Autolus

Developing Next Generation Programmed T Cell Therapies

ASH Analyst Meeting and Webcast

December 2023

Disclaimer

These slides contain forward-looking statements within the meaning of the "safe harbor" provisions of the Private Securities Litigation Reform Act of 1995. Forward-looking statements are statements that are not historical facts, and in some cases can be identified by terms such as "may," "will," "could," "expects," "plans," "anticipates," and "believes." These statements include, but are not limited to, statements regarding Autolus' development of the obe-cel program; the profile and potential application of obe-cel in additional disease settings; the future clinical development, efficacy, safety and therapeutic potential of the Company's product candidates, including progress, expectations as to the reporting of data, conduct and timing and potential future clinical activity and milestones; expectations regarding the initiation, design and reporting of data from clinical trials; expectations regarding the regulatory approval process for any product candidates; the benefits of the collaboration between Autolus and Blackstone, including the potential and timing to receive milestone payments and pay royalties under the terms of the strategic collaboration; the Company's current and future manufacturing capabilities; and the Company's anticipated cash runway. Any forward-looking statements are based on management's current views and assumptions and involve risks and uncertainties that could cause actual results, performance, or events to differ materially from those expressed or implied in such statements. These risks and uncertainties include, but are not limited to, the risks that Autolus' preclinical or clinical programs do not advance or result in approved products on a timely or cost effective basis or at all; the results of early clinical trials are not always being predictive of future results; the cost, timing and results of clinical trials; that many product candidates do not become approved drugs on a timely or cost effective basis or at all; the ability to enroll patients in clinical trials; possible safety and efficacy concerns. For a discussion of other risks and uncertainties, and other important factors, any of which could cause Autolus' 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 with the Securities and Exchange Commission on March 7, 2023, as well as discussions of potential risks, uncertainties, and other important factors in Autolus' subsequent filings with the Securities and Exchange Commission. All information in this presentation is as of the date of the release, and Autolus 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. You should, therefore, not rely on these forward-looking statements as representing the Company's views as of any date subsequent to the date of this presentation.

Agenda

- Welcome and Introduction: Rob Dolski, CFO
- Opening Remarks: Dr. Christian Itin, CEO
- FELIX pooled analysis in B-ALL: Dr. Claire Roddie, Associate Professor Haematology and Honorary Consultant Haematologist, Cancer Institute, University College London
- Building the obe-cel Opportunity and Next Steps: Dr. Christian Itin, CEO
- Q&A: Dr. Christian Itin and Dr. Claire Roddie

Building a leading CAR T company developing transformational therapies for cancer and autoimmune diseases

Obe-cel continues to demonstrate a potential best-in-class risk/benefit ratio in r/r adult ALL

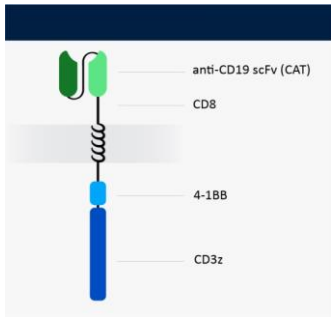
- Clinical data updates at 2023 American Society of Hematology (ASH)
  - Obe-cel: oral presentation – pooled analysis of the ongoing FELIX Phase Ib/II study
  - Obe-cel: poster presentation – pooled analysis from ALLCAR19 and FELIX Phase Ib studies in B-ALL and ALLCAR19 extension in B-NHL and CLL
  - Obe-cel: poster presentation – manufacturing for the FELIX study*
  - AUTO8: oral presentation – MCARTY Phase I study
- Recent corporate updates
  - Announced November 27th our submission of obe-cel's Biologics License Application (BLA) to the FDA

* Poster to be presented at ASH on Monday, December 11, 2023, 6:00 PM - 8:00 PM PT.

