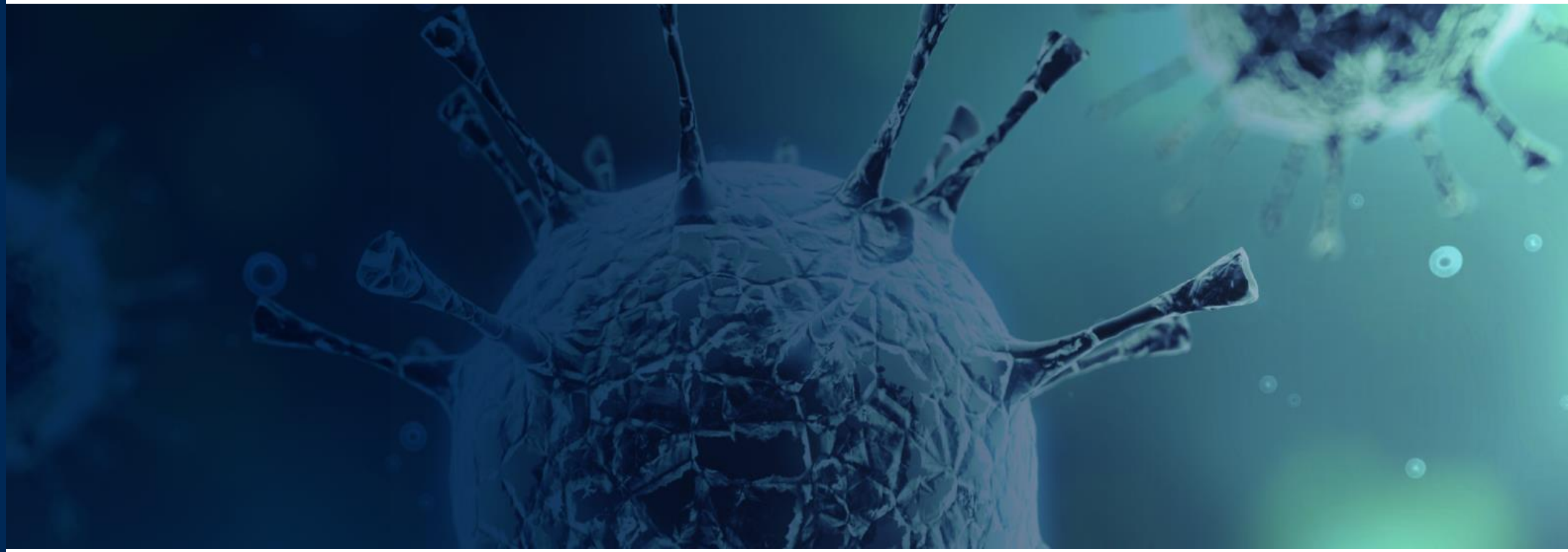
Autolus

Nasdaq: AUTL



Fourth Quarter and Full Year 2019 Financial Results and Operational Progress

March 3, 2020

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Agenda

1. Welcome and Introduction: Dr. Christian Itin, Chairman and CEO
2. Operational Highlights: Dr. Christian Itin
3. Financial Results and Overview: Andrew J. Oakley, CFO
4. Upcoming Milestones and Conclusion: Dr. Christian Itin
5. Q&A: Dr. Christian Itin and Andrew J. Oakley

Operational Highlights

Dr. Christian Itin

Chairman and CEO

Corporate strategy

Short term value steps with best in class programs for ALL and DLBCL

- 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

Corporate highlights - 2019

- Clinical progress with lead programs
  - AUTO1 in adult ALL
  - AUTO3 in DLBCL
  - AUTO6NG in Neuroblastoma; Melanoma; Osteosarcoma; SCLC
  - T-cell lymphomas (AUTO 4/5)

- Successful fundraisings
  - Net proceeds $109.0 million in April 2019 and approx. $75 million post year end in Jan 2020

- Manufacturing
  - Catapult site is fully operational and delivering clinical products for patients in Europe and the US
  - US facility progressing with expected capacity for 5,000 patients p.a.

