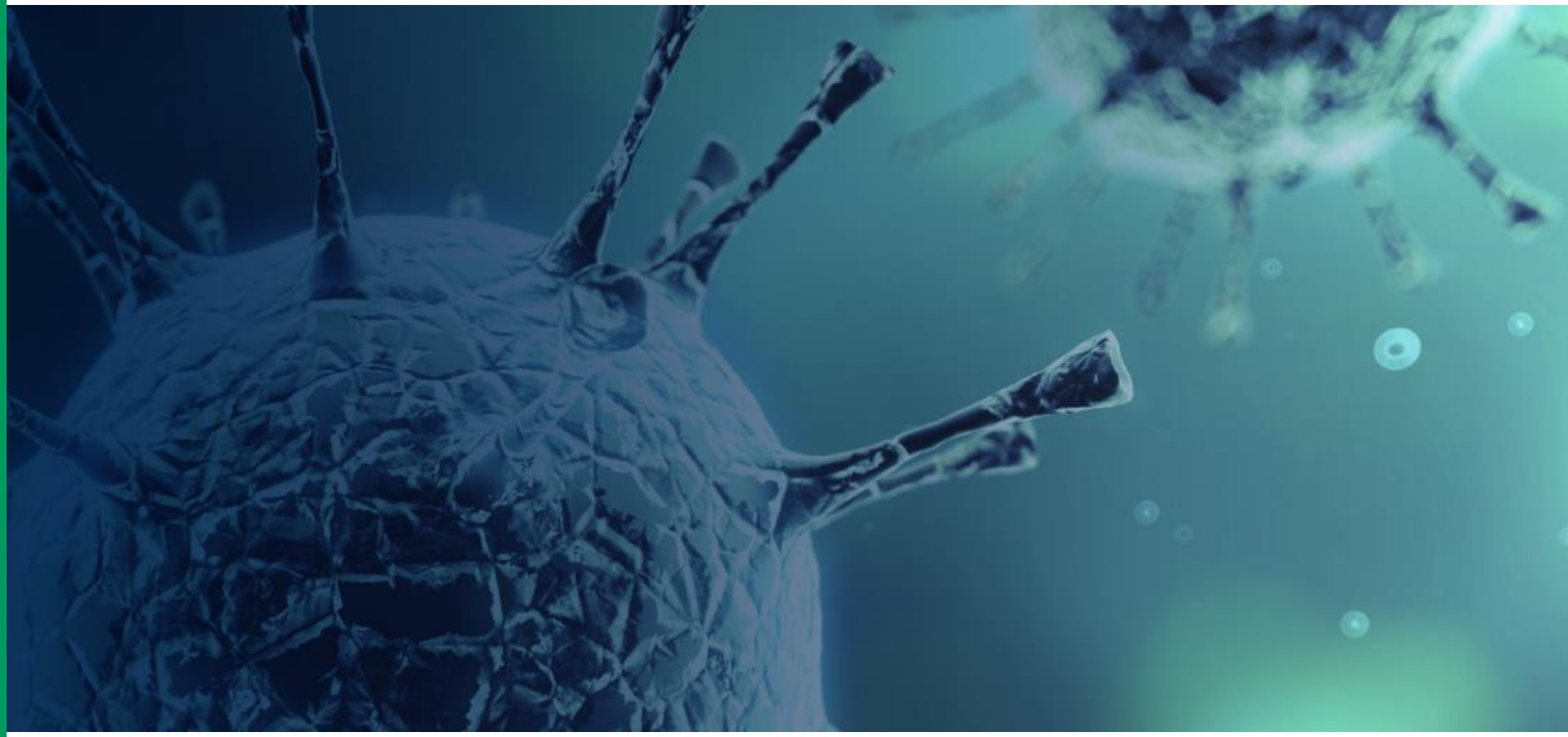
Autolus



Financial Results and Operational Highlights for Q2 2019

August 8, 2019

Disclaimers

These slides and the accompanying oral presentation contain forward-looking statements, including statements about the Company's plans to develop and commercialize its product candidates, the Company's ongoing and planned clinical trials, the anticipated benefits of the Company's product candidates, the timing and availability of data from clinical trials, the timing and ability to obtain and maintain regulatory approvals for the Company's product candidates and the size and growth potential of the markets for its product candidates. 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. For a discussion of other risks and uncertainties, and other important factors, any of which could cause our actual results to differ from those contained in the forward-looking statements, see the section titled "Risk Factors" in Autolus' Annual Report on Form 20-F filed on November 23, 2018 as well as discussions of potential risks, uncertainties, and other important factors in Autolus' future filings with the Securities and Exchange Commission from time to time. All information in this presentation is as of the date hereof, 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.

