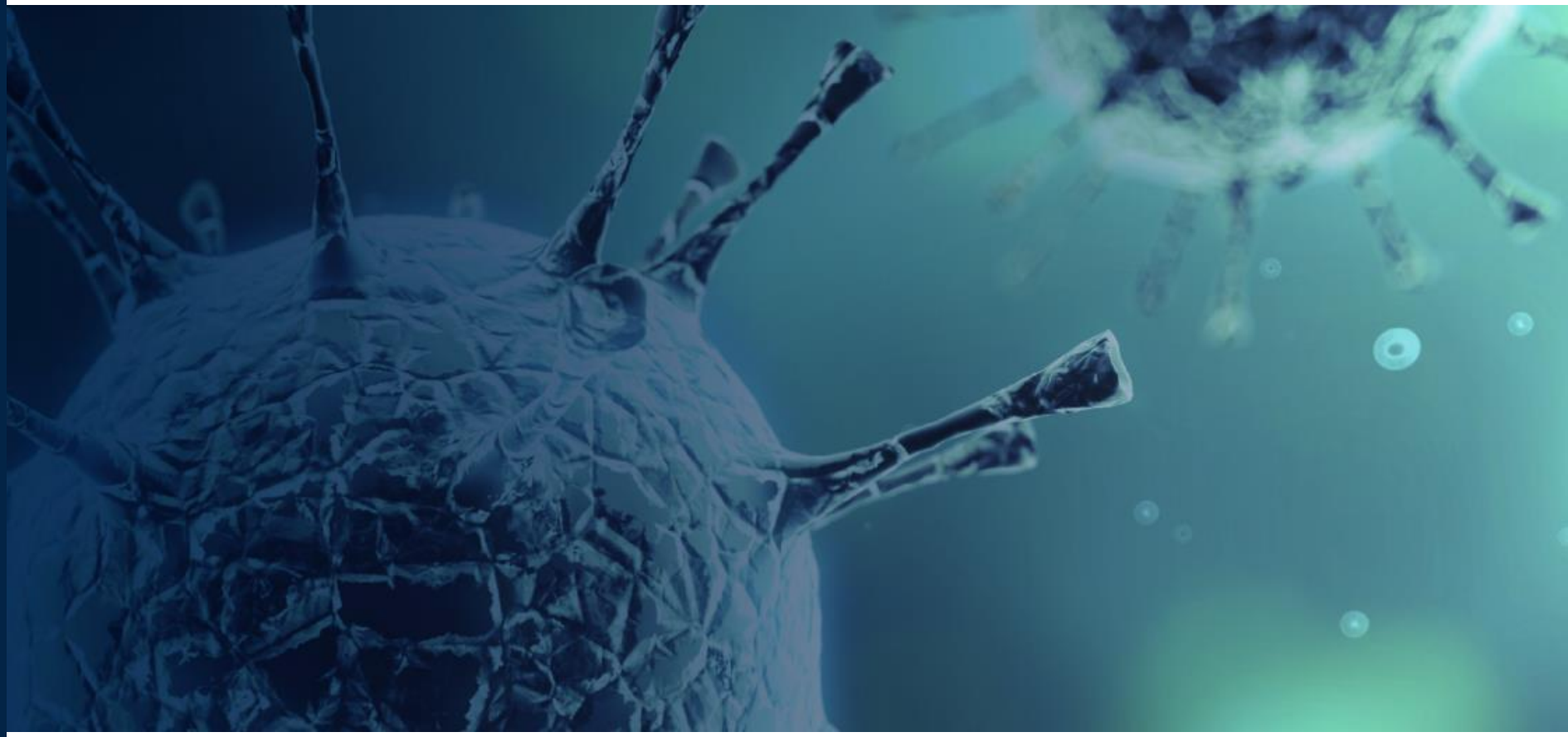
Autolus

Nasdaq: AUTL



Next Generation Programmed T Cell Therapies

November 2019

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Investment highlights

Broad clinical-stage pipeline

- 4 product candidates
- 4 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

- $229 million at September 30, 2019
- Worldwide rights retained for all programs
- Cash runway into H2 2021

Broad pipeline of clinical and next generation programs

Product	Indication	Target	Preclinical	Phase 1/2	Phase 2/3
B Cell Malignancies					
AUTO1	Adult ALL	CD19	ALLCAR19		
AUTO1	Pediatric ALL	CD19	CARPALL		
AUTO1NG	ALL	CD19 & CD22			
AUTO3	DLBCL	CD19 & CD22	ALEXANDER		
AUTO3NG	DLBCL	CD19 & CD22			
Multiple Myeloma					
Next Gen.	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