No approved CAR T therapy for adult ALL patients

Severe toxicities of currently approved products have limited CAR T suitability in adult setting

- ALL is a significant opportunity
  - Up to 8,400* new cases of adult ALL diagnosed yearly worldwide‡
  - Addressable patient population is projected at 3,000 patients US & EU
- 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

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*Sources: Prevalence calculated using SEER and EUCAN and extrapolated using IMS; American Cancer Society
‡Autolus estimates

AUTO1: Key features

Designed for durability of responses without allo-transplant and reduced severe CRS

Conventional CD19 CARs	AUTO1
• Approved and near approved CD19 CAR Ts use identical high affinity CD19 binder (FMC63)	• AUTO1 has an optimized CD19 CAR with a lower affinity and a fast off rate
• FMC63 has a fast on-rate and a very slow off rate	• Engages efficiently, delivering a kill, disengages rapidly like a normal T cell
• Leads to over-activation, exhaustion and high-grade CRS and neurotoxicities	• Leads to enhanced activity and lower toxicities

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

Relapsed/refractory Adult ALL clinical data

		[2]AUTO1	
	[1]Blincyto	All patients	Closed Process[3]
Patient Numbers	271	16	9
CR Rate	42%	87%◊	100%
EFS 6m	31%	68%◊	100%
CRS ≥ Grade 3	3%	0%	0%
Neurotox ≥ Grade 3	13%	19%‡	12%‡

◊ 15 patients evaluable for efficacy with at least 4 weeks follow up or RIP prior to Month 1
‡ All three patients had > 50% tumor burden
Data cutoff 25-Nov-2019

[1]Kantarjian et al., 2017
[2]Roddie et al., ASH 2019 presentation
[3]Commerical manufacturing process

- AUTO1 preliminary data suggest manageable safety profile and a high level of clinical activity
- KTE-X19 CR Rate 68-84%, Grade ≥3 cytokine release syndrome (CRS) events occurred in 22-29% and neurologic events 11-38% of patients*

Sources: Prevalence calculated using SEER and EUCAN and extrapolated using IMS; American Cancer Society
Gilbert et al., 2017 (SITC)
*Shah et al, ASCO 2019

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First Autolus program to move to late stage development

Potential pivotal study in adult ALL:

- CTA filed in UK in November 2019 US IND to be filed in Q1 2020
- Single arm study
- 100 relapsed / refractory adult ALL patients
- Primary endpoint: overall complete response rate (CR/CRi)
- Secondary endpoints include MRD-negative CR EFS and DoR
- BLA filing targeted for Q4 2021

DLBCL is a large commercial opportunity

AUTO3 - addressable patient population in DLBCL

- Potential market size in DLBCL
  - Approx. 24,000 patients diagnosed in the US every year

- Aggressive and rapidly advancing cancer, survival outcomes remain poor
  - Most common type of Non-Hodgkin Lymphoma
  - High dose chemotherapy + mAb leads to remission in about 50-60% of patients
  - DLBCL patients who fail salvage regimens median overall survival 4.4m

- Two approved CAR T products (Yescarta® and Kymriah®)

- Initial AUTO3 positioning in DLBCL
  - High unmet need remains, despite active CD19 CARs in r/r DLBCL. Safety profile limits use to centers of excellence, leaving about 80% of the eligible patients without access to CAR T therapy

Current status of CAR T Cell therapies in DLBCL

Two approved products (Yescarta® and Kymriah®) and one near to approval (JCAR017)

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 upregulation[3] which contributes to CAR T exhaustion and CD19 antigen loss[4]

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

1. Locke F et al Lancet Oncol 2019
2. Schuster S et al NEJM 2019
3. Neelapu S et al ASCO 2018
4. Neelapu S et al NEJM 2017

Desired characteristics for broad use of a CAR T therapy for DLBCL

Sustained CRs, low toxicity & toxicity management and broad healthcare utilization

