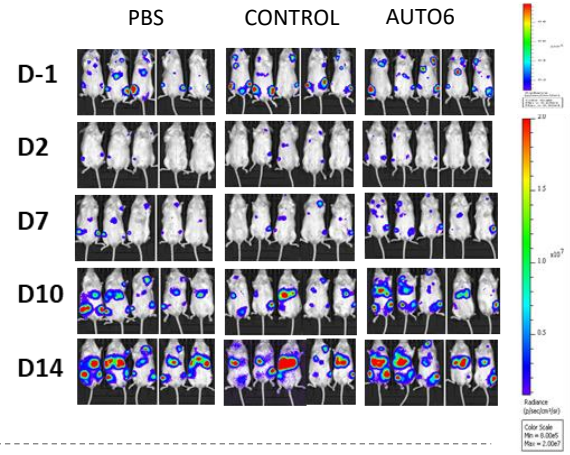
- Utilizes GD2 CAR from AUTO6, and is further enhanced to address persistence, control and tumor defenses
- Targeting neuroblastoma, osteosarcoma, melanoma and small cell lung cancer amongst others

AUTO6NG exhibits potent anti-tumor activity in preclinical model

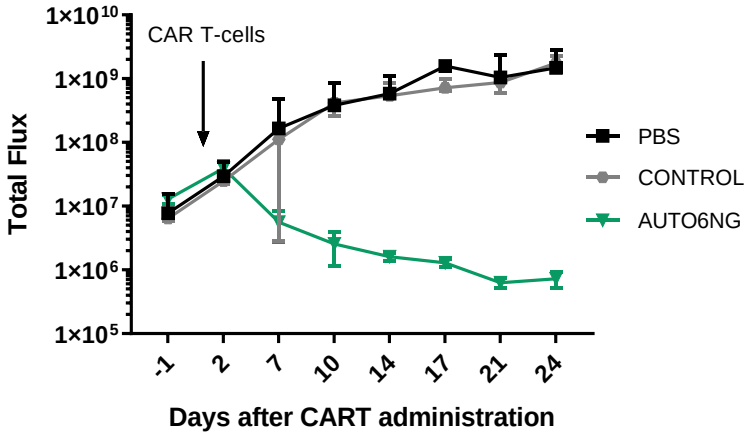
Extends survival in challenging in vivo model

