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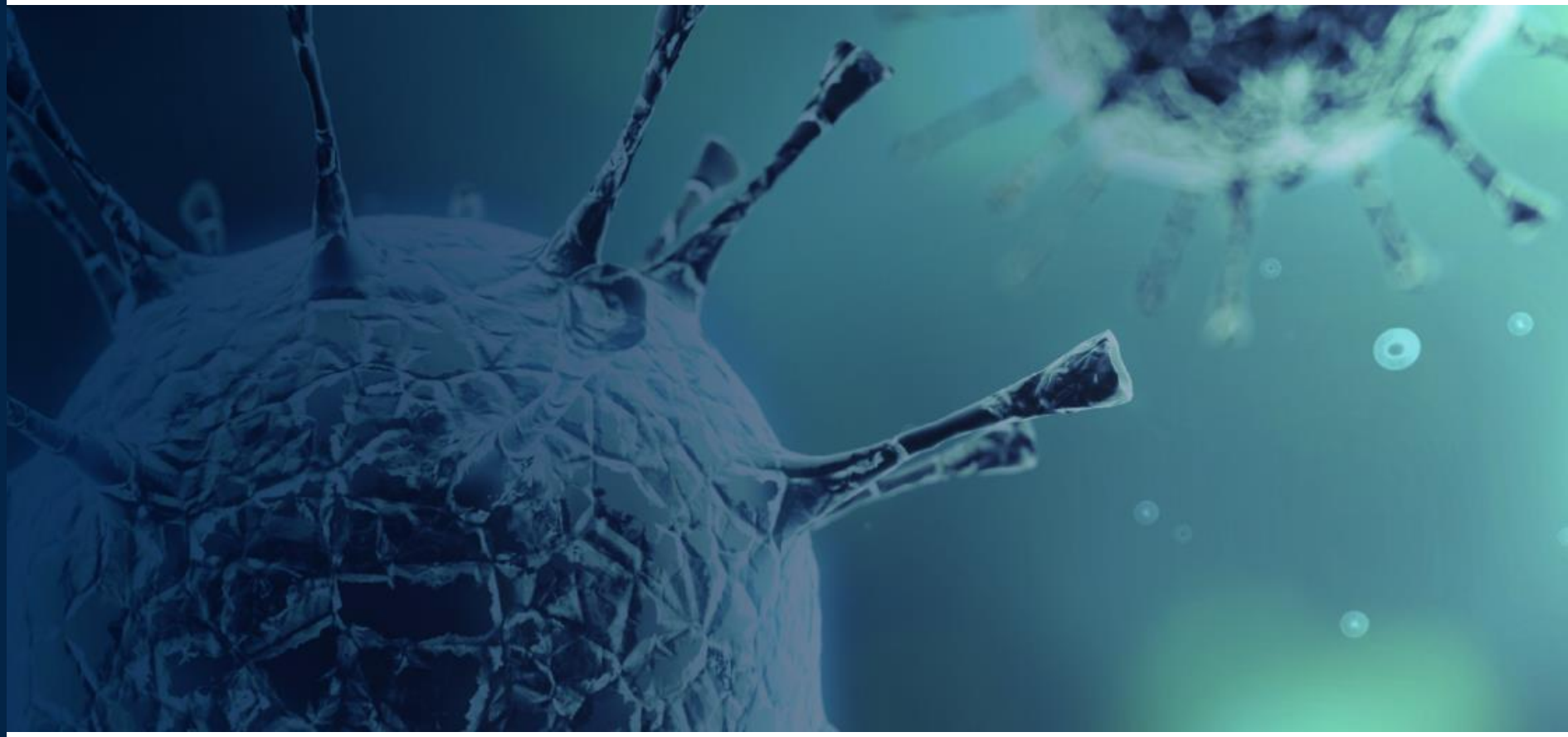
Nasdaq: AUTL



Next Generation Programmed T Cell Therapies

September, 2019

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Investment highlights

Broad clinical-stage pipeline

- 4 product candidates
- 5 hematological indications
- 1 solid tumor program

Modular programming approach

- Enables rapid cycle of innovation
- 4 next generation versions of lead programs
- Designed to overcome tumor defenses

Multiple upcoming milestones

- Late and early stage clinical data from multiple programs

Broad technology base

- Portfolio of owned and in-licensed intellectual property; 85 patent families

Proprietary manufacturing process

- Fully enclosed, semi-automated
- Economical at commercial scale
- Expanding to new US/UK facilities

Strong Fundamentals

- $266 million at June 30, 2019
- Worldwide rights retained for all programs
- Cash runway into H2 2021

Broad pipeline of clinical and NG programs

Product	Indication	Target	Preclinical	Phase 1/2	Phase 2/3
B Cell Malignancies					
AUTO1	Pediatric ALL	CD19	UCL - CARPALL		
AUTO1	Adult ALL	CD19	UCL – ALLCAR19		
AUTO1NG	ALL	CD19 & CD22			
AUTO3	DLBCL	CD19 & CD22	ALEXANDER		
AUTO3NG	DLBCL	CD19 & CD22			
Multiple Myeloma					
AUTO2NG	Multiple Myeloma	Undisclosed			
T Cell Lymphoma					
AUTO4	TRBC1+ Peripheral TCL (LibrA T1)	TRBC1	LibrA T1		
AUTO5	TRBC2+ Peripheral TCL	TRBC2			
GD2+ Tumors					
AUTO6	Neuroblastoma	GD2	CRUK		
AUTO6NG	Neuroblastoma; Melanoma; Osteosarcoma; SCLC	GD2			
Prostate Cancer					
AUTO7	Prostate Cancer	Undisclosed			

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NG = Next Generation
SCLC = Small Cell Lung Cancer

Cancer cells defend against T Cells

- Any aspiring cancer cell changes its internal programs, displays those changes on its surface and becomes a target for T cells
- At time of first diagnosis, cancer cells have already acquired capability to defend against T cells
- Mechanisms of defense are either driven by acquired mutations or use of common mechanisms of immune modulation, like checkpoint inhibition
- Redirection of T cells is necessary but typically not sufficient for transformational clinical activity

