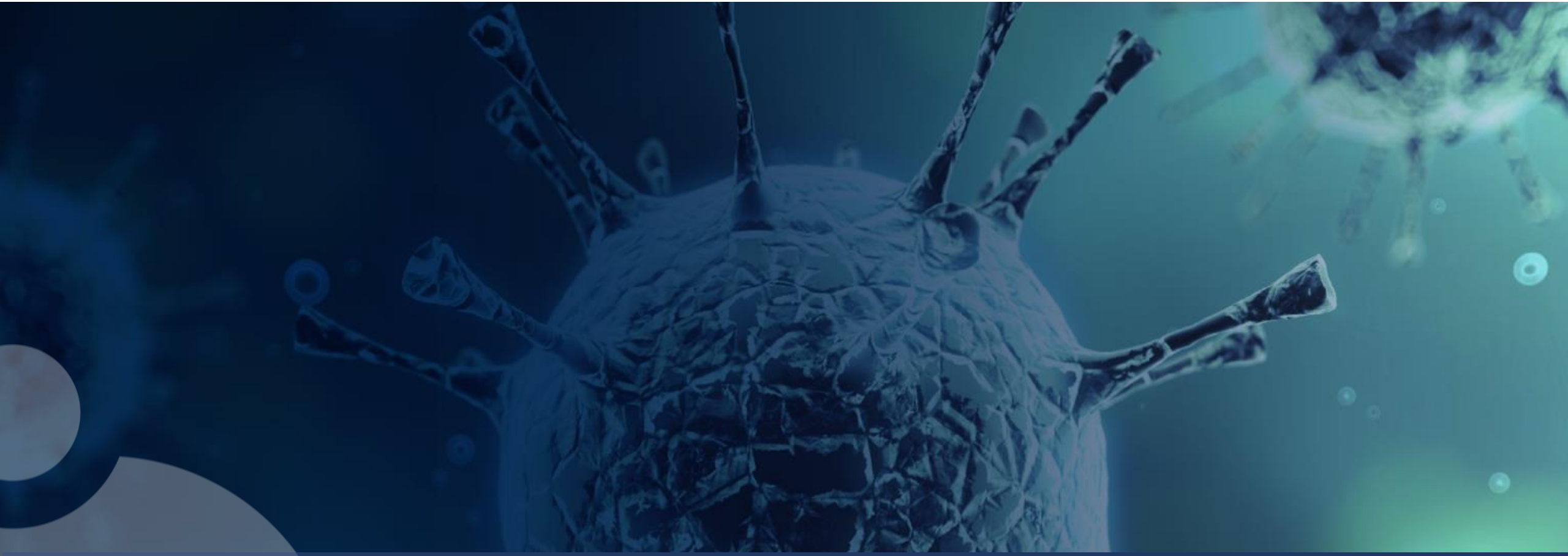
Autolus

Nasdaq: AUTL



Obe-cel Data Update - ASH 2021

December 2021

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Agenda

- Welcome and Introduction: Dr. Christian Itin, CEO
- Obe-cel adult ALL update and development path: Dr. Edgar Braendle, CDO
- Obe-cel NHL data review: Dr. Wolfram Brugger, Head of Clinical Development
- AUTO1/22 data update: Dr. Martin Pule, CSO
- Summary: Dr. Christian Itin, CEO
- Q&A: Dr. Christian Itin, Dr. Edgar Braendle, Dr. Wolfram Brugger, Dr. Martin Pule, Andrew Oakley (CFO)

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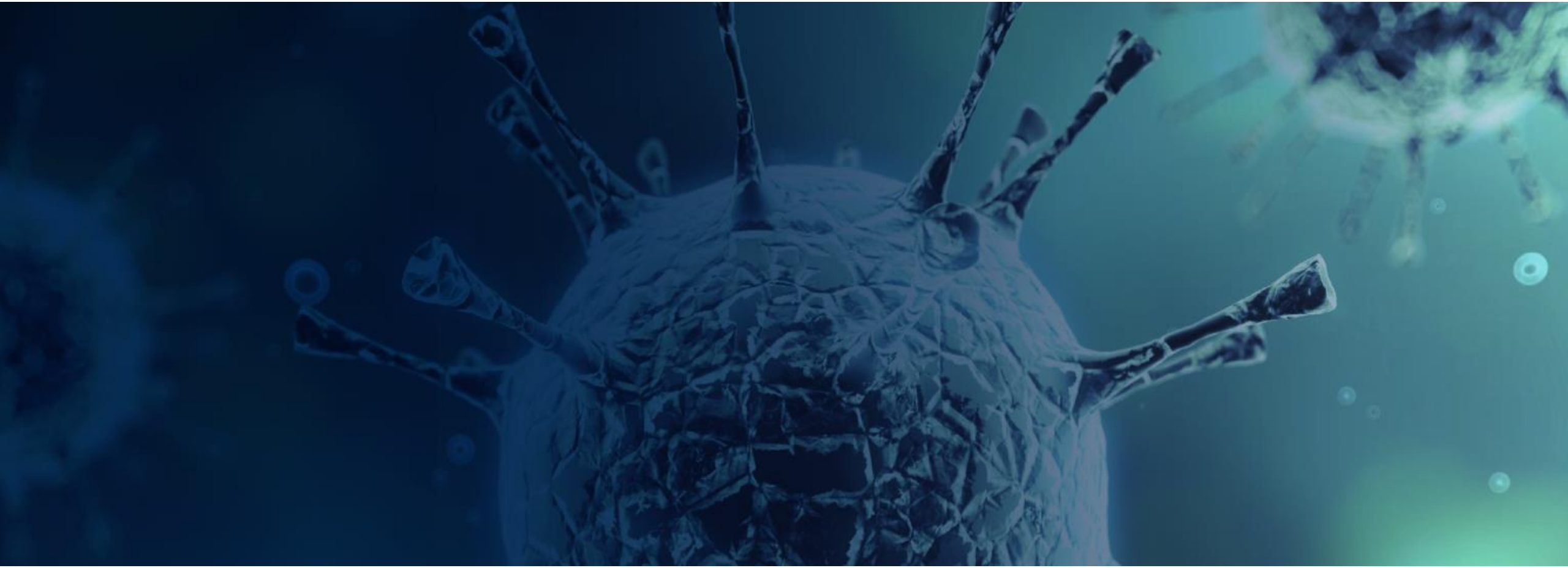

Welcome & Introduction

Dr. Christian Itin, CEO

Obe-cel poised for value inflection in 2022

Unique CAR T designs drives potentially best in class product profile

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Obe-cel Adult ALL

- Clinical data in adult ALL continues to support potential best-in-class profile
- Morphological EFS for obe-cel in ALLCAR19 was 46% at 24 months, with a median follow-up of 29.3 months
- FELIX Phase 1 b data is consistent with ALLCAR19 data
  - Activity: high CR/ CRi rate
  - Safety: No Grade ≥ 3 CRS and low rates of ICANS in FELIX Phase 1b study
- Long term CAR T persistence drives durability of effect

Obe-cel Franchise

- Obe-cel demonstrated a metabolic CR in 13/13 patients with FL, MCL and DLBCL
- No ICANS or severe Grade ≥ 3 CRS events in patients with r/r FL, MCL, DLBCL and CLL
- Dual targeting of AUTO1/22 shows data consistent with high level of activity and good engraftment

*Roddie et al. “Durable responses and low toxicity after fast off-rate CD19 CAR-T therapy in adults with relapsed/ refractory B-ALL.” DOI: 10.1200/JCO.21.00917 Journal of Clinical Oncology
**Roddie et al. “Early Safety and Efficacy Findings of AUTO1 (CAT19), a Fast-Off Rate CD19 CAR, in Relapsed/Refractory Indolent B Cell Lymphomas.” EHA annual meeting, June 11 2021, abstract EP788. EHA Investor slide presentation

Setting the platform for future value growth

Key Drivers

Solid Foundation

- Novel fast-off rate CAR drives obe-cel activity and long term persistence in the absence of severe immunotoxicity
- Consistency of activity and safety observed across reported data for 70+ patients in ALL and B-NHL indications
- High impact publications highlight mechanism of action and transformational outcomes in adult ALL

Pivotal Program

- Consistency of activity and safety data across Felix Phase 1b and ALLCAR19 adult ALL cohorts
- Access to PRiME and ILAP pathways in EU and UK
- Felix Phase 2 read out in 2022

Obe-cel Franchise

- Initial clinical data supports optionality to move beyond ALL in to NHL indications
- AUTO1/22 next generation product to address CD19 antigen loss–driven relapses in pediatric ALL

Towards Commercialisation

- Up to $250m from Blackstone to support Autolus' advancement of obe-cel and next generation product therapies of obe-cel in B-cell malignancies
- Build out of 70,000 square foot dedicated manufacturing facility