- High sustained complete response rate
  - Preventing target negative relapse
  - Preventing checkpoint mediated resistance / exhaustion

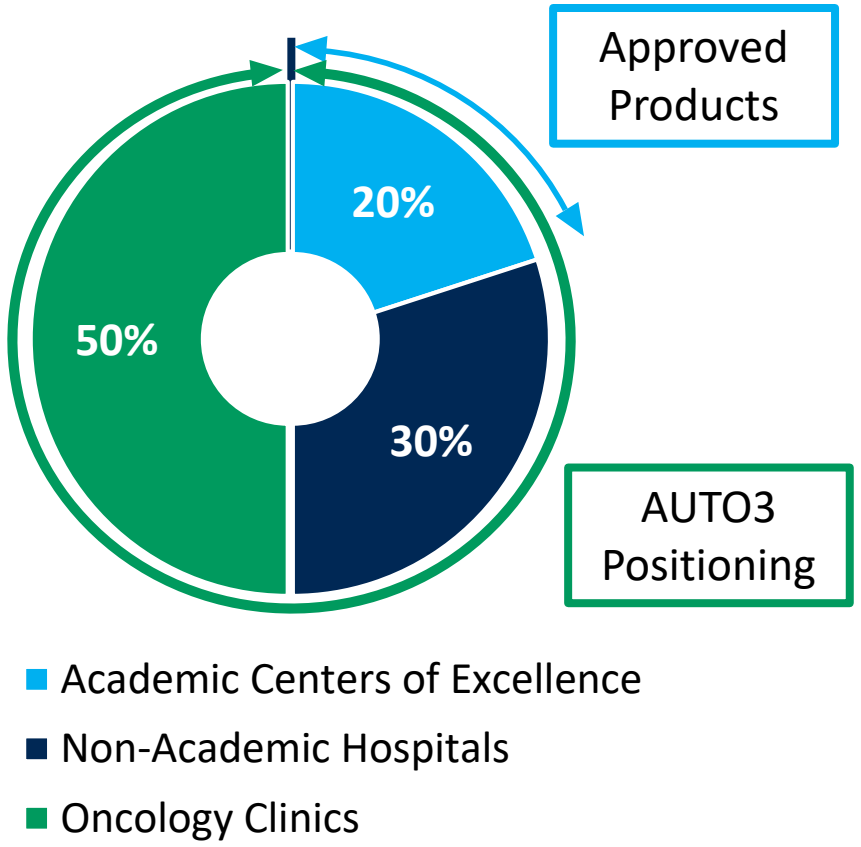
- Safety profile suitable for out patient therapy
  - Low severe CRS without intensive management
  - Low neurotoxicity rates

AUTO3 has been designed to be highly active with a profile suitable for all settings of care including outpatient therapy and oncology clinics

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

AUTO3 has the potential to be a true outpatient therapy

US Site of Care Distribution 3L+ R/R DLBCL



Source: 2016 IMS & CMS patient claims data

Approved CD19 CAR T Products

- Patients receive approved products as inpatients in CoEs because of the high rate & severity of toxicities plus intensity of patient management
- Market opportunity limited to ~20% of patients

AUTO3 Products

- Minimal tox management of AUTO3 should allow treatment across all settings of care
- Increased healthcare utilization of AUTO3 grows the addressable market and maximizes reimbursement options compared to approved products