- **Next Gen Candidate** – 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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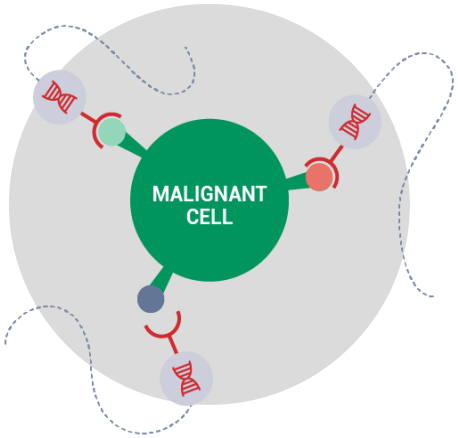
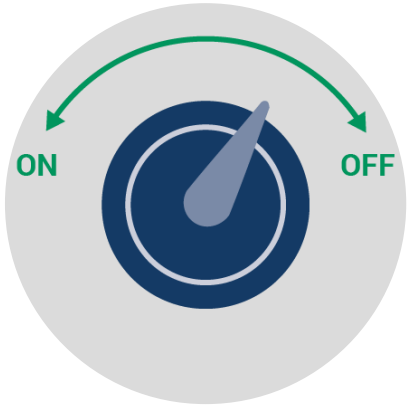
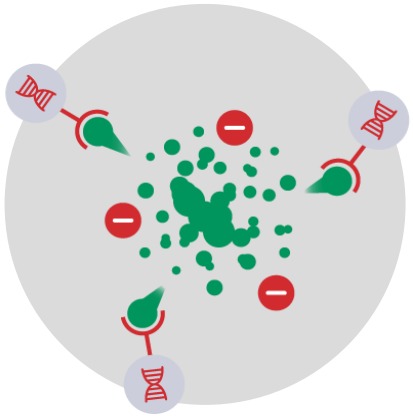
* Cytokine Release Syndrome

Advanced T cell programming

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



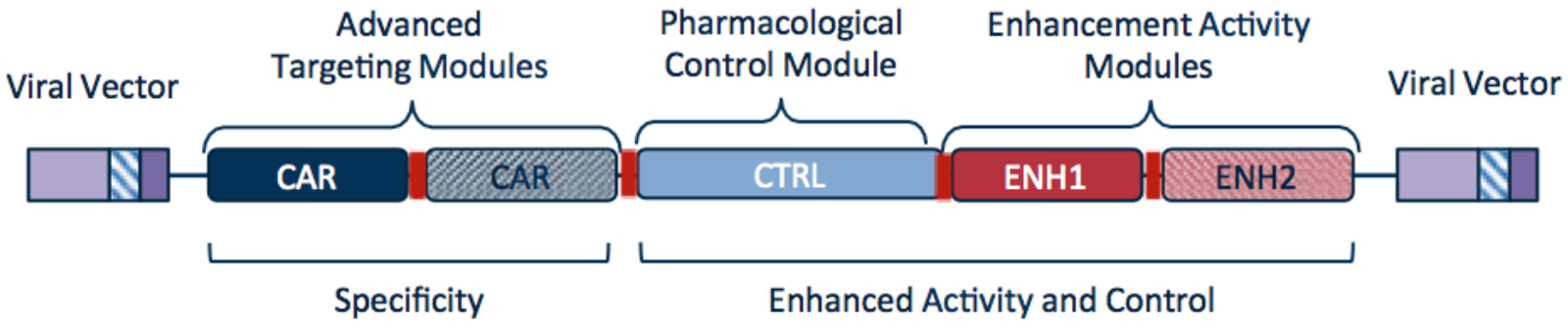




Advanced targeting

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
  - 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 only 30% to 40% will achieve long-term remission
  - Median overall survival is < 1 year in r/r ALL
- No CAR T therapy approved in adult ALL
- Only approved redirected T cell therapy is blinatumomab
- AUTO1 granted FDA orphan drug designation for ALL

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

AUTO1 designed for long term persistence and reduced 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
- Durable benefit in ALL requires long term pressure on the leukemia and thus requires long term persistence of the CAR T therapy
- 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 in Adult ALL: Durable remissions observed