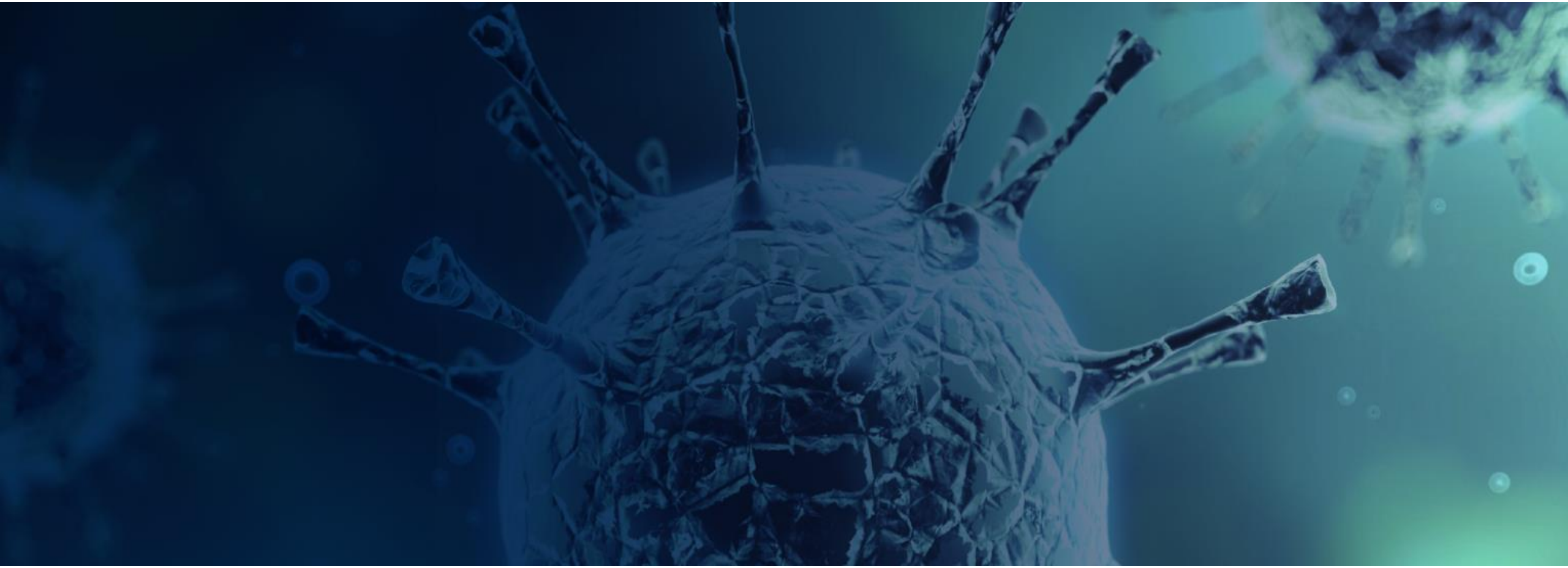
Capitalizing on the unique profile of obe-cel

Exploration of obe-cel activity in additional B-Cell malignancies

PRODUCT	INDICATION	TARGET	PHASE 1	PHASE 1B/2
obe-cel	Adult ALL	CD19	ALLCAR-19	FELIX
obe-cel	NHL & CLL	CD19	ALLCAR-19	
obe-cel	Primary CNS Lymphoma*	CD19	CAROUSEL	
AUTO1/22	Pediatric ALL	CD19 & CD22	CARPALL	

OPPORTUNITY TO PURSUE IN EARLIER LINES OF THERAPY AND INDICATIONS OF ADULT ALL AND ADDITIONAL B-CELL MALIGNANCIES

*Primary CNS lymphoma annual incidence approx.1400 cases in the US.



Development path for obe-cel

Dr. Edgar Braendle, CDO

Unmet need remains for adult ALL patients

Successful therapy requires high level of activity and sustained persistence paired with good tolerability

ALL is a significant opportunity

Up to **8,400*** new cases of adult ALL diagnosed yearly worldwide

Estimated R/R patients in US & EU **3,000** addressable patient population in last line setting

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 adult ALL
- Only redirected T cell therapies for adult patients are blinatumomab and brexucabtagene autoleucel
- CAR T therapies are highly active, but require subsequent allograft to achieve durability
- Patients are generally more fragile with co-morbidities, yet CAR T toxicities in this setting have been notable with high incidences of severe CRS and cases of fatal neurotoxicity
- Opportunity to expand the addressable patient population in earlier lines of therapy

OBE-CEL GRANTED ORPHAN DRUG DESIGNATION BY FDA FOR ALL, PRIME DESIGNATION IN R/R B-ALL BY EMA AND ILAP DESIGNATION BY MHRA IN ADULT R/R B-ALL

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

Unmet medical need in r/r adult ALL despite approved agents

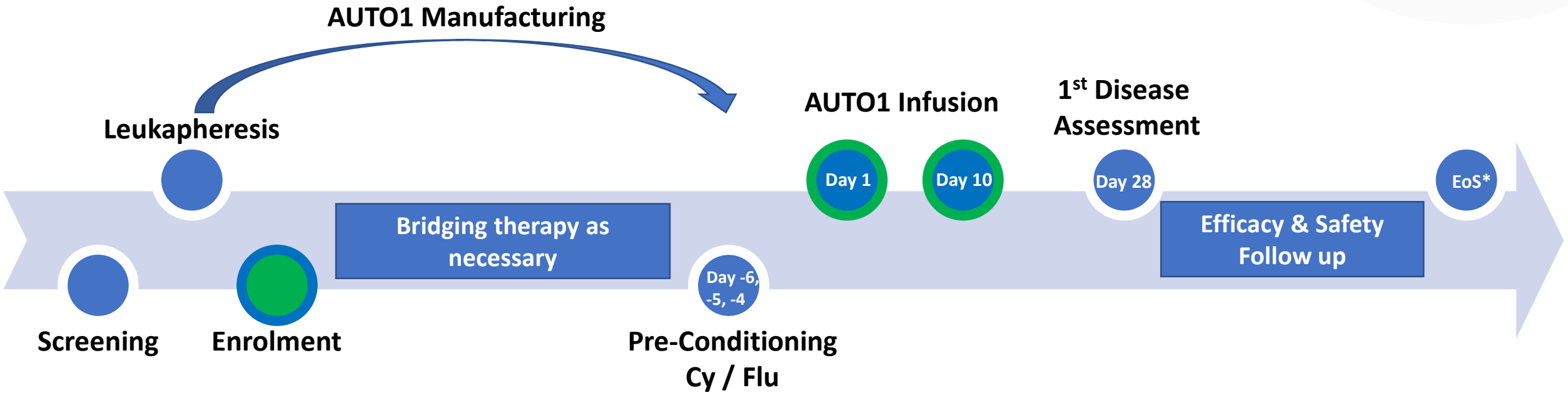
Current standard of care and recently approved agents in r/r adult ALL

	Standard of Care		Recently FDA approved
	Blinatumumab[1]	Inotuzumab[2]	ZUMA-3 Phase 2 Tecartus USPI (Label)[3]
N	271	109	54
ORR (CR/CRi)	44%	80.7%	65%
EFS	31% (6 m)	mPFS 5m	25% (18 m)[4]
median DoR	7.3m	5.4m	13.6m (8.7, NE)
median OS	7.7m	7.7m	18.2m (15.9, NE)[4]
CRS ≥ Grade 3	3%	0%	24%
Neurotox any Grade	65%	Not reported	87%
Neurotox ≥ Grade 3	13%	0%	35%
Other notable observations	NA Approx. 50% of blinatumumab patients received subsequent HSCT	14% Hepatic VoD Approx. 50% of inotuzumab patients received subsequent HSCT	40% vasopressor use[4] 18% pts received alloSCT after Tecartus infusion[4]

1. Kantarjian et al., 2017/ USPI (product label) 2. Kantarjian et al., 2016/ USPI (product label) 3. Tecartus USPI (label) 4. Shah et al. Lancet 2021

Information presented is based on publicly available data. No head-to-head studies were conducted.

Overview of ALLCAR19 and FELIX Studies in R/R B-ALL



BM blasts ≤20%

Day 1
Infuse 100 x 10^6 CD19 CAR T cells

Day 10 (± 2 days)
Infuse 310 x 10^6 CD19 CAR T cells

No G3-5 CRS
No G3-5 ICANS

Prior to pre-conditioning

BM blasts >20%

Day 1
Infuse 10 x 10^6 CD19 CAR T cells

Day 10 (± 2 days)
Infuse 400 x 10^6 CD19 CAR T cells

Comparable patient characteristics across the two studies

Patient Characteristics: ALLCAR19 vs FELIX Phase 1b

	ALLCAR19 (N=20)	FELIX Phase 1b(N=16)
Age, median (range)	42 (18 – 62)	42 (21 – 74)
Gender	13M/7F	10M/6F
Ph⁺ (bcr-abl) n (%)	6 (30%)	4 (25.0%)
Median prior lines of treatment (range)	3 (2 – 6)	3 (2 – 7)
Relapse/refractory status, n (%)		
• Primary refractory	4 (20%)	0
• 1st relapse	8 (40%)	7 (43.8%)
• 2nd relapse	4 (20%)	3 (18.8%)
• >2nd relapse	4 (20%)	6 (37.5%)
Prior Blinatumomab, n (%)	5 (25%)	9 (56.3%)
Prior Inotuzumab, n (%)	10 (50%)	6 (37.5%)
Prior Blina and Ino, n (%)	2 (10%)	4 (25.0%)
Prior Blina or Ino, n (%)	13 (65%)	11 (68.8%)
Prior allo-HSCT, n (%)	13 (65%)	9 (56.3%)
Disease burden (Blast %) at Screening, median (range)	43 (0 – 98)	56.6 (0 – 95)
Disease burden (Blast %) at Screening, n (%)		
• ≥50%	10 (50%)	8 (50.0%)
• >20% to <50%	3 (15%)	4 (25.0%)
• 5 to ≤20%	2 (10%)	1 (6.3%)
• <5%	5 (25%)	3 (18.8%)
Disease burden (Blast %) at Pre-Cond, median (range)	30 (0 – 90)	46.0 (0 – 98)
Disease burden (Blast %) at Pre-Cond, n (%)		
• > 20%	12 (60%)	12 (75.0%)
• ≤ 20%	8 (40%)	4 (25.0%)