Certain data in this presentation was obtained from various external sources. Such data speak only as of the date referenced in this presentation and neither the Company nor its affiliates, advisors or representatives make any representation as to the accuracy or completeness of that data or undertake to update such data after the date of this presentation. Such data involve risks and uncertainties and are subject to change based on various factors.

Agenda for today

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

Corporate Overview and Introduction

Dr. Christian Itin
Chairman and CEO

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 adult ALL
- Only approved redirected T cell therapy is blinatumomab

Autolus

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

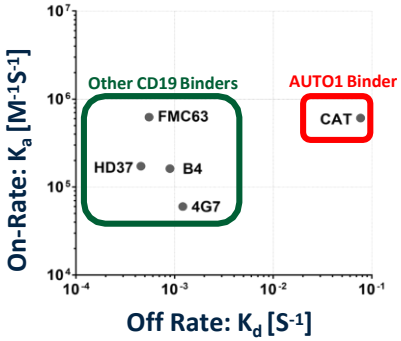
- AUTO1 is designed to reduce severe (≥ Grade 3) CRS using an optimized CD19 CAR with a lower affinity and a fast off rate
  - Engages efficiently with cancer cells, delivering a kill, but disengages rapidly like a normal T cell

AUTO1 shows enhanced activity vs FMC63 CARs

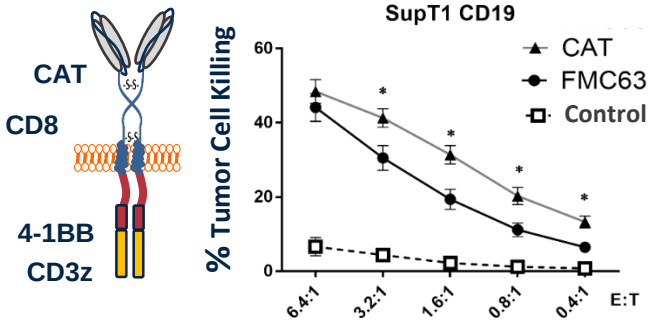
Preclinical data show higher potency and proliferation

