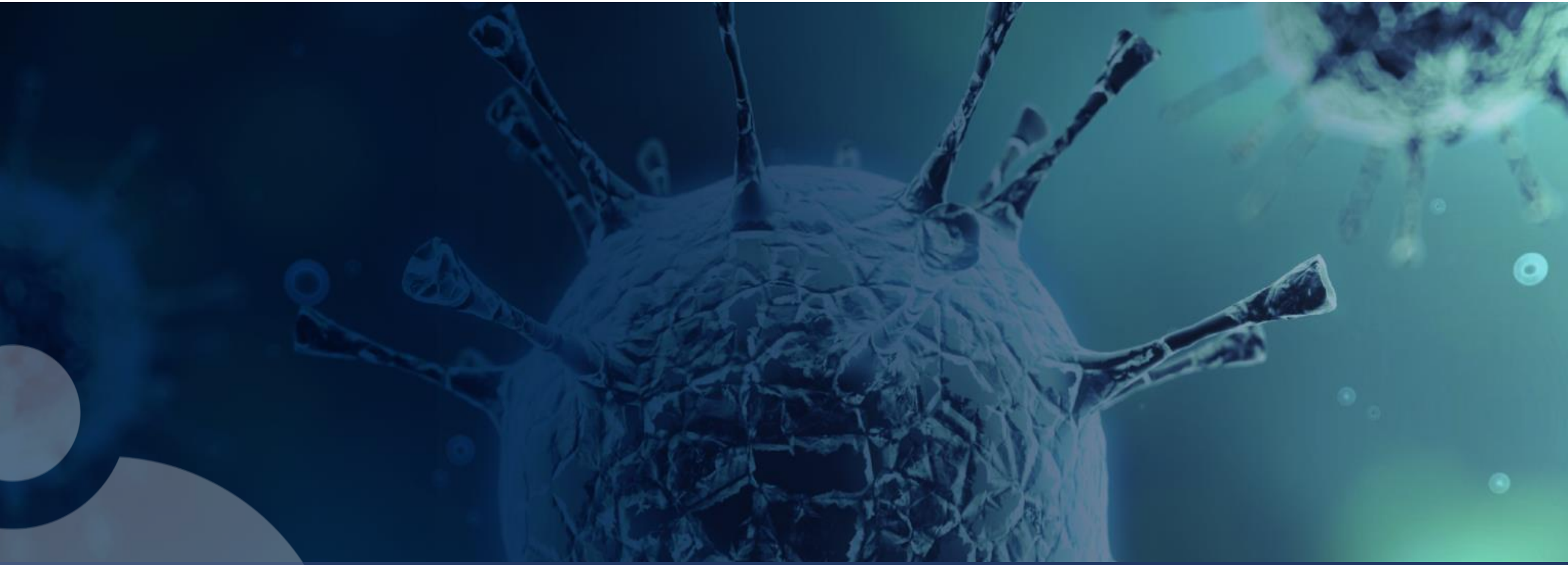
Autolus

Nasdaq: AUTL



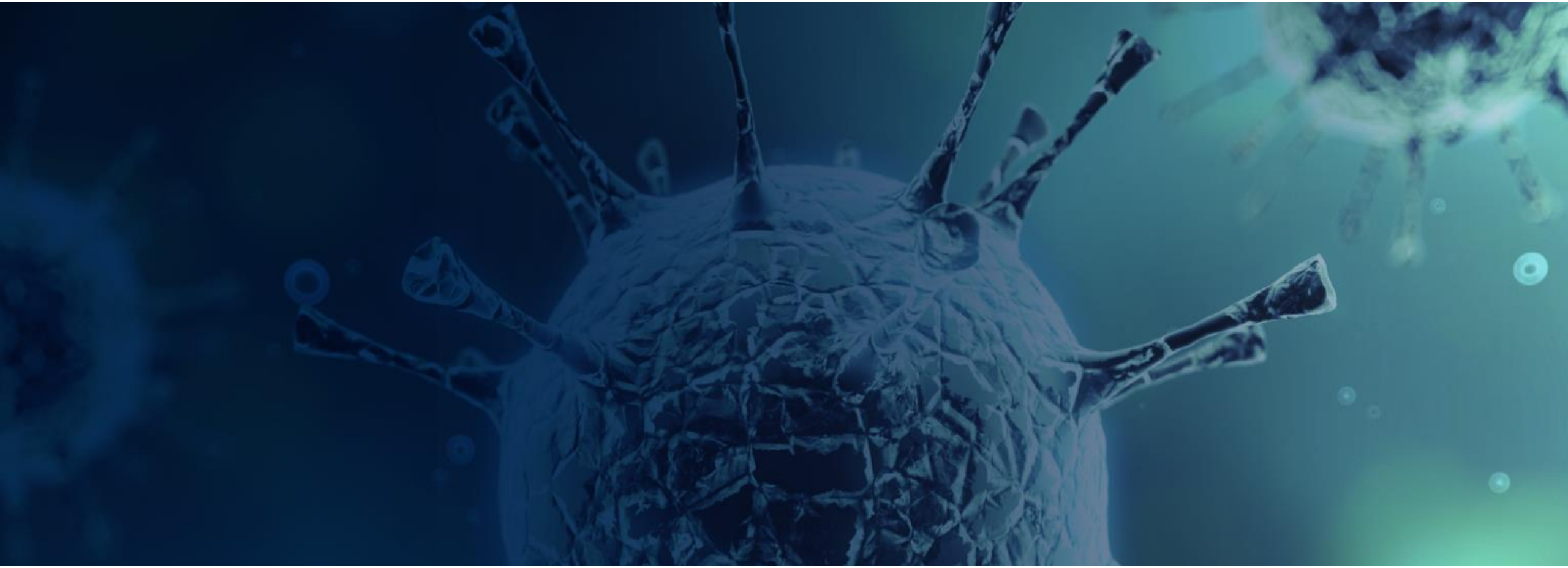
Developing Next Generation Programmed T Cell Therapies

August 2021

Disclaimer

These slides and the accompanying oral presentation contain forward-looking statements within the meaning of the "safe harbor" provisions of The Private Securities Litigation Reform Act of 1995, including, but not limited to, statements about the Company's anticipated cash runway; the safety, therapeutic potential and commercial opportunity of obe-cel, AUTO3 and AUTO4 and the future clinical development of obe-cel, AUTO3 and AUTO4 including progress, expectations as to the reporting of data, conduct and timing; the Company's plans to partner AUTO3, the Company's plans to develop and commercialize its other product candidates and next generation programs including statements regarding the timing of initiation, completion of enrollment and availability of data from the Company's current preclinical studies and clinical trials; the impact of the ongoing COVID-19 pandemic on the Company's business and clinical trials; and the Company's commercialization, marketing and manufacturing capabilities and strategy. All statements other than statements of historical fact contained in this presentation, including statements regarding the Company's future results of operations and financial position, business strategy and plans and objectives of management for future operations, are forward-looking statements. In some cases, you can identify forward-looking statements by terms such as "may," "should," "expects," "plans," "anticipates," "could," "intends," "target," "projects," "contemplates," "believes," "estimates," "predicts," "potential" or "continue" or the negative of these terms or other similar expressions. These statements involve known and unknown risks, uncertainties and other important factors that may cause the Company's actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements. Factors that may cause actual results to differ materially from any future results expressed or implied by any forward-looking statements include the risks described in the "Risk Factors" section of the Company's Annual Report on Form 20-F for the year ended December 31, 2019, as amended, as well as those set forth from time to time in the Company's subsequent SEC filings, available at www.sec.gov. All information contained herein is as of the date of the presentation, and the Company undertakes no obligation to publicly update any forward-looking statement, whether as a result of new information, future events, or otherwise, except as required by law. You should, therefore, not rely on these forward-looking statements as representing the Company's views as of any date subsequent to the date of this presentation.

Autolus



Lead Clinical Programs

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 Acute Lymphoblastic Leukemia (ALL), as well as exploring activity in additional B-cell malignancies

Full data for obe-cel (FELIX) trial in adult expected in 2022

Obe-cel data in broader NHL indications expected in Q4 2021, Obe-cel data in PCNSL in Q1 2022, AUTO1/22 in pALL expected in Q4 2021

- Additional value steps in T cell lymphoma and first solid tumor indication
- Broad preclinical pipeline of next generation programs expected to transition to clinical stage in 2021/2022
- Scalable, fully enclosed manufacturing platform

Broad pipeline of clinical programs

Designed to address limitations of current T cell therapies

Autolus

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	
AUTO3	DLBCL	CD19 & CD22	ALEXANDER	To be partnered
AUTO4	TRBC1+ Peripheral TCL	TRBC1	LibrA T1	