Reminder of obe-cel's unique mechanism of action

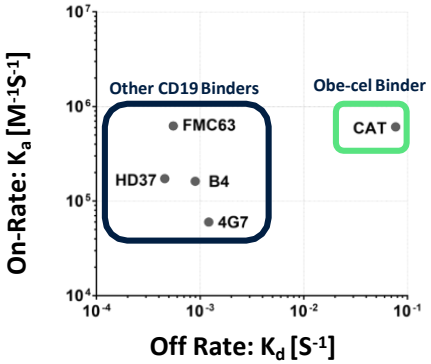
Designed for increased activity and reduced toxicity

Differentiated CD19 binder



CD19 binder with fast off-rate

Fast off-rate



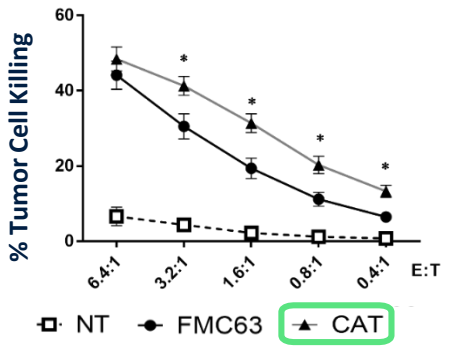
Shorter half-life of interaction compared to binders used in approved products

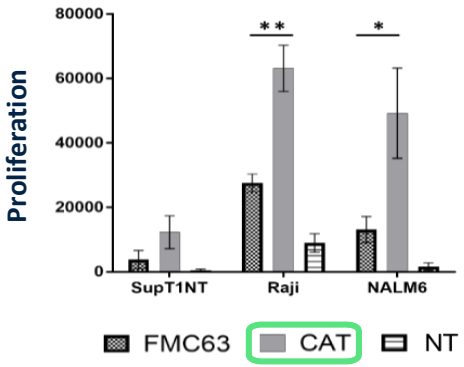
- obe-cel = 9.8 seconds
- Kymriah® = 21 minutes

Potential for improved potency, reduced toxicity

- Avoids over-activation of CAR T cells → Reduced toxicities
- Increases CAR T peak expansion → Improved persistence
- Avoids exhaustion of CAR T-cells → Improved engraftment, Improved persistence

Enhanced cytotoxicity and proliferation





Ghorashian et al. *Nature Medicine 2019*

ASH 2023

FELIX pooled analysis

Dr. Claire Roddie, Associate Professor Haematology and Honorary Consultant Haematologist, Cancer Institute, University College London

Publication Number: 222

OBECABTAGENE AUTOLEUCEL (OBE-CEL, AUTO1) FOR RELAPSED/REFRACTORY ADULT B-CELL ACUTE LYMPHOBLASTIC LEUKEMIA (R/R B-ALL): POOLED ANALYSIS OF THE ONGOING FELIX PHASE IB/II STUDY

Claire Roddie,[1] Karamjeet S. Sandhu,[2] Eleni Tholouli,[3] Paul Shaughnessy,[4] Pere Barba,[5] Manuel Guerreiro,[6] Michael R. Bishop,[7] Jean A. Yared,[8] Armin Ghobadi,[9] Deborah Yallop,[10] Aaron C. Logan,[11] Amer M. Beitinjaneh,[12] Jeremy M. Pantin,[13] Martha L. Arellano,[14] Sridhar Chaganti,[15] Ram Malladi,[16] Tobias Menne,[17] Virginia Escamilla Gómez,[18] Katharine Hodby,[19] Krishna Gundabolu,[20] Luke Mountjoy,[21] Kristen M. O'Dwyer,[22] Sameem Abedin,[23] Hassan B. Alkhateeb,[24] Bijal D. Shah,[25] Pierre Lao-Sirieix,[26] Gianfranco Pittari,[27] Kapil Saxena,[28] Yiyun Zhang,[28] Wolfram Brugger,[29] Martin A. Pule,[26] Jae H. Park,[30] Daniel J. DeAngelo,[31] Elias Jabbour[32]