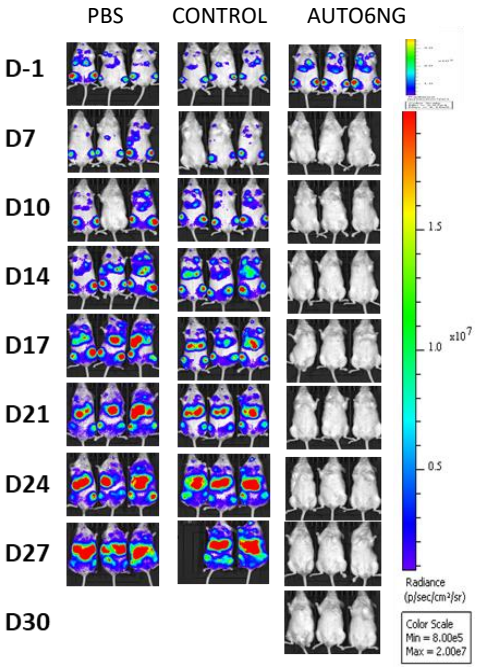
AUTO6



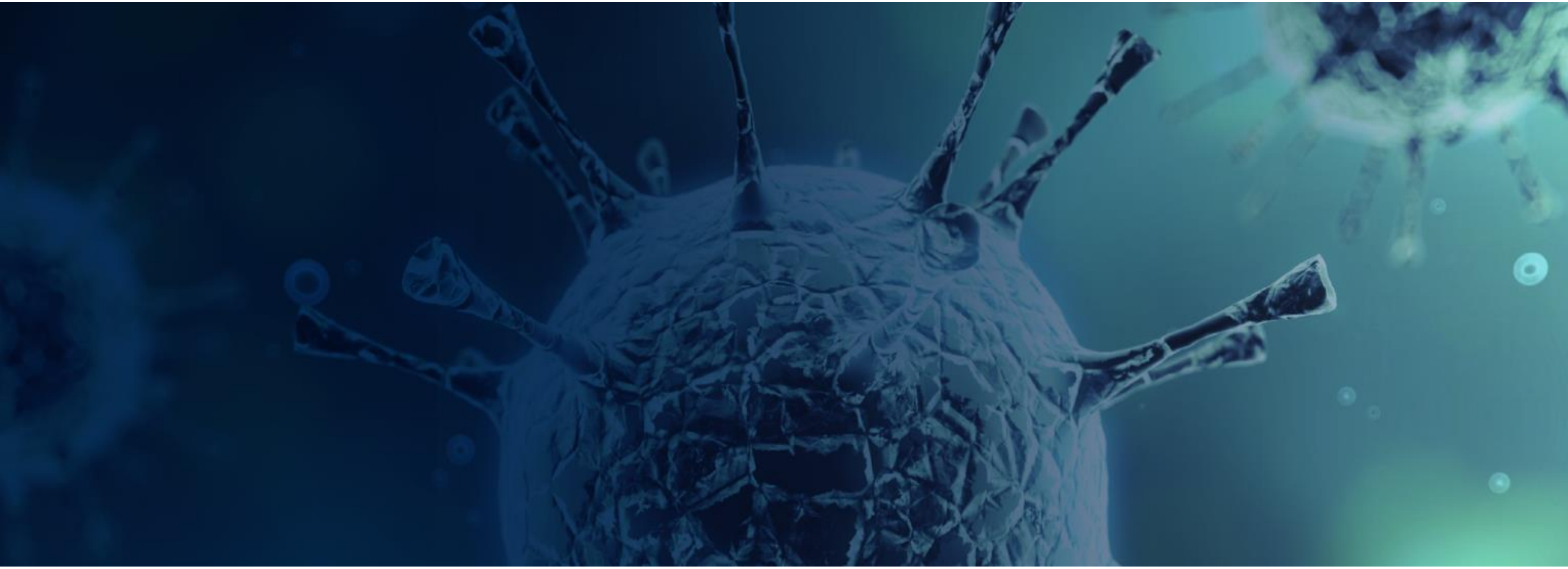


AUTO6NG





Achkova, D., et al SITC 2019 (abstract)



Next Steps

Multiple clinical milestones anticipated through 2021/2022

PRODUCT	INDICATION	TARGET	PHASE	NEXT MILESTONE
Obe-cel	Adult ALL	CD19	Pivotal*	FELIX data in 2022
AUTO1 /22	Pediatric ALL	CD19/CD22	Phase 1	Data in Q4 2021
obe-cel	B-NHL	CD19	Phase 1	Data in Q4 2021
obe-cel	PCNSL	CD19	Phase 1	Data in Q1 2022
AUTO3	DLBCL	CD19/CD22	Phase 1	Phase 1 completed. Intend to partner.
AUTO4	TRBC1+ Peripheral TCL	TRBC1+ Peripheral TCL	Phase 1	Phase 1 interim data H1 2022
AUTO5	TRBC2+ Peripheral TCL	TRBC2+ Peripheral TCL	Preclinical	Start Phase 1 H1 2022
AUTO6 NG	Neuroblastoma; Osteosarcoma; SCLC	GD2	Preclinical	Start Phase 1 H1 2022
AUTO8	Multiple Myeloma	BCMA/CAR-X	Preclinical	Start Phase 1 study Q4 2021
ALLO Program	Undisclosed	Undisclosed	Preclinical	Start Phase 1 H1 2022

