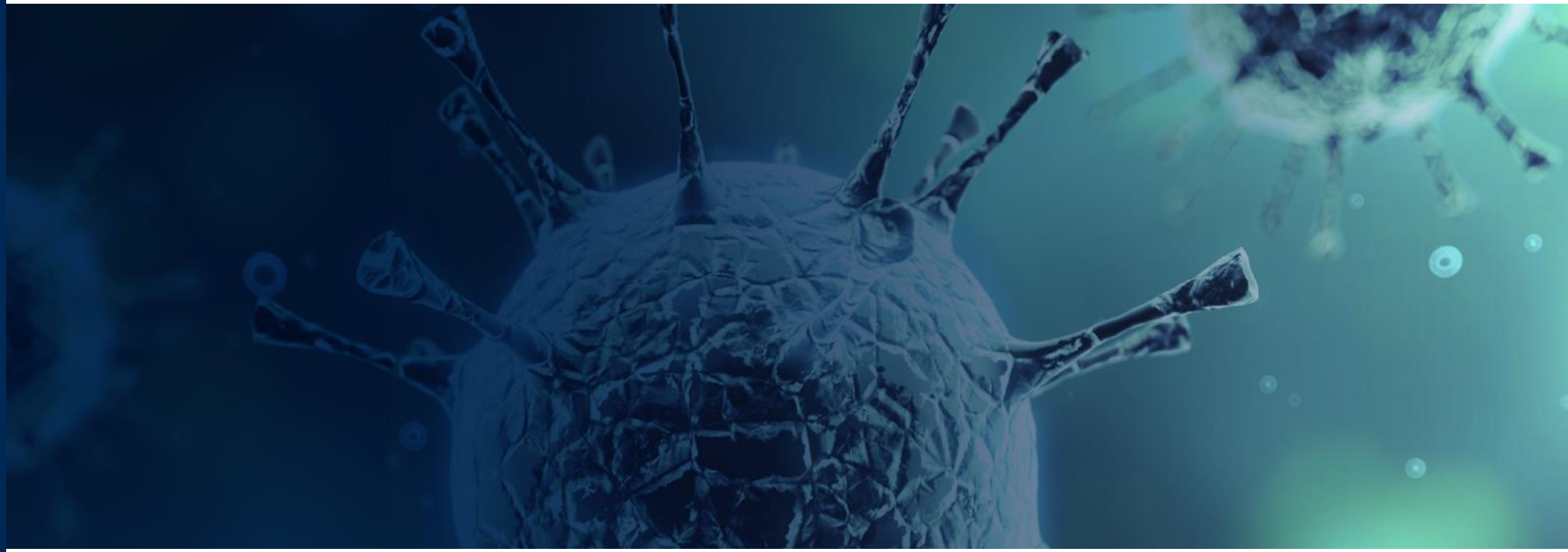
Autolus

Nasdaq: AUTL



Second Quarter Financial Results and Operational Progress

August 6, 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

Business update – second quarter 2020

Impact from COVID-19 on our programs has been limited to date

- In Q2 our lead programs AUTO1 and AUTO3 were not impacted significantly
  - AUTO1 pivotal study was initiated in Q2 as planned and potential impact of infection surges on timelines is being closely monitored
  - AUTO3 - continued to enrol patients in Q2 in unimpacted areas
    - Enrollment in the UK and NYC area was paused
    - Enrollment continued in other parts of the US
    - Infection surges are being closely monitored to ensure continued enrollment

- Impact on AUTO4 Ph1 clinical trial
  - Study is being conducted in the UK and Spain
  - Healthcare systems in both countries heavily impacted, leading to a pause of enrolment in Q2
  - Expect first data in H1 2021 (from Q4 2020)

- Preclinical programs have been minimally impacted
  - Expect AUTO5, AUTO6NG, AUTO7 to enter clinical development in 2021
  - AUTO1NG in pALL and AUTO8 in multiple myeloma are on track to start Ph1 in H2 2020

Corporate highlights – second quarter 2020

Advancing our clinical programs to value inflection; positive updates at ASCO & EHA

