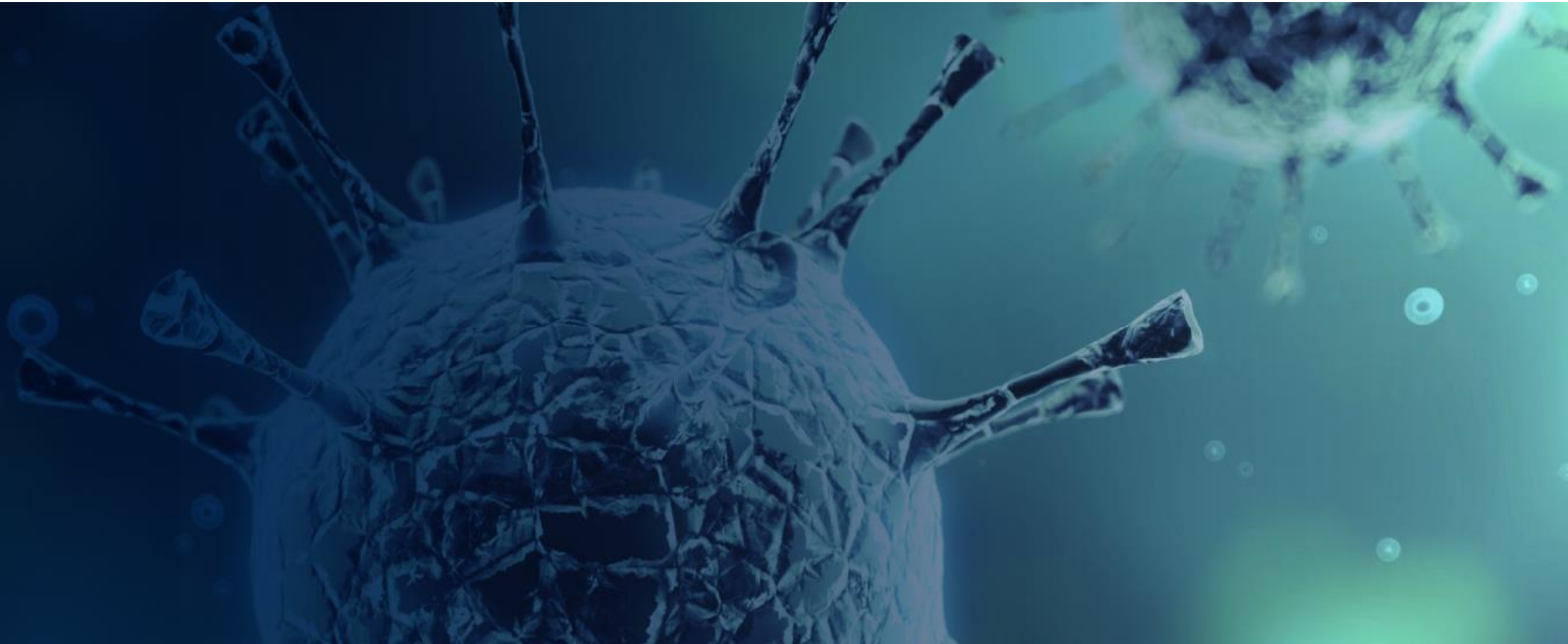


Autolus

Nasdaq: AUTL



Next Generation Programmed T Cell Therapies

July 2020

Disclaimer

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Lead Clinical Programs

Striving for best-in-class and use as standalone therapies

Near term value steps with potential best-in-class programs

Focus on potentially best-in-class Acute Lymphoblastic Leukemia (ALL) and Diffuse Large B Cell Lymphoma (DLBCL) therapies with major value steps expected in 2020 / 2021

First pivotal study of adult ALL to complete in H1 2021 with approval targeted in 2022

Drive DLBCL program to POC and prepare for pivotal study

- Additional value steps in T cell lymphoma and first solid tumor indication
- Broad preclinical pipeline of next generation programs transitioning to clinical stage in 2020
- Broad proprietary cell programming technology
- Scalable, fully enclosed manufacturing platform

Note on COVID-19: While the COVID-19 situation has had varying degrees of impact on the ability of clinical sites to conduct clinical studies, we currently do not anticipate any significant impact on our clinical programs.

Broad pipeline of clinical programs

Designed to address limitations of current T cell therapies

PRODUCT	INDICATION	TARGET	PHASE 1/2	PIVOTAL*
AUTO1	Adult ALL	CD19	ALLCAR19	AUTO1-AL1
AUTO1	Pediatric ALL	CD19	CARPALL	
AUTO3	DLBCL	CD19 & CD22	ALEXANDER	
AUTO4	TRBC1+ Peripheral TCL (LibrA T1)	TRBC1	LibrA T1	
AUTO6	Neuroblastoma	GD2	CRUK	

● B Cell Malignancies
 ● T Cell Lymphoma
 ● GD2+ Tumors



Adult Acute Lymphoblastic Leukemia

AUTO1 – tailored for adult ALL

No approved CAR T therapy for adult ALL patients

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

ALL is a significant opportunity:

Up to

8,400*

new cases of adult ALL diagnosed yearly worldwide

Projected patients in US & EU

3,000

addressable patient population

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 approved redirected T cell therapy approved for adults generally is blinatumomab
- CAR T therapies are highly active, but no clear sense of durability without subsequent allograft
- Patients are generally more fragile, more co-morbidities, yet CAR T toxicities in this setting have been notable with high incidences of severe CRS and cases of fatal neurotoxicity

FDA granted AUTO1 orphan drug designation for ALL

AUTO1: Key features

Designed for durable responses without allo-transplant and absence of severe CRS

● Conventional CD19 CARs

- Approved and near-approved CD19 CAR Ts use identical **high affinity** CD19 binder (FMC63)

- FMC63 has a fast on-rate and a **very slow off-rate**

- **Leads to over-activation, exhaustion** and high-grade CRS and neurotoxicities

● AUTO1

- AUTO1 has an optimized CD19 CAR with a **lower (40x) affinity** for CD19 and a fast off-rate*

- Engages efficiently, delivers a kill, and **disengages rapidly** like a normal T cell

- **Leads to enhanced activity**
- and lower toxicities

AUTO1 potentially has a superior efficacy profile compared to standard of care

Comparable and manageable safety profile

	¹ AUTO1		Standard of Care	
	All patients	Closed Process	² Blinatumumab	³ Inotuzumab
Patient Numbers	19	13	271	218
CR Rate	84%	92%	44%	80.7%
EFS 6m	62%	76%	31%	mPFS 5m
CRS ≥ Grade 3	0%	0%	3%	0%
Neurotox ≥ Grade 3	16%*	15%*	13%	0%
Other notable toxicities				14% Hepatic VoD