AUTO1 may be best-in-class for Adult ALL

- As of July 24, 2019:
  - 10 of 12 (83%) evaluable patients achieved MRD negative CR at 1 month
  - 7 of 12 (58%) evaluable patients remain on study in flow/molecular MRD negative remission with a median follow-up of 9 months
- 6 patients had ≥ 50% BM blasts prior to lympho-depletion (CRS 'high risk')
- No high-grade CRS, 1 of 13 patients had Grade 3 neurotoxicity (dysphasia), resolved swiftly with steroids
- Oral presentation at ASH: Additional follow-up data, including additional safety and efficacy will be presented

Data as of July 24, 2019

Roddie, C. et al. A novel fast off CD19CAR delivers durable remissions and prolonged CAR T cell persistence with low CRS or neurotoxicity in adult ALL [abstract]. In: 61st American Society of Hematology (ASH) Annual Meeting and Exposition; 2019 December 7-10; Orlando, FL; Abstract nr 131086.

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Comparison of AUTO1 vs. Kymriah® and Blincyto®

AUTO1 may be best-in-class, redirected T cell therapy in ALL

	Pediatric ALL		Adult ALL	
	[1]Kymriah®-pALL	[2]AUTO1 - pALL	[3]AUTO1 aALL	[4]Blinatumomab
Patient Numbers	75	14	13	271
CR Rate	81%	86%	83%*	42%
EFS	EFS 12m: 50% (95% CI, 35 to 64)	EFS 12m: 52% (95% CI, 16 to 72)	TBD	EFS 6m: 31%
CRS ≥ Grade 3	47%	0%	0%	3%
Neurotox ≥ Grade 3	13%	7%	8%	13%

* In 10 of 12 evaluable patients at 1 month.

1. Maude et al., NEJM 2018
2. Ghorasian et al., ASH 2019 (abstract)
3. Roddie et al., ASH 2019 (abstract)
4. Kantarjian et al., 2017

AUTO1 in aALL - Summary and next steps

First Autolus program to move to a registration trial

- Potential to have best-in-class profile
- Favorable safety profile and high level of clinical activity
  - Data suggest AUTO1 may be twice as active as current standard of care, blinatumomab, with comparable safety profile
- Pivotal study:
  - Feedback from FDA and EMA
  - CTA to be filed in UK in Nov, US IND to be filed in Q1
  - Single arm study with approx. 100 patients
- Primary endpoint is overall complete response rate (CR/CRi)
- Secondary endpoints include:
  - MRD-negative CR and EFS
- BLA filing targeted for H2 2021

Pediatric ALL – Focus on AUTO1/AUTO1NG

AUTO3 data support dual antigen targeting hypothesis

- Development in pediatric ALL will focus on AUTO1 and AUTO1NG, building on the long-term persistence observed with AUTO1 in pALL
- Key driver for relapse with AUTO1 is CD19 antigen loss
- Dual-targeting AUTO1NG with CD19 CAR of AUTO1 and a novel CD22 CAR planned to enter clinical testing in H1 2020

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 + mAb leads to remission in about 50-60% of patients
- Two approved CAR T products (Yescarta and Kymriah)