- AUTO1 in adult ALL;
  - AUTO1 Ph1 data at EHA continues to show favorable safety profile and high level of clinical activity
  - AUTO1 pivotal program initiated and enrolling
  - On track for full data by end 2021

- AUTO3 in DLBCL
  - AUTO3 data at ASCO continue to show encouraging clinical activity alongside tolerable safety
  - Recommended Phase 2 dose range of 150 - 450 x 10^6 cells with pembrolizumab preconditioning
  - Next data update at ESMO Sept 18, 2020
  - Outpatient cohort initiated, data update Q4 2020

- Additional clinical data expected at ESMO and ASH through September and December 2020
  - AUTO1 in adult ALL, plan to present longer term follow up data (likely ASH)
  - AUTO3 in DLBCL, updated data and longer term follow up from ALEXANDER study (ESMO and likely ASH)
  - Analyst call planned post ESMO

Corporate highlights – second quarter 2020

Advancing next generation preclinical programs to value inflection; positive updates at AACR

- AUTO5 in TRBC2+ T-cell lymphomas
  - Currently no T cell therapy approved for T cell lymphoma
  - Autolus' TRBC1 programmed T cell product candidate, AUTO4, progressing in clinical study
  - Preclinical data demonstrated highly selective targeting of TRBC2 by novel CAR T candidate, AUTO5
- AUTO6NG in SCLC
  - Preclinical data suggested broader application beyond neuroblastoma with demonstrated efficacy in an *in vitro* SCLC model
- AUTO7 in Prostate Cancer
  - Preclinical data highlighted activity in an immunologically cold tumor using proprietary Autolus modular programming technology
- AUTO5, AUTO6NG & AUTO7 next generation preclinical programs to enter Ph1 in 2021

Operational highlights – second quarter 2020

Board and Management Team evolution, plus manufacturing flexibility extended

- Dr Jay T Backstrom appointed to Board of Directors
  - Dr Backstrom currently serves as EVP, Head of Research & Development at Acceleron Pharma Inc
  - Prior to Acceleron, Dr Backstrom served as CMO and Head of Regulatory Affairs at Celgene Corporation
  - Dr Backstrom oversaw development of Celgene's substantial hemato-oncology pipeline including its CAR T programs

- Dr Nushmia Khokhar promoted to Senior Vice President, Clinical Development
  - Dr Khokhar will take over the clinical leadership role at Autolus
  - Dr Khokhar is a board-certified oncologist and has led several successful registration trials within the industry including the global daratumumab program at Janssen Oncology
  - Dr Vijay Peddareddigari, Chief Medical Officer, will be leaving the Company

- Extended manufacturing capacity at the Cell and Gene Therapy Catapult to secure initial commercial launch capability

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

*SEER and EUCAN estimates (respectively) for US and EU epi

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

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* Observed in patients with > 50% tumor burden

Roddie et al., EHA 2020
Kantarjian et al., 2017
Kantarjian et al., 2016

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

On track for full data by end 2021

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Current status of CAR T Cell therapies in DLBCL

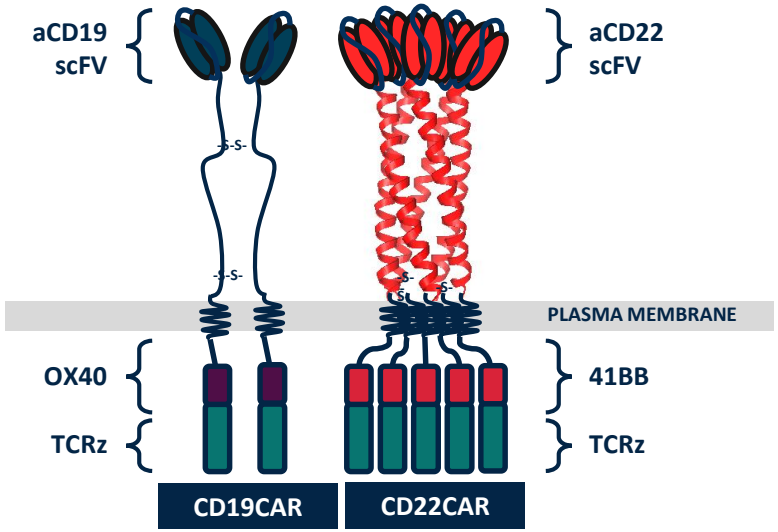
Two approved products (Yescarta® and Kymriah®) and one near to approval (liso-cel)