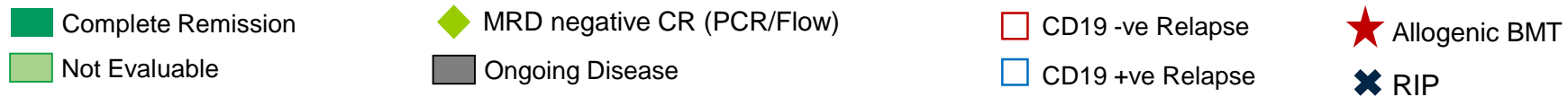
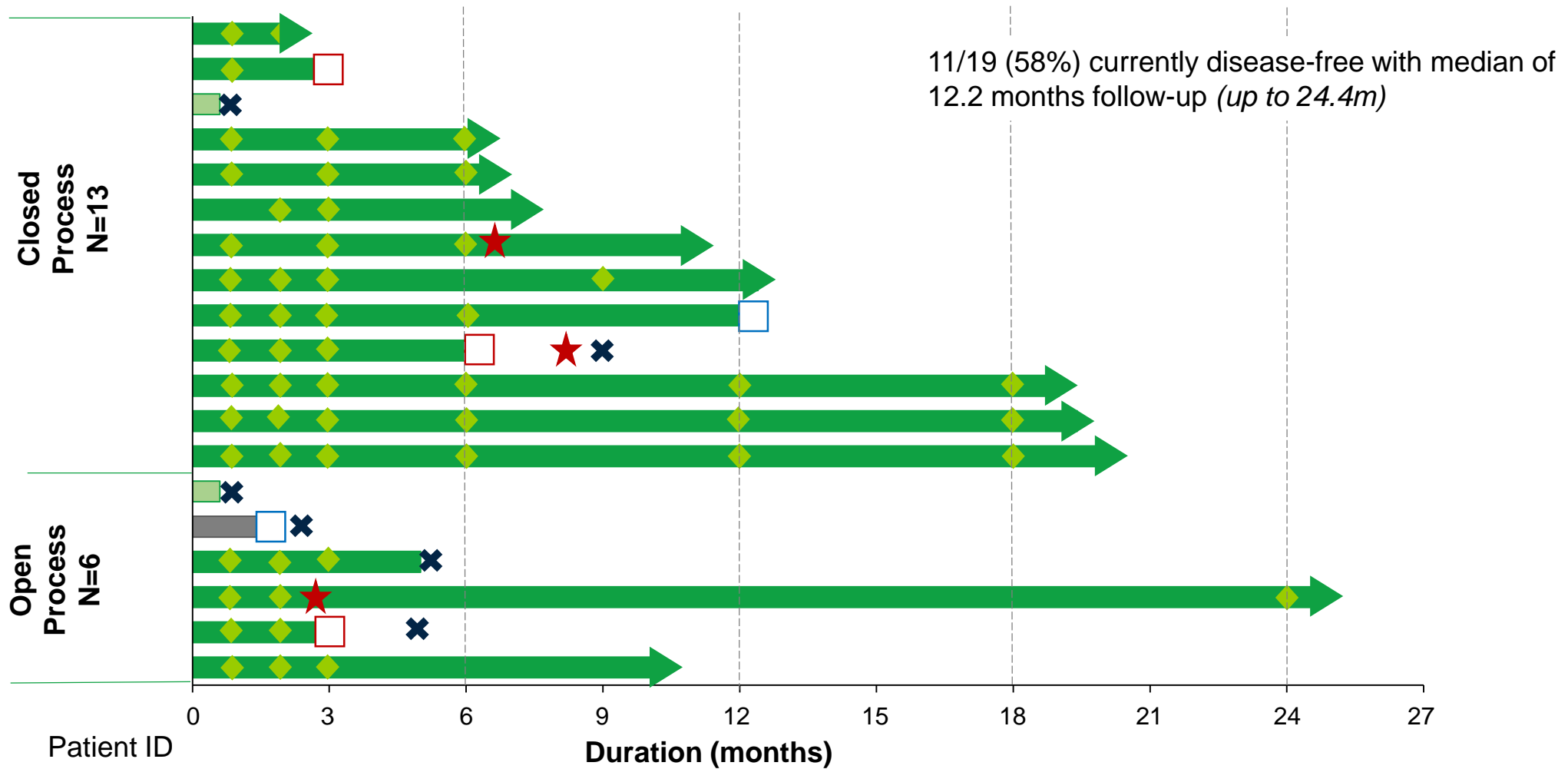
- Approximately 50% of blinatumumab and inotuzumab patients received subsequent HSCT
- Veno-Occlusive Disease (VoD) during treatment and following subsequent HSCT, with the latter causing a higher post-HSCT non-relapse mortality rate, has limited inotuzumab uptake

AUTO1 has potential for best-in-class profile for efficacy and safety

	Competitor CAR T cell Therapies				
	¹ AUTO1	² Kymriah	³ KTE-X19	⁴ UCART19 [§]	
Patient Numbers	19	35	41	21	
CR Rate	84% (92%#)	69% (90% [@])	68% (84% ^{##})	88%	
EFS	62% (76%#) at 6 months	5.6 median (2.2m to 19.4m)	TBD	TBD	
Allo-Transplant	10%	38%	Not known	78%	
Tox Management	Normal	Normal	Normal	Intensive	Normal
CRS all Grade	47%	94%	100%	100%	94%
CRS ≥ Grade 3	0%	71% (17% G4/5)	29%	22%	16%
Neurotoxicity all Grade	21%	40%	93%	78%	33%
Neurotox ≥ Grade 3	16%*	6%	38%	11%	0%

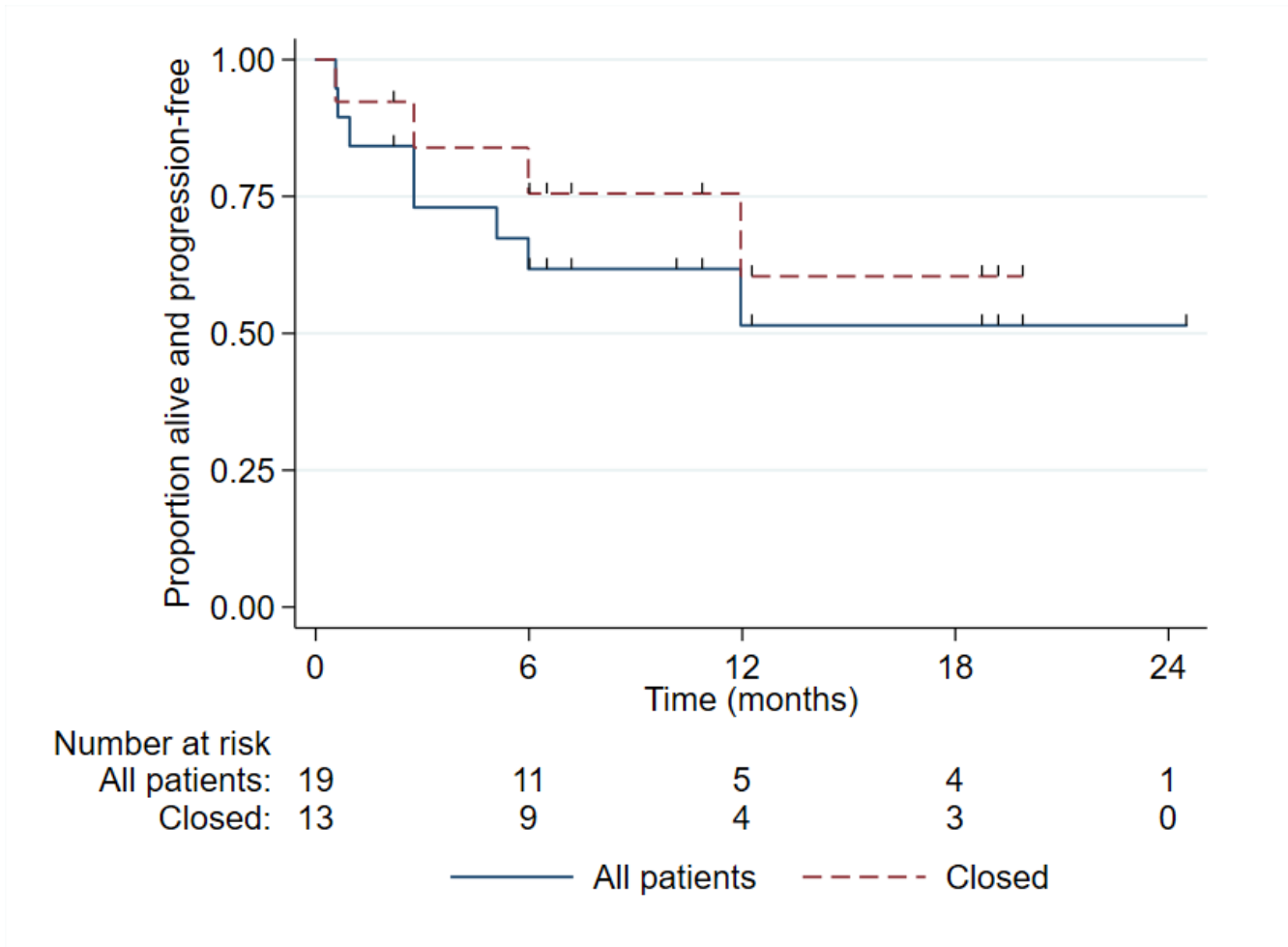
Responses are durable without need for transplant