*Source: American Cancer Society

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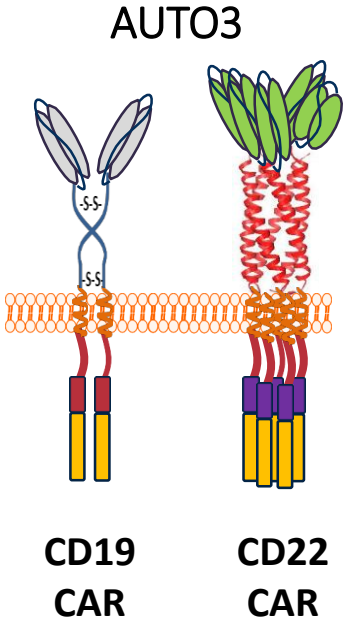
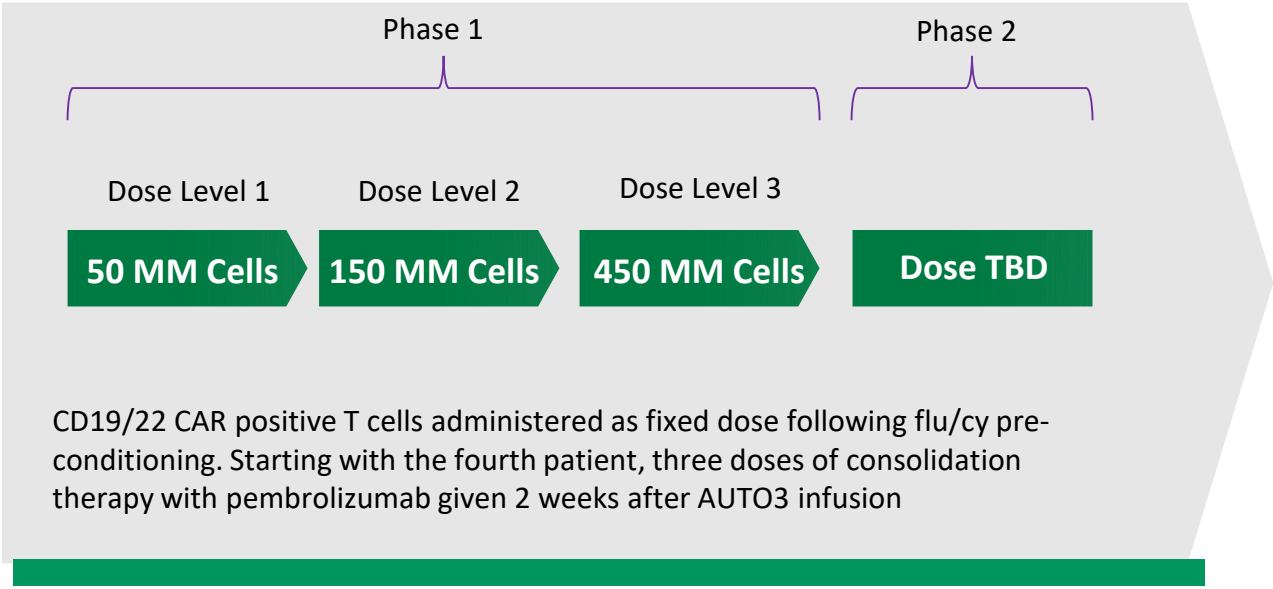
AUTO3 in DLBCL - ALEXANDER study design

Addressing antigen escape & PDL-1 mediated inhibition





- Interim Phase 1 data planned to be presented at ASH 2019
- Products manufactured at Cell and Gene Therapy Catapult at Stevenage in the UK for US and EU use
- Decision for triggering Phase 2 initiation planned for mid 2020
- AUTO3NG – next generation product for life cycle management

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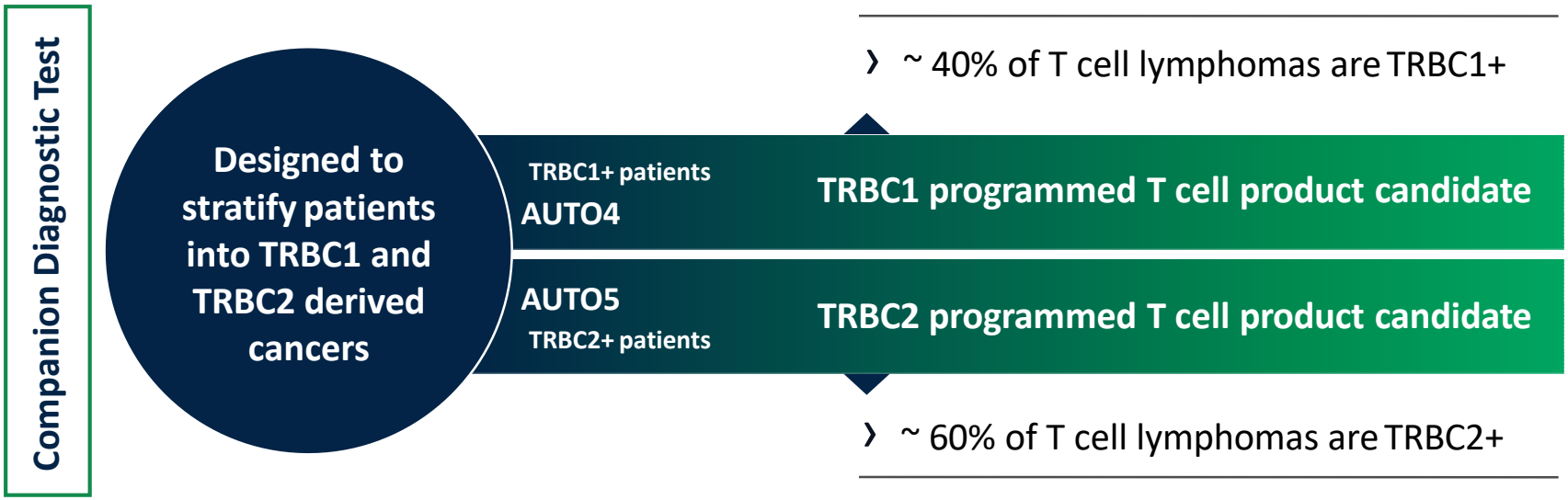
Addressing T cell lymphomas