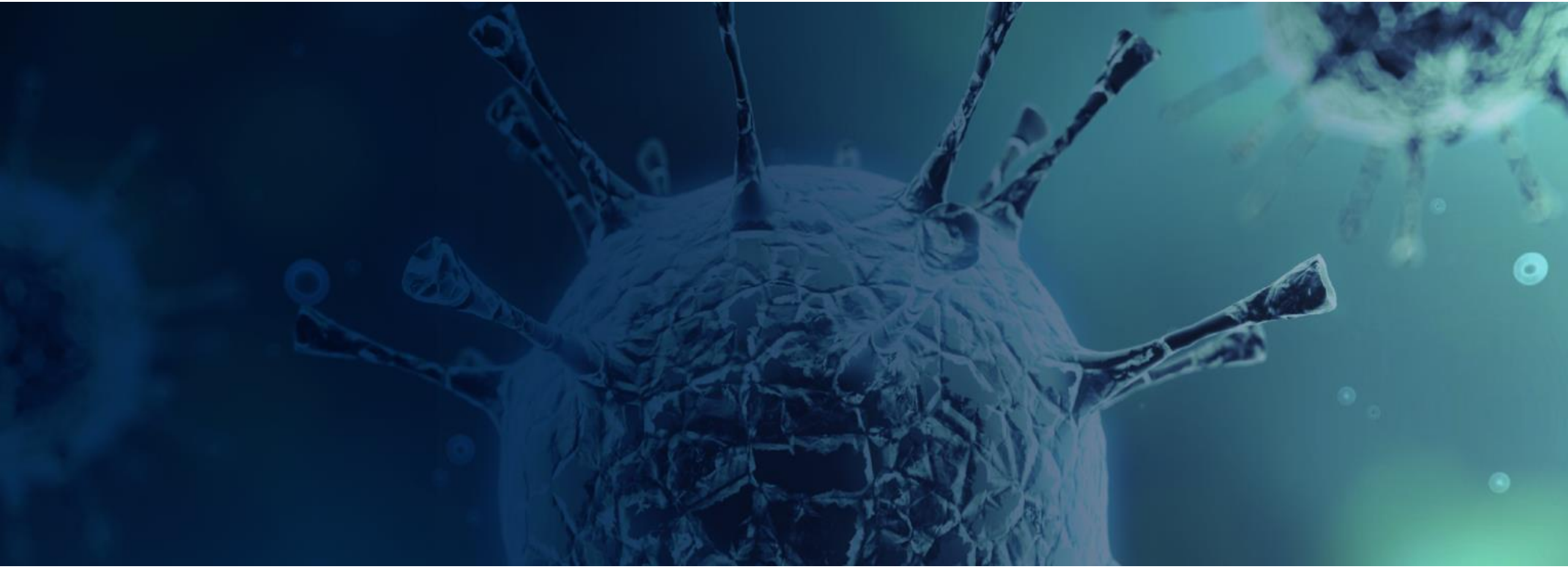
B Cell Malignancies

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

No approved CAR T therapy 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

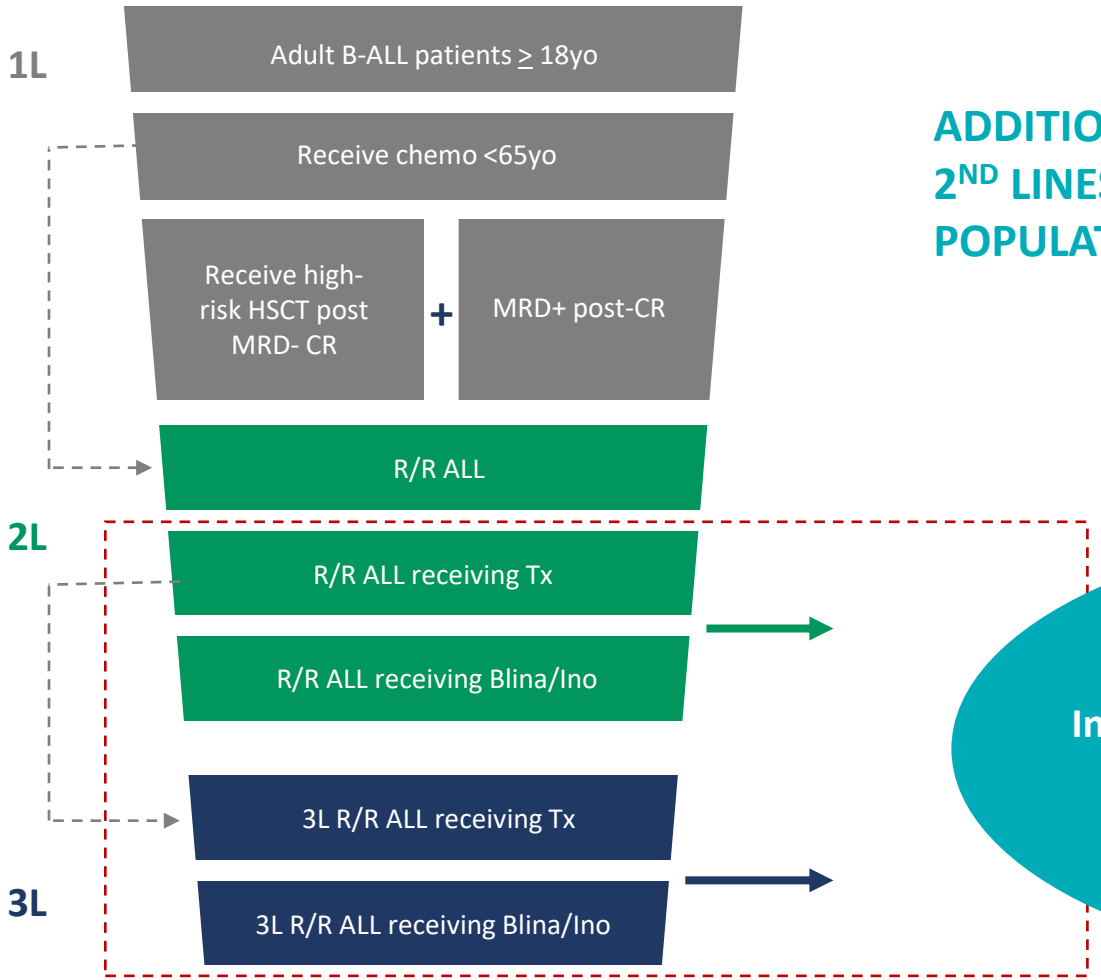
HIGH UNMET MEDICAL NEED

- 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 ALL
- Only redirected T cell therapy for adult patients is blinatumomab
- 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 progress to earlier lines of treatment and expand the addressable patient population

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	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

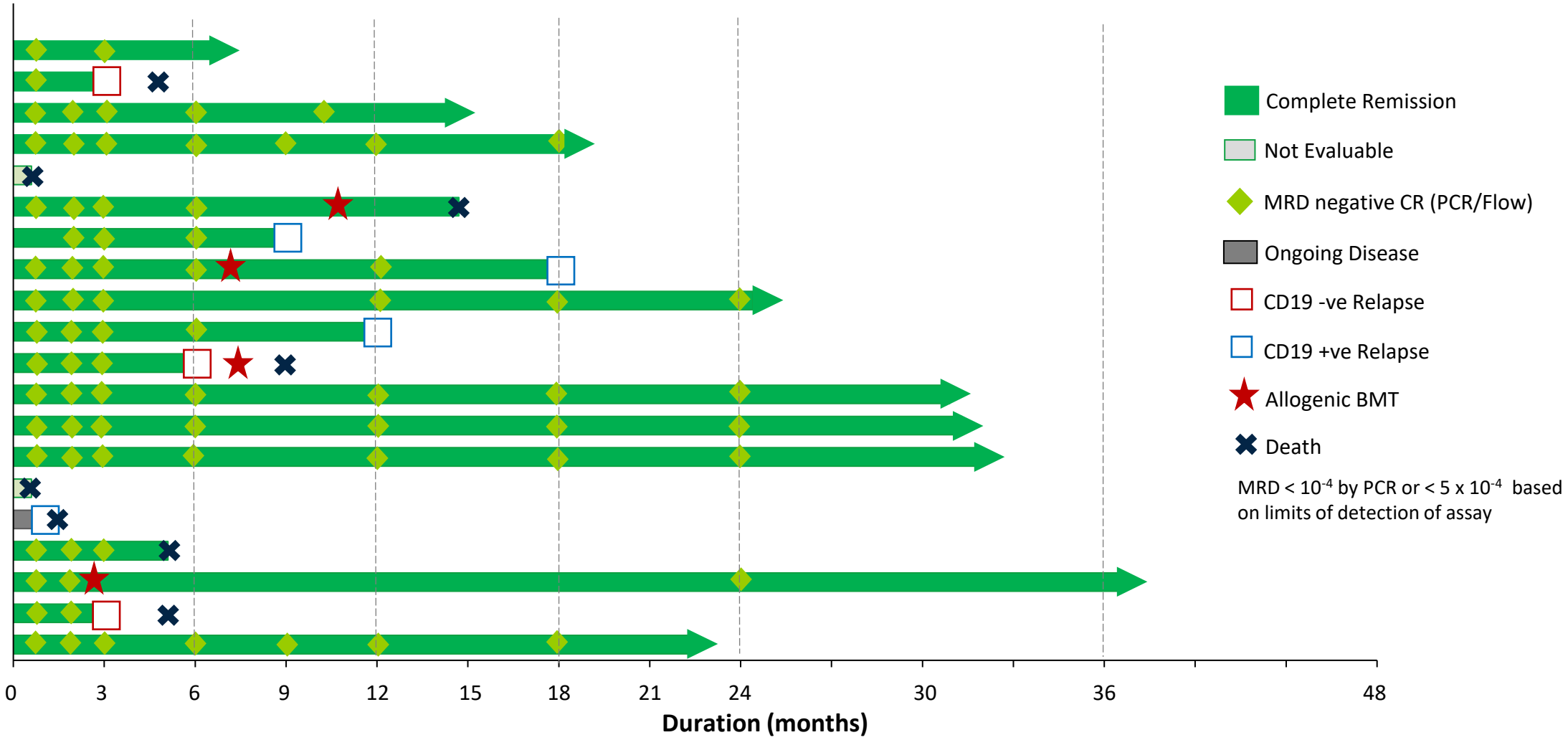
Data cut-off date May 17, 2021

- High level of sustained CR achieved without subsequent stem cell transplant
- Durability of remissions highly encouraging
  – Across all treated patients, event free survival (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
- Phase 1b/2 potential pivotal study 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