[1]University College London Cancer Institute, London, UK; [2]City of Hope National Medical Center, Duarte, CA, USA; [3]Manchester Royal Infirmary, Manchester, UK; [4]Sarah Cannon Transplant and Cellular Therapy Program, Methodist Hospital, San Antonio, TX, USA; [5]Hospital Universitari Vall d'Hebron-Universitat Autónoma de Barcelona, Barcelona, Spain; [6]Hospital Universitari I Politècnic La Fe, Valencia, Spain; [7]The David and Etta Jonas Center for Cellular Therapy, University of Chicago, Chicago, IL, USA; [8]University of Maryland, Baltimore, MD, USA; [9]Washington University School of Medicine, St. Louis, MO, USA; [10]King's College Hospital London, UK; [11]Hematology, Blood and Marrow Transplantation, and Cellular Therapy Program, University of California at San Francisco, San Francisco, CA, USA; [12]University of Miami, Miami, FL, USA; [13]Sarah Cannon Transplant and Cellular Therapy Program, Nashville, TN, USA; [14]Winship Cancer Institute of Emory University, Atlanta, GA, USA; [15]University Hospitals Birmingham NHS Foundation Trust, Birmingham, UK; [16]Cambridge University Hospitals NHS Foundation Trust, Cambridge, UK; [17]Newcastle Upon Tyne NHS Hospitals Foundation Trust, Newcastle, UK; [18]Hospital Universitario Virgen del Rocío Sevilla, Seville, Spain; [19]University Hospital Bristol, Bristol, UK; [20]University of Nebraska Medical Center, Omaha, NE, USA; [21]Colorado Blood Cancer Institute, Denver, CO, USA; [22]University of Rochester Medical Center, Rochester, NY, USA; [23]Medical College of Wisconsin, Milwaukee, WI, USA; [24]Mayo Clinic, Rochester, MN, USA; [25]Moffitt Cancer Center, Tampa, FL, USA; [26]Autolus Therapeutics, London, UK; [27]Autolus Therapeutics, Basel, Switzerland; [28]Autolus Therapeutics, Rockville, MD, USA; [29]Autolus Therapeutics, Munich, Germany; [30]Memorial Sloan Kettering Cancer Center, New York, NY, USA; [31]Dana-Farber Cancer Institute, Boston, MA, USA; [32]University of Texas MD Anderson Cancer Center, Houston, TX, USA

Background

- Obecabtagene autoleucel (obe-cel) is an autologous CAR-T cell product, which utilizes a fast off-rate CD19 binder to reduce toxicity and improve persistence[1,2]
- The clinical activity of obe-cel has been evaluated in Phase I studies in R/R pediatric[1] and adult B-ALL,[2] and other B-cell malignancies including B-NHL and B-CLL[3]
- The FELIX study (NCT04404660) is a pivotal study of obe-cel in R/R adult B-ALL; preliminary results from the Phase IIA cohort were recently presented[4]

We present results from the FELIX Phase Ib/II study as a pooled analysis of all patients treated to date with obe-cel, including patients with low leukemic burden* at treatment

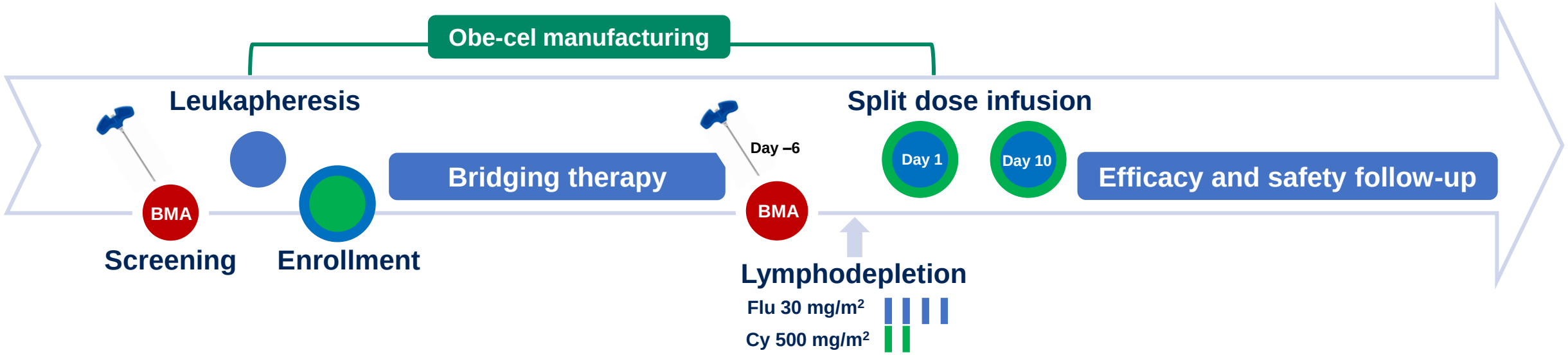
*Defined as morphological remission per investigator assessment (<5% BM blasts without EMD) as measured at screening and lymphodepletion