- 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

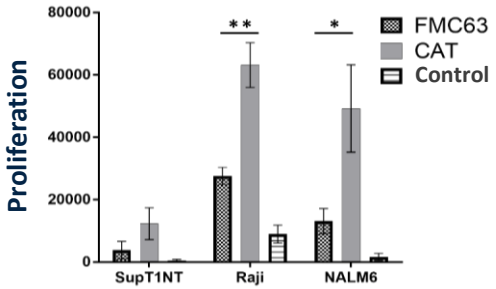
Fast Off-Rate



Enhanced Cytotoxicity



Enhanced Proliferation

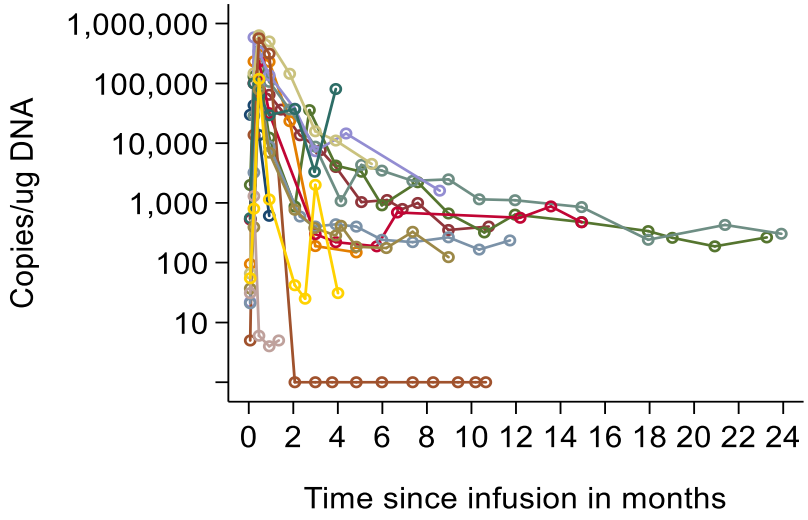


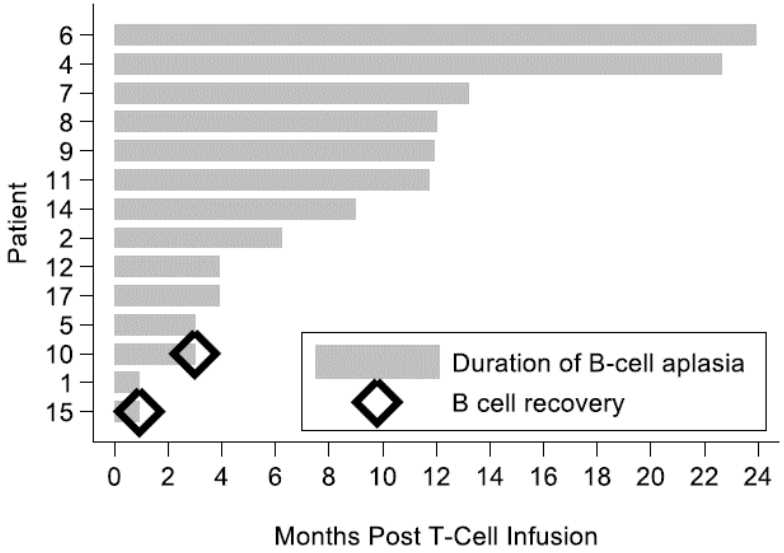
Autolus

*Similar binders are used in Yescarta and JCAR-017

AUTO1 shows excellent expansion and persistence in pALL

AUTO1 expansion and persistence exceed Kymriah





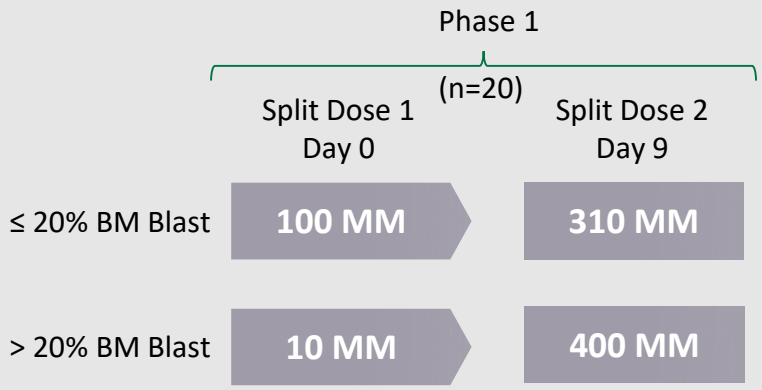
- Enhanced Expansion:
  - Peak expansion (Cmax) approximately 3 x higher than that reported for Kymriah
  - Area under the curve (day 0-28) 5 x higher than that reported for Kymriah

- 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

Mueller et al., (2018) Blood.
Maude et al., (2014) NEJM.