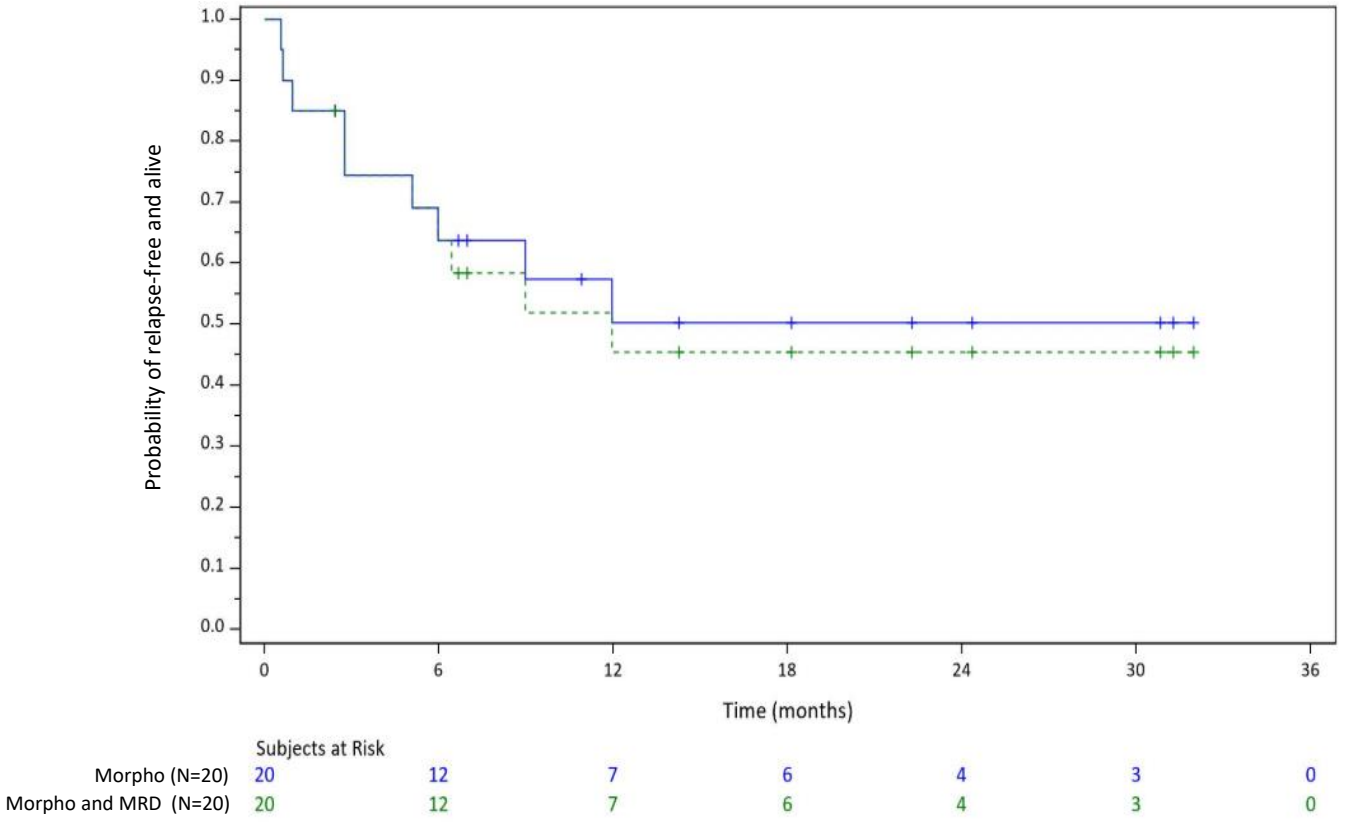
ALLCAR-19 Phase 1 EHA data cut - May 17 2021



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



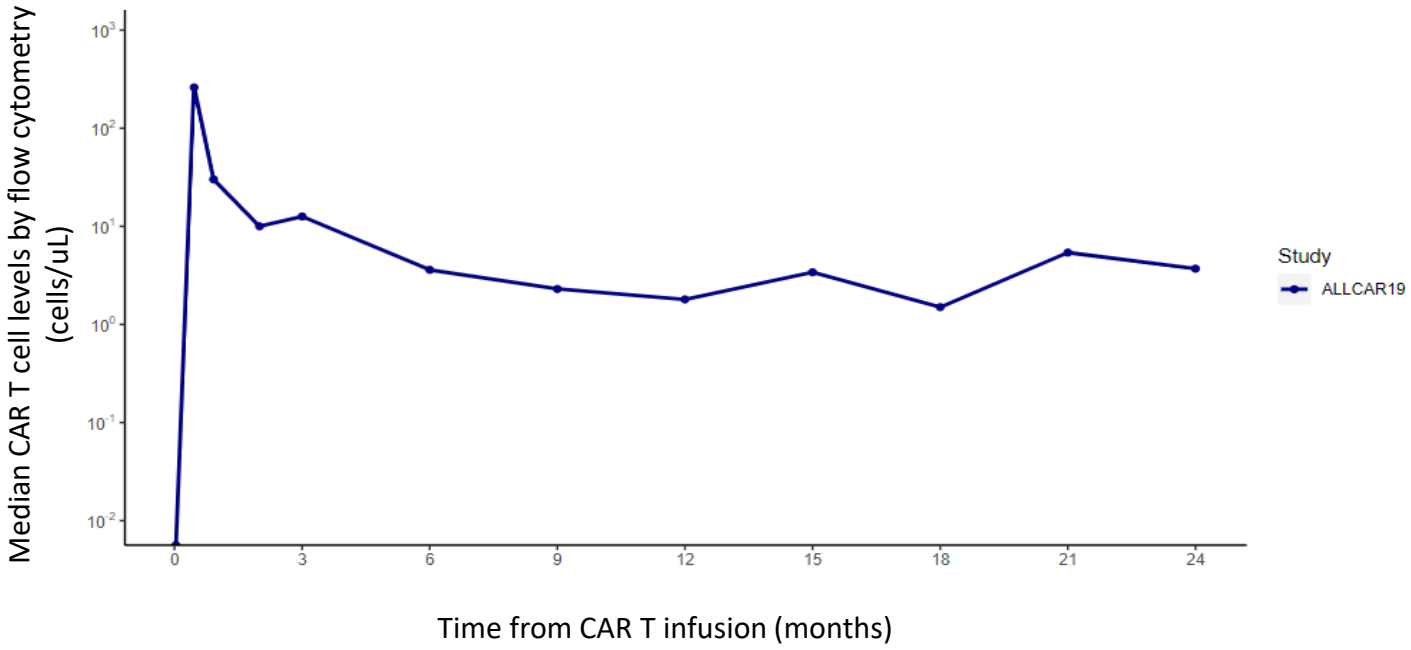
		All infused patients	Closed Process
	N	20	14
	ORR	85%	93%
	MRD Neg CR	85%	93%
DOR			
	Median	Not reached	Not reached
	12 months	64%	64%
Morph. EFS			
	Median	Not reached	Not reached
	12 months	50.2%	60%
	24 months	50.2%	60%
Molecular EFS			
	Median	12 months	Not reached
	12 months	45%	54%
	24 months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

Data so far points to a transformational product with ability to maintain pressure on tumor

Median CAR T cell levels in peripheral blood



	ALLCAR-19 Phase 1
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

A cross study comparison of Tecartus ® vs current standard of care

Obe-cel showed 50.2% EFS at 24 months

	ZUMA-3[1] Phase 2	Standard of Care	
	Tecartus	Blinatumumab[2]	Inotuzumab[3]
N	55	271	109
ORR (CR/CRi)	71%	44%	80.7%
EFS	~45% (12 m), ~25% (18 m)	31% (6 m)	mPFS 5m
CRS ≥ Grade 3†	24%	3%	0%
Neurotox ≥ Grade 3†	25%	13%	0%
Other notable observations	40% vasopressor use	NA	14% Hepatic VoD

- Approximately 50% of blinatumomab and inotuzumab patients received subsequent HSCT
- Veno-Occlusive Disease (VoD) during treatment and following subsequent HSCT, with the latter causing a higher post-HSCT non-relapse mortality rate, has limited inotuzumab uptake

Duration of follow-up is calculated from CAR T infusion to data cutoff. EFS for ZUMA-3 were estimated based on the KM curve#

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

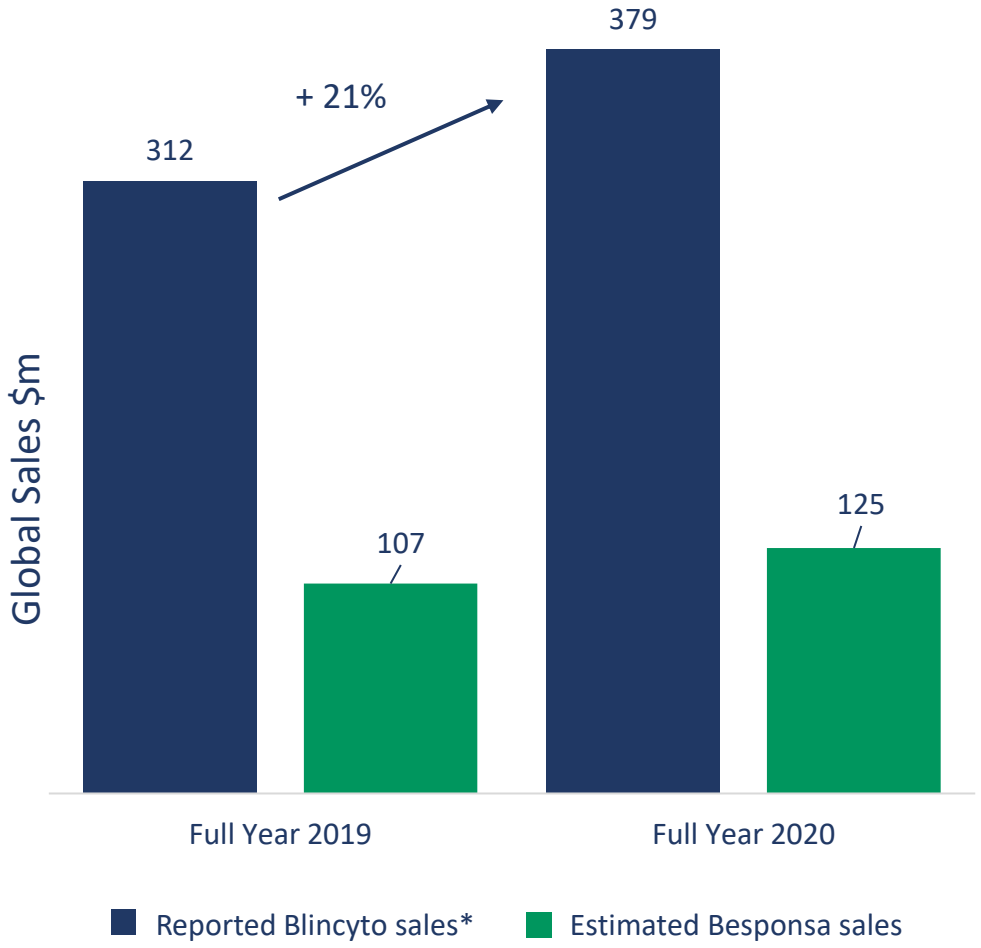
Obe-cel potentially differentiated on efficacy, durability and safety

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 launch into an expanding market

Benefitting from a potentially superior clinical profile



*As per Amgen quarterly SEC filings

- Blincyto sales price estimated to be $178k± (based on 2 cycles) resulting in approx. 2,100 commercial patients (of which approx. 85% are >18 years **)
- Growth attributed by Amgen* to broader uptake and expansion in community settings, continued strong growth at 29% y-o-y for Q4
- Kymriah is priced at $475k in pediatric ALL. Breyanzi (lisocabtagene maraleucel) is priced at $410k in DLBCL±±.
- 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 expected to have a superior clinical profile
  - Has potential to be the only curative therapy with tolerability profile to take advantage of expanding delivery footprint