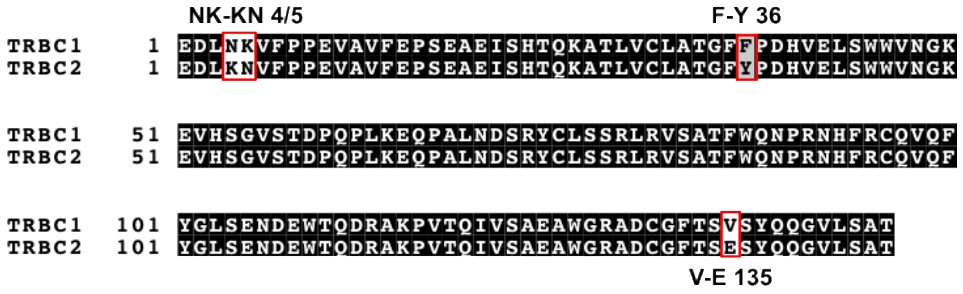
No standard of care after first relapse
Patient prognosis is poor

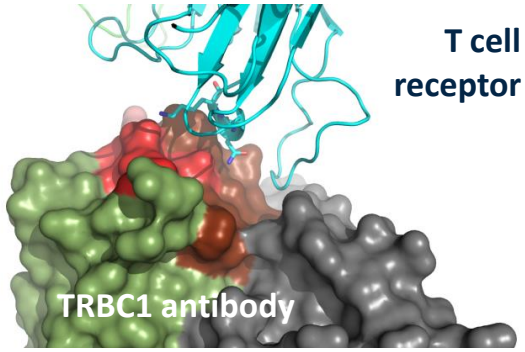


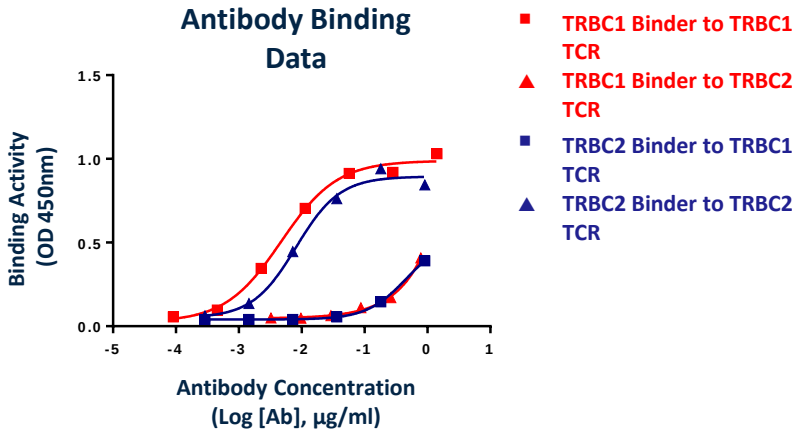
AUTO4/5 in Peripheral T Cell Lymphoma

Unique targeting of TRBC1 and TRBC2 opens new therapeutic approach

Differences between TRBC1 and TRBC2 are small







- Patient enrolment on AUTO4 Phase 1 study will resume in Q1 2020
- Expect to present initial AUTO4 Phase 1 data H2 2020
- AUTO5 Phase 1 decision based on AUTO4 data
- Companion diagnostic development on track

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AUTO6: GD2-targeted programmed T cell therapy