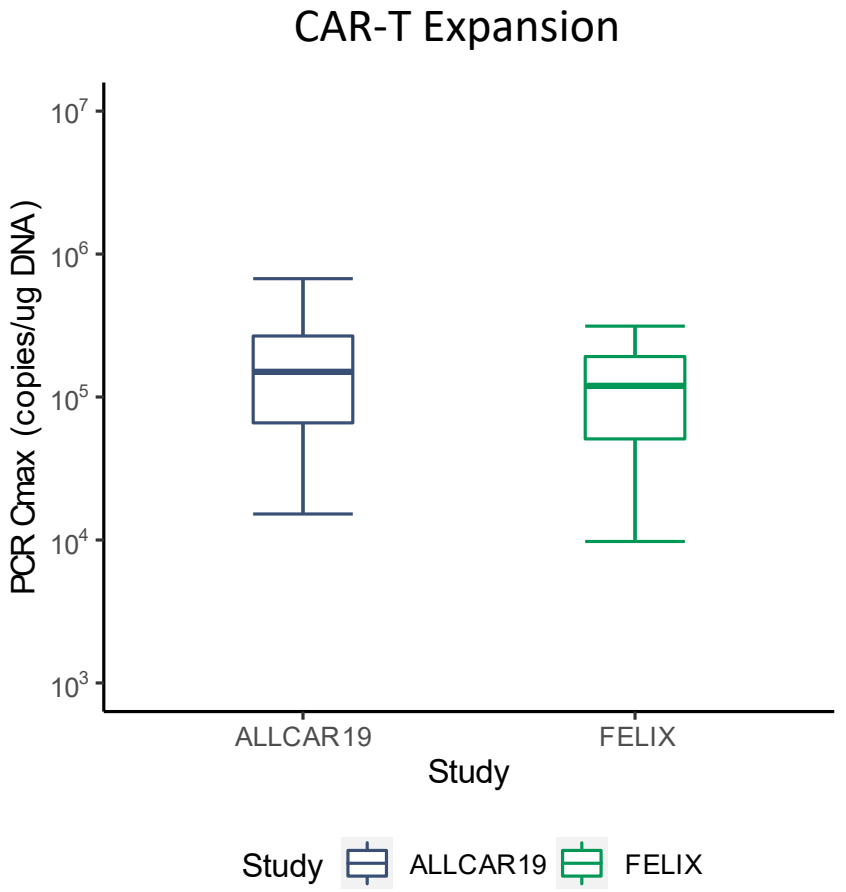
ALLCAR19 Source: JCO 2021, FELIX Phase Ib data cutoff: 13-Sep-2021

Comparable safety and response data between ALLCAR19 and FELIX study

Clinical overview & obe-cel expansion: ALLCAR19 vs FELIX Phase 1b

Efficacy	ALLCAR19*	FELIX Phase 1b
N	20	16
CR/CRi, n (%)	17 (85%)	12 (75%)
[95% CI]	[62%, 97%]	[48%, 93%]

Safety		
CRS		
(any grade)	11 (55%)	9 (56%)
Grade 2	8 (40%)	5 (31%)
Grade ≥ 3	0	0
ICANS		
(any grade)	4 (20%)	2 (13%)
Grade 1	0	0
Grade 2	1 (5%)	1 (6%)
Grade 3	3 (15%)	1 (6%)

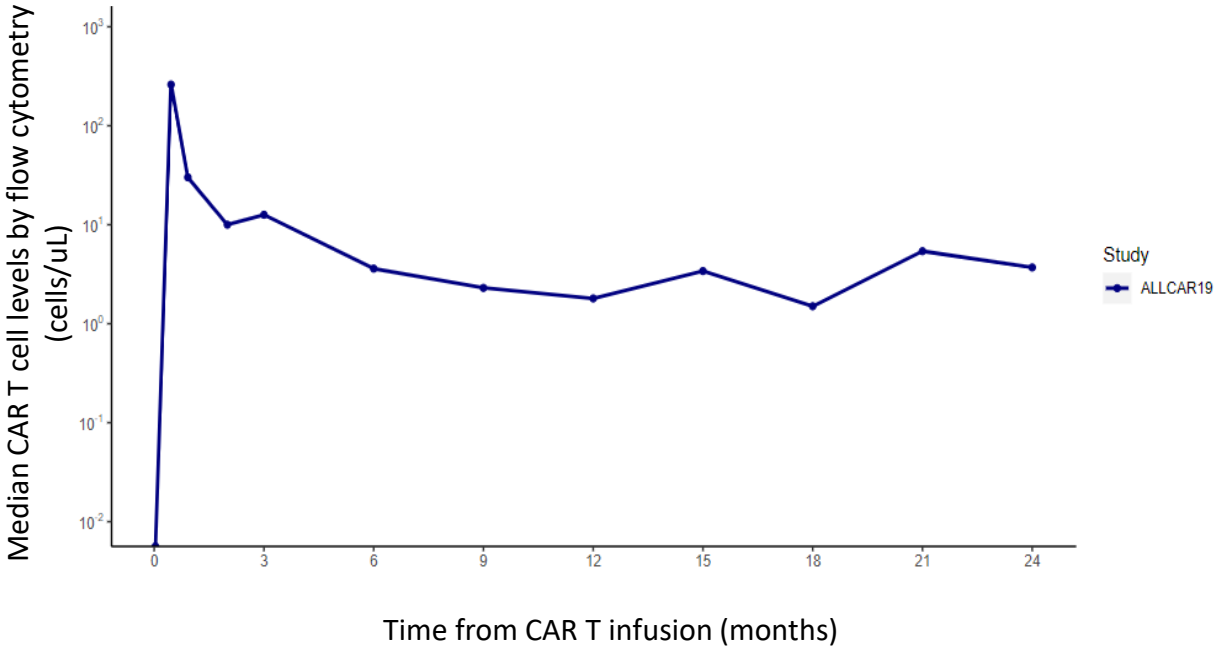


*Roddie et al., J Clin Oncol 2021

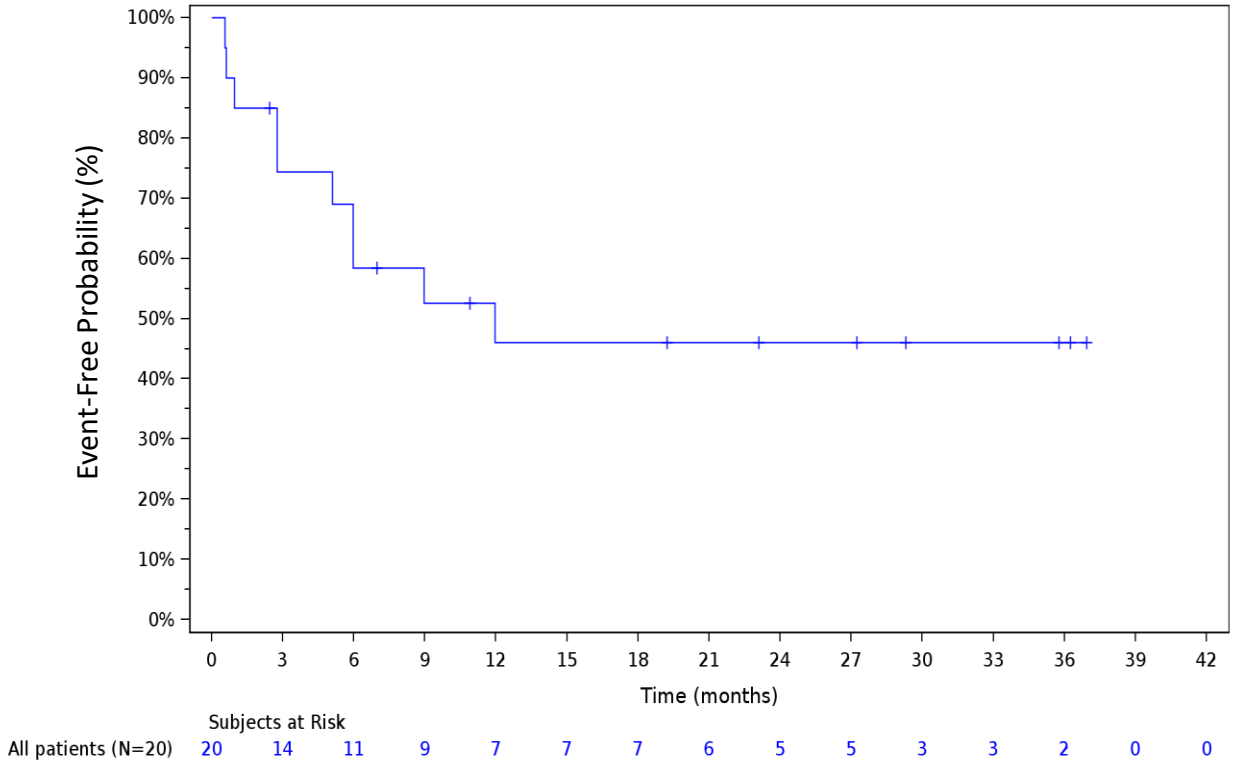
Updated Event-Free Survival (EFS) shows sustained durability beyond 30 months