** Komodo Health 2015 – 2020
± https://www.medscape.com/viewarticle/836879
± ± Bristol Myers finally wins FDA approval for cancer cell therapy | BioPharma Dive

Preliminary Ph1 data supports development as a standalone 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 accepted by the FDA in April 2020

- Ph1b run-in component, prior to single arm Ph2 pivotal study
- 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

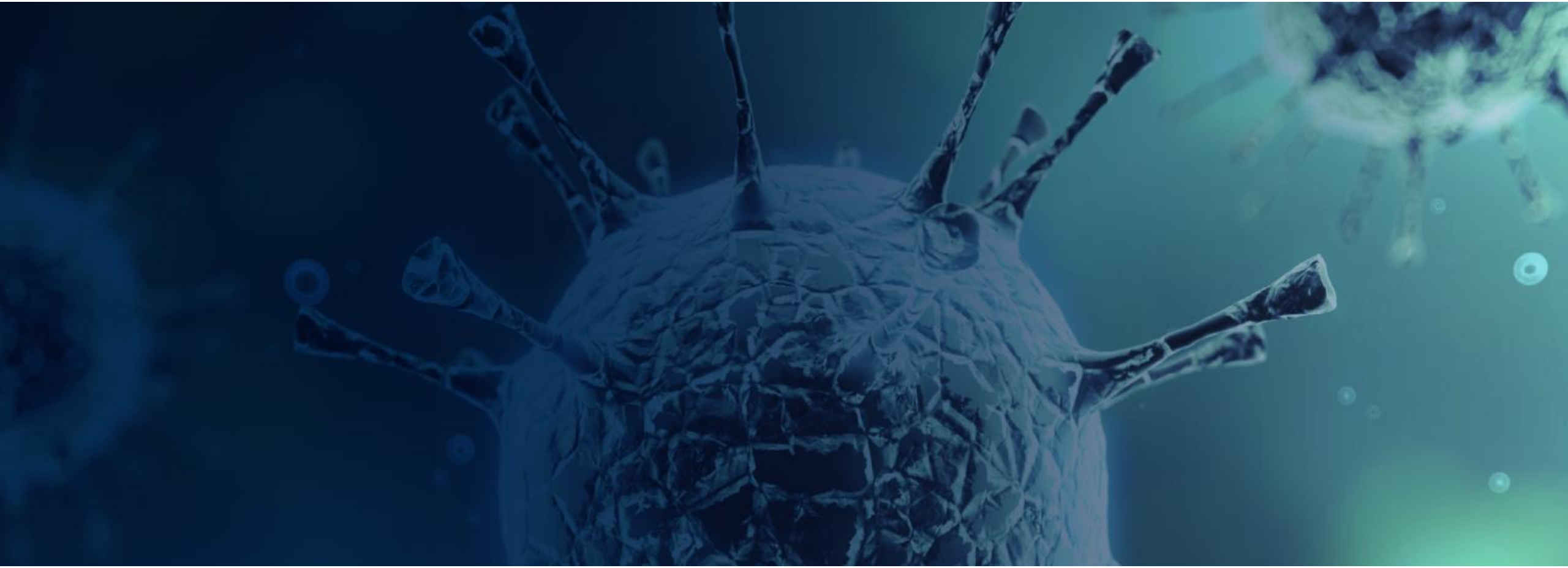
Evaluation of obe-cel activity in additional B-Cell malignancies to capitalize on potential market opportunity

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

Autolus



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

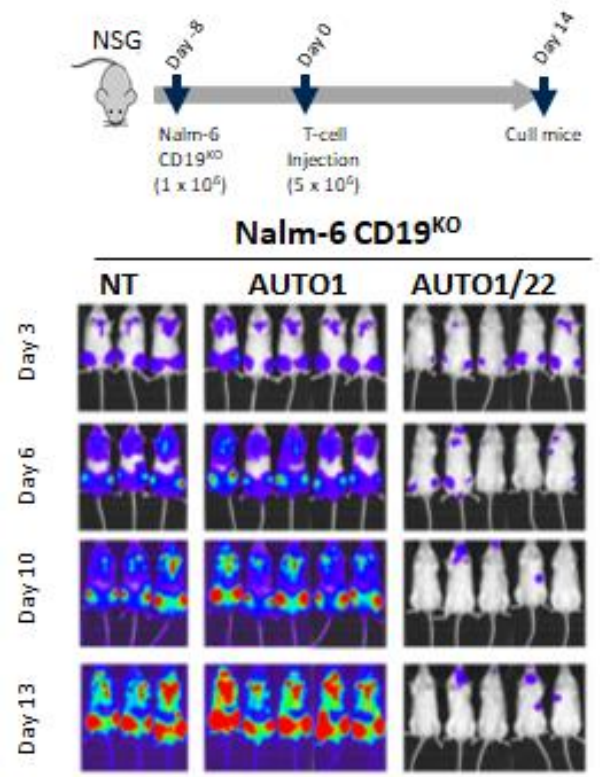
Primary driver for relapse in pALL is CD19 antigen loss

	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

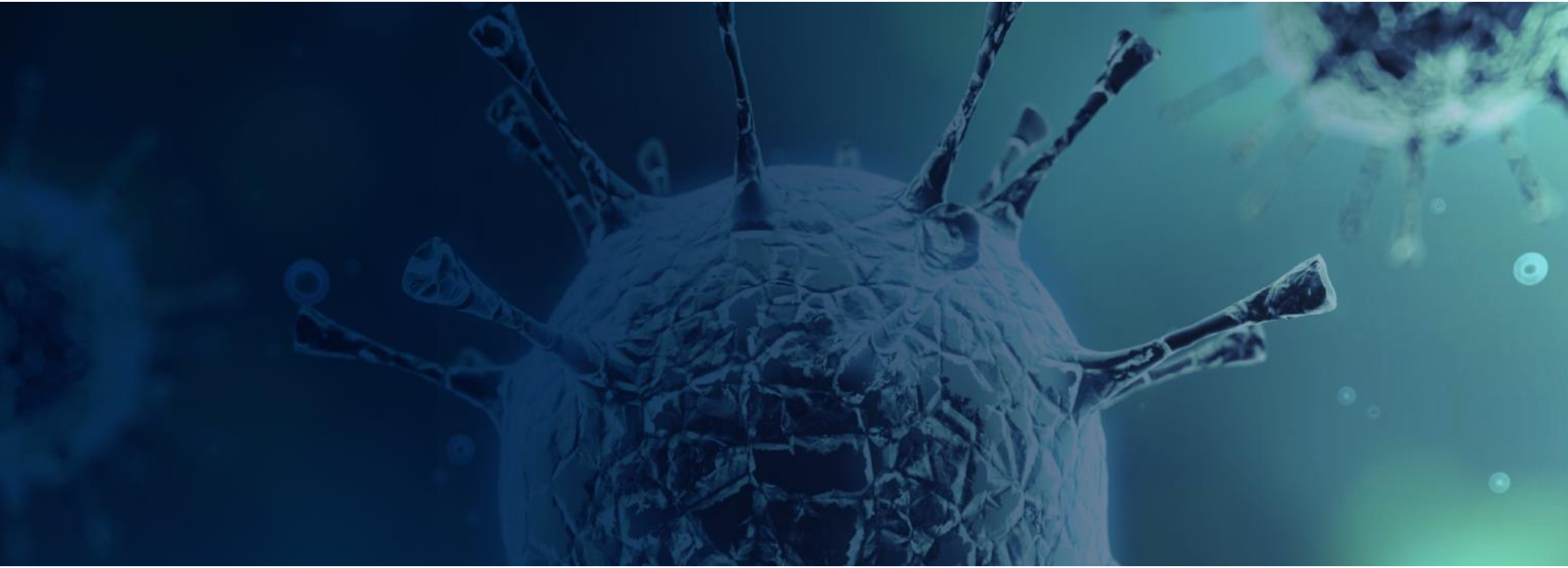
#Maude et al., NEJM 2018

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

Autolus



Indolent NHL

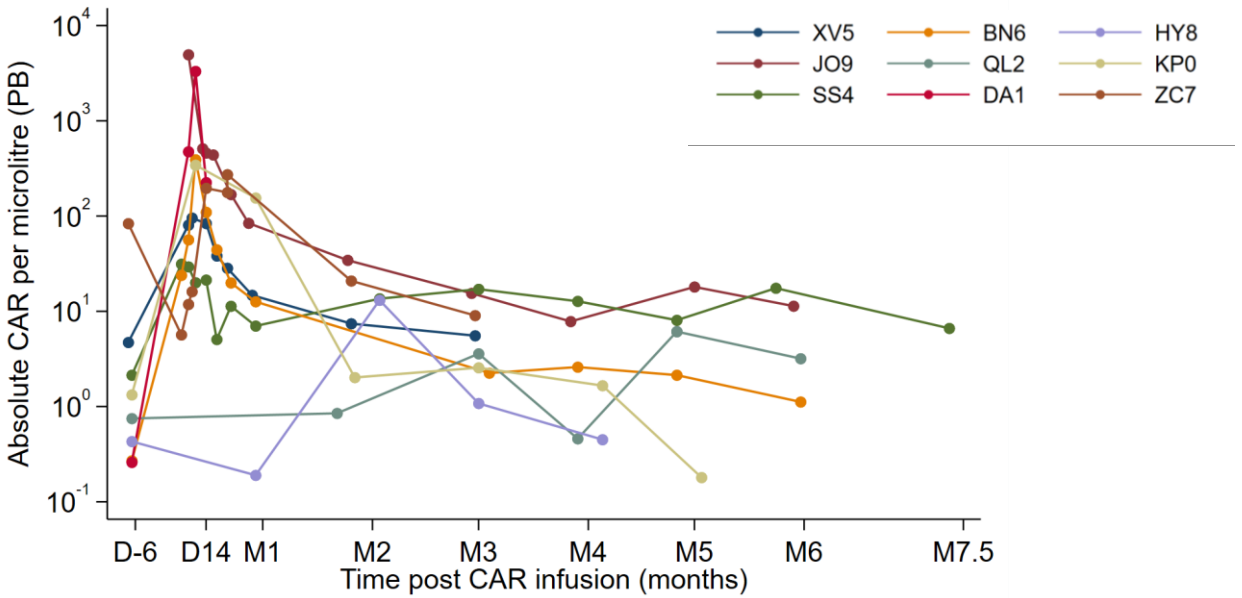
obe-cel

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)