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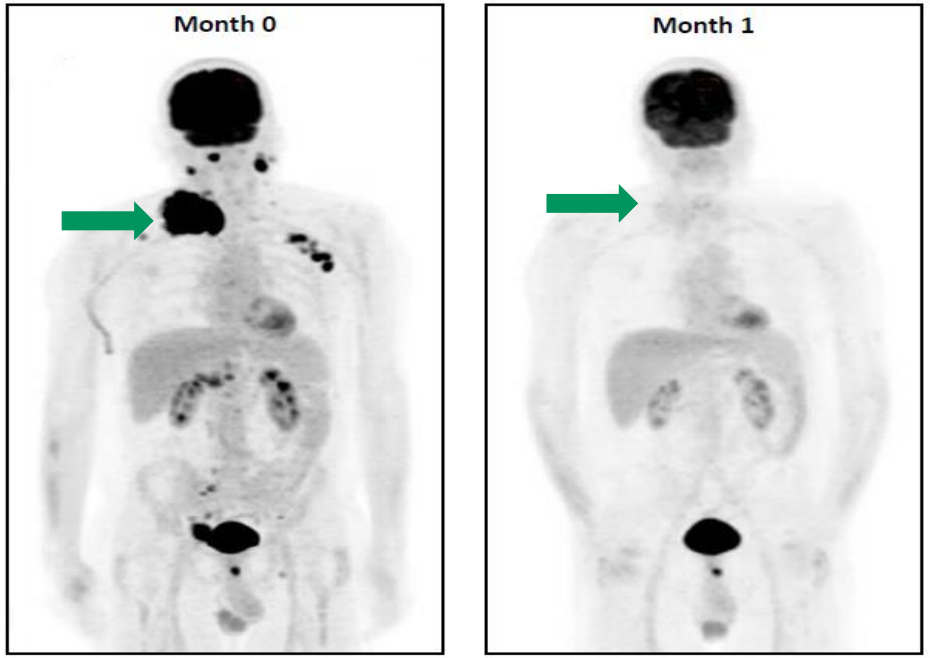
Preliminary efficacy* indication of dose response

AUTO3 - DLBCL

	50×10^6 No Pem (n=4)	50×10^6 D14 Pem (n=3)	150×10^6 D14 Pem (n=4)	450×10^6 D14 Pem (n=4)	450×10^6 D-1 Pem (n=3)
CR	1	1	2	2	2
PR	1	1	0	1	NA
NE	0	1	0	0	0
CRR	25%	33%	50%	50%	66%

- 450 million: ORR 5/7 (71%) and CR 4/7 (57%)

Pre-CAR T-cells | Post-CAR T-cells



Dose: 50×10^6
DLBCL: ABC, Primary refractory & refractory to RCHOP/RICE/RESHAP
No CRS or NT
CR duration 18 months+