Autolus

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*

Autolus

*Presented at AACR 2019

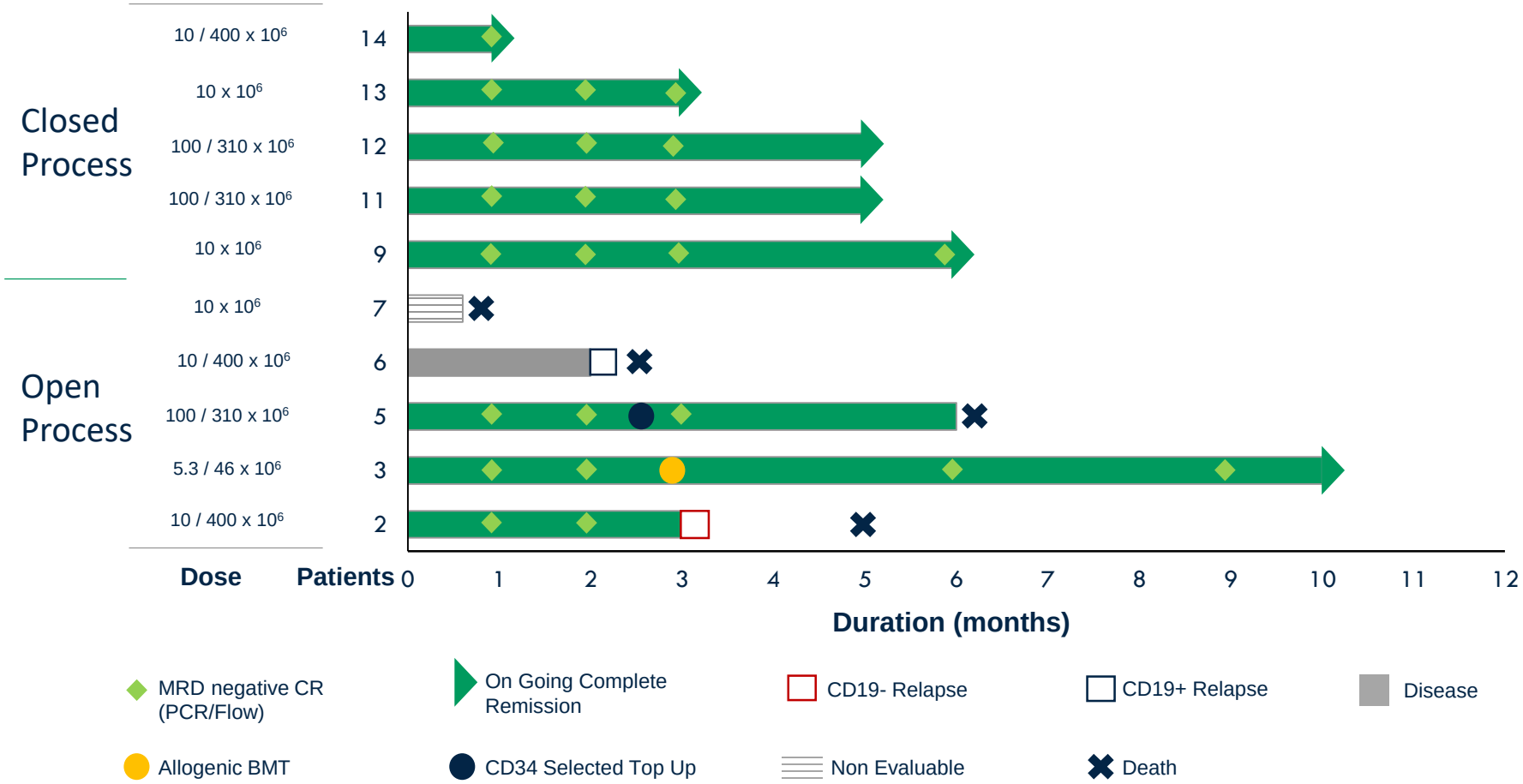
AUTO1 in adult ALL: Favorable safety profile

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

- 5 patients had ≥ 50% BM blasts prior to lympho-depletion (CRS 'high risk')
- Robust CAR-T cell expansion and persistence
- CRS: 0 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