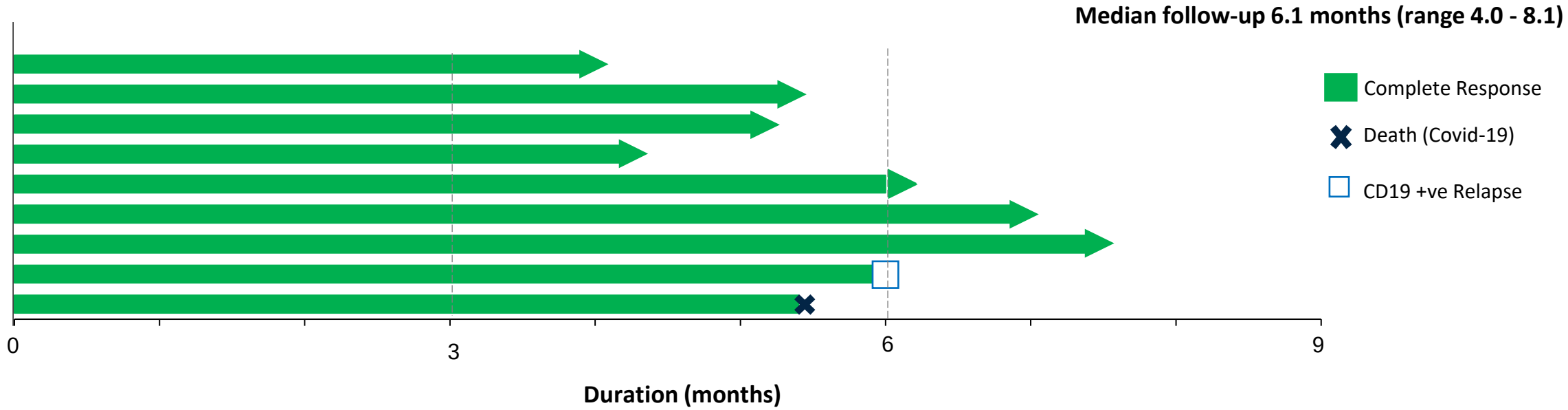
CRS (ASTCT criteria#)	Neurotoxicity (ICANS)
• CRS (any) in 5/9 • Grade 2 in 1/9 • ≥ Grade 3 CRS in 0/9 • Tocilizumab used in 2 patients	• ICANS in 0/9 • Grade 2 in 0/9 • Grade 3 in 0/9

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)

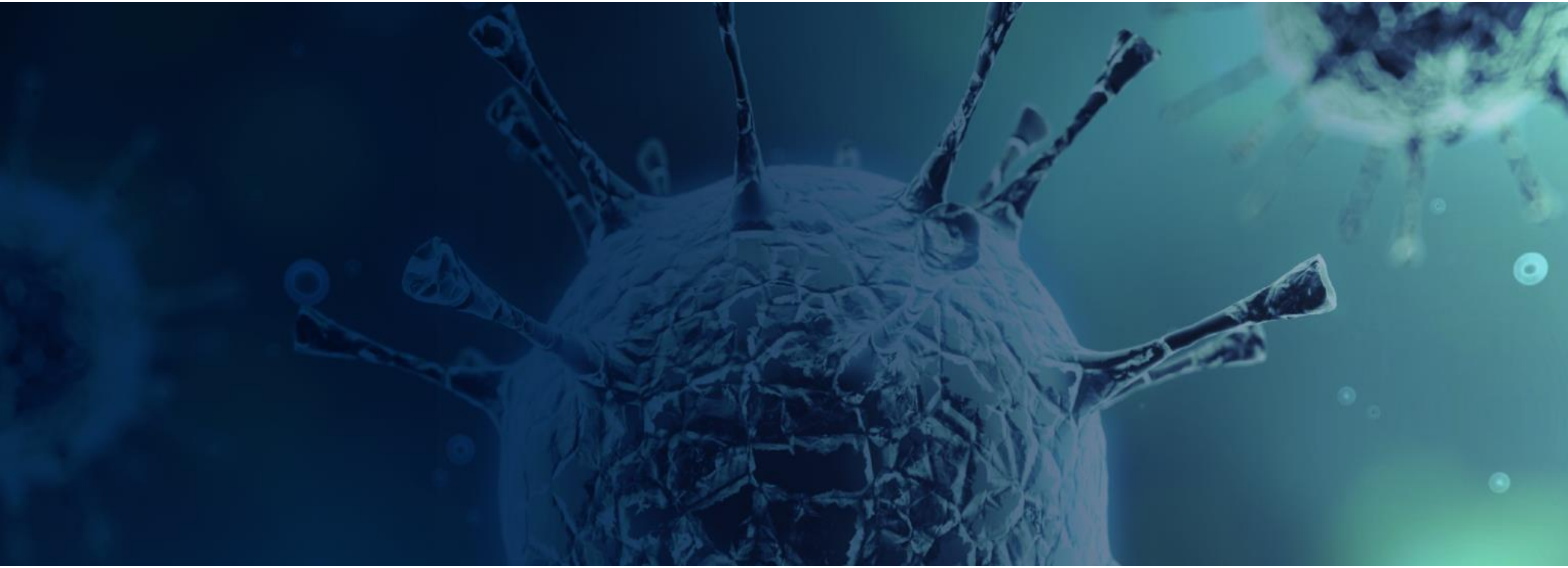


- 9/9 patients in the indolent B-NHL cohort achieved metabolic CR by month 3
- 8/9 disease-free at last follow-up (median F/U = 6.1 months; range 4.0 - 8.1m)
- 1/9 patients died on study from COVID-19 whilst in remission at month 6 of follow-up
- 1/9 relapsed with small volume subcutaneous CD19+ disease,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



Diffuse Large B Cell Lymphoma

AUTO3 — tailored for DLBCL

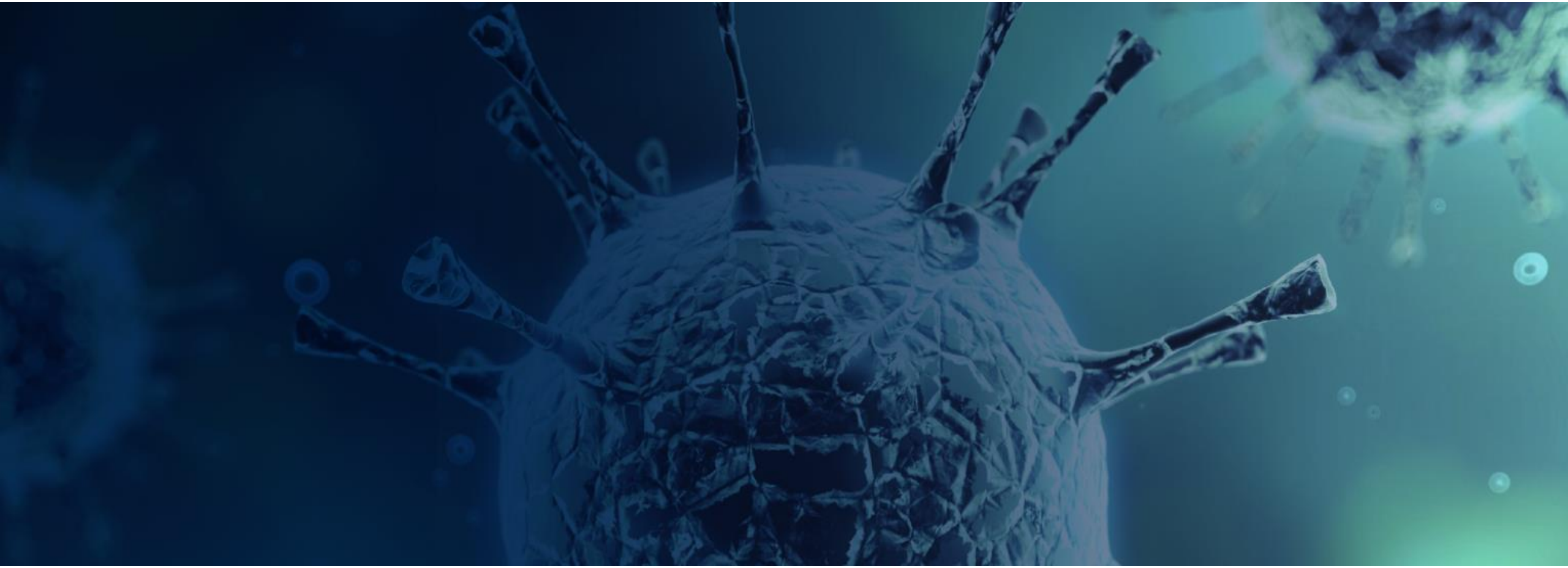
AUTO3 continues to show differentiated product profile in DLBCL

Data presented at ASH 2020, with data cut-off date of October 30, 2020

- Key Phase 1 observations:
  - High level of complete remissions (CR) of 51% overall
  - At the highest dose level of 450M cells the CR rate was 73%
  - Very low levels of high-grade CRS and neurotoxicity
  - AUTO3 administration together with the pembrolizumab dosing regimens (D-1 and D14/D35/D56) were well tolerated
  - Among the five patients who achieved a CR having received 3 doses of pembrolizumab, none had progressed as of the data cut-off date
  - Demonstrated feasibility to administer AUTO3 in outpatient setting

- Potential path forward for development of AUTO3
  - Phase 2 designs under evaluation:
    - 3L r/r DLBCL setting
    - 2L/3L transplant ineligible DLBCL setting
  - Planned Phase 2 dosing regimen
    - Dose range of 150M to 450M cells, as patients benefitted from therapy at 150M, 300M and 450M cell dose levels
    - 3 doses of pembrolizumab with a schedule of D-1, D28, D56
  - Implement manufacturing process enhancements (incl. stable cell line for vector manufacturing)