Each product candidate is designed to address a limitation of current T cell therapies

B Cell Malignancies

- **AUTO1** – Reduce high grade CRS*, while achieving long persistence in acute leukemia
- **AUTO1NG** – build on AUTO1 clinical experience and limit antigen driven escape by dual targeting
- **AUTO3** – Limit antigen driven relapse by dual targeting and address checkpoint inhibition in DLBCL
- **AUTO3NG** – Address 3 routes of escape

Multiple Myeloma

- **AUTO2NG** – Increase depth of initial response, counter tumor defense and increase CAR-T persistence

T Cell Lymphoma

- **AUTO4 / 5** – Unique targeting of T cell lymphoma while maintaining immunity

Solid Tumors

- **AUTO6NG** – Target GD2+ tumors, increase persistence and address routes of escape
- **AUTO7** – Target prostate cancer and address routes of escape

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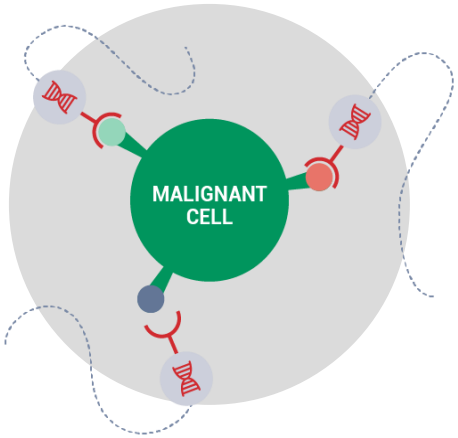
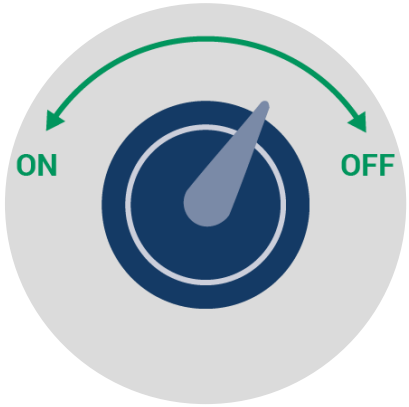
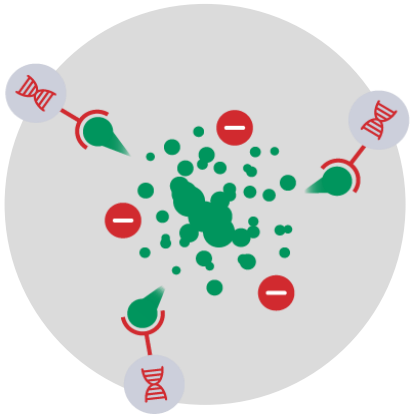
* Cytokine Release Syndrome

Advanced T cell programming

Driving modular innovation with a focus on changing T cell properties without inducing systemic toxicity



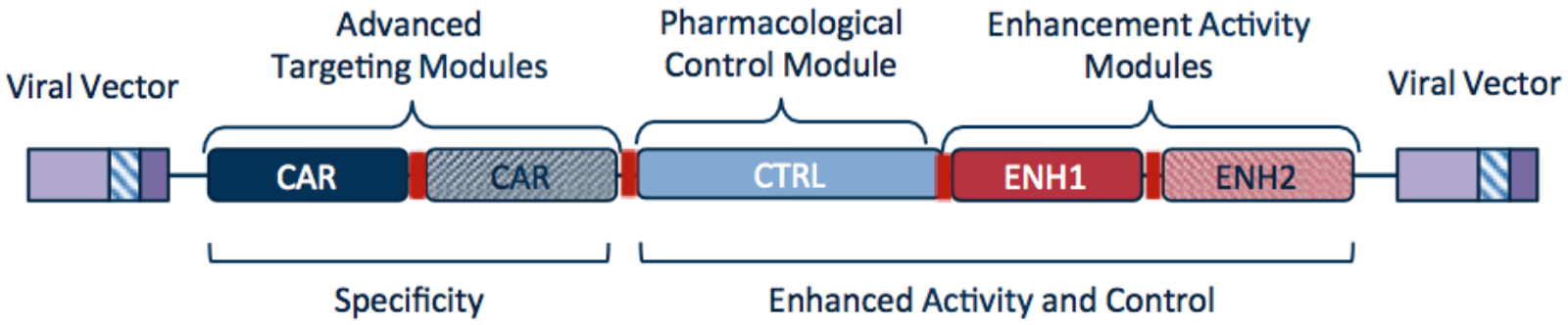




Advanced targeting

Pharmacological Control

Enhanced Activity



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Adult Acute Lymphoblastic Leukemia

Adult ALL is a significant commercial opportunity

- Potential market size in adult ALL
  - Up to 8,400 new cases of adult ALL diagnosed yearly worldwide (incl. approx. 6,000 in US & EU5)
  - Addressable patient population is projected at 3,000 patients US & EU5
- High unmet medical need
  - Combination chemotherapy enables 90% of adult ALL patients to experience CR, but approximately 50% will relapse
  - Median overall survival is < 1 year in r/r ALL
- No CAR T therapy approved in ALL for adults > 25 years of age
- Only approved redirected T cell therapy is Blincyto® (blinatumomab)

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Sources: Prevalence calculated using SEER and EUCAN and extrapolated using IMS; American Cancer Society