MRD negative CRs ongoing past 18 months



High rate of CRs continue to be sustained

Encouraging duration of response with median EFS and OS not yet reached

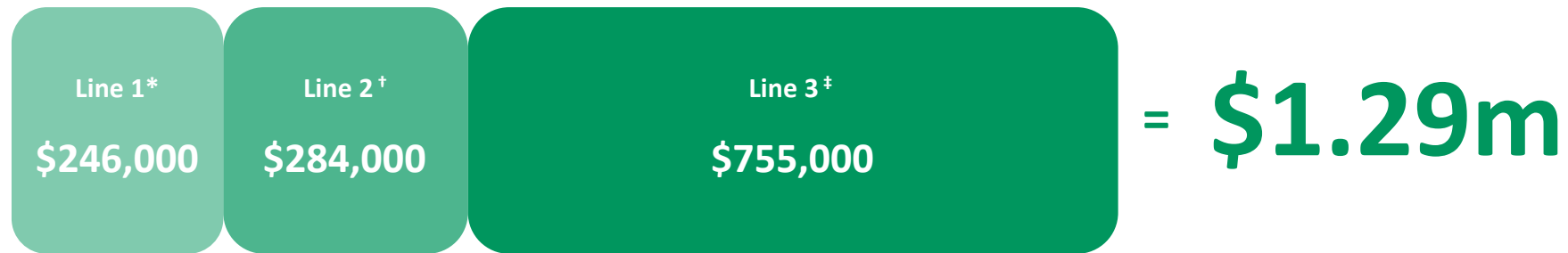


	All patients Est [95% CI]	Closed process Est [95% CI]
N *	19	13
ORR	84%	92%
MRD Neg CR	84%	92%
DOR		
Median	Not reached	Not reached
6 month	73% [44%, 89%]	82% [45%, 95%]
EFS		
Median	Not reached	Not reached
6 months	62% [36%, 80%]	76% [42%, 91%]
OS		
Median	Not reached	Not reached
6 months	72% [45%, 87%]	92% [57%, 99%]

Estimated ALL drug costs >\$1m for responding adults

Excluding transplant

Estimated adult ALL drug acquisition costs by line of therapy



* Modified hyper-CVAD + rituximab²

† Inotuzumab Ozogamicin (per product label)³

‡ Blinatumomab (per product label)⁴

- Adult ALL patients spend 2-3 years receiving treatment
- Current treatments (Chemotherapy, allogeneic HSCT, Biologics) are associated with significant effects
- May expose adult ALL patients to negative acute and chronic clinical consequences

AUTO1 potential is a curative treatment could reduce health care resource consumption and patient burden

AUTO1 is the first Autolus program to move into a pivotal study

Preliminary Ph1 data supports development as a stand-alone therapy

Pivotal study, AUTO1-AL1, in adult ALL:



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



Diffuse Large B Cell Lymphoma

AUTO3 – tailored for DLBCL

Current status of CAR T Cell therapies in DLBCL

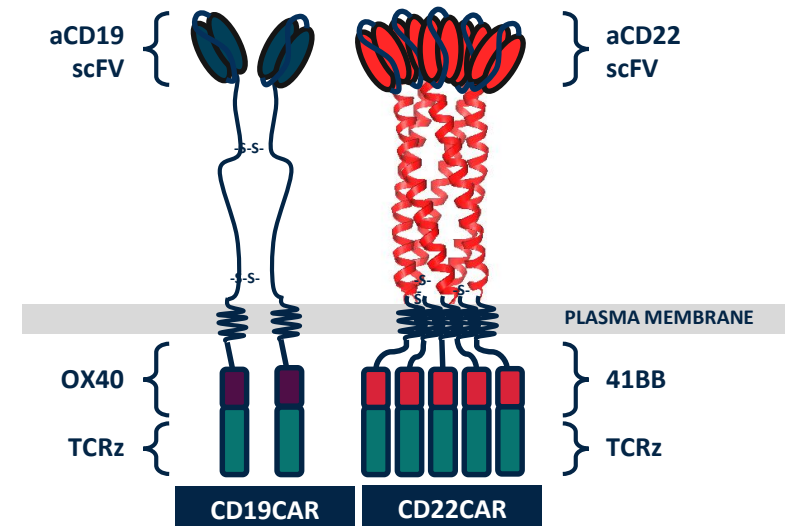
Two approved products (Yescarta® and Kymriah®) and one near to approval (liso-cel)

Efficacy

- Despite high ORR (70-80%) and high best CRR (40-55%), only 29-37% patients achieve durable CRR in DLBCL^{1,2}
- Approximately a third of CRs are lost over time
- Loss of CRs are caused by PD-L1 upregulation³ which contributes to CAR T exhaustion and CD19 antigen loss⁴

Safety

- High rates of severe cytokine release syndrome (13-22%) and severe neurotoxicity (12-28%)^{2,4}
- Early onset and severity of toxicities requires intensive inpatient management



Cytokine Release Syndrome (CRS) and Neurotoxicity (NT)

No grade 3 or higher CRS at $\geq 150 \times 10^6$ cell dose

	50 x10 ⁶ AUTO3 no pembro (N=4)	50 x10 ⁶ AUTO3 D14 pembro (N=3)	150 x10 ⁶ AUTO3 D14 pembro (N=4)	450 x10 ⁶ AUTO3 D14 pembro (N=4)	450 x10 ⁶ AUTO3 D -1 pembro (N=4 [#])	150-450 x 10 ⁶ AUTO3 D-1 pembro RP2D (N=4)	Total (N=23)
Grade 1 CRS	1	0	1	1	2	1	6 (26%)
Grade 2 CRS	0	0	1	1	0	1	3 (13%)
\geq Grade 3 CRS	0	0*	0	0	0	0	0
All grades NT	1	0	0	0	0	0	1 (4%)

* 1 patient who had no CRS with primary infusion, developed G3 CRS (severe hypoxia) with re-treatment 1 year later without CAR T expansion and with significant disease burden in lung that had been treated with radiation

Includes one patient who received only 125×10^6

- No prophylactic measures of any kind
- No grade >3 CRS* with primary infusion, median time to CRS is 7 days (1-36d), median duration of CRS is 5 days (1-19d), 4 patients (17%) received tocilizumab for CRS
- No NT of any grade in AUTO3 + pembro, only 1 case of NT (Grade 3) at lowest dose, which resolved quickly with steroids
 - No CAR T expansion was seen at any time. Grade 3 NT occurred day 53. Symptoms improved in 3 days. Same symptoms of facial/muscle weakness occurred > 10 years ago without specific diagnosis.