COMPANY INTENDS TO PARTNER AUTO3, AHEAD OF PROGRESSING INTO THE NEXT PHASE OF DEVELOPMENT



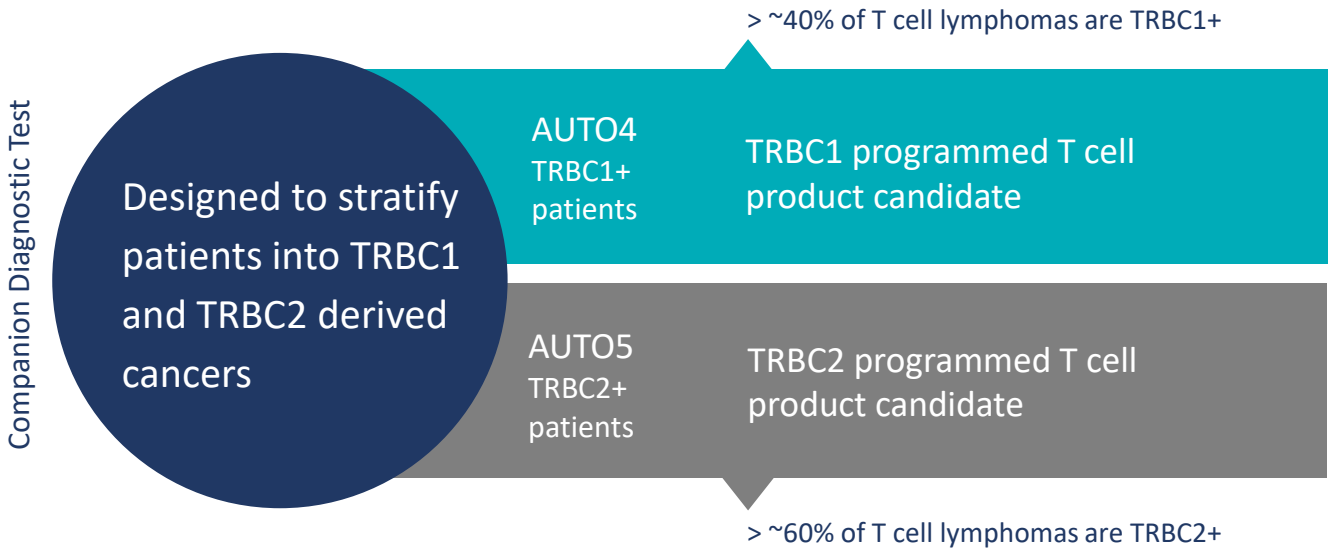
T Cell Lymphoma

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



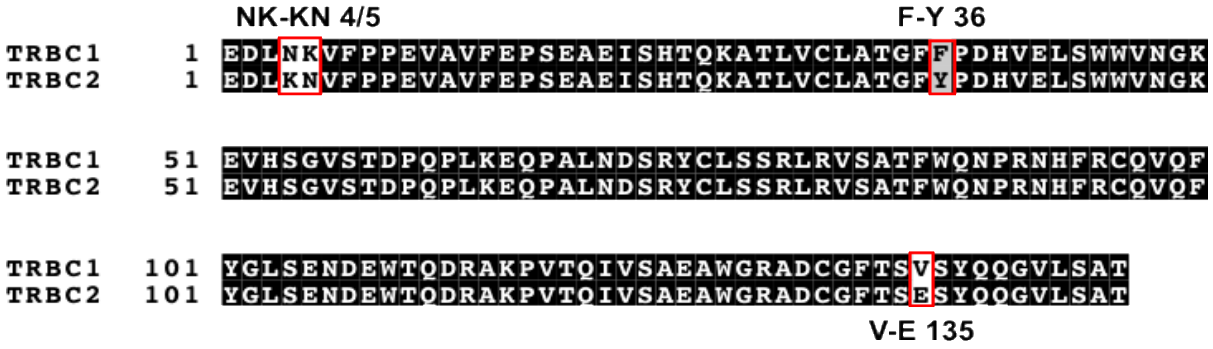
- T cell lymphoma is an aggressive disease with a very poor prognosis for patients
- Median 5 yrs OS: 32%
- Standard of care is variable and often based on high-dose chemotherapy and stem cell transplants
- A large portion of T cell lymphoma patients are refractory to or relapse following treatment with 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