AUTO1 designed to reduce high-grade CRS

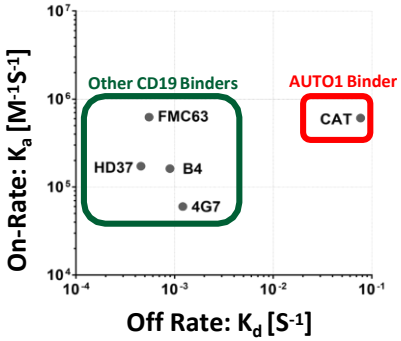
- Adult ALL patients are generally more fragile, have more co-morbidities, and are less likely to tolerate toxicity compared to pediatric ALL patients
- Adult ALL patients often have a higher tumor burden in the bone marrow, increasing the risk of adverse events
- Conventional CD19 CAR Ts use an identical high affinity CD19 binder (FMC63), with a fast on-rate and a very slow off rate leading to over-activation and high-grade CRS
- AUTO1 is designed to reduce severe (≥ Grade 3) CRS using an optimized CD19 CAR with a lower affinity and a fast off rate
  - Engages efficiently with cancer cells, delivering a kill, but disengages rapidly like a normal T cell

AUTO1 shows enhanced activity vs FMC63 CARs

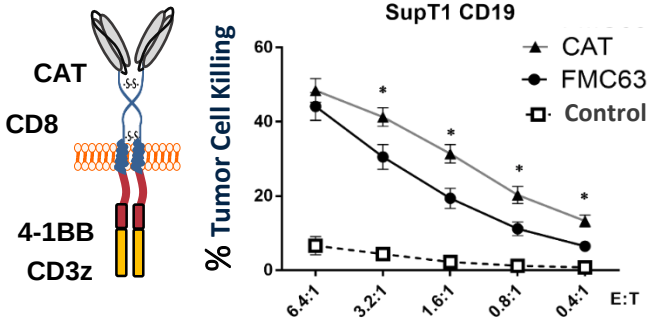
Preclinical data show higher potency and proliferation

- 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

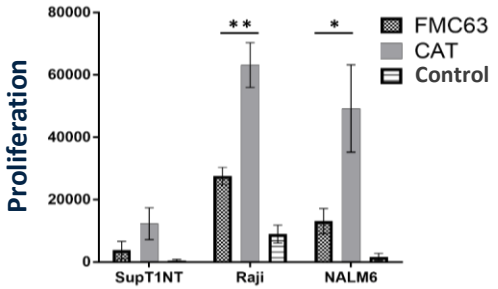
Fast Off-Rate



Enhanced Cytotoxicity



Enhanced Proliferation



*Similar binders are used in Yescarta® and JCAR-017

Amrolia, Persis J. et al. "Enhanced CAR T cell expansion and prolonged persistence in pediatric patients with ALL treated with a low-affinity CD19 CAR." *Nature Medicine, September 2019.*

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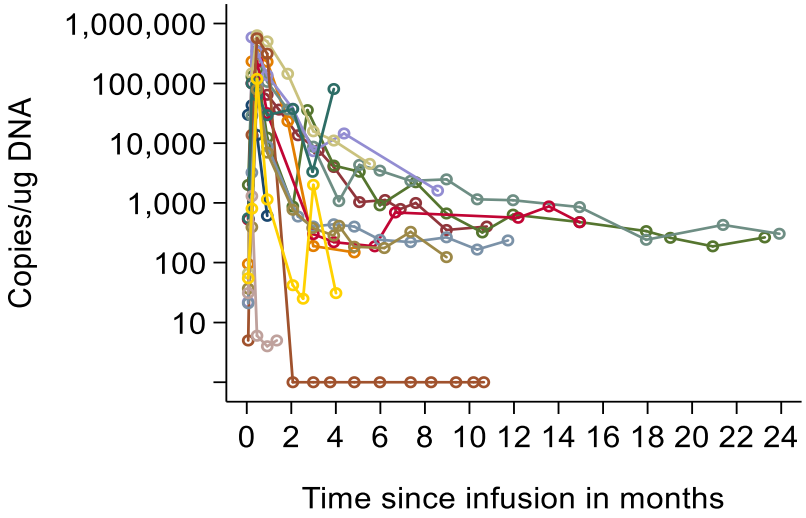
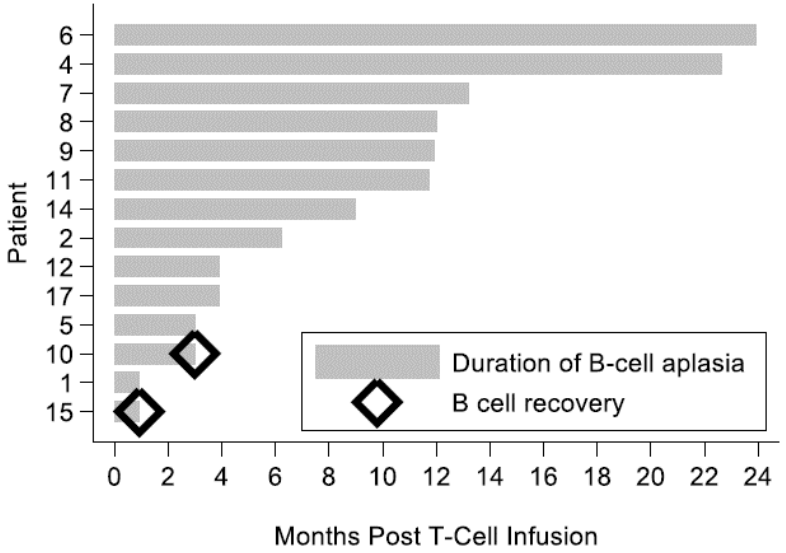
AUTO1 shows excellent expansion and persistence in pALL

AUTO1 expansion and persistence exceed Kymriah®





> Enhanced Expansion:
  - Peak expansion (Cmax) approximately 3 x higher than that reported for Kymriah®
  - Area under the curve (day 0-28) 5 x higher than that reported for Kymriah®

> Prolonged Persistence:
  - Median half-life of AUTO1 cells (34 days) was more than 2 x longer than that reported for Kymriah® (14.2 days)
  - At last follow-up, AUTO1 cells were detectable in 11/14 patients (79%) and correlated with ongoing B cell aplasia in these patients

Data as of 19 December, 2018

Mueller et al., (2018) Blood; Maude et al., (2014) NEJM.
Amrolia, Persis J. et al. "Enhanced CAR T cell expansion and prolonged persistence in pediatric patients with ALL treated with a low-affinity CD19 CAR." *Nature Medicine, September 2019.*