21 January 2020 data cut-off

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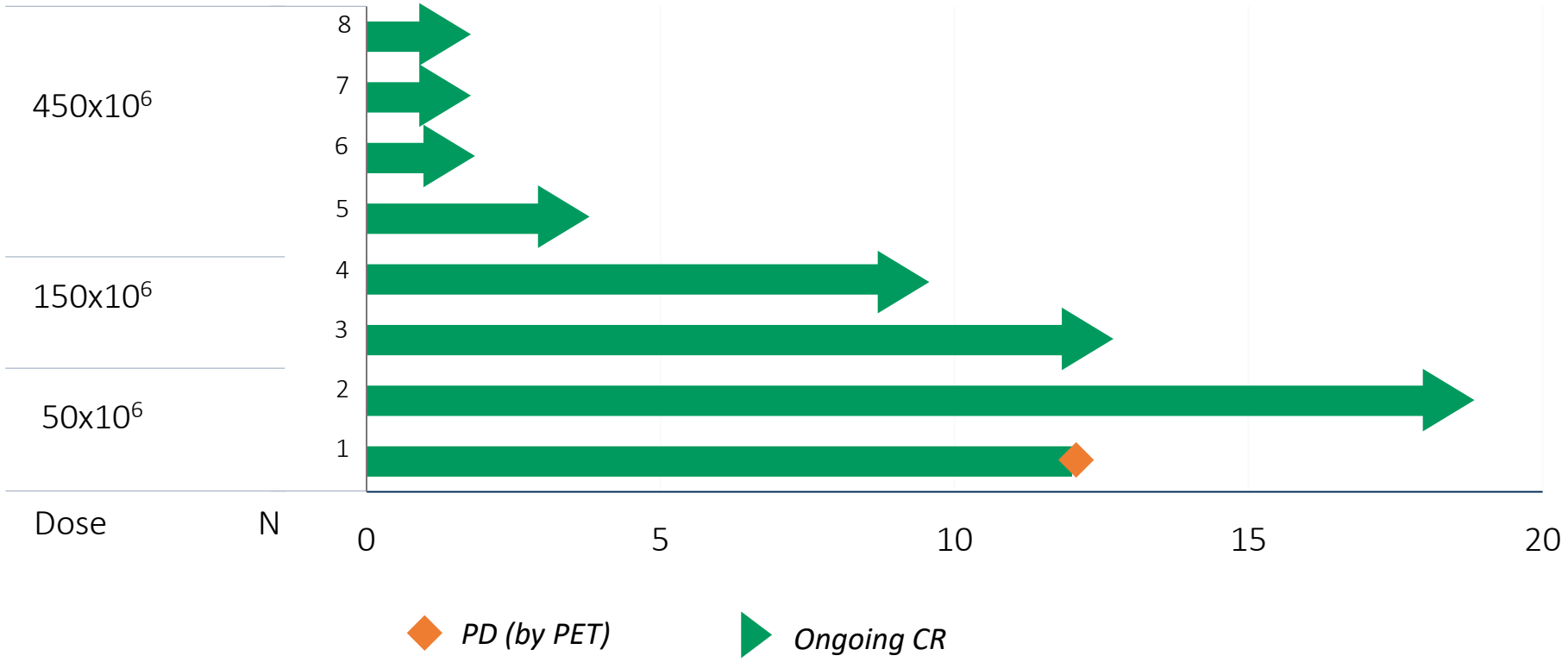
* Per Lugano criteria; CR: complete response; PR: partial response; NE: not evaluable; PD: progressive disease
Data for patients with 4 weeks efficacy follow-up

Early encouraging signs of durable complete responses

AUTO3 in DLBCL



Median Follow-up:
6 months (1 – 18 month)

18 patients treated, 7 out of 8 (87%) CRs ongoing, 3 PRs not durable
7 of 7 (100%) CRs* are ongoing in AUTO3+ Pembro cohorts at a median f/u of 3 months (1-18m)

21 January 2020 data cut-off

Autolus

* Efficacy assessment Per Lugano criteria; CR: complete response; PR: partial response; NE: not evaluable; PD: progressive disease
Data for patients with 4 weeks efficacy follow-up

AUTO3 has a safety profile which may allow outpatient use

	[1]AUTO3 + Pembro ≥ 150 x10^6 Dose	[2]Yescarta®	[3]Kymriah®	[4]JCAR017
Best CR	55%*	54%	40%	53%
CRS ≥ grade 3	0%	11% #	23%	2% #
Neurotox any grade	0%	64%	21%	30%
Neurotox ≥ Grade 3	0%	28%	12%	10%

* All CRs ongoing at a median f/u of 2 months (1-12 month)
# CRS rate achieved with intensive management

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1. Data cut off 21 January 2020
2. Nellapu et al, 2017
3. Schuster et al., 2019
4. Abramson et al., 2019 (ASH)

Early data encouraging – full read-out expected in mid-2020

AUTO3 in DLBCL

- AUTO3 product was successfully manufactured for all patients
  - Products manufactured at Catapult in the UK, for US and EU use
- No neurotoxicity or severe CRS* in patients treated with AUTO3 at active dose levels
- Complete responses achieved without intensive management or ICU care
- 7/8 CRs ongoing with a median follow up of 6 months (1-18 months)
- Pembrolizumab on D-1 x single dose is being evaluated further
- Decision for triggering Phase 2 initiation planned for mid-2020