Preliminary efficacy indicative of high level of activity

Dose level $\geq 150 \times 10^6$ cells with day -1 pembro selected as Phase 2 dosing regimen (RP2D)

	50 x 10 ⁶ No pembro (N=4)	50 x 10 ⁶ D14 pembro (N=3)	150 x 10 ⁶ D14 pembro (N=4)	450 x 10 ⁶ D14 pembro (N=4)	450 x 10 ⁶ D-1 pembro (N=4)	150-450 x 10 ⁶ D-1 pembro RP2D (N=4)
CR	1	1	2	2	2	3
PR	1	1	0	1	0	1
PD	2	0	2	1	2**	0
NE	0	1*	0	0	0	0

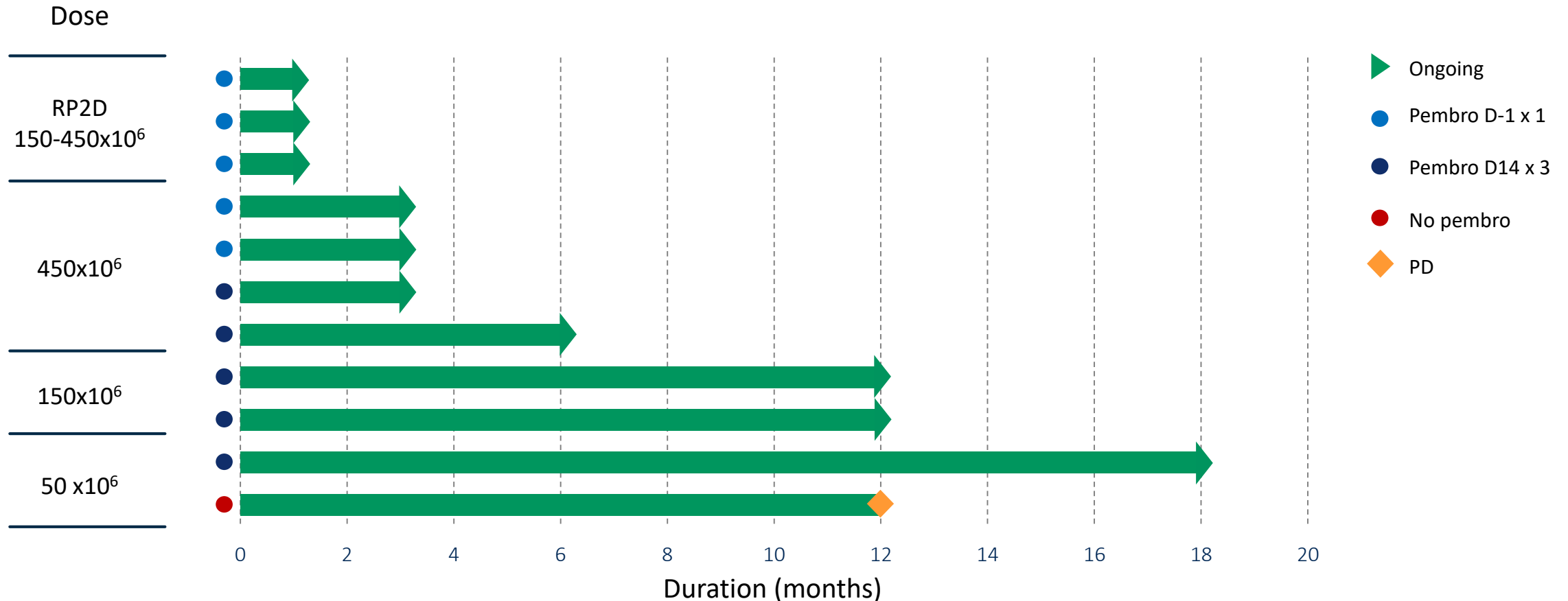
- All dose levels (N=23): ORR 65%, CRR 48%
 - $\geq 150 \times 10^6$ (N=16): ORR 69%, CRR 56%
 - $\geq 150 \times 10^6$, Day -1 pembro (N=8): ORR 75%, CRR 63%

* NE because baseline PET negative disease

**Includes one patient who received only 125 x 106 and NE per protocol

Encouraging signs of durable complete responses

10 of 11 complete responses ongoing



At $\geq 150 \times 10^6$ dose, all complete responses are ongoing with a median follow up 3 months (range 1-12m)

Widespread adoption of CAR T products has been limited by toxicities

High rates and severity of toxicities require intensive management and inpatient care

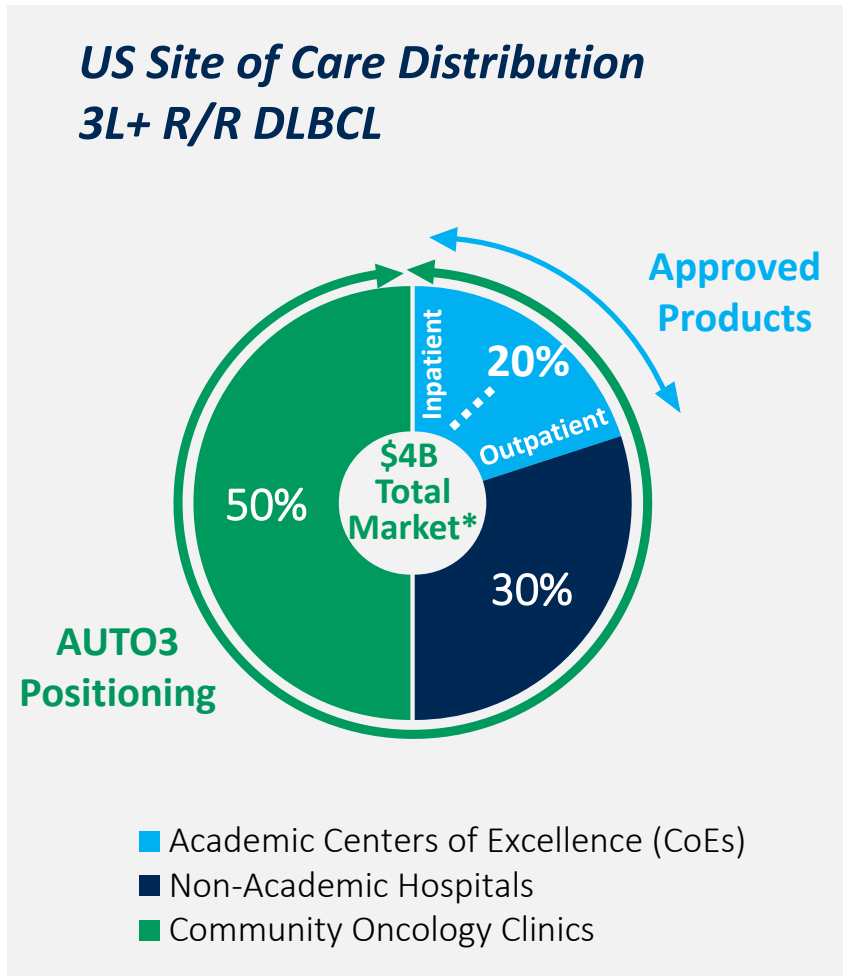
	Yescarta®	Kymriah®/ liso-cel	AUTO3*
Best CRR	54%	40-53%	63%
Ongoing CR rate	36% at 6m	29-35% at 6m	tbd
CRS ≥ grade 3	11%	2-23%	0%
NTX any grade	64%	21-30%	0%
NTX ≥ grade 3	28%	10-12%	0%
Toxicity management	Intensive		Minimal
Healthcare utilization	Inpatient Treatment		Outpatient Positioning

AUTO3 has been designed to minimise loss of CRs and has a safety profile suitable for all settings of care including outpatient therapy