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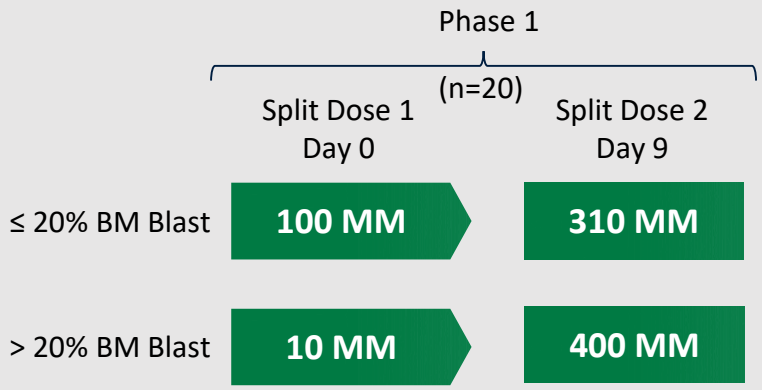
Adult ALL – AUTO1: Phase 1 trial is ongoing



CD19 CAR T Cells administered as fixed dose following Flu/Cy pre-conditioning

Status

Initiated Phase 1 ALLCAR19 trial in Q1 2018

Phase 1 designed to assess safety in adult ALL; conducted in collaboration with UCL

Phase 1 data on safety and preliminary efficacy data presented Q2 2019*

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*Presented at AACR 2019

AUTO1 in adult ALL: Favorable safety profile

Interim data from ALLCAR19 Phase 1 Study (N=10)

- 5 patients had ≥ 50% BM blasts prior to lymphodepletion (CRS 'high risk')
- Robust CAR T cell expansion and persistence
- Zero patients ≥ Grade 3 CRS (Lee criteria)
  - Only 2 patients with Grade 2 CRS
- Neurotoxicity: 1 Grade 3 CRES* (with rapid and complete resolution)
- No patients admitted to ICU due to CRS

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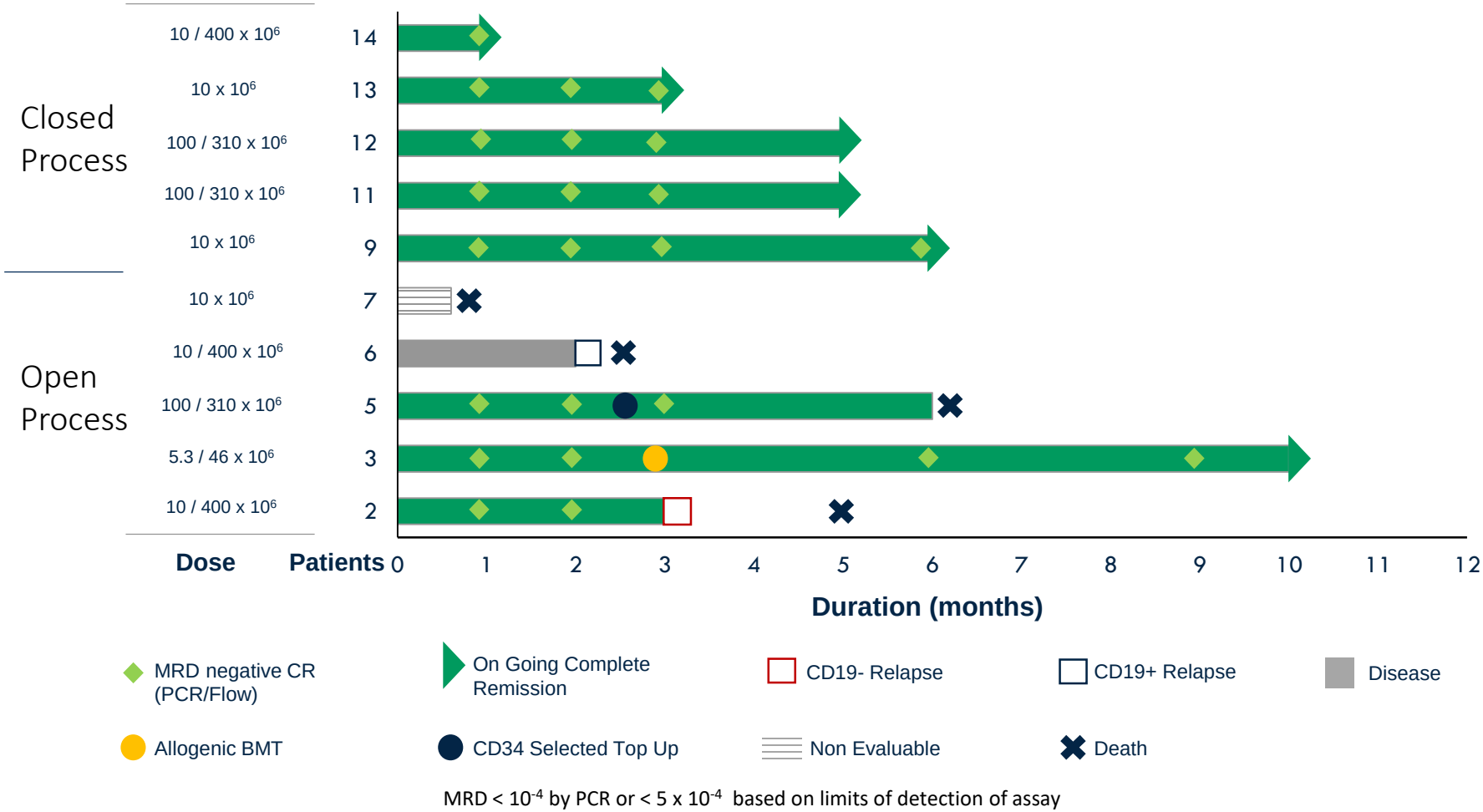
*CAR T cell-related encephalopathy syndrome