B-ALL, B-cell acute lymphoblastic leukemia; B-CLL, B-cell chronic lymphocytic leukemia; BM, bone marrow; B-NHL, B-cell non-Hodgkin lymphoma; CAR-T, chimeric antigen receptor T-cell; CD19, cluster of differentiation 19; EMD, extramedullary disease; R/R, relapsed/refractory

1. Ghorashian S, et al. Nat Med 2019;25(9):1408–14; 2. Roddie C, et al. J Clin Oncol 2021;39(30):3352–63; 3. Roddie C, et al. Blood 2022;140(Suppl. 1):7452–3, ASH abstract; 4. Roddie C, et al. J Clin Oncol 2023;41(16 Suppl):7000

FELIX: obe-cel tested in adults with R/R B-ALL

Study design with leukemic burden-adjusted split dosing

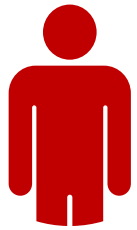


Lymphodepletion → **Leukemia burden-adjusted split dosing based on BM at Day –6**

Lymphodepletion	Leukemia burden-adjusted split dosing based on BM at Day –6		
BM blasts ≤20%	100 × 10^6 CAR-T cells	CRS Grade <2 No ICANS	310 × 10^6 CAR-T cells
BM blasts >20%	10 × 10^6 CAR-T cells		400 × 10^6 CAR-T cells

B-ALL, B-cell acute lymphoblastic leukemia; BM, bone marrow; BMA, bone marrow analysis; CAR-T, chimeric antigen receptor T-cell; CRS, cytokine release syndrome; cy, cyclophosphamide; flu, fludarabine; ICANS, immune effector cell-associated neurotoxicity syndrome; obe-cel, obecabtagene autoleucel; R/R, relapsed/refractory

FELIX: patient eligibility and endpoints



Key eligibility criteria

- R/R adult B-ALL*
- Age ≥18 years

Cohort A
≥5% BM blasts at screening

Cohort B
MRD-positive at screening

Cohort C
Isolated EMD at screening

Selected endpoints‡

- CR/CRi rate per IRRC
- DoR
- EFS§
- OS
- MRD-negativity rate($<10^{-4}$)
- Safety
- CAR-T expansion/persistence
- Manufacture feasibility

*R/R B-ALL: primary refractory; first relapse if first remission ≤12 months; R/R disease after ≥2 lines of systemic therapy; R/R disease after allogeneic transplant; R/R Philadelphia chromosome-positive ALL if intolerant to/failed two lines of any TKI or one line of second-generation TKI, or if TKI therapy is contraindicated

‡Primary endpoints: Cohorts A and C, ORR defined as the proportion of patients achieving CR or CRi; Cohort IIB, the proportion of patients achieving MRD-negative remission ($<10^{-4}$ leukemic cells)