Long term CAR T persistence drives durability of effect

Median CAR T cell levels in peripheral blood



ALLCAR19 Event-Free Survival



Median (range) follow-up time: 29.3 months (range 0.6 – 41.5)

Median (95% CI) EFS: 12 months [2.8, NE]

EFS starting from Month 12 going forward: 46% (95% CI [23%, 67%])

Data cut: 15-OCT-2021;

Patients were received SCT post obe-cel infusion are censored at date of SCT

Obe-cel potentially differentiated on efficacy, durability and safety

Obe-cel currently in pivotal Phase 2 study, data expected in 2022

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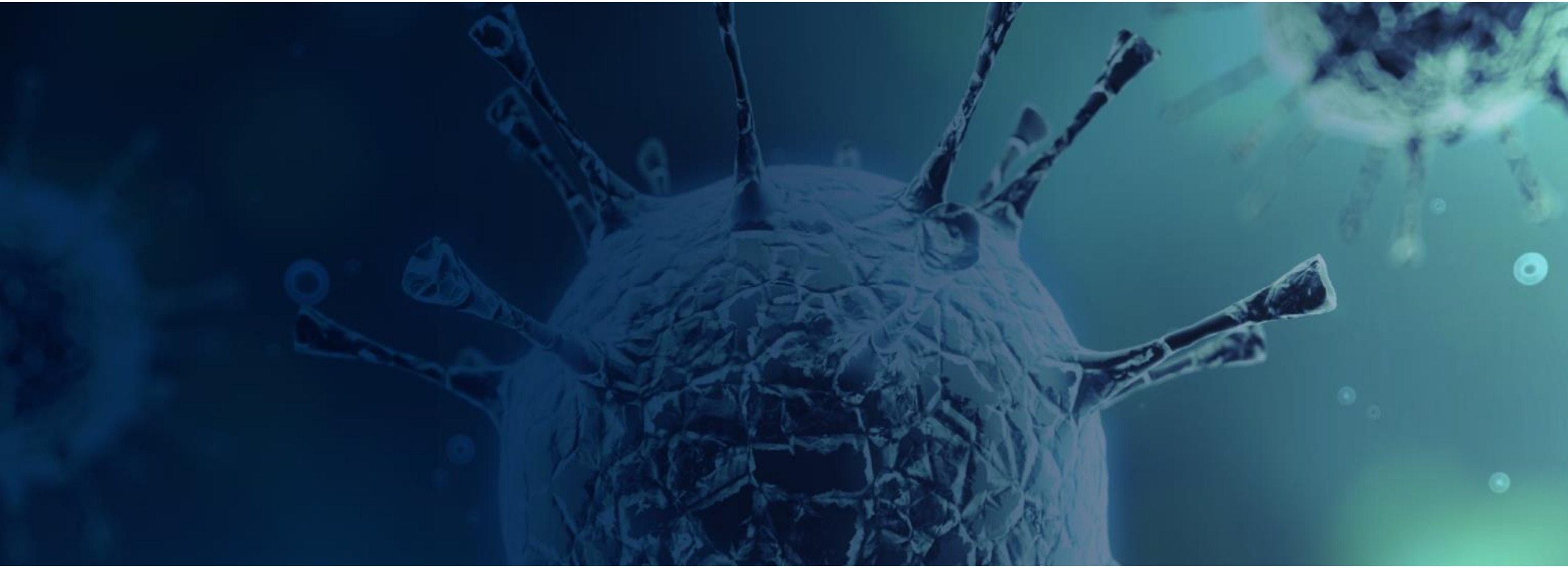
Obe-cel Adult ALL

- Clinical data in adult ALL continues to support potential best-in-class profile
- Morphological EFS for obe-cel in ALLCAR19 was 46% at 24 months, with a median follow-up of 29.3 months
- FELIX Phase 1b data is consistent with ALLCAR19 data
  - Activity: high CR/ CRi rate
  - Safety: No Grade ≥ 3 CRS and low rates of ICANS in FELIX Phase 1b study
- Long term CAR T persistence drives durability of effect
- Obe-cel is currently in a pivotal, global study (FELIX study) in r/r adult ALL (NCT04404660)
- Obe-cel program in r/r adult ALL received ILAP designation in the UK and Prime designation in the EU

Data expected from FELIX Phase 2 in mid 2022



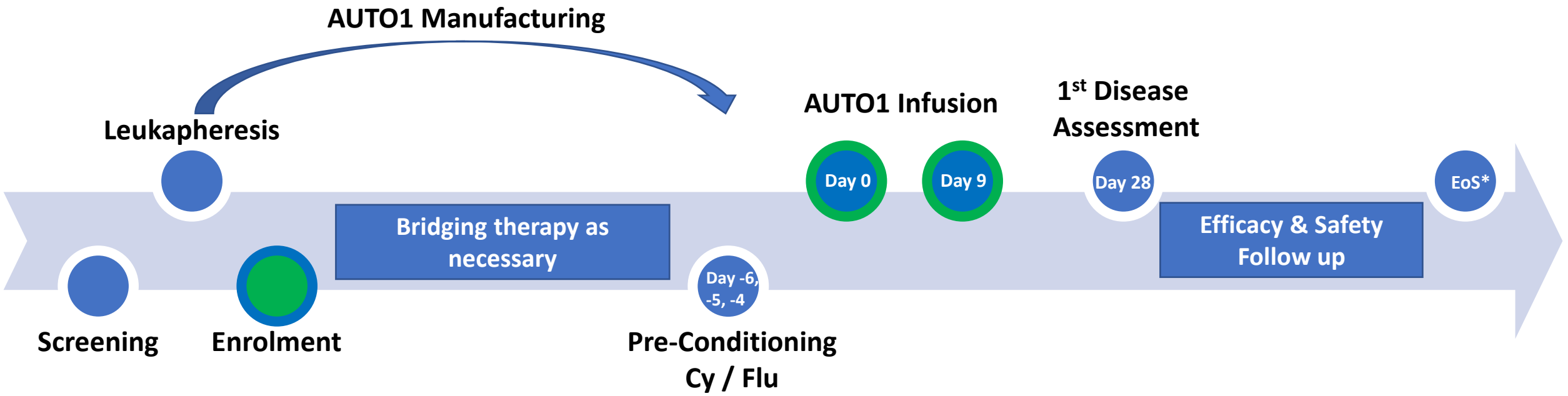
Data Review – indolent and aggressive B-NHL and CLL

Dr. Wolfram Brugger, Head of Clinical Development

* EHA June 2021

Obe-cel in the ALLCAR19 extension study – single dose in B-NHL

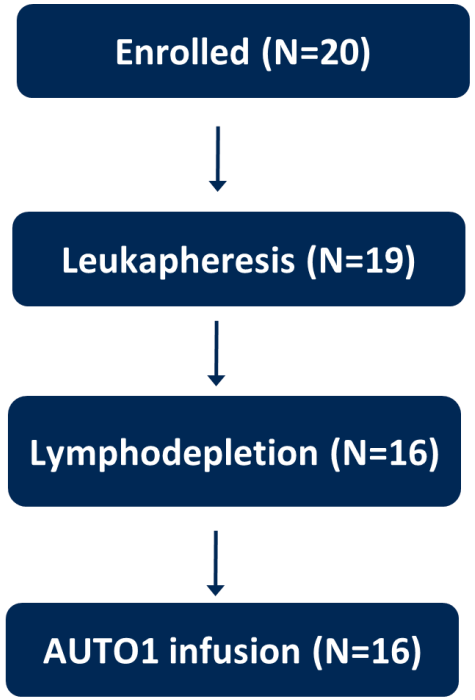
Study design



Indication	Lymphodepletion	Day 0 (Dose 1) ($x10^6$ CAR T-cells)	Day 9 (Dose 2) ($x10^6$ CAR T-cells)
Indolent B-NHL	Cy / Flu	200	-
DLBCL	Cy / Flu + Pembrolizumab	200	-
B-CLL/SLL	Cy / Flu	30	200

Obe-cel in B-NHL and CLL cohorts

Patient disposition and baseline characteristics



Baseline Characteristics	N=16
Median age, years (range)	59.5 (39 - 79)
Gender	4F / 12M
Disease • Follicular Lymphoma (FL) • DLBCL (incl. transformed FL) • Mantle Cell Lymphoma • CLL	 7 (44%) 4 (25%) 3 (19%) 2 (13%)
Lines of treatment • Median (range) • Prior autograft • Prior allo-HSCT	 3 (2-5) 2 (13%) 5 (31%)
Stage of disease at screening Ann Arbor (B-NHL) • Stage II • Stage IV Rai/BINET (B-CLL) • I/B • III/B	 14 Patients 1 (7%) 13 (93%) 2 Patients 1 (50%) 1 (50%)
Bridging therapy • Chemoimmunotherapy • Radiotherapy only • Immunotherapy only • Nil	 10 (63%) 2 (13%) 1 (7%) 3 (19%)