AUTO1 in adult ALL: High level of efficacy

8/9 (88%)* of evaluable patients at 1 month achieved molecular CR



MRD < 10^{-4} by PCR or < 5 x 10^{-4} based on limits of detection of assay

*8 of 10 (80%) of treated patients achieved molecular CR

Comparison of AUTO1 vs. Kymriah® and Blincyto®

AUTO1 – potential for best in class redirected T cell therapy in adult ALL

	Pediatric ALL		Adult ALL	
	[1]Kymriah®-pALL	[2]AUTO1 - pALL	[3]AUTO1 aALL	[4]Blincyto®
Patient Numbers	75	14	10	271
CR Rate	81%	86%	88%*	42%
EFS	EFS 12m: 50% (95% CI, 35 to 64)	EFS 12m: 46% (95% CI, 16 to 72)	tbd	EFS 6m: 31%
CRS ≥ Grade 3	47%	0%	0%	3%
Neurotox ≥ G3	13%	7%	10%	13%

* In 8 of 9 evaluable patients at 1 month; 8 of 10 treated patients

1. Maude et al., NEJM 2018
2. Ghorashian et al., EU CAR T Cell Meeting 2019 and Amrolia, Persis J. et al. "Enhanced CAR T cell expansion and prolonged persistence in pediatric patients with ALL treated with a low-affinity CD19 CAR." *Nature Medicine, September 2019.*
3. Roddie et al., AACR 2019
4. Kantarjian et al., 2017

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AUTO1 in adult ALL - Summary and next steps

First Autolus program to move to a registration trial

- Favorable safety profile and high level of clinical activity
  - Data suggest AUTO1 may be twice as active as blinatumomab, with comparable safety profile
- Phase 2 registration trial: planned start Q4 2019 (pending regulatory feedback)
  - Adult ALL patients in morphological relapse
  - Single arm study with approx. 70 patients
  - Clinical trial sites in US and Europe
- Primary Endpoint is overall complete response rate (CR/CRi)
- Secondary endpoints include:
  - MRD-negative CR
  - EFS at 6 months
- Additional upcoming milestones:
  - Data update at ASH 2019
  - BLA filing targeted for H2 2021

Pediatric ALL

Assessing next steps

- Pediatric ALL is most common cancer diagnosed in children. Patients respond well to first line therapy
  - Approx. 3,400 new cases diagnosed in the US every year*
- 10-20% of patients are relapsed/refractory, or approx. 1,000 patients US & EU5 combined
- Kymriah® and Blincyto® are approved for r/r pALL

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*Source: National Cancer Institute Surveillance, Epidemiology and End Results statistics database

Pediatric ALL

AUTO3 data support dual antigen targeting hypothesis

- AUTO3 molecular CRR and safety are comparable to AUTO1
- AUTO1 primary cause of relapse was loss of antigen, which usually occurred within 6 months after AUTO1 infusion
- Design premise for AUTO3 is to reduce antigen driven relapse using a dual targeting approach to CD19 and CD22
- With AUTO3 one CD19 loss at relapse was observed at around 12 months
- Recent updated data show good, but still less long-term persistence compared to AUTO1 and durability of effect may be inferior to AUTO1

Pediatric ALL

Future focus will be on AUTO1/AUTO1NG

- AUTO1 shows comparable clinical efficacy to Kymriah® with an improved safety profile, similar to Blincyto®

- Development track in pediatric ALL will focus on AUTO1
  - Phase 1 data at ASH 2019
  - Pediatric program (PIP) with AUTO1

- Development program includes dual-targeting AUTO1NG, which incorporates the CD19 CAR of AUTO1 and a novel CD22 CAR
  - Expect to present first preclinical data on novel CD22 CAR at ASH 2019
  - Initiate Phase 1 trial H2 2020 with interim Phase 1 data H1 2021

Mueller et al., (2018) Blood.
Maude et al., (2014) NEJM.
Amrolia, Persis J. et al. "Enhanced CAR T cell expansion and prolonged persistence in pediatric patients with ALL treated with a low-affinity CD19 CAR." *Nature Medicine, September 2019.*

Diffuse Large B Cell Lymphoma (DLBCL)

DLBCL is a large commercial opportunity

- Potential market size in DLBCL
  - Approx. 24,000 patients diagnosed in the US every year*
  - Addressable patient population projected at 10,000 patients for US & EU5 combined

- Aggressive and rapidly advancing cancer
  - Most common type of Non-Hodgkin Lymphoma
  - High dose chemotherapy + monoclonal antibody (MAB) leads to remission in about 50-60% of patients

- Two Approved CAR T products (Yescarta® and Kymriah®)
  - Yescarta® ongoing CR rate: 39%[1]
  - Kymriah® ongoing CR rate: 29%[2]

*Source: American Cancer Society
1 Locke et al 2019
2 Schuster et al 2019

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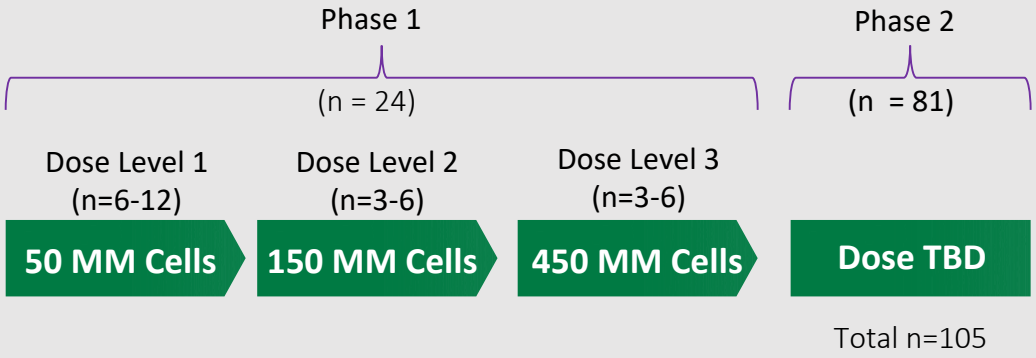
AUTO3 in DLBCL* - ALEXANDER study design and status