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 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

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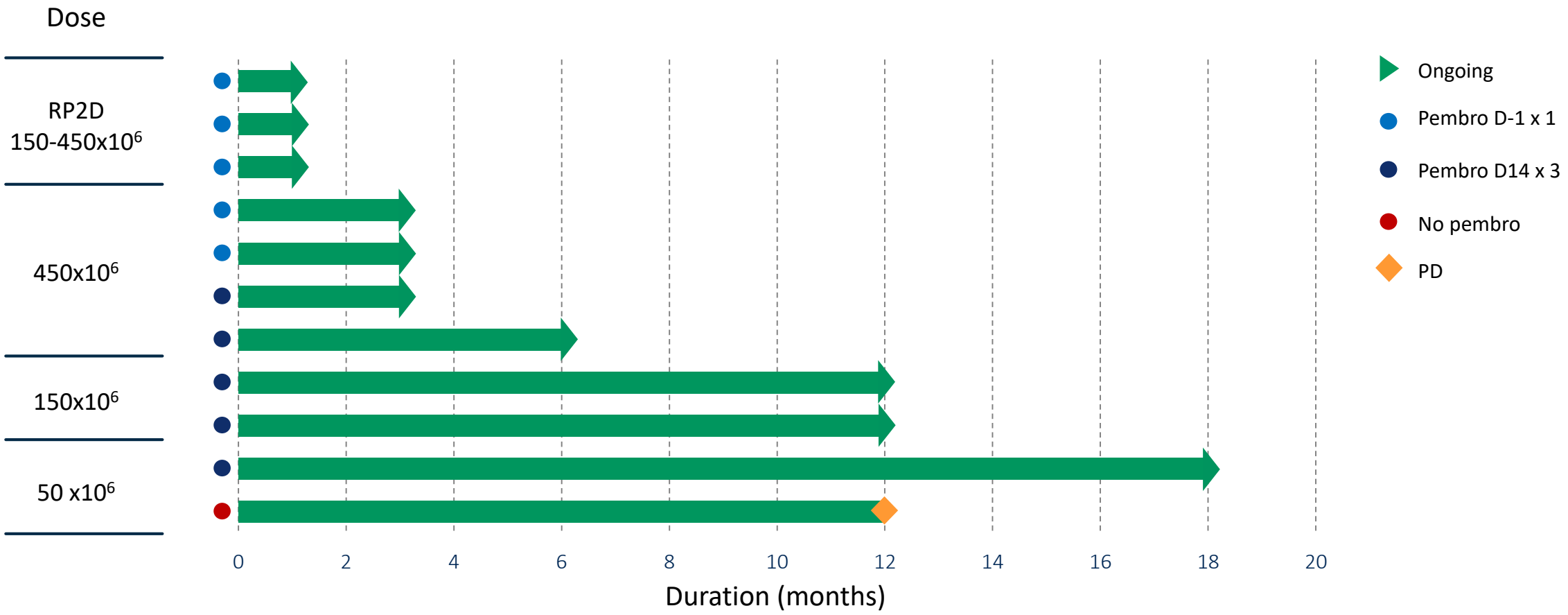
Encouraging signs of durable complete responses