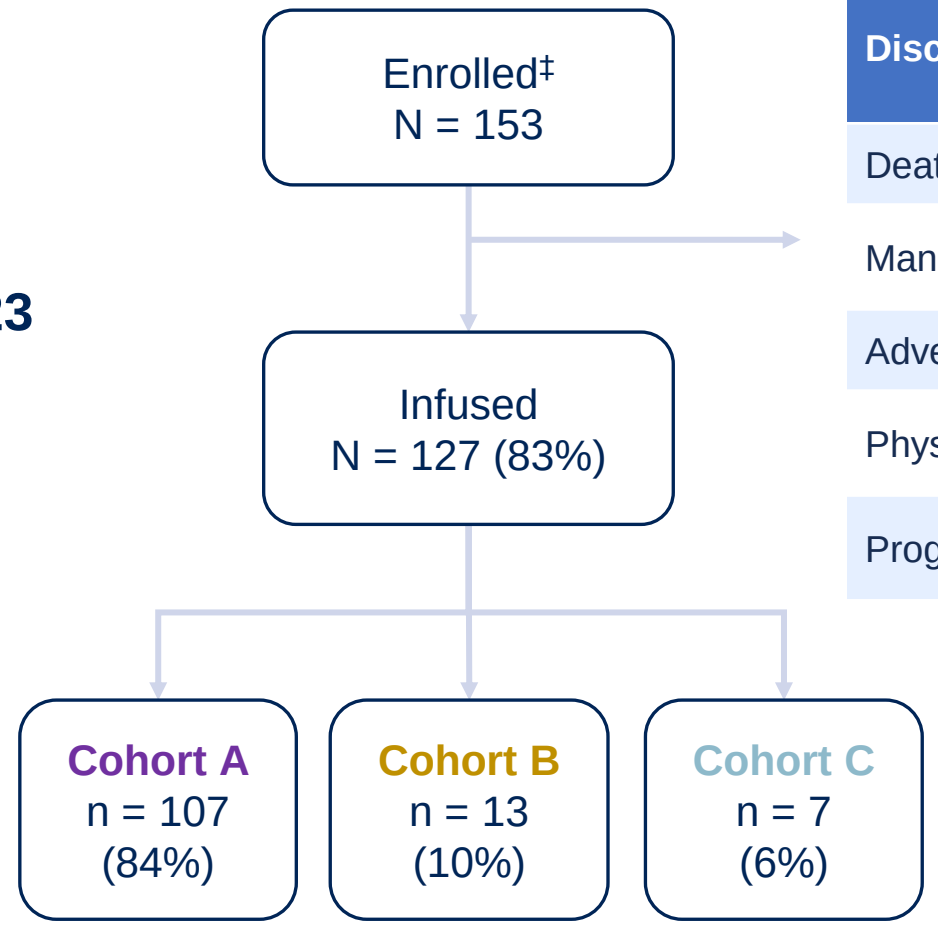
§EFS: the time from date of first infusion to the earliest of treatment failure, relapse, or death from any cause

ALL, acute lymphoblastic leukemia; B-ALL, B-cell acute lymphoblastic leukemia; BM, bone marrow; CAR-T, chimeric antigen receptor T-cell; CR, complete remission; CRi, CR with incomplete hematologic recovery; DoR, duration of remission; EFS, event-free survival; EMD, extramedullary disease; IRRC, Independent Response Review Committee; MRD, measurable residual disease; ORR, overall remission rate; OS, overall survival; R/R, relapsed/refractory; TKI, tyrosine kinase inhibitor

FELIX: patient disposition

127/153 (83%) enrolled patients received obe-cel*

Data cut-off date: September 13, 2023



Discontinued	n (%)
	26 (17)
Death	15 (10)
Manufacturing-related	7 (5)
Adverse event	2 (1)
Physician decision	1 (0.7)
Progressive disease	1 (0.7)

*Seven patients received Dose 1 only
‡All eligibility criteria met and the leukapheresate accepted for manufacturing
obe-cel, obecabtagene autoleucel

FELIX: baseline characteristics

Heavily pre-treated patients (many post-allogeneic SCT)

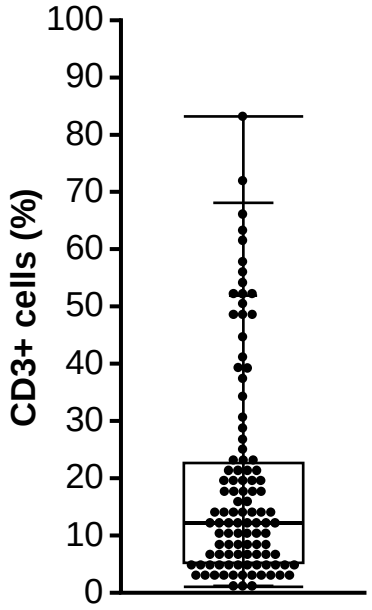
	All treated patients (N = 127)
	n (%)*
Median age, years (range)	47 (20–81)
Male/female	66/61 (52/48)
Asian Black or African American White Unknown Hispanic or Latino	16 (13) 2 (2) 94 (74) 15 (12) 38 (30)
Philadelphia chromosome-positive	36 (28)
Prior therapies, median (range) ≥3 prior lines	2 (1–6) 44 (35)
Prior allogeneic SCT	56 (44)
Prior blinatumomab Prior inotuzumab Prior blinatumomab and inotuzumab	53 (42) 40 (31) 21 (17)
BM blasts % at screening, median (range)	36 (0–100)
EMD at screening	29 (23)