Data cut: 15-OCT-2021

Favorable tolerability profile of obe-cel reproduced in Lymphoma

No ICANS or severe CRS

AEs of Special Interest

Event N=16 patients	All Grades n (%)	Grade 1 n (%)	Grade 2 n (%)	Grade 3 n (%)	Grade 4 n (%)
CRS*	9 (56%)	6 (38%)	3 (19%)	0	0
ICANS	0	0	0	0	0

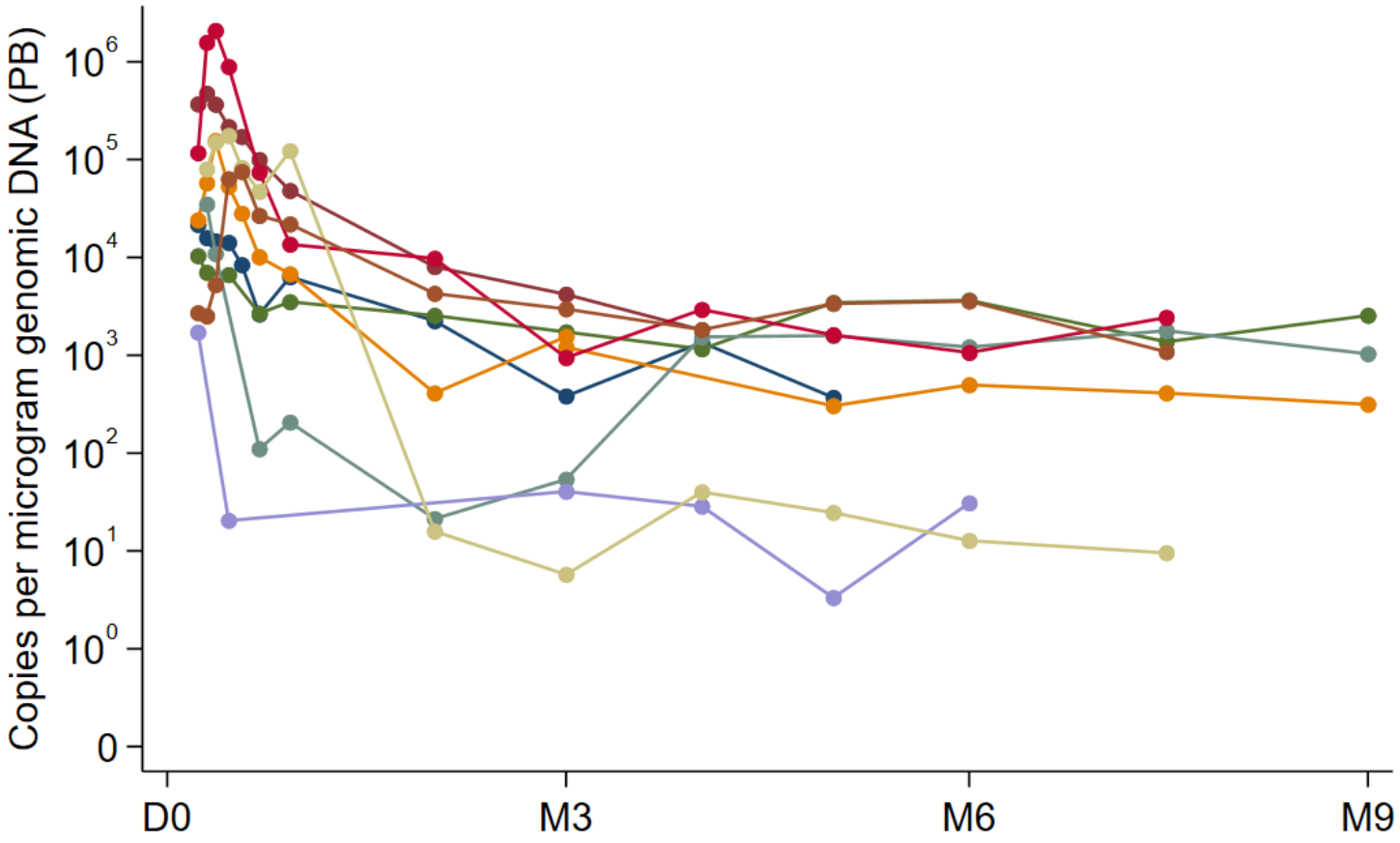
*CRS grading by Lee et al 2018
Data cut: 15-OCT-2021

- Consistent safety profile for obe-cel across indications tested
  - No ICANS
  - No high grade CRS

Data cut: 15-OCT-2021

Obe-cel shows excellent T cell expansion and engraftment

ALLCAR19 – B-NHL Patients



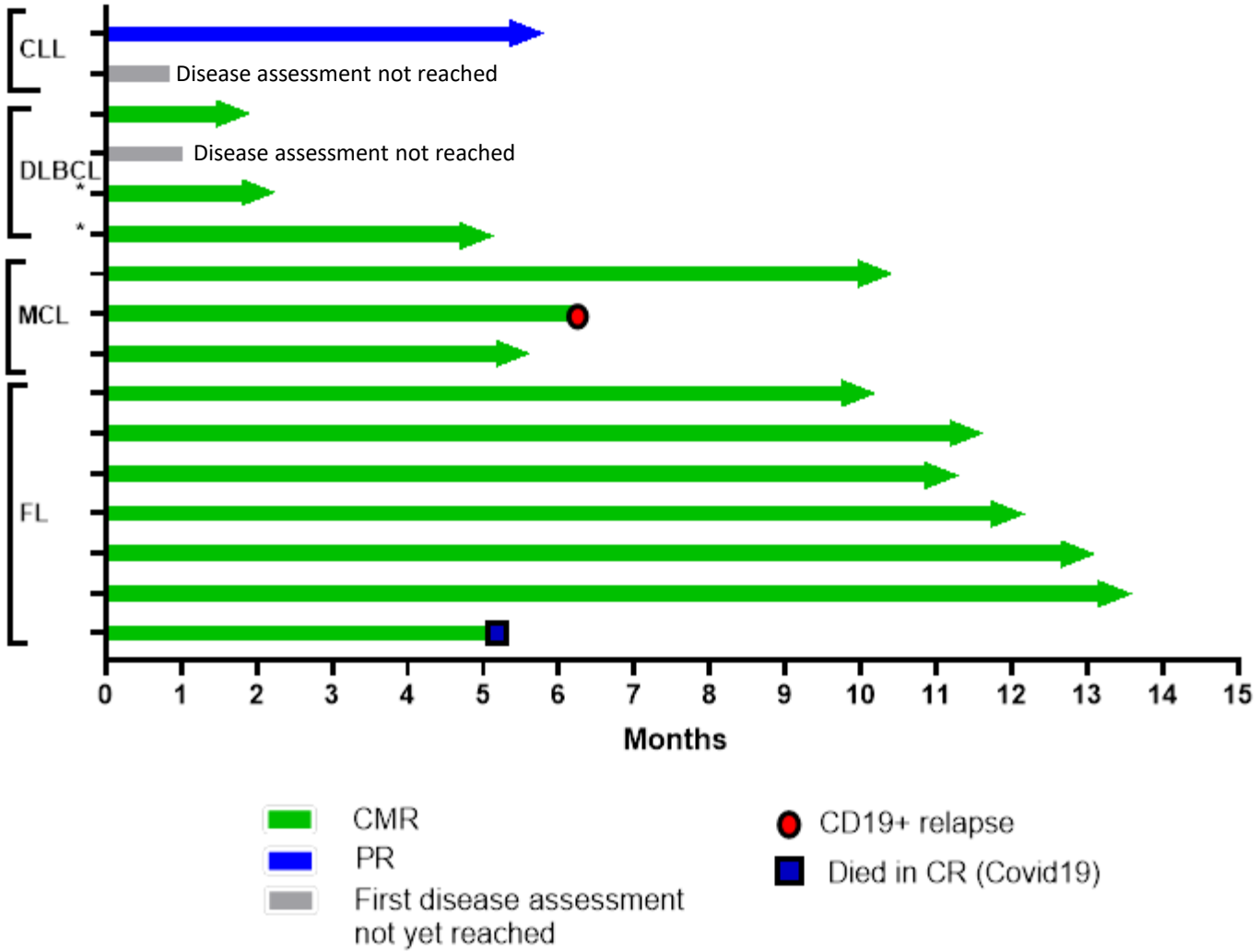
Cmax (CAR transgene per ug gDNA)	
n	9
Mean	336234
CV%	50.2%
Time to Cmax (Days)	
n	9
Median	9
Range	7-17
Time last measurable in Blood (Days)	
n	9
Median	228
Range	122-274

CAR, chimeric antigen receptor; VCN, vector copy number; qPCR, quantitative polymerase chain reaction, CV% , coefficient of variation

Data cut: 15-OCT-2021

Encouraging efficacy and duration of response in NHL/CLL

ALLCAR19 – B-NHL/CLL patients



	N (%)
Follicular Lymphoma	
CR + PR	7 (100%)
CR	7 (100%)
DLBCL	
CR + PR	3 (100%)
CR	3 (100%)
Pending	1
MCL	
CR + PR	3 (100%)
CR	3 (100%)
CLL/SLL	
CR + PR	1 PR (BM MRD-neg.)
Pending	1
Non-Response	0
Relapse	1 (MCL at 6 mos)