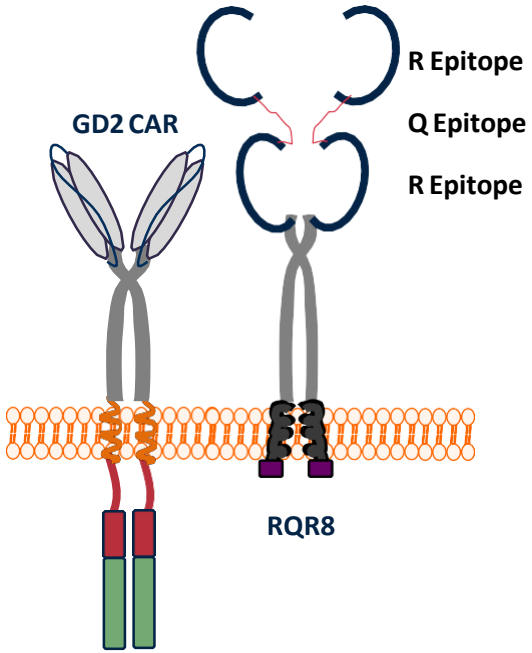
Designed to drive anti-tumor activity without inducing neurotoxicity

> 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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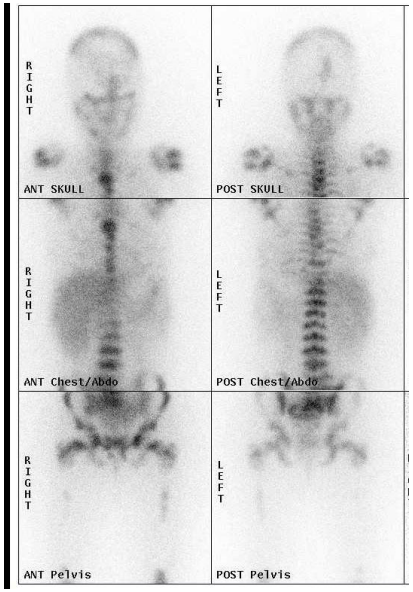
*Cancer Research UK

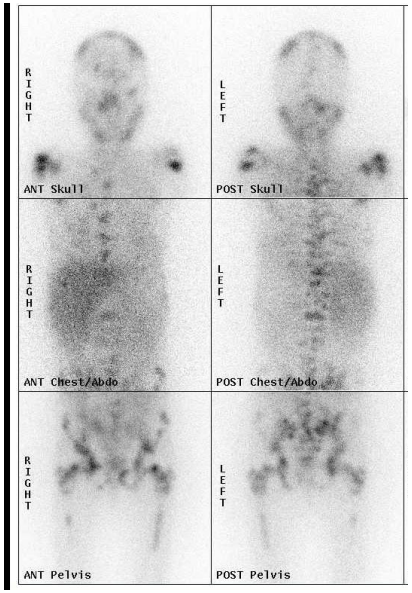
AUTO6 proof of principle presented at AACR 2018

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
- AUTO6 next generation program in advanced pre-clinical development

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AUTO6NG – Building on AUTO6 therapeutic window