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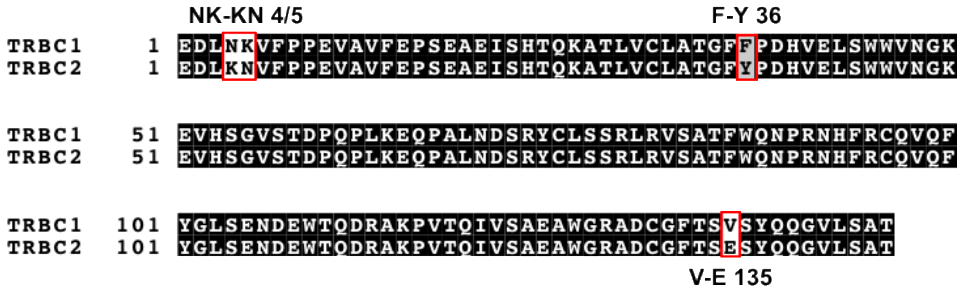
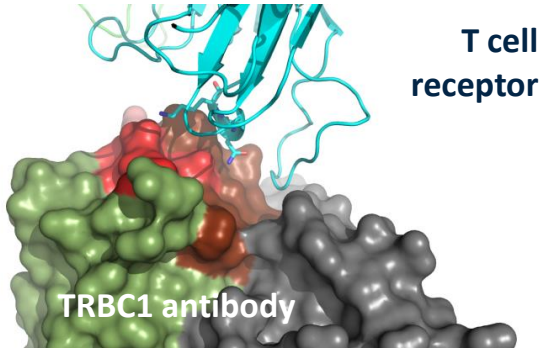
* > Grade 3

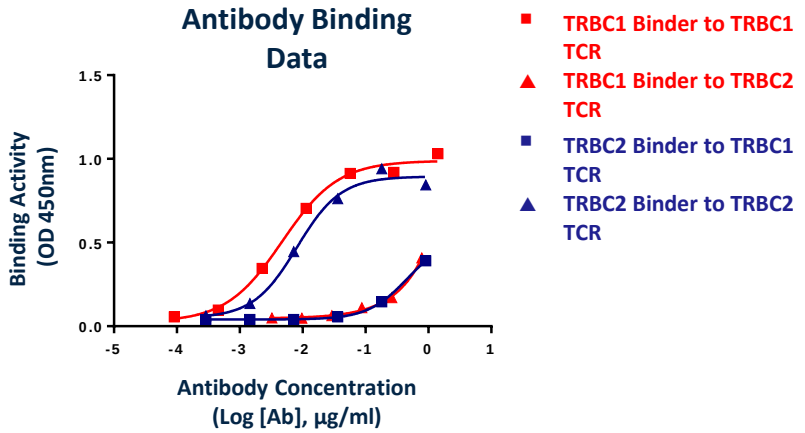
Unique targeting of TRBC1 and TRBC2 opens new therapeutic approach

AUTO4/5 in Peripheral T Cell Lymphoma

Differences between TRBC1 and TRBC2 are small







- Patient enrolment on AUTO4 Phase 1 study ongoing
- Expect to present initial AUTO4 Phase 1 data H2 2020
- AUTO5 Phase 1 to commence H2 2020
- Companion diagnostic development on-track

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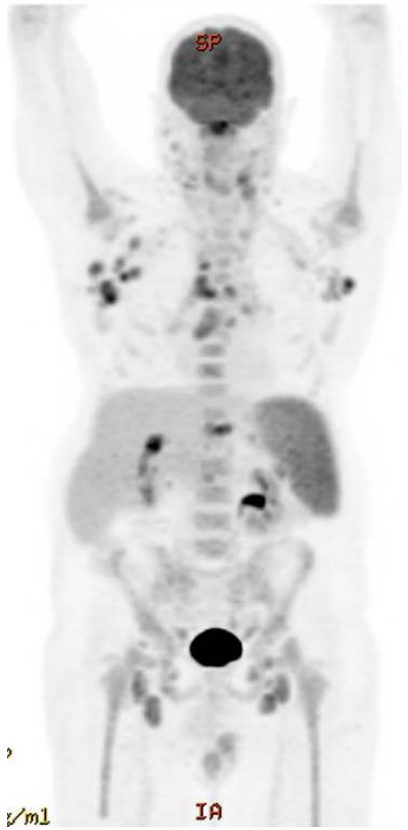
Encouraging signal of anti tumor effect from AUTO4 treated patient