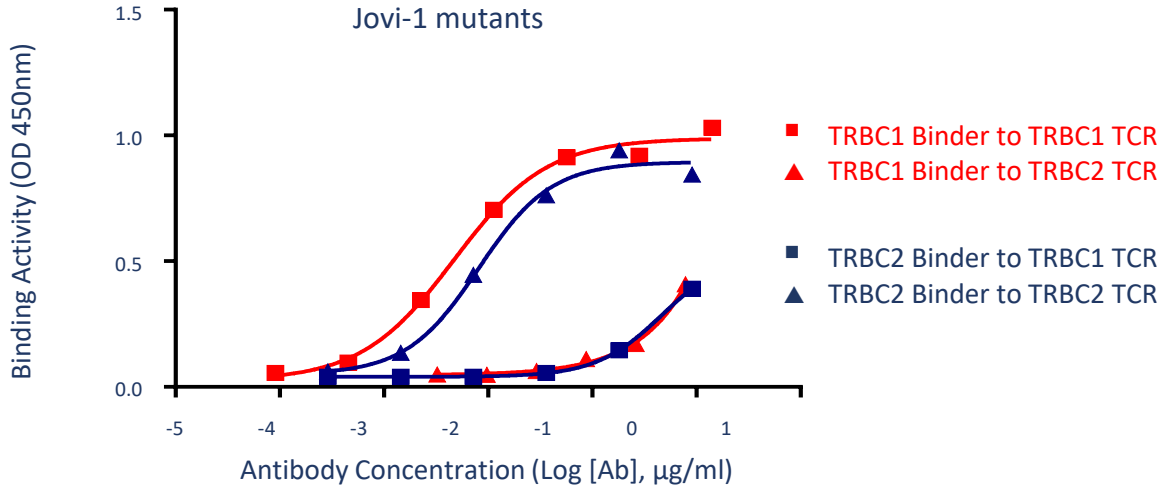
AUTO4/5 in Peripheral T Cell Lymphoma

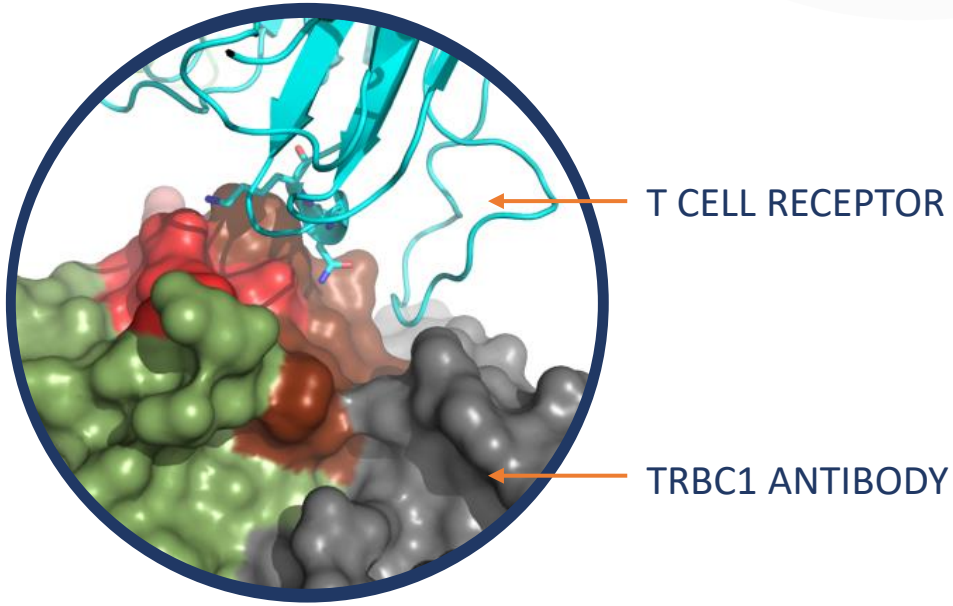
Autolus

DIFFERENCES BETWEEN TRBC1 AND TRBC2 ARE SMALL

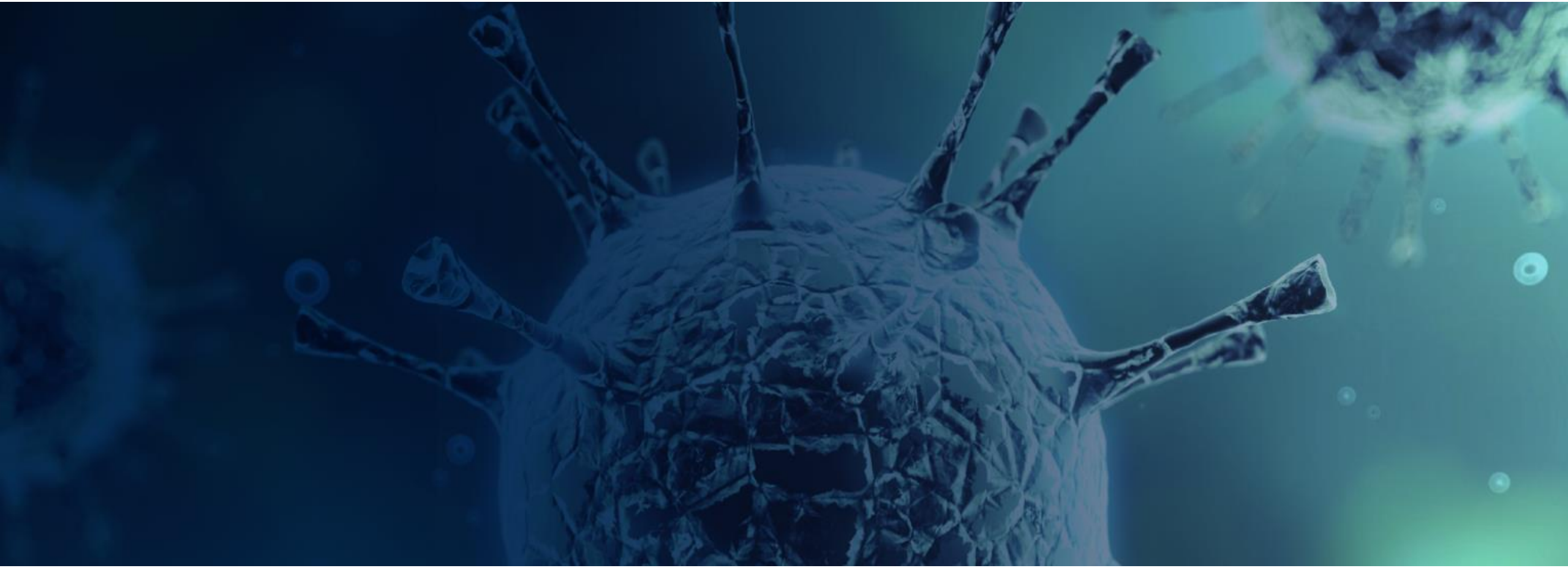


ANTIBODY BINDING DATA





- 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*

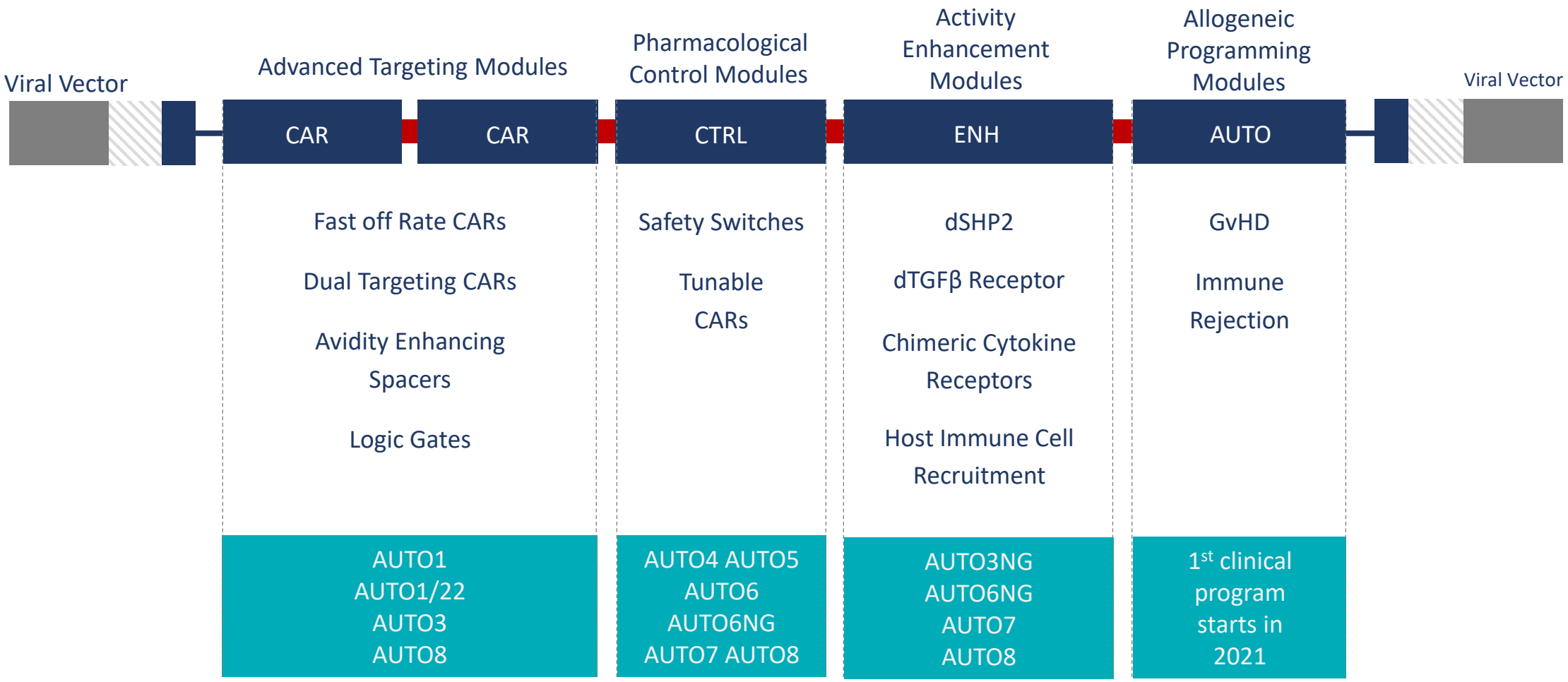


Pipeline

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
AUTO7	Prostate Cancer	PSMA		H1 2022
AUTO8 **	Multiple Myeloma	BCMA & CAR X		H2 2021

B Cell Malignancies T Cell Lymphoma GD2+ Tumors Prostate Cancer Multiple Myeloma

*Planned Trial Initiations
** Collaboration with UCL
NG = Next Generation, SCLC = Small Cell Lung Cancer

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

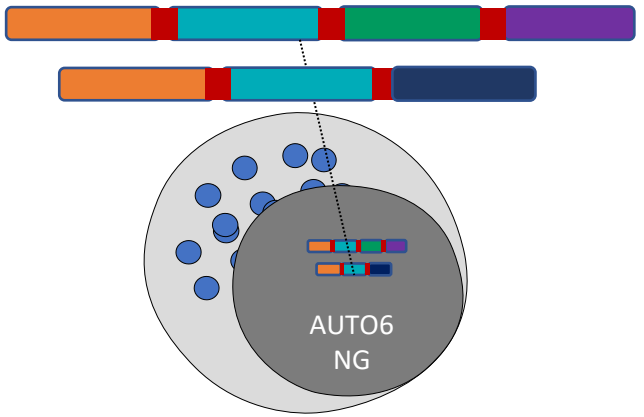
To overcome inhibitory effect of TGFβ in microenvironment

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



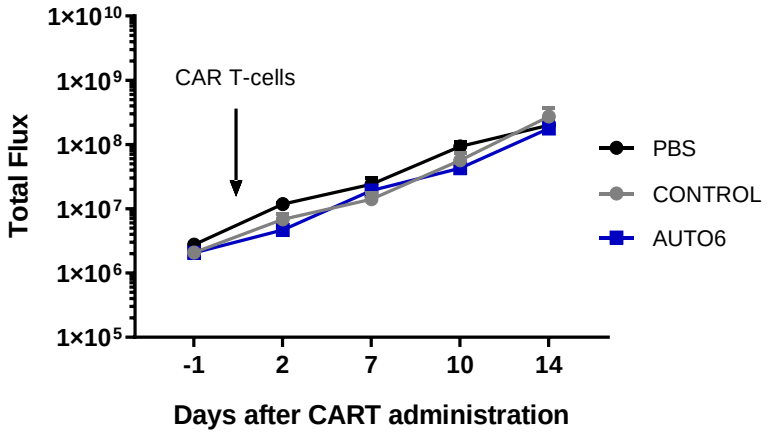
AUTO6NG:

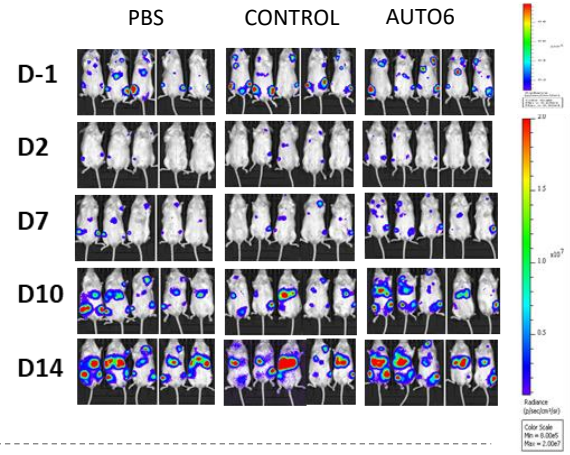
- Utilizes GD2 CAR from AUTO6, and is further enhanced to address persistence, control and tumor defenses
- Targeting neuroblastoma, osteosarcoma, melanoma and small cell lung cancer amongst others

AUTO6NG exhibits potent anti-tumor activity in preclinical model

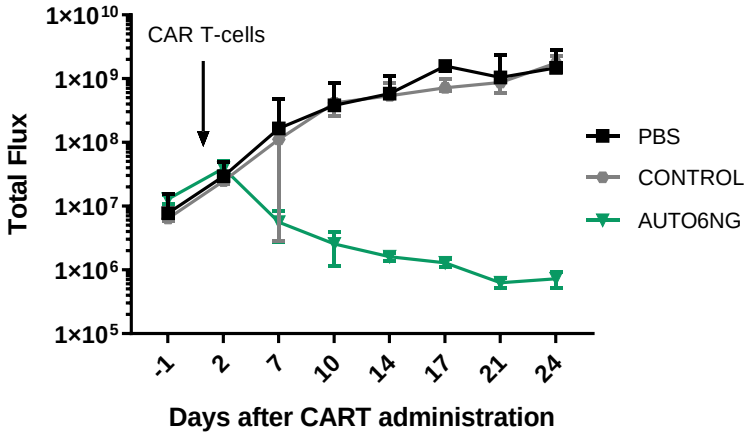
Extends survival in challenging in vivo model