Potential to be best in class therapy in DLBCL by addressing antigen escape & PDL-1 mediated inhibition



CD19/22 CAR positive T cells administered as fixed dose following flu/cy pre-conditioning starting with the fourth patient. Three doses of consolidation therapy with pembrolizumab given 2 weeks after AUTO3 infusion

Status#

Initiated Phase 1/2 ALEXANDER trial in Q3 2017

7 patients dosed to date

Anticipate completing Phase 1 dose escalation in H2 2019

#All data as of October 2018

AUTO3 - ALEXANDER interim safety data presented at ASH 2018

Event	All Grade n (%)	Grade 3 n (%)	Grade 4 n (%)
CRS*	1 (14%)	0	0
Neurotoxicity	1 (14%)	1 (14%)	0

*CRS grading as per Lee et al., *Blood* 2014

- No dose limiting toxicities
- No AUTO3 related deaths or Grade 5 adverse events
- No pembrolizumab immune-related toxicities
- No patient required ICU admission
- Of the seven patients, seven had Grade 3-4 neutropenia; six had pyrexia, and six had decreased platelet count, of which five were Grade 3-4

Preliminary data from the trial suggest AUTO3 at a dose of 50 x 10^6 cells may have a manageable safety profile alone and in combination with pembrolizumab

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All data as of October 2018
Presented at ASH 2018

AUTO3 – ALEXANDER initial clinical outcomes at ASH 2018 – clinical activity at initial dose level

Patient	Dose (no. of transduced CAR T-cells)	Pembrolizumab (Dosing days)	Best response*	Ongoing response
001	50 x 10^6	No	PD	
003	50 x 10^6	No	PR	PD at M3
006	50 x 10^6	No	CR	Ongoing CR at M6
007	50 x 10^6	Yes	CR	Ongoing CR at M3
008	50 x 10^6	Yes	PR	PD at M3
009	50 x 10^6	No	PD	
010	50 x 10^6	Yes	NE	

* Response determined by PET scan based on Lugano criteria
PD, progressive disease; PR, partial response; CR, complete response; NE, not evaluable
Patient 010 NE, PET-negative disease after bridging chemotherapy and prior to AUTO3 infusion

- Enrolment continues at higher doses of AUTO3
- Phase 1 interim data at ASH 2019, with full Phase 1 data in H1 2020

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All data as of October 2018
Presented at ASH 2018

AUTO3 Next Generation

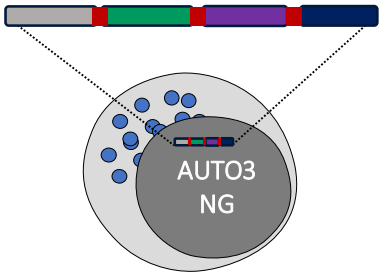
Designed for improved response rate & durability without external checkpoint inhibitor combination

dSHP2 ◆ **dTGFβ Receptor** ◆ **CD19 CAR / CD22 CAR**

Truncated SHP2 to block multiple checkpoint pathways

Truncated TGFβ receptor to combat high levels of TGFβ

Simultaneous targeting of CD19 and CD22 designed to reduce relapse due to antigen loss

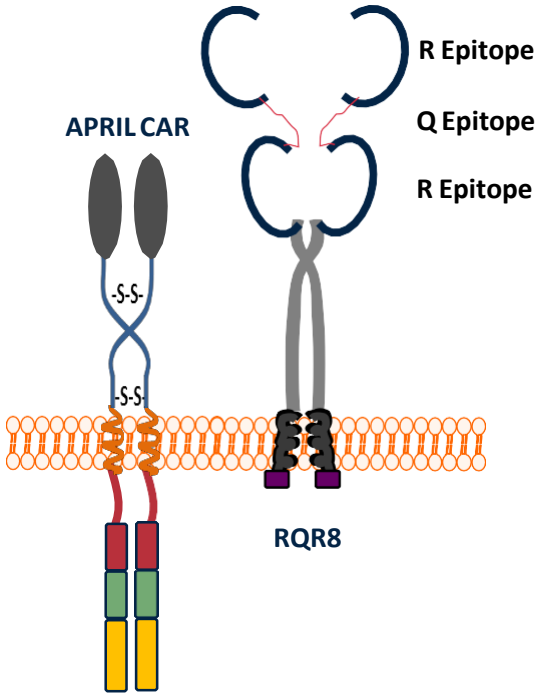


> Expect to initiate Phase 1 trial with AUTO3NG H1 2020

AUTO2 and AUTO2NG

Dual-targeting programmed T cell therapy for use in r/r multiple myeloma

- Dual-targeting programmed T cell product candidate with human binder designed to:
  - Reduce risk of antigen escape
  - Overcome challenges of low antigen density
- RQR8 safety switch designed to be triggered in the event of certain serious adverse events related to the T cell therapy



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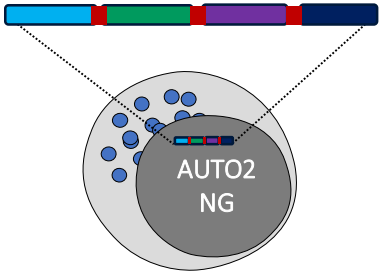
AUTO2 and AUTO2NG

Potential to enhance depth of response and persistence and render therapy insensitive to tumor microenvironment