Median (Range) Follow-Up Time:

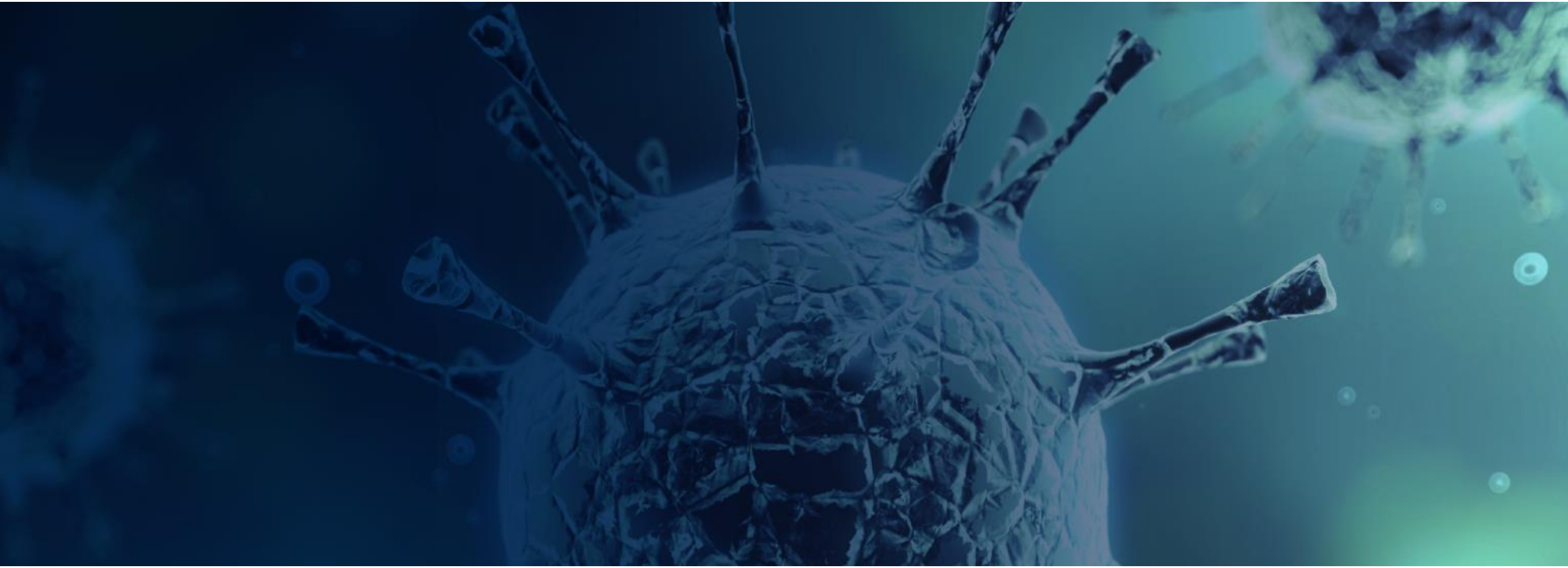
- FL/DLBCL: 11.8 Months (Range 2.0-14.2)
- MCL/CLL: 7.4 Months (Range 1.1-14.8)

Data cut: 15-OCT-2021

DLBCL* = transformed follicular lymphoma

Summary and next steps for obe-cel outside of adult B-ALL

- Favorable safety profile with no ICANS or severe Grade ≥ 3 CRS events, consistent with safety profile observed in r/r B-ALL
- Out of 14 patients evaluable for efficacy, 100% ORR and 13/14 (93%) in complete metabolic response
- Long term persistence of obe-cel demonstrated by qPCR
- 15/16 patients are ongoing without disease progression
  - 6/7 FL patients in CR for more than 10 months (10-14 months), 1 patient died in CR from COVID
  - Longer follow-up and enrolment of additional DLBCL and CLL patients ongoing, further data planned for Q1 2022



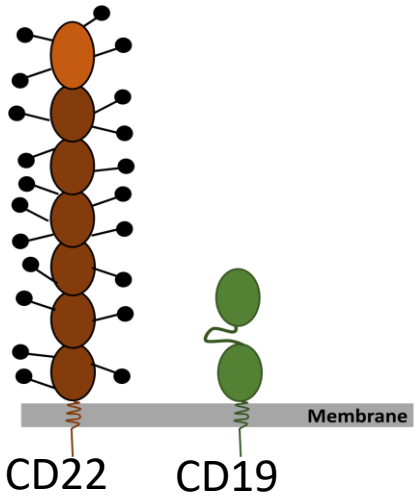
AUTO1/22 - High sensitivity CD22 CAR combined with a CD19 CAR

Dr. Martin Pule, CSO

Autolus CAR-T approach to treating pediatric ALL

CD19 negative antigen escape was a common cause of treatment failure

- Medical need in pediatric ALL to minimize rates of antigen-loss–driven relapses to improve long-term outcomes
- CD22 is challenging to target with a CAR as it is a rigid bulky molecule which prevents effective immune synapse formation
- CD22 is expressed at a low density and can be downregulated further in response to CD22 CAR challenge*
- Obe-cel CARPALL study** in relapsed / refractory pediatric ALL±

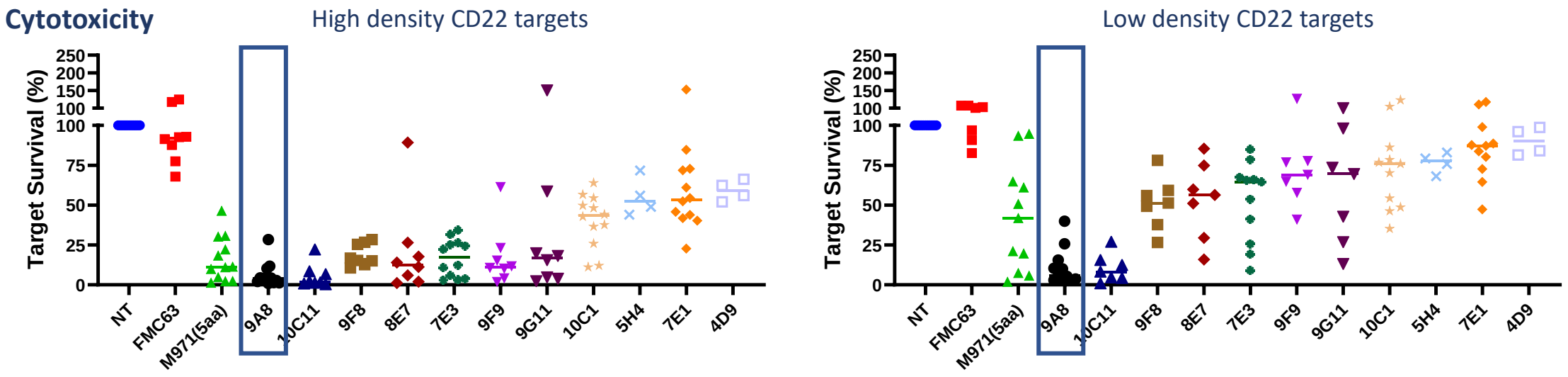


	CARPALL Study
n	14
CR Rate	86%
EFS 12m	52% (95% CI, 16 to 72)
No. of CD19 negative relapses	5/6
CRS ≥ G3	0%
NTX ≥ G3	7%

*Shah et al., JCO 2020, Spiegel et al., Nat Med 2021
** NCT02443831
±Ghorashian et al., Nat Med 2019