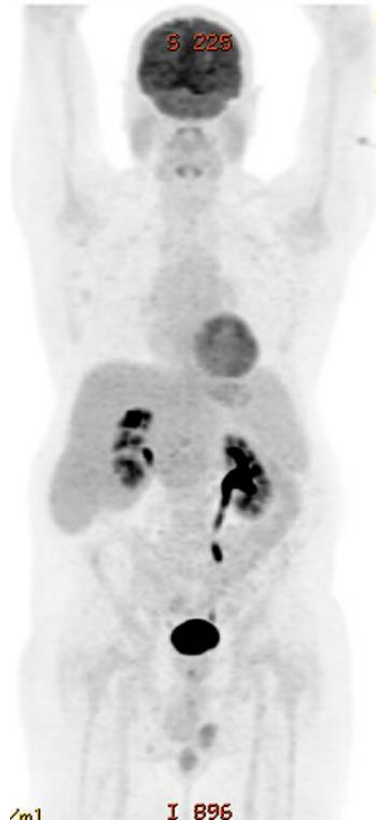
Clinical outcome of patient 1

- 57 yr old with Angioimmunoblastic T cell lymphoma
- Past treatments include CHOP (CR) & IVE (refractory)
- AUTO4 Treatment
  - Treated with $25x10^6$ 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



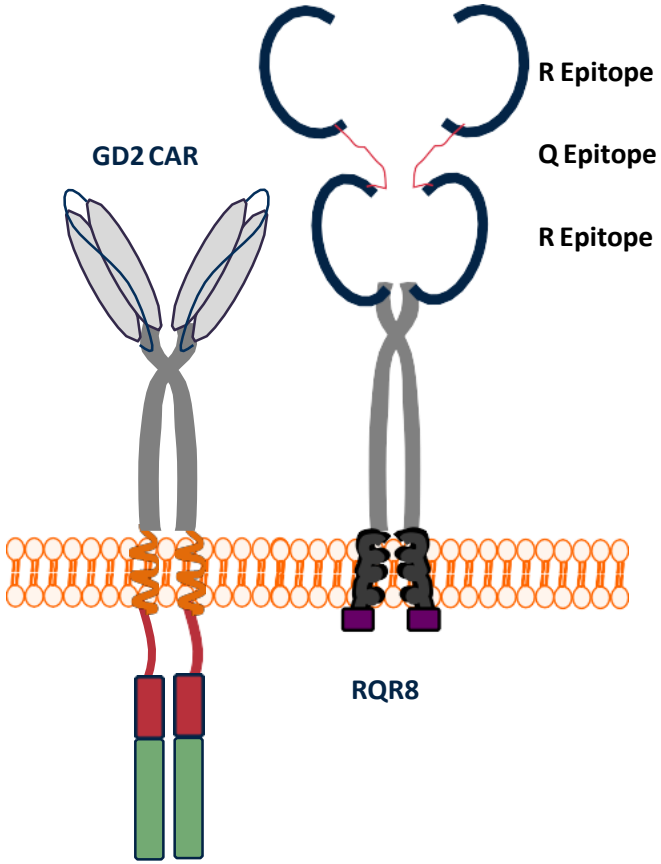
Month 1 PET/CT scan



Designed to drive anti-tumor activity without inducing neurotoxicity

AUTO6: GD2-targeted programmed T cell therapy

- 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
- Preliminary data has shown initial anti-tumor activity in this solid tumor indication



*Cancer Research UK

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

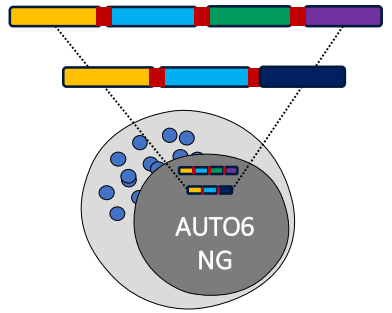
To overcome multiple checkpoint pathways