Modular Approach: Adaptive therapy to a hostile tumor micro-environment

AUTO6

GD2 CAR

Anti-tumor activity and no neurotoxicity or pain syndrome

Safety Switch

To eliminate the therapy in the event of unexpected toxicities

dSHP2

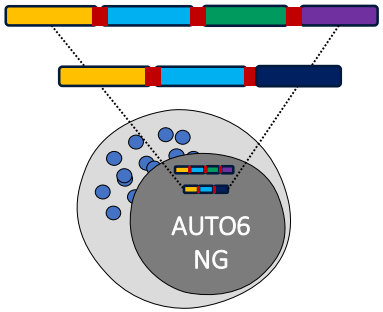
Overcoming multiple checkpoint pathways

Cytokine Signal

IL7R chimeric protein designed to improve CAR T cell persistence

dTGFβ Receptor

Overcoming inhibitory effect of TGFβ in microenvironment

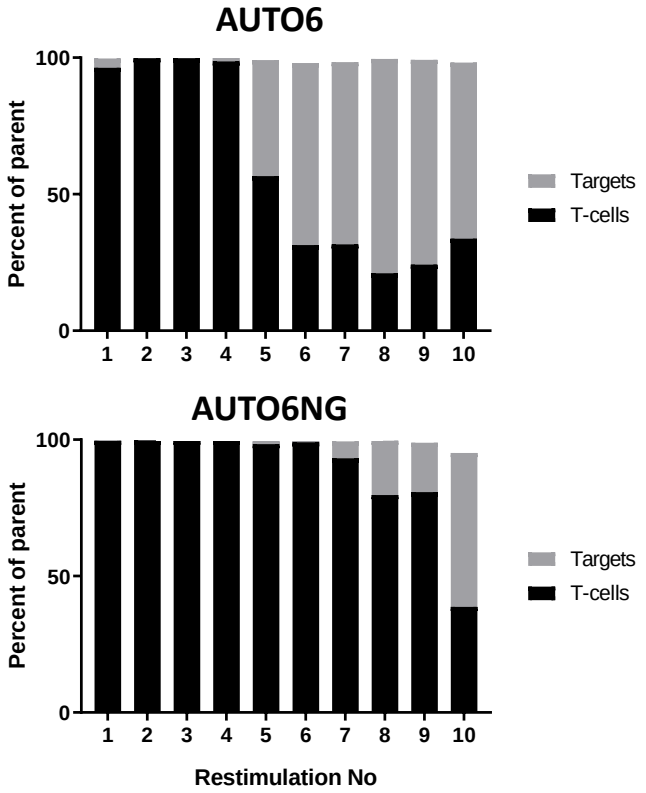


> AUTO6NG:

- 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

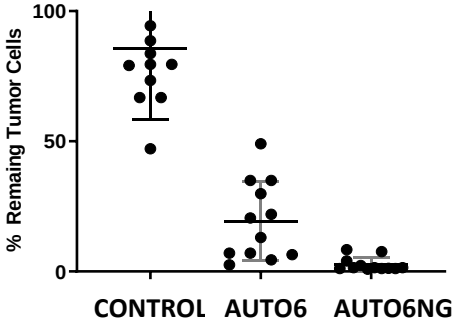
AUTO6NG Shows Superior Activity *In Vitro*

Enhanced Persistence



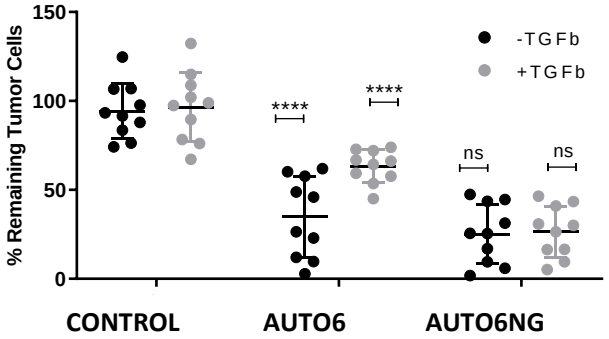
- Cytokine signal extends AUTO6NG activity through multiple rounds of restimulation.

Checkpoint Resistance



- dSHP2 enhances AUTO6NG activity against PDL1+ tumor cells.

TGFβ Resistance



- dTGFβ Receptor enhances AUTO6NG activity in the presence of TGFβ.

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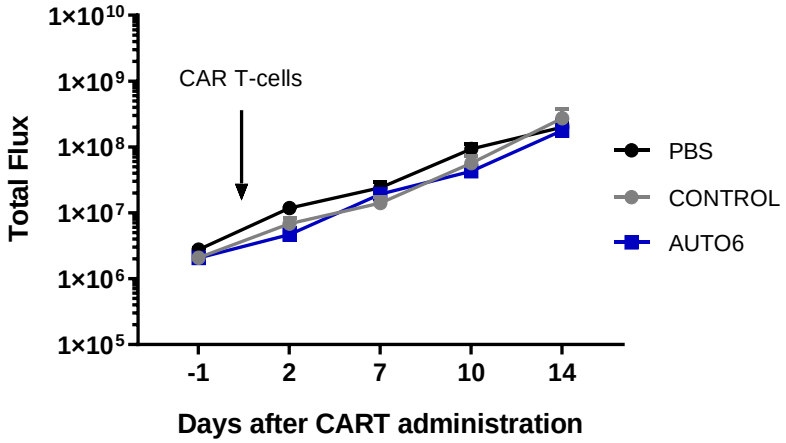
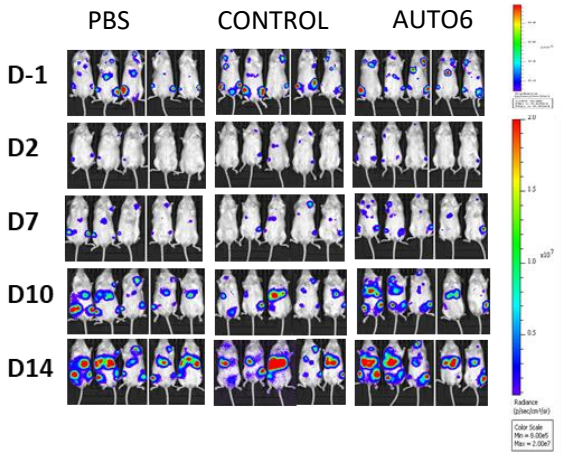
Achkova, D., et al SITC 2019 (abstract)