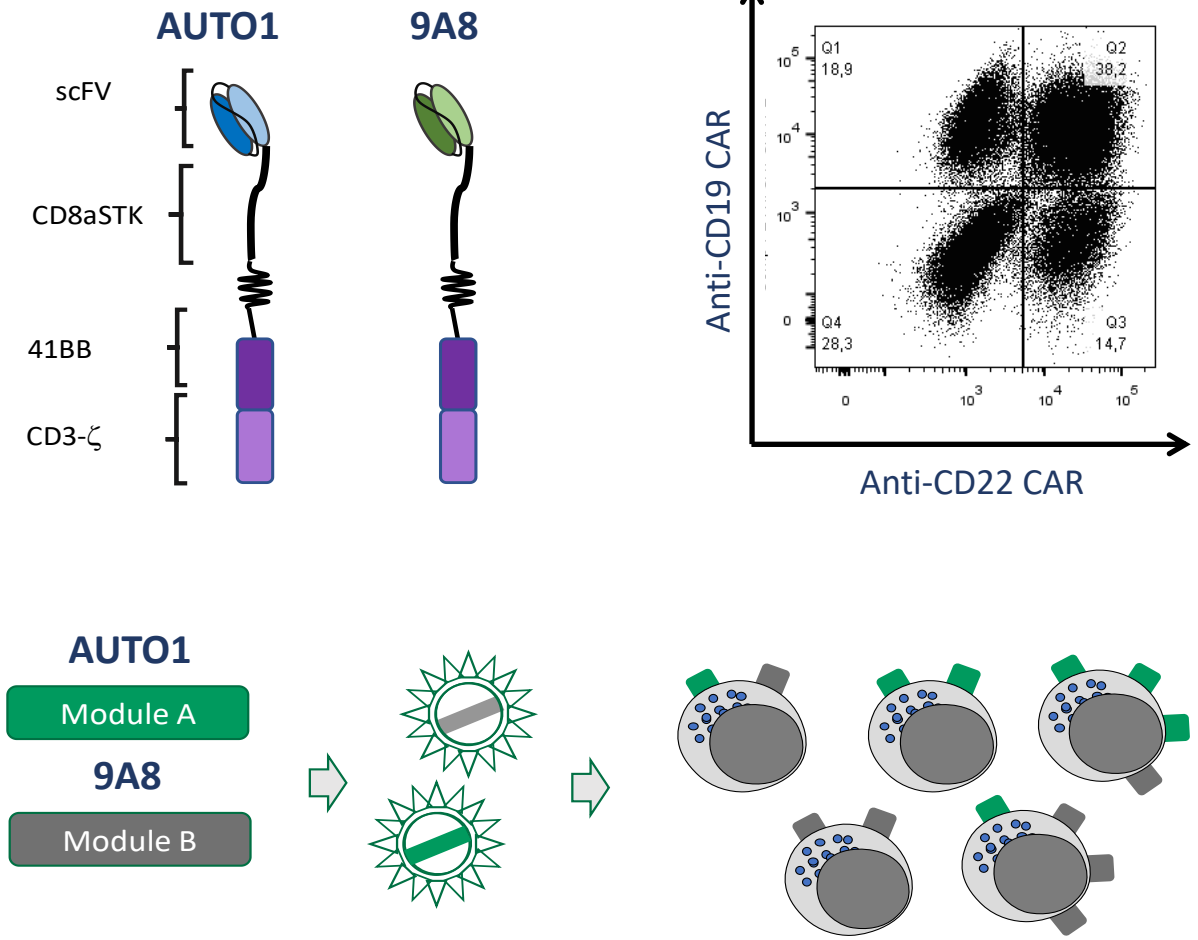
CD22 CAR selected due to sensitivity to low density antigen

- 18 novel anti-CD22 binders identified and screened for activity in a 4-1BB second generation CAR format
- Stimulations were performed with target cells expressing high (>6000 mols/cell) and low densities of CD22 (approx. 250 mols / cell)

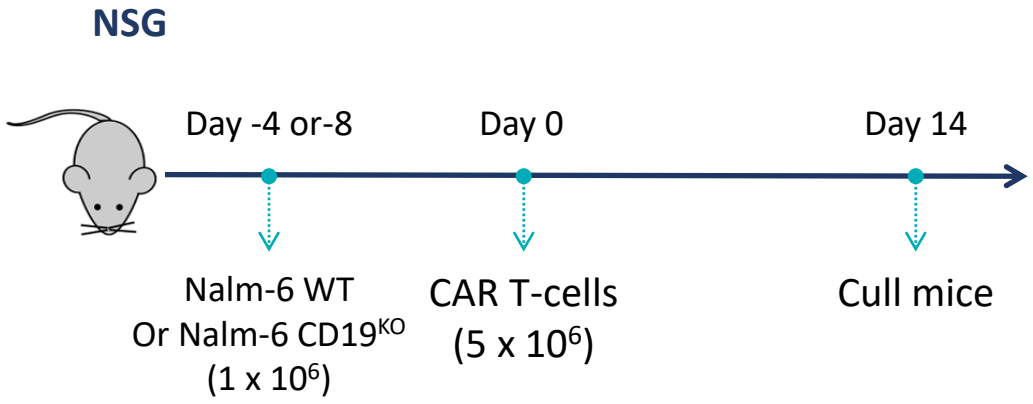


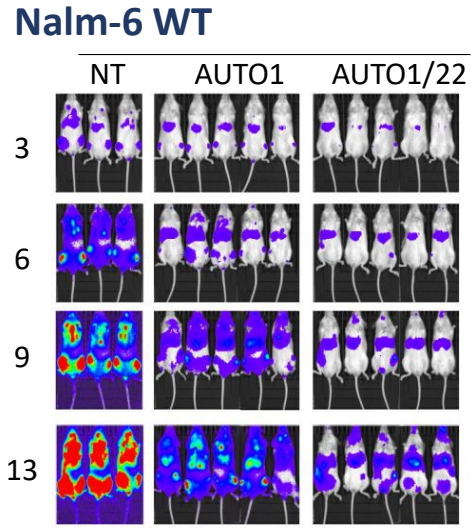
AUTO1/22 utilises co-transduction approach

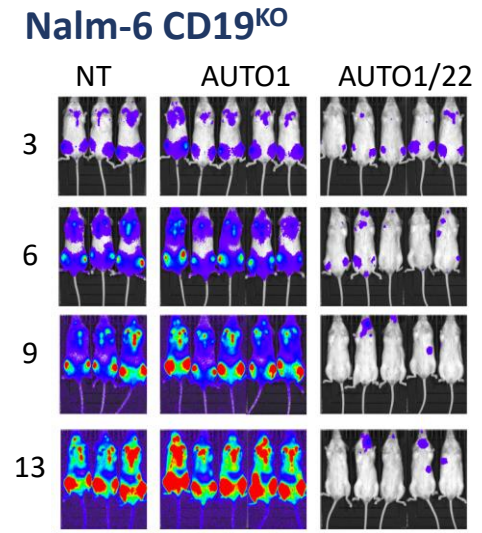
Adds to the unique properties of obe-cel

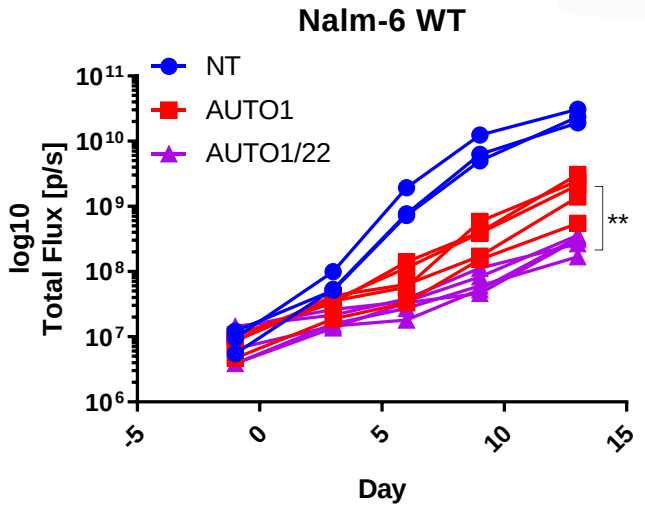


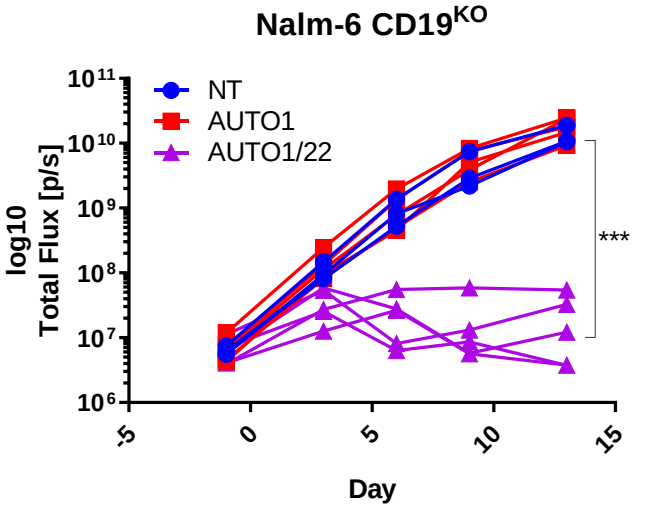
AUTO1/22: enhanced in vivo anti-tumor efficacy











Single and double positive CAR T cell populations can be detected

Engraftment of AUTO1/22 at 28 days

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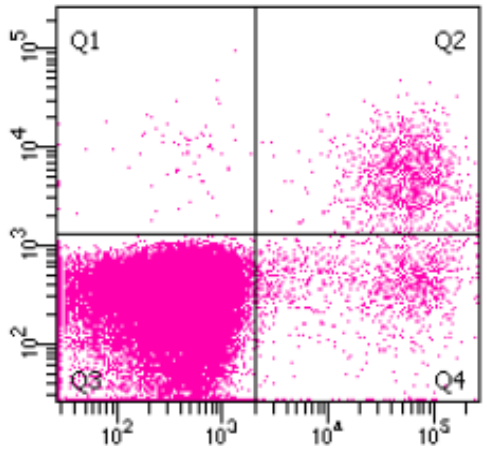
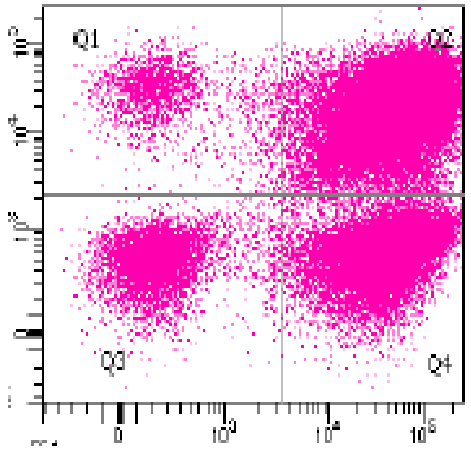
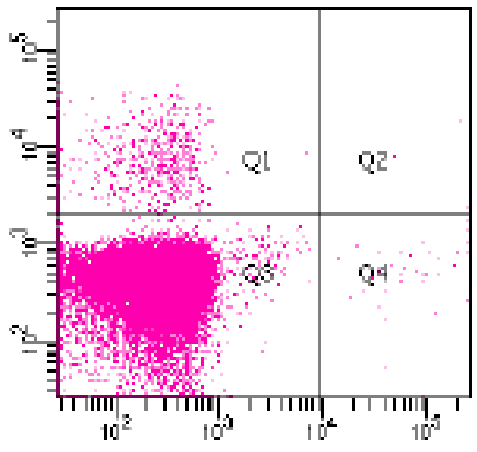
Patient 1