Cytokine Signal

IL7R chimeric protein designed to improve CAR T cell persistence

dTGFβ Receptor

To overcome inhibitory effect of TGFβ in microenvironment



AUTO6NG:

- Utilizes GD2 CAR from AUTO6, but further enhanced to address persistence, control and tumor defences
- Targeting neuroblastoma, osteosarcoma, melanoma and small cell lung cancer amongst others
- Plan to commence Phase 1 H2 2020

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Positioned for additional value inflection in 2020

AUTO6NG

- Plan to commence Phase 1 H2 2020

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

Financial Results

Andrew J. Oakley

CFO

Financial summary

USD m	Year ended 31 Dec 2018	Year ended 31 Dec 2019	Variance
Grant Income	1.5	2.9	1.4
R&D	(48.3)	(105.4)	(57.1)
G&A	(27.3)	(39.5)	(12.2)
Loss on impairment of leasehold improvements	-	(4.1)	(4.1)
Total Op Expenses, net.	(74.1)	(146.1)	(72.0)
Interest Income	2.0	2.5	0.5
Other Income	5.8	4.5	(1.3)
Tax Benefit	8.5	15.2	6.7
Net Loss	**(57.9)**	**(123.8)**	**(65.9)**

USD m	Dec 31 2018	**Dec 31 2019**	Variance
Cash Balance*	**217.5**	**210.6**	**(6.9)**

- Follow on offering in Jan 2020 raised $75m in net proceeds
- Cash runway increased to into 2022

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* Before adjusting for Jan 20 offering, raised $75m net proceeds

Upcoming Milestones and Conclusions

Dr. Christian Itin

Chairman and CEO

Multiple clinical data points expected through 2020

Product	Indication	Target	Event
B Cell Malignancies			
AUTO1	Adult ALL	CD19	• Ph 1 long-term follow up Q2 & Q4 2020 • Start pivotal program H1 2020
AUTO1NG	Pediatric ALL	CD19 & 22	• Start Ph 1 H1 2020
AUTO3	DLBCL	CD19 & 22	• Ph 1 data Q2 & Q4 2020 • Decision on Ph 2 transition mid 2020
AUTO3NG	DLBCL	CD19 & 22	• Ready to start Ph 1 H2 2020
Multiple Myeloma			
AUTO8	Multiple Myeloma	BCMA & CAR X	• Start Ph 1 study H2 2020
T Cell Lymphoma			
AUTO4	TRBC1+ Peripheral TCL	TRBC1	• Ph 1 interim data Q4 2020
GD2+ Tumors			
AUTO6NG	Neuroblastoma; Melanoma; Osteosarcoma; SCLC	GD2	• Start Ph 1 H2 2020
Allogeneic Approach			
NA	NA	NA	• Start Ph 1 Q4 2020

Pre-clinical data presentations at AACR (April 2020)

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Autolus poised for value inflection in 2020

- AUTO1
  - Encouraging data at ASH Dec 2019
  - First Autolus program to move into a pivotal program – Adult ALL
  - Opportunity for best in class CD19 CAR T with FDA Orphan drug designation
  - Pediatric ALL – moving forward with AUTO1/AUTO1NG
- AUTO3
  - Encouraging data at EHA-EBMT 2nd European CAR T Cell conference Jan 2020
  - Initial focus on DLBCL, Phase 2 decision point mid-2020
  - AUTO3NG opportunity as next generation product
- Opportunity for additional value in 2020 from AUTO1NG, AUTO4, AUTO6NG and AUTO8
- Strong balance sheet with approx. $210.6m in cash as of 31 December 2019*
- Key data releases expected at upcoming medical conferences

*Before adjusting for $75m in net proceeds from Jan 2020 public offering

Q&A

Dr. Christian Itin (Chairman and CEO)

Andrew J. Oakley (CFO)

Thank you