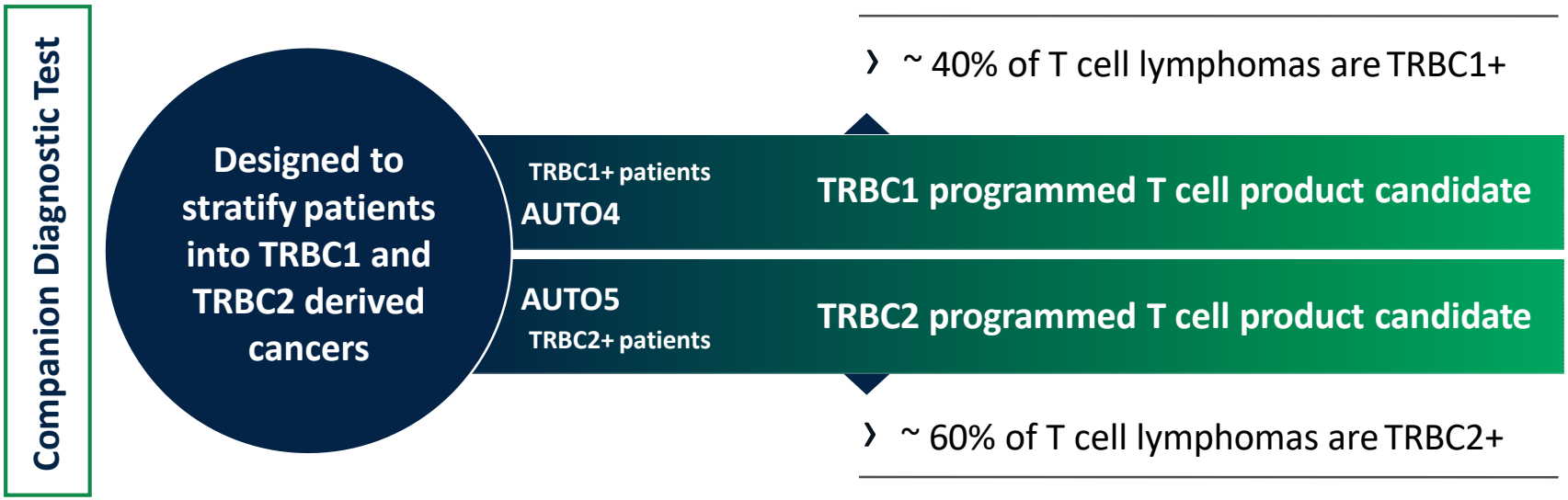
CAR	dSHP2	dTGFβ Receptor	Persistence
Targeting tumor and tumor stem cells to enhance depth and duration of response	Overcoming multiple checkpoint pathways	Overcoming inhibitory effect of TGFβ in microenvironment	Modules and manufacturing technology to enhance persistence



- AUTO2 is not differentiated from more advanced competitor programs
- Expect to present Phase 1 data at ASH 2019
- Focus on moving next generation version into clinic in H1 2020

Addressing T cell lymphomas

No standard of care after first relapse
Patient prognosis is poor



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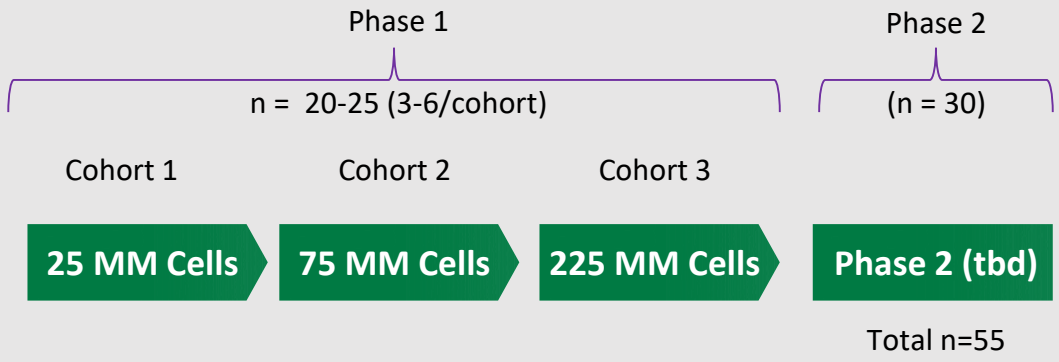
AUTO4/5 in Peripheral T Cell Lymphoma – study design and status

Potential to be first in class therapies for T cell lymphoma designed to avoid severe immunosuppression typically associated with current treatments



TRBC1 CAR positive T Cells administered as Fixed Dose following Flu/Cy pre-conditioning

Status

Initiated AUTO4 Phase 1/2 LibrA T1 trial in Q4 2018; first patient dosed

Expect initial dose ranging Phase 1 data in H2 2020

AUTO5 in preclinical development, will enter Ph 1/2 if POC established in LibrA T1

AUTO6: GD2-targeted programmed T cell therapy

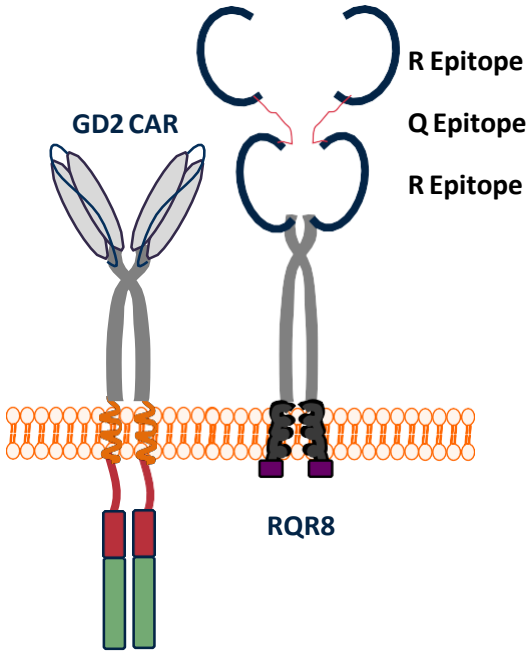
Designed to drive anti-tumor activity without inducing neurotoxicity

> Programmed T cell product candidate:

- New binder to minimize on-target, off-tumor toxicity
- Humanized binder to reduce immunogenicity
- RQR8 safety switch

> Phase 1 clinical trial in r/r neuroblastoma conducted by CRUK* in collaboration with UCL