*Data reported are n (%) unless otherwise stated
BM, bone marrow; EMD, extramedullary disease; SCT, stem cell transplant

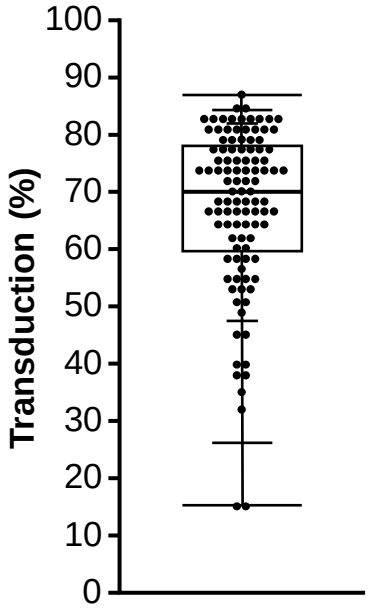
FELIX: obe-cel manufacturing

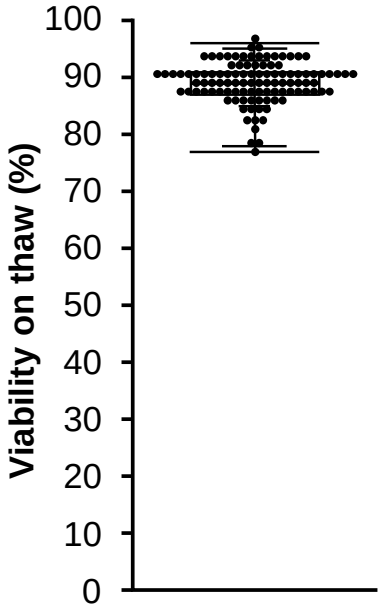
Robust and rapid manufacturing, despite variable starting material

Starting material quality

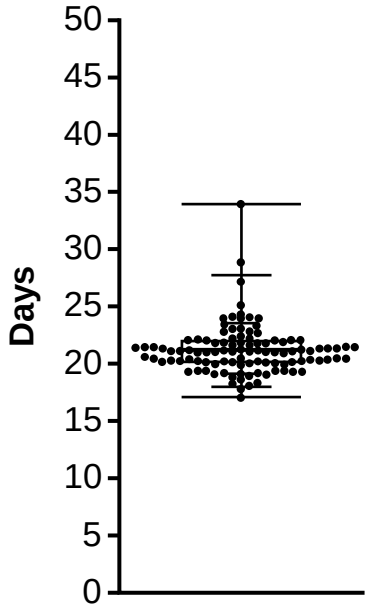


Release parameters





Vein-to-release time



- Obe-cel was released for 95% of patients, with a median time from vein-to-release of 22 days
- Consistent manufacturing was observed, despite leukapheresis from patients with multiple lines of prior therapy (many with prior allogeneic SCT) and high leukemic burden

For more details on obe-cel manufacturing, please see poster 4892

CD3, cluster of differentiation 3; obe-cel, obecabtagene autoleucel; SCT, stem cell transplant

FELIX: remission rate and MRD by status at lymphodepletion

High MRD-negative remission rates were observed after obe-cel

All treated patients (N = 127)

Morphologic disease* (n = 98)

- **74% of patients had CR/CRi (n = 73)**
- **95% of evaluated responders were MRD-negative‡**

No morphologic disease (n = 29)