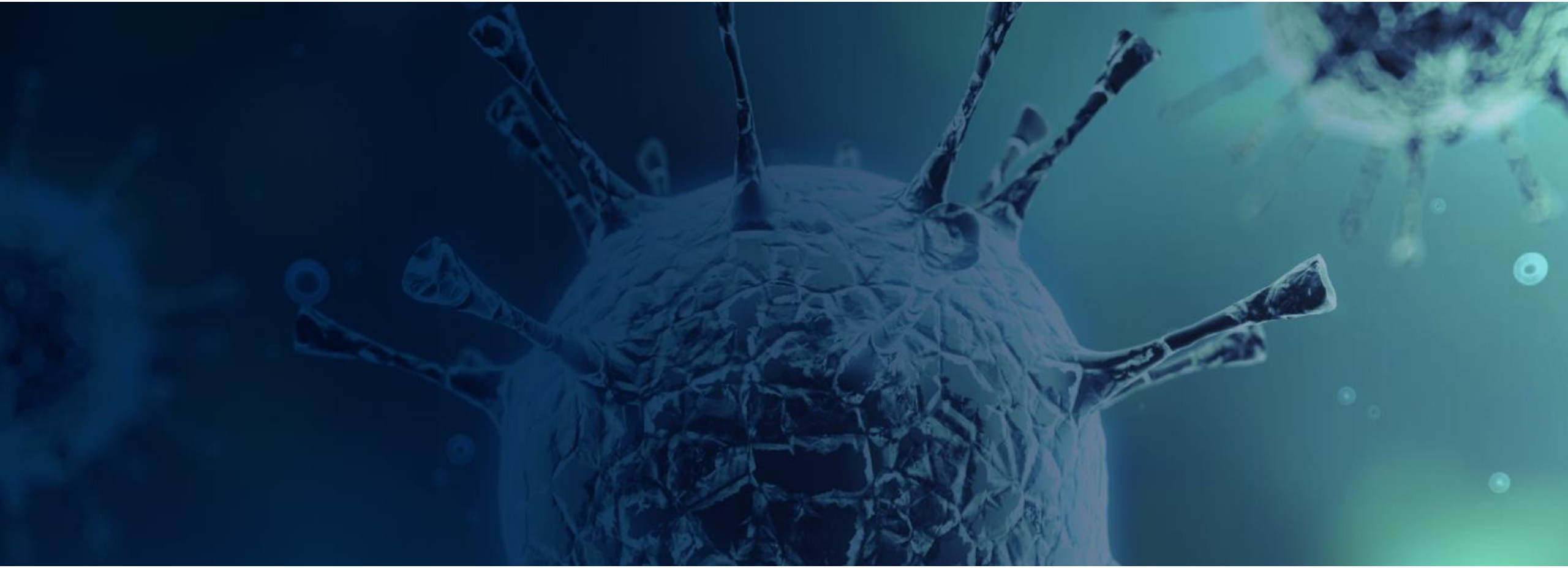
*Subject to confirmation by regulatory authorities.

B Cell Malignancies T Cell Lymphoma Solid Tumors Multiple Myeloma Allogenic

Autolus poised for potential value inflection

- Obe-cel and AUTO1/22
  - Autolus' potential pivotal trial (FELIX) in adult ALL progressing well. Enrollment continues with initial data on the Phase 1b portion of the trial expected at ASH in December, 2021. Company reiterates guidance to expect full data in 2022
  - Pediatric ALL – AUTO1/22 Phase 1 trial started in December, 2020. Update expected at ASH in December, 2021
  - ALLCAR study extension in other relapsed/refractory B-NHL and CLL ongoing. Update expected at ASH in December, 2021
  - Opportunity to develop AUTO1 in Primary CNS Lymphoma, CAROUSEL study update expected in Q1 2022
- AUTO4 continues in dose escalation in a Phase 1 trial, interim data expected in H1 2022
- Autolus' solid tumor program, AUTO6NG, to enter clinic in H1 2022
- AUTO8 IN Multiple Myeloma due to enter clinic in Q4 2021
- 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