> Autolus has exclusive worldwide rights to clinical data and patents



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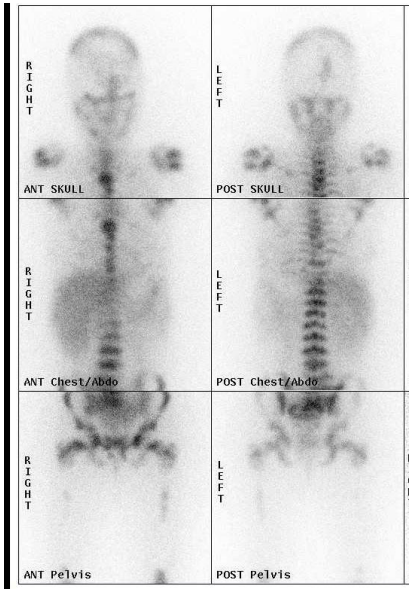
*Cancer Research UK

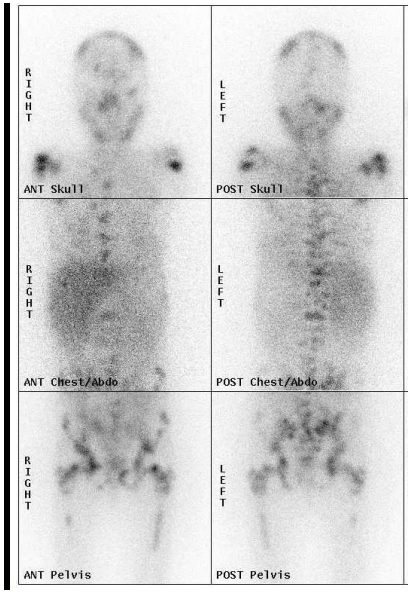
AUTO6 proof of principle presented at AACR 2018

Patient 10: AUTO6 anti-tumor activity without inducing neurotoxicity

Day 0



Day 28



MIBG: iodine-123-meta-iodobenzylguanidine

- Significant decrease in disease hot spots in patient 10 by MIBG scan after therapy
- No DLTs and no neurotoxicity or pain syndrome observed
- First GD2 CAR reported to demonstrate CRS and tumor lysis syndrome in solid tumor setting

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AUTO6 and AUTO6NG T Cell therapy

Designed to overcome tumor defenses

GD2 CAR

Anti-tumor activity and no neurotoxicity or pain syndrome

Safety Switch

To eliminate the therapy in the event of unexpected toxicities

dSHP2

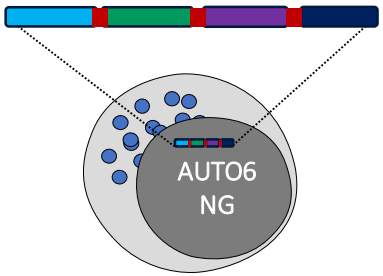
Overcoming multiple checkpoint pathways

dTGFβ Receptor

Overcoming inhibitory effect of TGFβ in microenvironment

Cytokine Signal

Increase persistence in a immunologically cold tumor



> AUTO6NG:

- Utilizes the GD2 CAR from AUTO6
- Designed to address persistence, control and tumor defenses
- Target neuroblastoma, osteosarcoma, melanoma, small cell lung cancer and soft tissue sarcoma
- Expected to commence Phase 1 in H2 2020

Economical & scalable product delivery platform

A key success factor for T cell innovators

Fully enclosed, semi-automated system for cell manufacturing

- Designed to provide common platform suitable for all current product candidates
- Designed for scalability in connection with commercialization
- Long-term equipment and reagent supply agreement with Miltenyi Biotec

Cell and Gene Therapy Catapult (Stevenage, UK)

- Approved for GMP Clinical Supply
- Existing max capacity: 300 p.a. with option to expand to 500 in 2020

Autolus Launch Facility - The GRiD (Enfield, UK)

- Launch site for Cell Process and Vector Supply
- Design Complete
- Anticipated 2020
- Planned max capacity: 1000 p.a.

Autolus Commercial Facility (Rockville, MD, US)

- Fully scaled Commercial site for Cell Process Supply
- Lease agreed
- Anticipated 2021
- Planned max capacity: 5000 p.a.

Multiple near term clinical data points expected

Product	Indication	Target	Catalyst
B Cell Malignancies			
AUTO1	Pediatric ALL	CD19	• Phase 1 data Q4 2019
AUTO1	Adult ALL	CD19	• Phase 1 data Q4 2019 • Start Phase 2 end of 2019
AUTO1NG	ALL	CD19 & CD22	• Start Phase 1 H2 2020 • Interim data H1 2021
AUTO3	DLBCL	CD19 & CD22	• Phase 1 interim data Q4 2019 • Start Phase 2 mid 2020
AUTO3NG	DLBCL	CD19 & CD22	• Start Phase 1 2020
Multiple Myeloma			
AUTO2NG	Multiple Myeloma	Undisclosed	• Start Phase 1 H1 2020
T Cell Lymphoma			
AUTO4	TRBC1+ Peripheral TCL (LibrA T1)	TRBC1	• Phase 1 interim data 2020
AUTO5	TRBC2+ Peripheral TCL	TRBC2	• Start Phase 1 H2 2020
GD2+ Tumors			
AUTO6NG	Neuroblastoma; Melanoma; Osteosarcoma; SCLC	GD2	• Non-clinical data Q4 2019 • Start Phase 1 H2 2020
Prostate Cancer			
AUTO7	Prostate Cancer	Undisclosed	• Start Phase 1 H1 2021

Autolus

Investment highlights

Broad clinical-stage pipeline

- 4 product candidates
- 5 hematological indications
- 1 solid tumor program

Modular programming approach

- Enables rapid cycle of innovation
- 4 next generation versions of lead programs
- Designed to overcome tumor defenses

Multiple upcoming milestones

- Late and early stage clinical data from multiple programs

Broad technology base

- Portfolio of owned and in-licensed intellectual property; 85 patent families

Proprietary manufacturing process

- Fully enclosed, semi-automated
- Economical at commercial scale
- Expanding to new US/UK facilities

Strong Fundamentals

- $266 million at June 30, 2019
- Worldwide rights retained for all programs
- Cash runway into H2 2021


Thank you