All CRs at ≥ 150 x106 are ongoing at 27 April data cut off
 *AUTO3: 27 April 2020 Data cut (AUTO3 + Day – 1 Pembro ≥ 150 x106)
 Nellapu et al., 2017
 Schuster et al., 2019
 Abramson et al., 2019 (ASH)

AUTO3 is designed to reach total addressable r/r DLBCL population

AUTO3 has the potential to be a true outpatient therapy



Approved CD19 CAR T Products

- Patients receive approved products as inpatients in CoEs because of the high rate and severity of toxicities and the need for intensive patient management
- Market opportunity limited to ~20% of patients

AUTO3

- Minimal toxicity management of AUTO3 should allow treatment across all settings of care
- AUTO3 grows the addressable market and maximizes reimbursement options compared to approved products
- >80% of 3L+ and 2L DLBCL patients are treated outside of academic CoEs

Full outpatient opportunity unlikely to be realized with current CAR Ts

Real-world Medicare claims data for adults with lymphoma who received CAR T-cell therapy from 2017 to 2018 suggests:

Median length of hospital stay is
17 days

Median time in intensive care unit (ICU) is
13 days

Nearly 50% of patients require an ICU stay*

- Outpatient treatment with liso-cel in r/r DLBCL resulted in 57% of patients requiring hospitalisation post-treatment with a median time to hospitalization of 5.5 days**
- Aggressive steroid management to reduce toxicity may have a negative impact on efficacy***

AUTO3 is designed for potential best-in-class efficacy and safety

Differentiated product profile should open access to full market opportunity



First-in-class CD19 & CD22 CAR with novel signaling domains, design & manufacturing process



Designed to provide best-in-class efficacy with high rates of durable complete responses



Potential for best-in-class safety with no need for intensive patient management



Highly differentiated clinical profile with potential for true outpatient treatment across all settings of care



Outpatient cohort initiated with potential to move to a pivotal study early 2021



AUTO3 has the potential to reach patients without the need for referrals to academic centers



T Cell Lymphoma

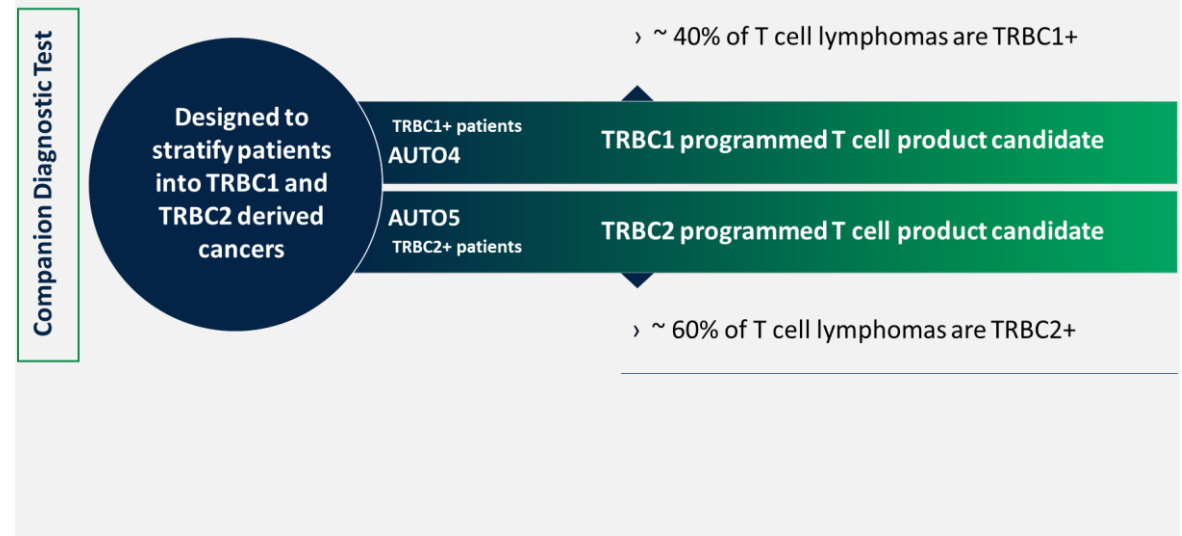
AUTO4 and AUTO5 – tailored for T Cell Lymphoma

T Cell Lymphoma

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

- 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 benefited from advances in immunotherapeutic approaches

Autolus use three key elements to address T Cell Lymphoma's - AUTO4, AUTO5 and a companion diagnostic test

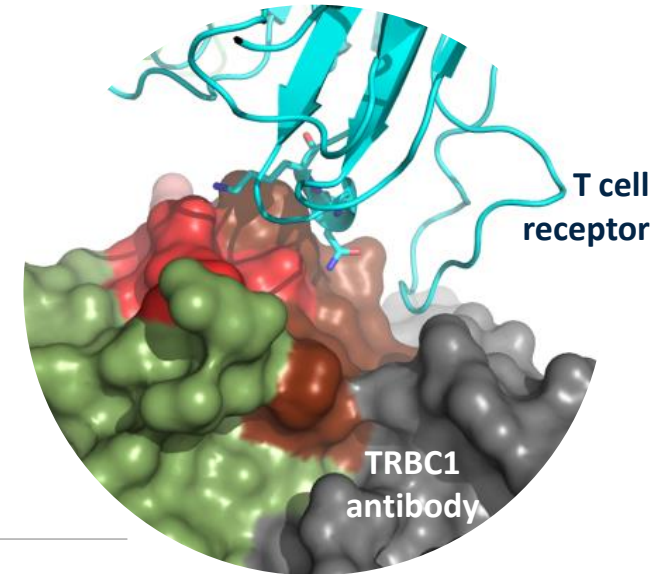


Unique targeting of TRBC1 & TRBC2 opens new therapeutic approach

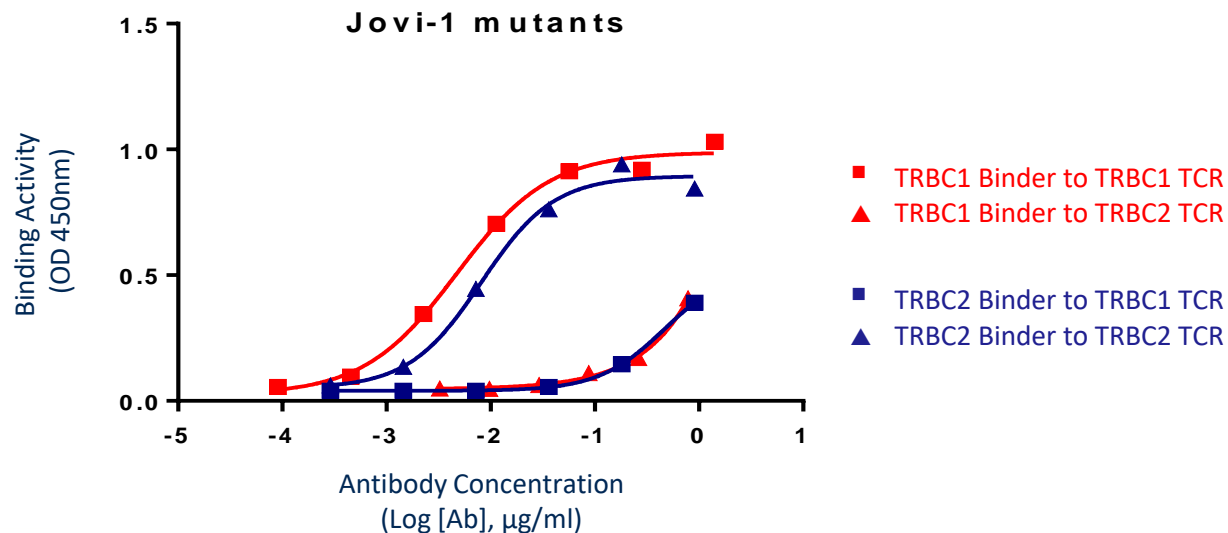
AUTO4/5 in Peripheral T Cell Lymphoma

Differences between TRBC1 and TRBC2 are small

		NK-KN 4/5	F-Y 36
TRBC1	1	EDLNKVFPPPEVAVFEPSEAEISHTQKATLVCLATGFF	PDHVLSWVWNGK
TRBC2	1	EDLNKVFPPPEVAVFEPSEAEISHTQKATLVCLATGFY	PDHVLSWVWNGK
TRBC1	51	EVHSGVSTDPQPLKEQPALNDSRYCLSSRLRVSATFWQNP RNHFRCQVQF	
TRBC2	51	EVHSGVSTDPQPLKEQPALNDSRYCLSSRLRVSATFWQNP RNHFRCQVQF	
TRBC1	101	YGLSENDEWTQDRAKPVTOIVSAEAWGRADCGFTS	
TRBC2	101	YGLSENDEWTQDRAKPVTOIVSAEAWGRADCGFTS	
		V-E 135	