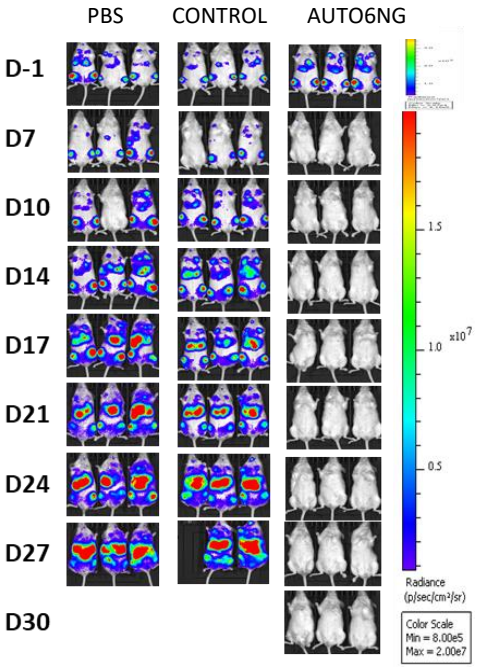
AUTO6





AUTO6NG

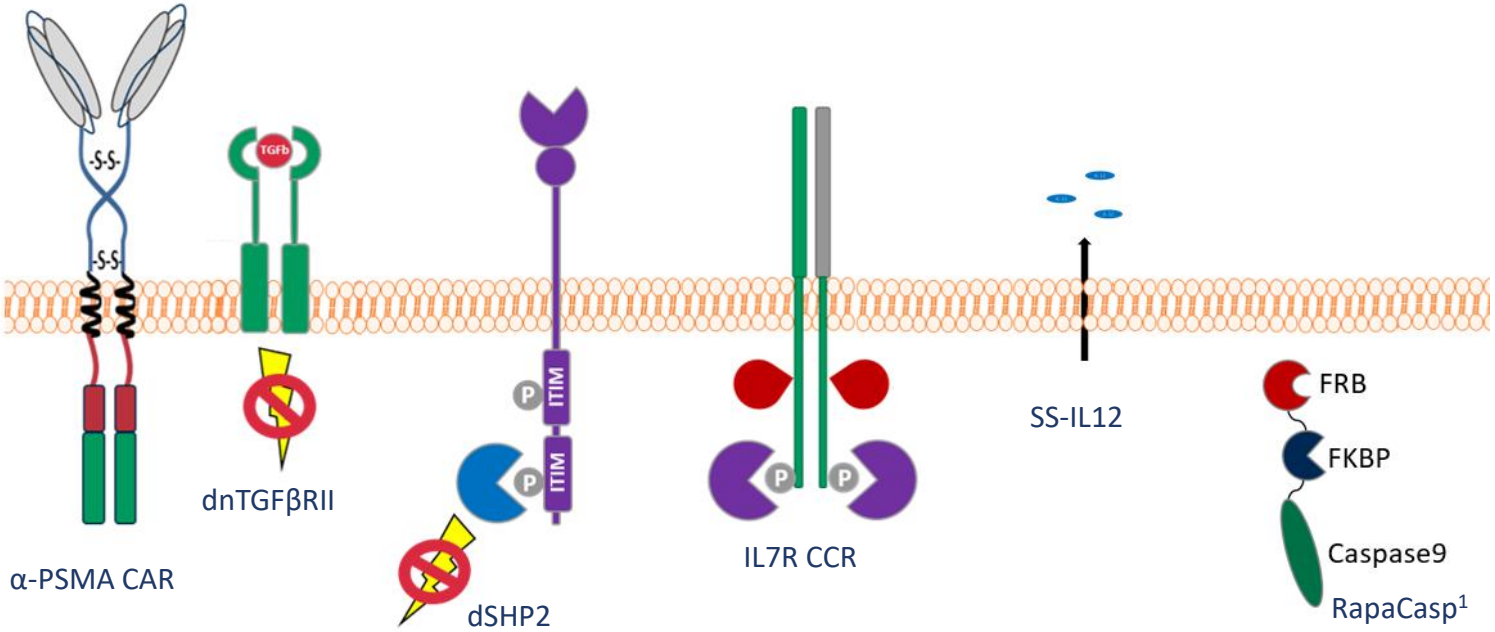




Achkova, D., et al SITC 2019 (abstract)

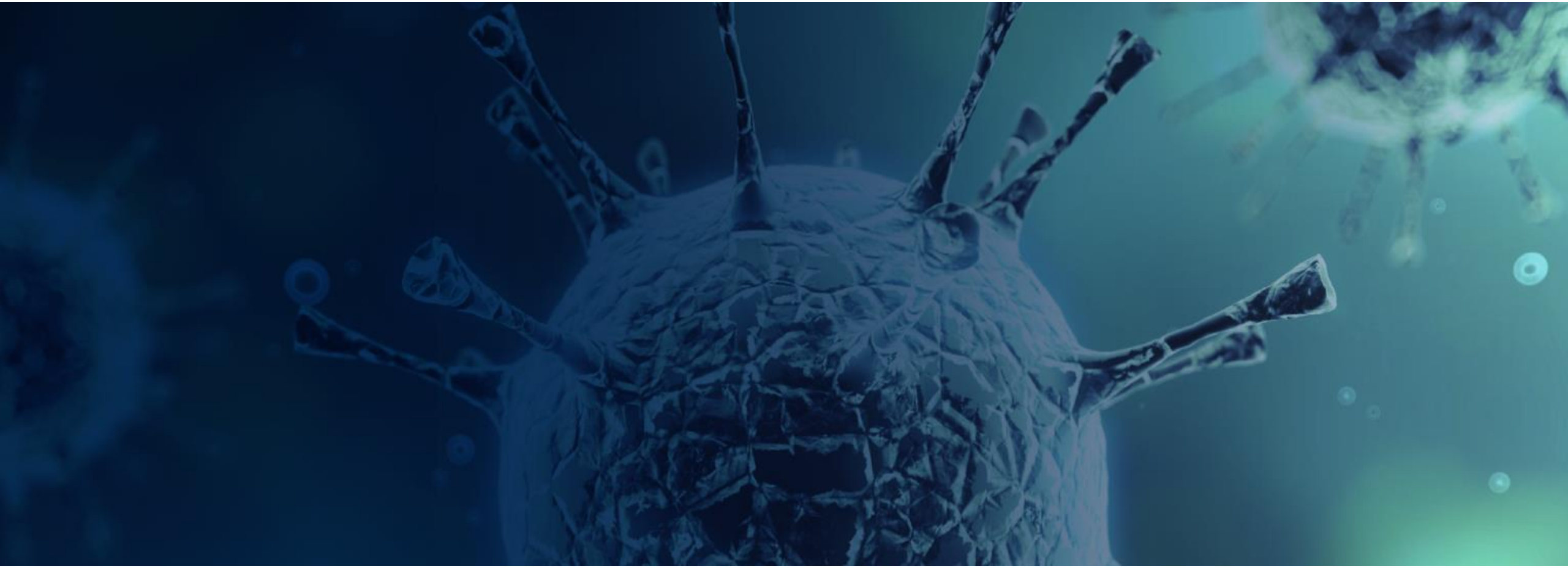
AUTO7 is designed to tackle the complex solid tumor environment

Anti-PSMA humanized CAR T cell for improved persistence and resistance in Prostate Cancer



PSMA CAR	dnTGFβRII	dSHP2	Cytokine signal	Immune Adjuvant	Safety Switch
Targeting of PSMA expressing tumor cells	Truncated TGFβRII receptor to shield inhibitory effect of TGFβ	Truncated SHP2 to block checkpoint inhibition	Cytokine signal to overcome minimal co-stimulation	Secretion of IL-12 cytokine to promote host immune activation	To terminate therapy in the event of unexpected toxicities

MODULES DELIVERED USING GAMMA-RETROVIRAL VECTOR



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	Study enrolling, data in Q4 2021
obe-cel	B-NHL	CD19	Phase 1	Study enrolling, data in Q4 2021
obe-cel	PCNSL	CD19	Phase 1	Study enrolling, data in Q1 2022
AUTO3	DLBCL	CD19/CD22	Phase 1	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
AUTO7	Prostate	PSMA	Preclinical	Start Phase 1 H1 2022
AUTO8	Multiple Myeloma	BCMA/CAR-X	Preclinical	Start Phase 1 study H2 2021
ALLO Program	Undisclosed	Undisclosed	Preclinical	Start Phase 1 2021

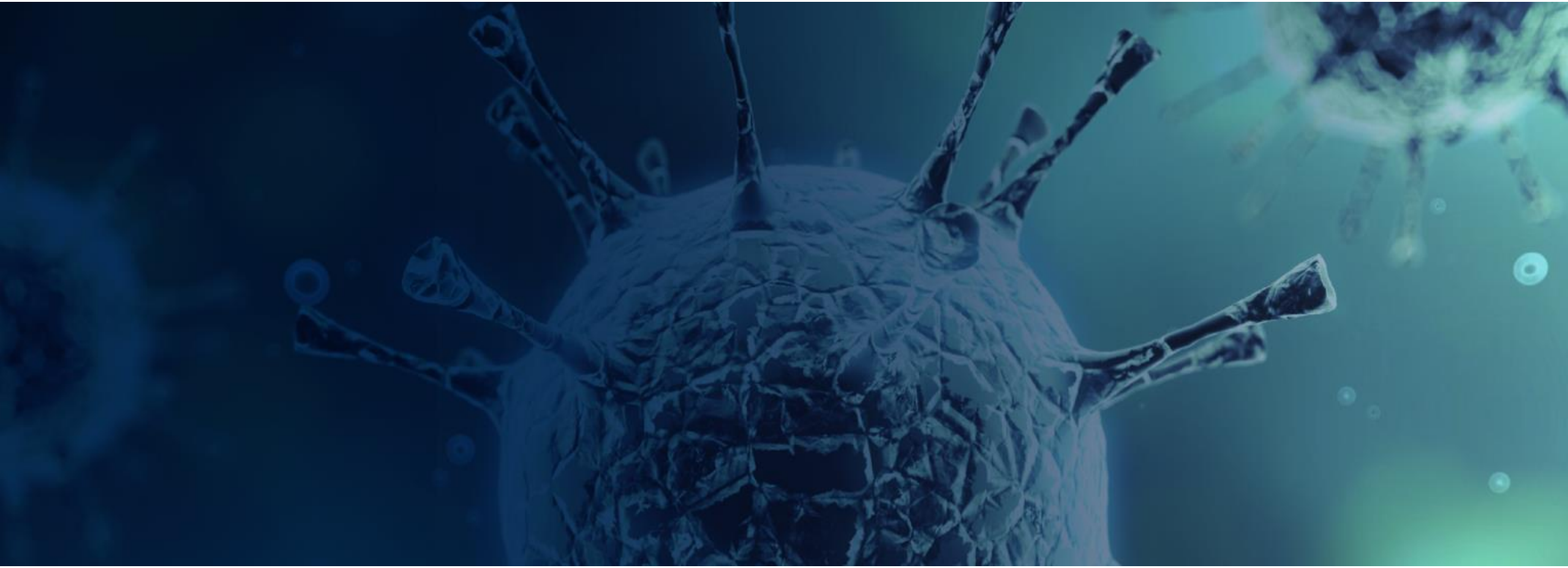
*Subject to confirmation by regulatory authorities.

B Cell Malignancies T Cell Lymphoma Solid Tumors Multiple Myeloma Allogenic

Autolus poised for potential value inflection

- Obe-cel and AUTO1/22
  - Autolus' first pivotal trial (FELIX) in adult ALL. Enrollment continues and company reiterates guidance to expect data in 2022
  - Pediatric ALL—AUTO1/22 Phase 1 study started in Dec 2020. Update expected Q4 2021
  - ALLCAR study extension in other relapsed/refractory B-NHL and CLL ongoing. Update expected Q4 2021
  - Opportunity to develop AUTO1 in Primary CNS Lymphoma, CAROUSEL study update expected Q1 2022
- AUTO4
  - 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
- Cash balance at Jun 30, 2021, was approx. $216 million, anticipate cash runway into H1 2023

Autolus



Thank you