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

Autolus

Comparison of AUTO1 vs. Kymriah® and Blincyto®

AUTO1 – potential for 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	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 ≥ Grade 3	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
3. Roddie et al., AACR 2019
4. Kantarjian et al., 2017

Autolus

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

Autolus

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

Pediatric ALL – Focus on AUTO1/AUTO1NG

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
- Development track in pediatric ALL will focus on AUTO1:
  - 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
  - Initial Phase 1 data with AUTO1NG expected for H2 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)
  - Yescarta ongoing CR rate: 39%
  - Kymriah ongoing CR rate: 29%

Autolus

*Source: American Cancer Society

DLBCL – AUTO3

Program on track to deliver data H1 2020

- Manufacturing site was licensed in March 2019 but overall 5 months delay in site qualification resulted in a delay in patient recruitment
- Interim Phase 1 data planned to be presented at ASH 2019 in December, no presentation at ESMO
- Decision for triggering Phase 2 initiation planned for mid 2020
- Expect to initiate Phase 1 trial with AUTO3NG H1 2020

Other Indications

Positioned for additional value inflection in 2020

- Multiple myeloma
  - 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

- T Cell Lymphoma
  - Patient enrolment in Phase 1 study with AUTO4 impacted by delay in regulatory licensure of clinical manufacturing site
  - Expect to present initial Phase 1 data H2 2020
  - AUTO5 Phase 1 to commence H2 2020
  - Companion diagnostic development on-track

- Solid tumor programs
  - Plan to commence Phase 1 H2 2020 for AUTO6NG (GD2+ tumors)

Financial Results

Andrew J. Oakley
Chief Financial Officer

Second quarter 2019 financial summary

USD m	2Q19	2Q18	Variance
Grant Income	0.3	0.4	(0.1)
R&D	(26.2)	(8.9)	(17.3)
G&A	(11.4)	(8.1)	(3.3)
Total Operating Expenses, net.	(37.2)	(16.5)	(20.7)
Other Income	5.5	6.7	(1.2)
Tax Benefit	3.3	2.2	1.1
Net Loss	**(28.5)**	**(7.7)**	**(20.8)**

USD m	June 19	Dec. 18	Variance
Cash Balance	**266.2**	**217.5**	**48.7**

- Follow on offering completed April 2019
  - $108.8 m aggregate net proceeds raised (after UW discounts/before expenses)
- Cash runway expected into second half of 2021

Autolus

Upcoming Milestones and Conclusion

Dr. Christian Itin
CEO and Chairman

Autolus

Clinical newsflow expected through H1 2021

Indication	Asset	Q4 2019	H1 2020	H2 2020	H1 2021
Adult ALL	AUTO1	◆ ◆			◆
DLBCL	AUTO3	◆		◆	
	AUTO3NG		◆		◆
Pediatric ALL	AUTO1	◆			
	AUTO1NG			◆	◆
	AUTO3	◆			
Multiple Myeloma	AUTO2	◆	◆		
	AUTO2NG		◆		
T Cell Lymphoma	AUTO4			◆	
	AUTO5			◆	
GD2+ Tumors	AUTO6NG			◆	

Autolus

◆ Commence phase 1 trial ◆ Ph 1 interim data ◆ Ph 1 data ◆ Commence phase 2 trial (pending regulatory feedback) ◆ Ph 2 full data

Key Q2 Messages

- AUTO1:
  - First Autolus portfolio program to move to Phase 2 in adult ALL
  - Opportunity for best in class CD19 CAR T
- AUTO3:
  - Focus on DLBCL, next data at ASH
  - Pediatric ALL: data confirm hypothesis, but deprioritized in pALL in favor of AUTO1/AUTO1NG
- Opportunity for additional value steps in 2020 from multiple myeloma, T cell lymphoma and GD2+ tumor programs
- Company has a strong balance sheet with $266M in cash
- Key data releases at ASH

Q&A

Dr Christian Itin (Chairman and CEO)
Andrew Oakley (CFO)

Thank you.

Autolus