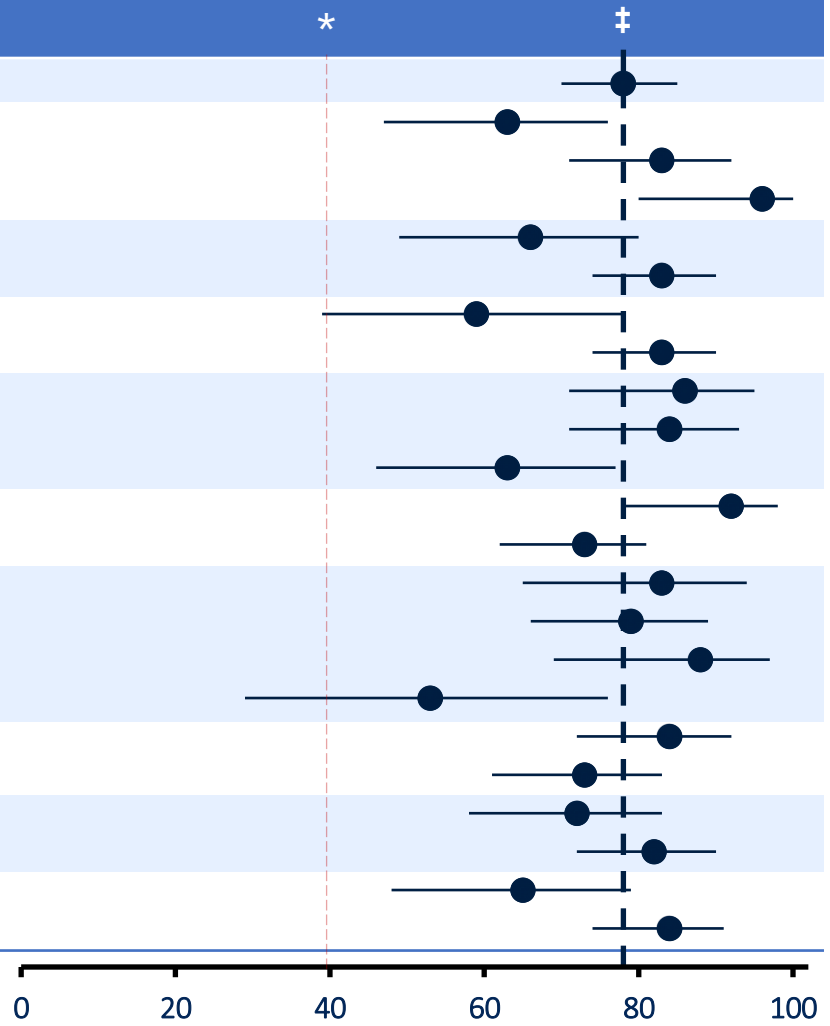
- **100% of evaluable patients were MRD-negative§**

*Morphologic disease defined as ≥5% BM blasts or presence of EMD regardless of BM blast status
‡MRD status available for 64/73 patients, as assessed by NGS or flow cytometry
§MRD status available for 27/29 patients, as assessed by NGS or flow cytometry
BM, bone marrow; CR, complete remission; CRi, CR with incomplete hematologic recovery; EMD, extramedullary disease; MRD, measurable residual disease; NGS, next-generation sequencing; obe-cel, obecabtagene autoleucel