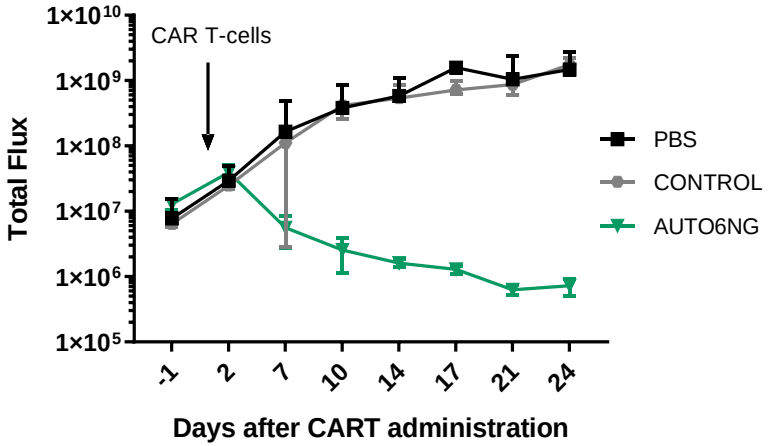
AUTO6NG Exhibits Potent Anti-tumor Activity and Extends Survival in Challenging *In Vivo* Model

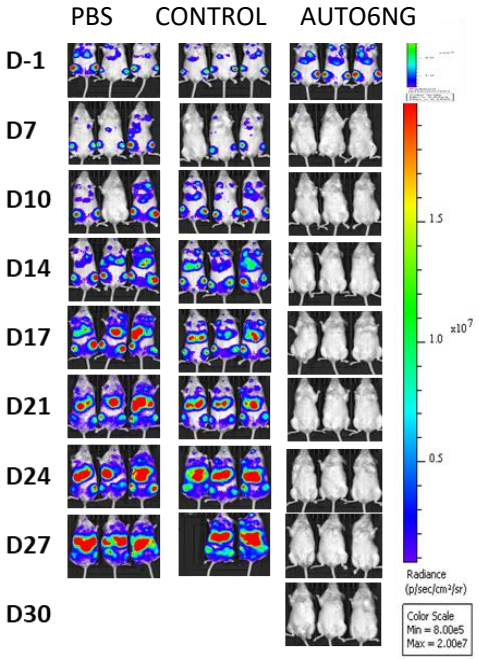
AUTO6





AUTO6NG





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

AUTO6NG

Positioned for additional value inflection in 2020

- Plan to commence Phase 1 H2 2020
- Encouraging pre-clinical data on three T cell programming modules presented at SITC 2019
  - Constitutively signaling IL7 cytokine receptor (IL7R_CCR module) is shown to enhance persistence
  - Dominant negative TGFbRII (dnTGFbRII module) is shown to block TGFβ signaling
  - Truncated SHP2 (dSHP2 module) is shown to confer resistance to inhibitory signals such as those from PD1
  - In established tumor model AUTO6NG eliminated the tumor, whereas the clinically active AUTO6 did not.

Newsflow expected through 2020

Product	Indication	Target	Event
B Cell Malignancies			
AUTO1	Pediatric ALL	CD19	• Ph 1 data 4Q 2019
AUTO1	Adult ALL	CD19	• Ph 1 (ALLCAR19) data 4Q 2019 • Start pivotal program H1 2020
AUTO1NG	Pediatric ALL	CD19 & 22	• Start Ph 1 H1 2020
AUTO3	DLBCL	CD19 & 22	• Ph 1 interim data 4Q 2019 • Decision on Ph 2 transition mid 2020
AUTO3NG	DLBCL	CD19 & 22	• Start Ph 1 H2 2020
Multiple Myeloma			
NG program	Multiple Myeloma	Undisclosed	• Start Ph 1 study H2 2020
T Cell Lymphoma			
AUTO4	TRBC1+ Peripheral TCL	TRBC1	• Ph 1 interim data H2 2020
GD2+ Tumors			
AUTO6NG	Neuroblastoma; Melanoma; Osteosarcoma; SCLC	GD2	• Non-clinical data 4Q 2019 • Start Ph 1 H2 2020

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