Antibody Binding Data



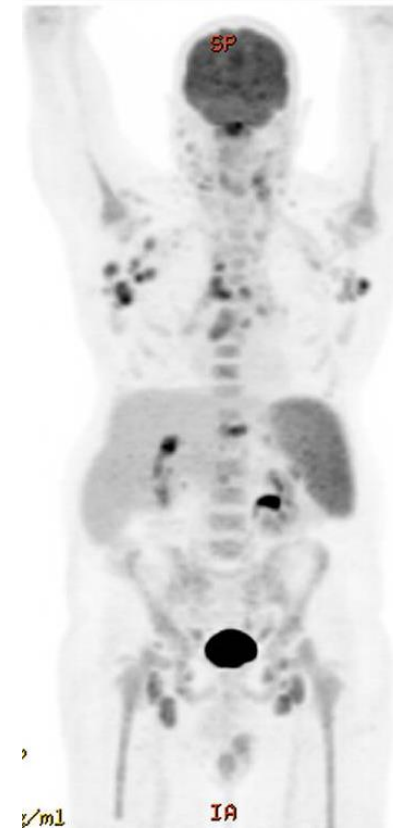
- AUTO4 clinical study in progress
- AUTO5 in late preclinical development
- Preclinical study package demonstrating selective binding and anti-tumor activity of TRBC1 and TRBC2 CARs in vitro and in vivo

Encouraging signal from AUTO4 treated patient

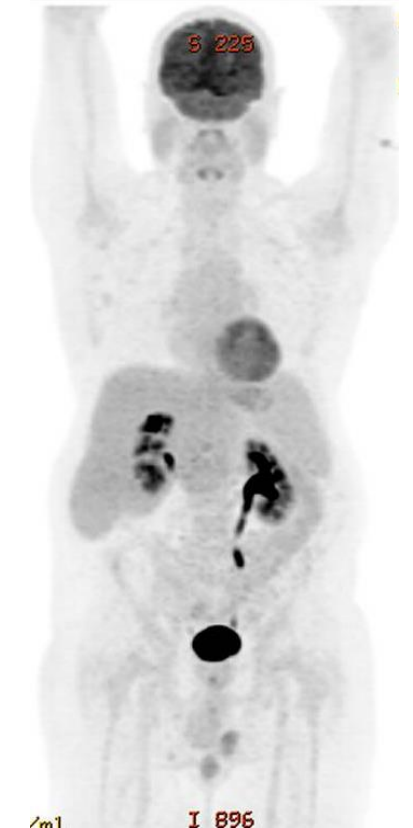
Clinical outcome of patient 1

- 57 yr old with Angioimmunoblastic T cell lymphoma
- Past treatments include CHOP (CR) & IVE (refractory)
- AUTO4 Treatment
 - Treated with 25×10^6 anti-TRBC1 CAR T cells
 - No expansion of CAR T cells was noted
 - No CRS or neurotoxicity or T-cell aplasia was noted
 - Initial PET/CT at one month showed Complete Metabolic Response but subsequently had progression on day 71

Baseline PET/CT scan
Pre-AUTO4 treatment



Month 1 PET/CT scan



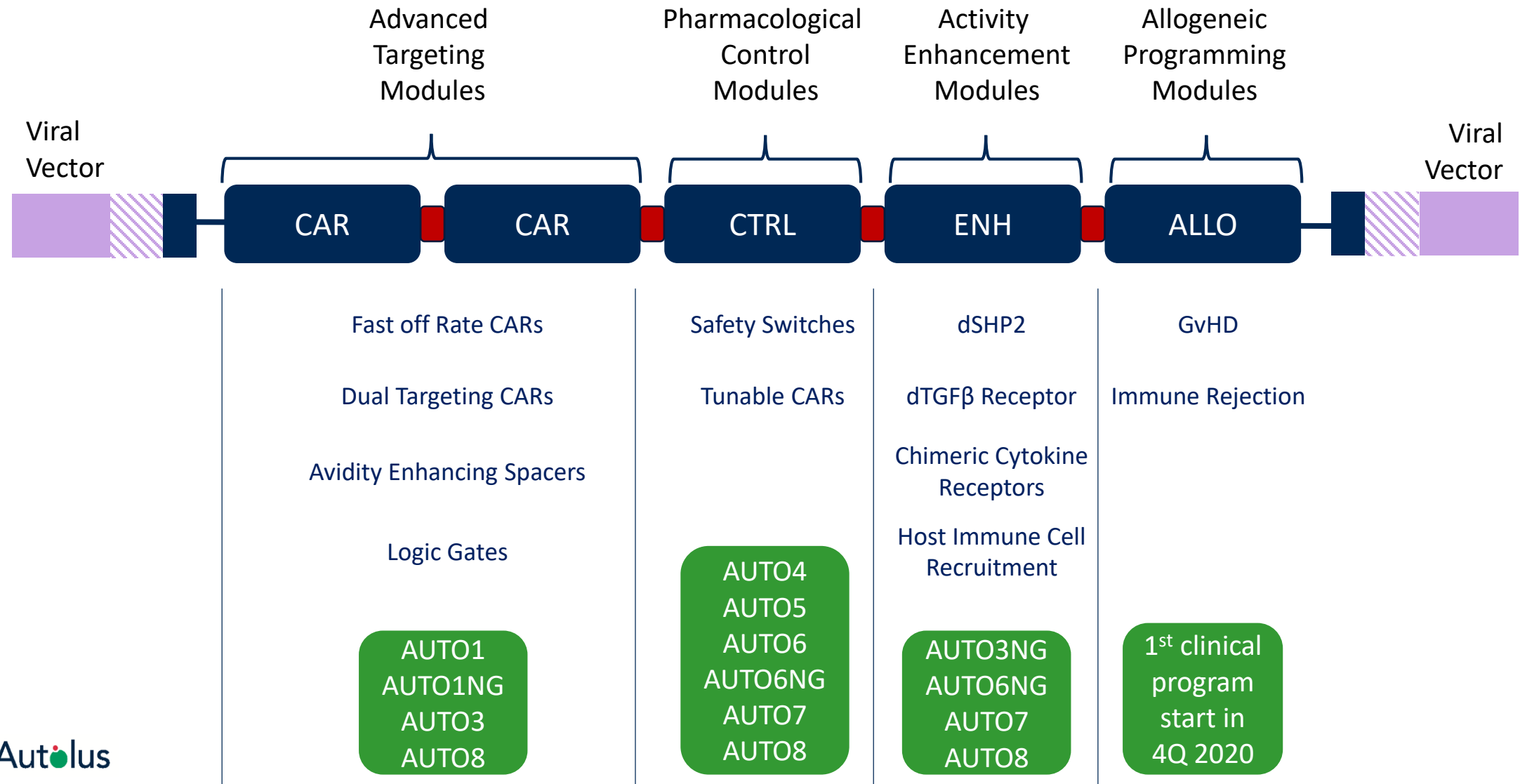
A microscopic image of a cell, likely a T cell, with a textured, spherical surface and several long, thin, spiky protrusions extending outwards. The background is a soft, out-of-focus green and blue gradient.