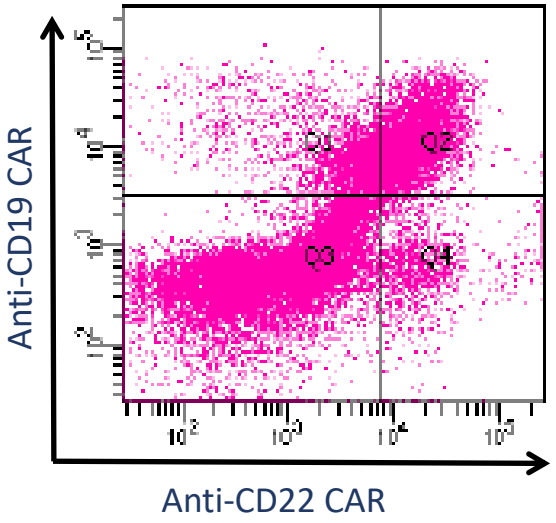
Patient 2



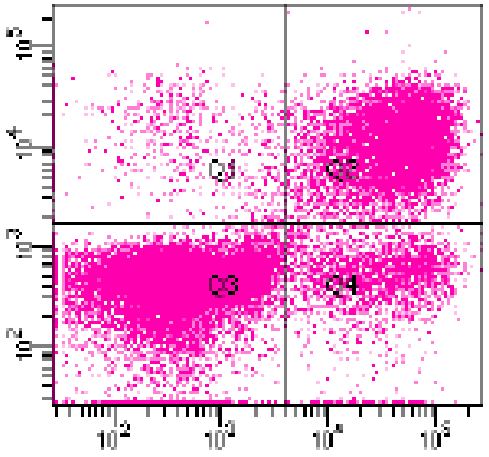
Patient 3



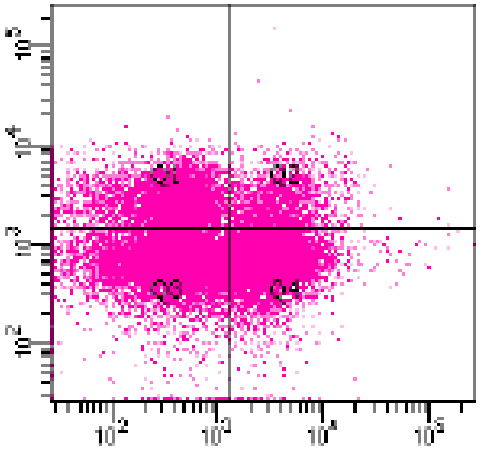
Patient 4



Patient 5



Patient 6



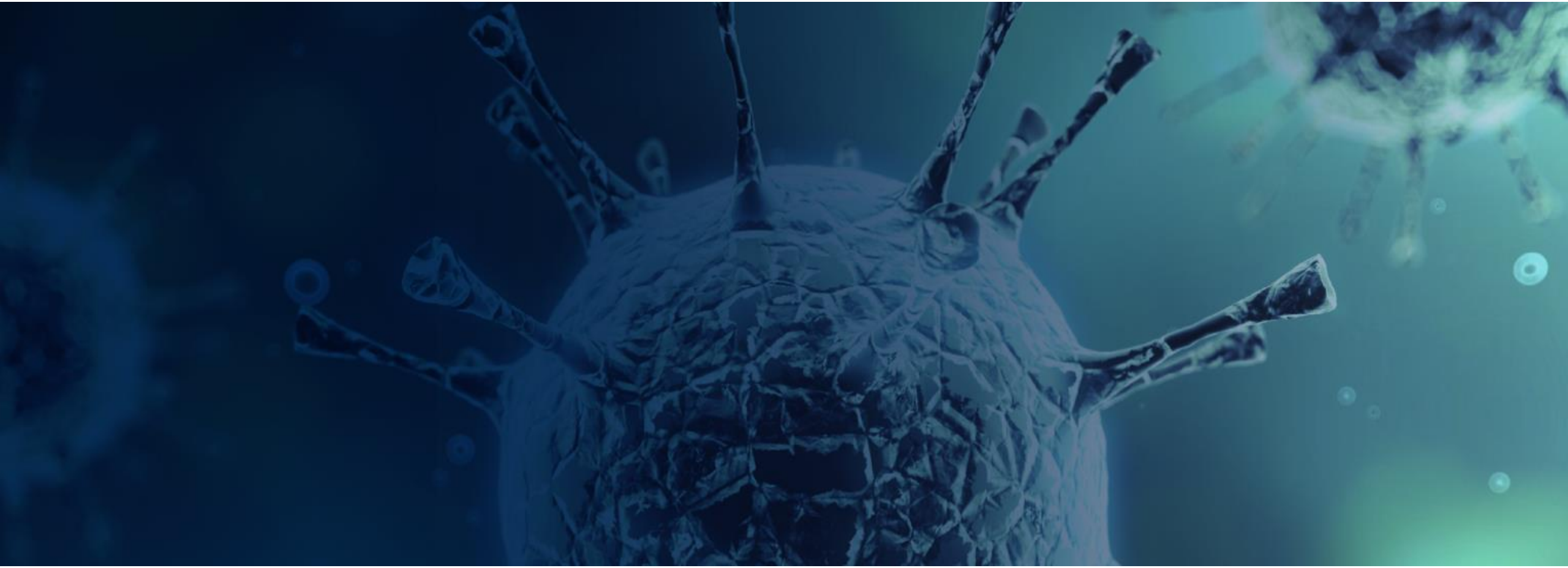
AUTO1/22 – A dual targeting CAR T therapy

Currently being tested in pediatric ALL

- AUTO1/22 builds on excellence of CD19 targeting with obe-cel; adds co-targeting of CD22
- Eliminates targets that express low density CD22 molecules
- Effective in-vivo model of CD19 negative escape
- Six patients* have been dosed. All show engraftment of single and double CAR positive populations by flow cytometry

Full cohort and longer term follow up expected in H1 2022

* As of the cut-off date of October 21, 2021



Summary & Next Steps

Dr. Christian Itin, CEO

Obe-cel poised for value inflection in 2022

Unique CAR T designs drives potentially best in class product profile

Autolus

Obe-cel Adult ALL

- Clinical data in adult ALL continues to support potential best-in-class profile
- Morphological EFS for obe-cel in ALLCAR19 was 46% at 24 months, with a median follow-up of 29.3 months
- FELIX Phase 1 b data is consistent with ALLCAR19 data
  - Activity: high CR/ CRi rate
  - Safety: No Grade ≥ 3 CRS. Only 2/16 (13%) ICANS in FELIX Phase 1b study, 1/16 (6%) Grade 3 ICANS
- Long term CAR T persistence drives durability of effect

Obe-cel Franchise

- Obe-cel demonstrated a metabolic CR in 13/13 patients with FL, MCL and DLBCL
- No ICANS or severe Grade ≥ 3 CRS events in patients with r/r FL, MCL, DLBCL and CLL
- Six patients have received AUTO1/22. All show engraftment of single and double CAR positive populations by flow cytometry

*Roddie et al. “Durable responses and low toxicity after fast off-rate CD19 CAR-T therapy in adults with relapsed/ refractory B-ALL.” DOI: 10.1200/JCO.21.00917 Journal of Clinical Oncology
**Roddie et al. “Early Safety and Efficacy Findings of AUTO1 (CAT19), a Fast-Off Rate CD19 CAR, in Relapsed/Refractory Indolent B Cell Lymphomas.” EHA annual meeting, June 11 2021, abstract EP788. EHA Investor slide presentation

Building a market leading franchise based on obe-cel

Anchored in adult and pediatric ALL with options to move into additional B cell malignancies

obe-cel franchise

PRODUCT	INDICATION	STUDY	STATUS
obe-cel	Adult ALL	FELIX	Study enrolling, Pivotal data in 2022
obe-cel	B-NHL & CLL	ALLCAR-19	Study enrolling, Further data in Q4 2021
obe-cel	Primary CNS Lymphoma	CAROUSEL	Study enrolling, Data in Q4 2021
AUTO1 /22	Pediatric ALL	CARPALL	Study enrolling, Data in Q4 2021

- Obe-cel: potentially delivering transformational outcomes in adult ALL
- iNHL, CLL, DLBCL, PCNSL: generating options to move beyond ALL
- AUTO1/22: addressing CD19 antigen loss–driven relapses in pediatric ALL


Q&A