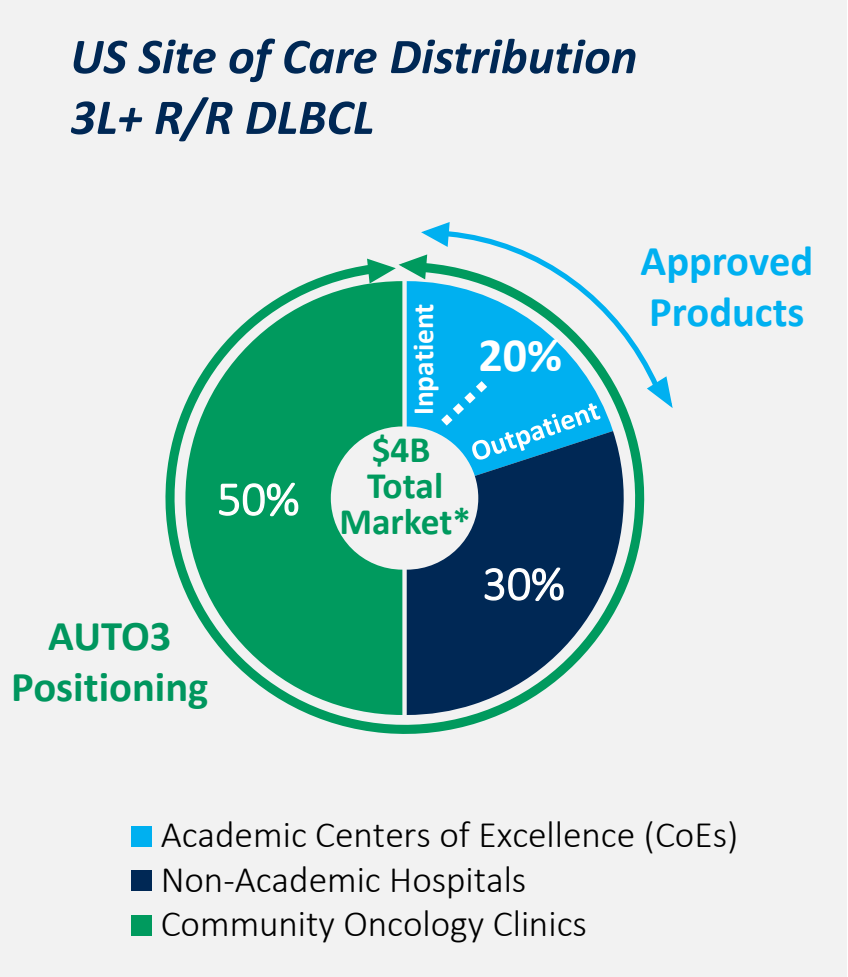
10 of 11 complete responses ongoing



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

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

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Source: US Retrospective Claims Analysis by Site of Distribution
*Autolus approximate estimates

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

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Broad pipeline of next generation programs

Designed to address limitations of current T cell therapies

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

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

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NG = Next Generation, SCLC = Small Cell Lung Cancer

Financial Results

Andrew J. Oakley
CFO

Financial summary

USD m	2Q 2019	2Q 2020	Variance
Grant Income	0.3	0.3	(0.0)
R&D	(26.2)	(31.3)	(5.1)
G&A	(11.4)	(8.5)	2.9
Total Op Expenses, net.	**(37.2)**	**(39.5)**	**(2.3)**
Interest Income	1.1	(0.0)	(1.1)
Other Income	4.4	0.5	(3.9)
Tax Benefit	3.3	7.0	3.7
Net Loss	**(28.5)**	**(32.0)**	**(3.5)**

USD m	Mar 31 2020	Jun 30 2020	Variance
Cash Balance	**243.3**	**212.0**	**(31.3)**

Cash runway into 2022

*Variances due to rounding

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Upcoming Milestones and Conclusions