Pipeline

A broad portfolio of next generation modular T cell therapies







A broad toolkit building on our core strategy of modular innovation

Advanced T cell programming



Broad pipeline of next generation programs

Designed to address limitations of current T cell therapies

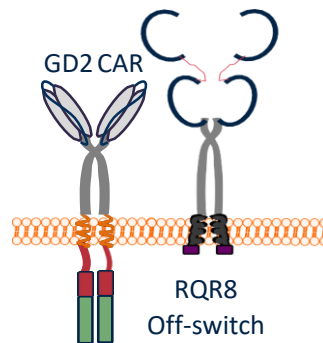
PRODUCT	INDICATION	TARGET	PRE-CLINICAL	PHASE 1
AUTO1NG	ALL	CD19 & CD22		H2 2020
AUTO3NG	DLBCL	CD19 & CD22		Life cycle mgmt
AUTO5	TRBC2+ Peripheral TCL	TRBC2		H1 2021
AUTO6NG	Neuroblastoma; Melanoma; Osteosarcoma; SCLC	GD2		H1 2021
AUTO7	Prostate Cancer	PSMA		H1 2021
AUTO8	Multiple Myeloma	BCMA & CAR X		H2 2020

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

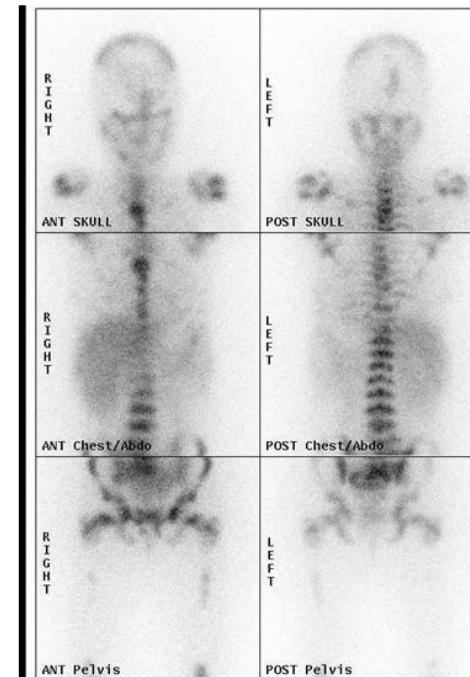
AUTO6 designed to drive anti-tumor activity without neurotoxicity

AUTO6: GD2-targeted programmed T cell therapy in neuroblastoma

- Programmed T cell product candidate:
 - New binder design
 - Minimize on-target, off-tumor toxicity
 - Humanized to reduce immunogenicity
 - RQR8 safety switch
- Phase 1 trial in r/r neuroblastoma conducted by CRUK in collaboration with UCL

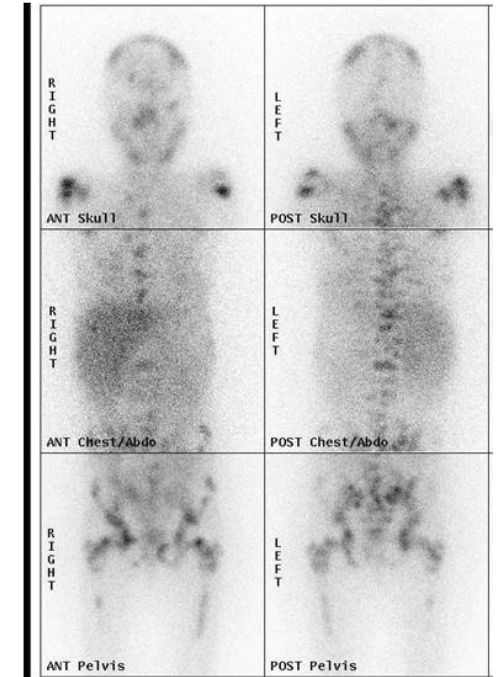


Day 0



MIBG: iodine-123-meta-iodobenzylguanidine

Day 28



Modular approach enhances AUTO6NG for solid tumor environment

Next generation programs powered by a technology tool box

AUTO6

GD2 CAR

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

Safety Switch

To eliminate the therapy in the event of unexpected toxicities

dSHP2

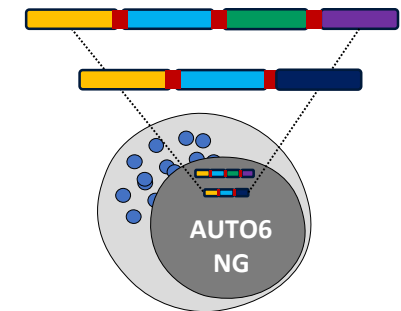
To overcome multiple checkpoint pathways

Cytokine Signal

IL7 CCR chimeric protein designed to improve CAR T cell persistence

dnTGFβRII Receptor

To overcome inhibitory effect of TGFβ in microenvironment



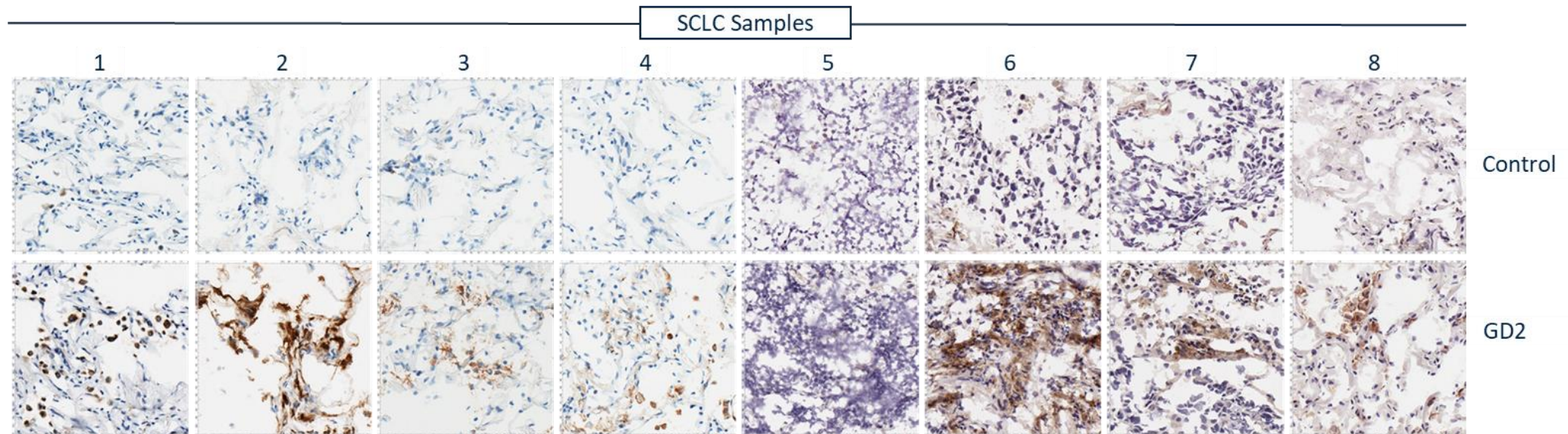
AUTO6NG:

- 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

Targeting GD2 in indications outside neuroblastoma

Screening for GD2 expression in multiple solid tumors

- GD2 is highly expressed in osteosarcoma, small cell lung cancer (SCLC) and melanoma
- Detailed expression in SCLC was analyzed further in a larger set (25 SCLC patients' biopsies)
 - 68% GD2 expressing (homogenous and heterogenous)
 - 32% No GD2



AUTO6NG is highly active *in vitro* and *in vivo* in a SCLC tumor model

Experimental data presented at AACR 2020 indicates that GD2 is an attractive SCLC CAR T target

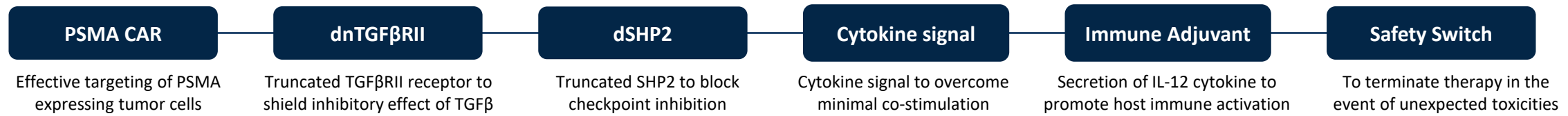
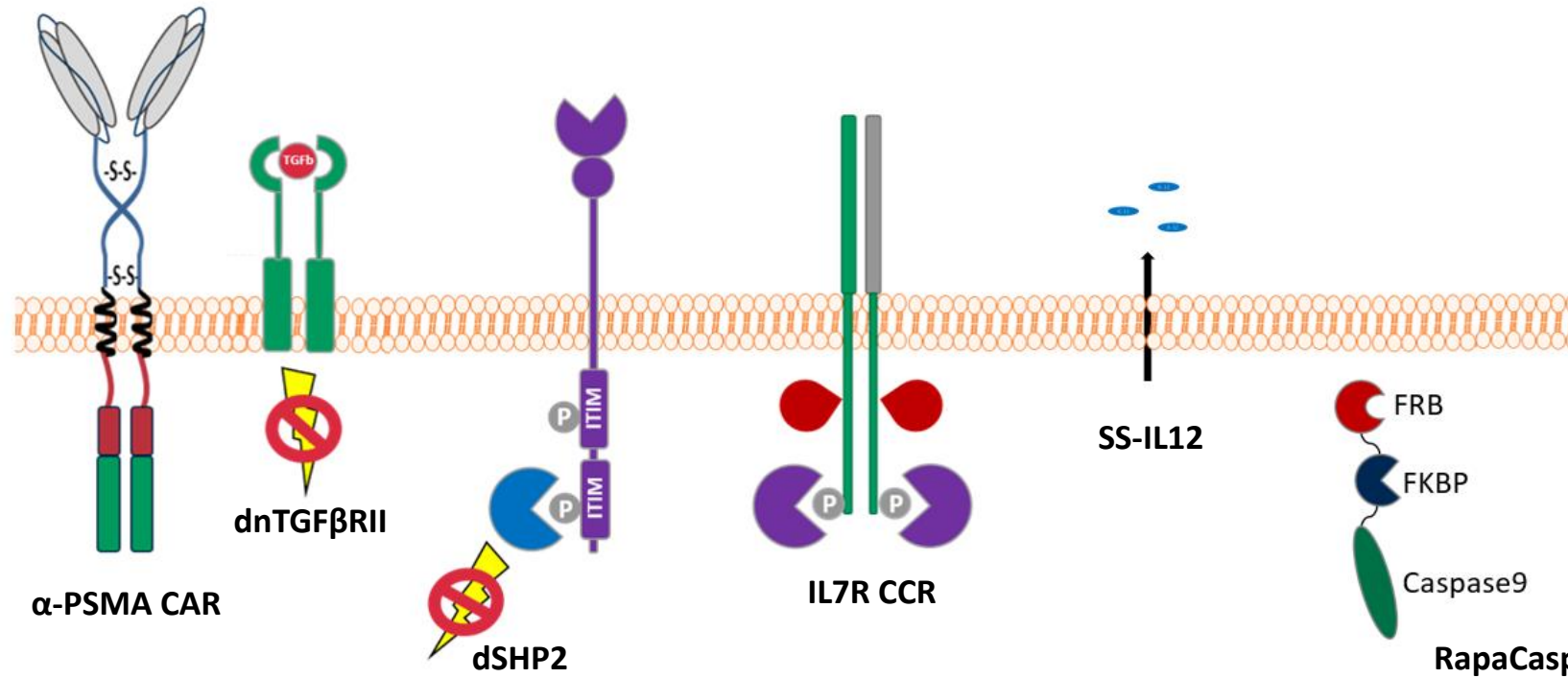
The modules enabled AUTO6NG cells to persist and this expansion enhancement was without increasing cytokines levels *in vivo*

AUTO6NG will be clinically explored in GD2 expressing tumors (e.g. SCLC)

AUTO6 alone is not sufficient to drive *in vivo* efficacy in a SCLC mouse model and additional cell programming modules rendering the CAR T cells insensitive to TGF β signalling and checkpoint inhibition (AUTO6NG) are required to drive efficacy

AUTO7 is designed to tackle the complex solid tumor environment

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



Modules delivered using gamma-retroviral vector



Manufacturing

Economical & scalable product delivery platform

Semi-automated and parallel processing

Clinical supply & commercial launch

- Multiple samples to be processed within the same environment
- CGT Catapult (UK)
- Global clinical supply since Q3 2019



Planned US commercial supply

- Collaboration with Alexandria Real Estate Partners (ARE)
- Fully scaled commercial site for cell process supply
- Planned capacity of 5,000 patients p.a.



Next steps

Multiple clinical data points expected through 2H 2020 / 2021

Product	Indication	Target	Event
B Cell Malignancies			
AUTO1	Adult ALL	CD19	<ul style="list-style-type: none"> • Ph1 long-term follow up Q4 2020 • Pivotal data end of 2021
AUTO1NG	Pediatric ALL	CD19 & 22	<ul style="list-style-type: none"> • Start Ph1 H2 2020
AUTO3	DLBCL	CD19 & 22	<ul style="list-style-type: none"> • Decision on Ph2 Q3 2020 • Full Ph1 data H2 2020
Multiple Myeloma			
AUTO8	Multiple Myeloma	BCMA & CAR X	<ul style="list-style-type: none"> • Start Ph1 study H2 2020
T Cell Lymphoma			
AUTO4	TRBC1+ Peripheral TCL	TRBC1	<ul style="list-style-type: none"> • Ph1 interim data H1 2021
GD2+ Tumors			
AUTO6NG	Neuroblastoma; Melanoma; Osteosarcoma; SCLC	GD2	<ul style="list-style-type: none"> • Start Ph1 H1 2021
Allogeneic Approach			
Undisclosed	Undisclosed	Undisclosed	<ul style="list-style-type: none"> • Start Ph1 Q4 2020

Autolus poised for value inflection in 2020

- AUTO1
 - Currently enrolling Autolus' first Phase 1b / 2 pivotal program in Adult ALL
 - Granted orphan drug designation by the FDA for treatment of ALL
 - Pediatric ALL – moving forward with AUTO1/AUTO1NG
- AUTO3
 - Outpatient treatment cohort started in Q2 2020
 - Confirmation of transition to pivotal stage in Q3 2020
 - Pivotal study could start early 2021
- Additional value inflection in 2020 from our preclinical solid tumor and hem-onc programs
- Key data releases expected at upcoming medical conferences
- Strong balance sheet with \$243.3m in cash as of March 31, 2020



Thank you