Dr. Christian Itin
Chairman and CEO

Multiple clinical data points expected through H2 2020 / 2021

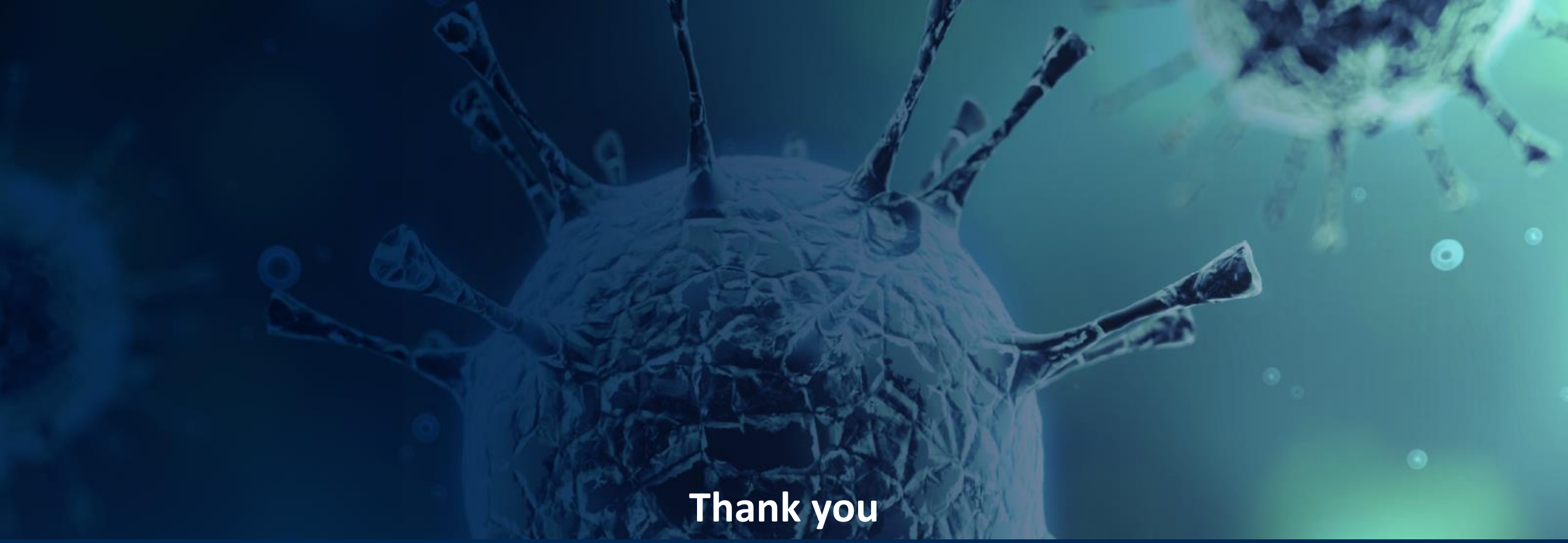
Product	Indication	Target	Event
B Cell Malignancies			
AUTO1	Adult ALL	CD19	• Ph1 long-term follow up Q4 2020 • Pivotal data end of 2021
AUTO1NG	Pediatric ALL	CD19 & 22	• Start Ph1 H2 2020
AUTO3	DLBCL	CD19 & 22	• Ph1 data update H2 2020 (ESMO and likely ASH)
Multiple Myeloma			
AUTO8	Multiple Myeloma	BCMA & CAR X	• Start Ph1 study H2 2020
T Cell Lymphoma			
AUTO4	TRBC1+ Peripheral TCL	TRBC1	• Ph1 interim data H1 2021
Solid Tumors			
AUTO6NG	Neuroblastoma; Melanoma; Osteosarcoma; SCLC	GD2	• Start Ph1 2021
AUTO7	Prostate Cancer	PSMA	• Start Ph1 2021
Allogeneic Approach			
Undisclosed	Undisclosed	Undisclosed	• Start Ph1 Q4 2020

Autolus poised for value inflection in 2020

- AUTO1/AUTO1NG
  - Currently enrolling Autolus' first Ph1b / 2 pivotal program in adult ALL
  - Granted orphan drug designation by the FDA for treatment of ALL
  - Pediatric ALL – moving forward with AUTO1NG
- AUTO3
  - Outpatient treatment cohort started in Q2 2020
  - Next data update planned at ESMO 2020
  - Pivotal study could start early 2021
- Key data releases expected at upcoming medical conferences, e.g. ESMO, ASH
- Cash on hand $212m as at June 30, 2020

Q&A

Dr. Christian Itin and Andrew Oakley



Thank you