FELIX: CR/CRi subgroup analysis per IRRC

Obe-cel demonstrated high CR/CRi rates across all subgroups

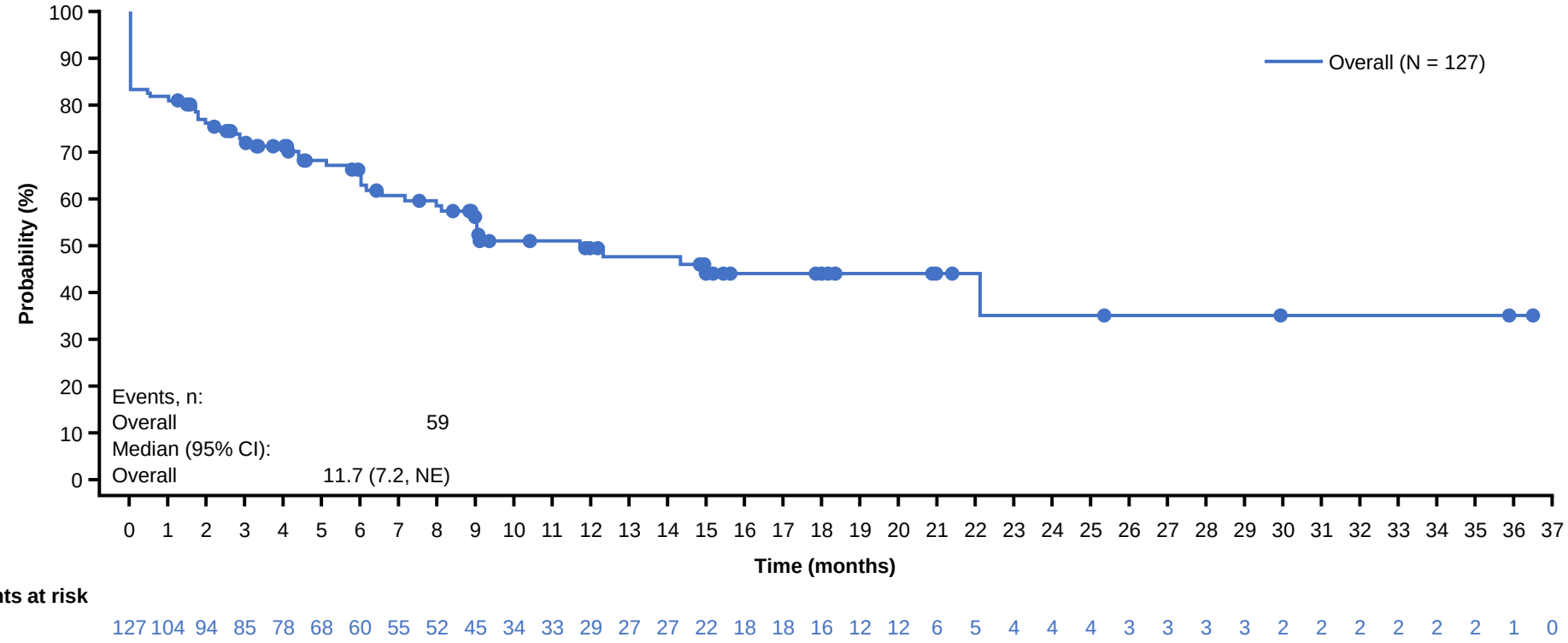
Subgroup		Total, n (%)	ORR, % (95% CI)
Overall		**127 (100)**	**78 (70, 85)**
Age, years	18–39	48 (38)	63 (47, 76)
	40–64	54 (43)	83 (71, 92)
	≥65	25 (20)	96 (80, 100)
Hispanic or Latino	Yes	38 (30)	66 (49, 80)
	No/Unknown	89 (70)	83 (74, 90)
EMD at lymphodepletion	Yes	27 (21)	59 (39, 78)
	No	100 (79)	83 (74, 90)
BM blasts % at lymphodepletion	<5	36 (28)	86 (71, 95)
	≥5−≤75	51 (40)	84 (71, 93)
	>75	40 (31)	63 (46, 77)
Philadelphia chromosome-positive	Yes	36 (28)	92 (78, 98)
	No	91 (72)	73 (62, 81)
Prior therapies	1	30 (24)	83 (65, 94)
	2	53 (42)	79 (66, 89)
	3	25 (20)	88 (69, 97)
	≥4	19 (15)	53 (29, 76)
Prior allogeneic SCT	Yes	56 (44)	84 (72, 92)
	No	71 (56)	73 (61, 83)
Prior blinatumomab	Yes	53 (42)	72 (58, 83)
	No	74 (58)	82 (72, 90)
Prior inotuzumab	Yes	40 (31)	65 (48, 79)
	No	87 (69)	84 (74, 91)



*The red dashed line denotes the Phase IIA null hypothesis (40%)
‡The black dashed line denotes the ORR among all treated patients (ORR=CR+CRi)
BM, bone marrow; CR, complete remission; CRi, CR with incomplete hematologic recovery; EMD, extramedullary disease; IRRC, Independent Response Review Committee; obe-cel, obecabtagene autoleucel; ORR, overall remission rate; SCT, stem cell transplant

FELIX: EFS in all treated patients*

The event-free survival estimate at 12 months was 50%



All treated patients (N = 127)	
Median EFS (95% CI), months	**11.7** (7.2, NE)
6-month EFS (95% CI), %	**65** (56, 73)
12-month EFS (95% CI), %	**50** (39, 59)

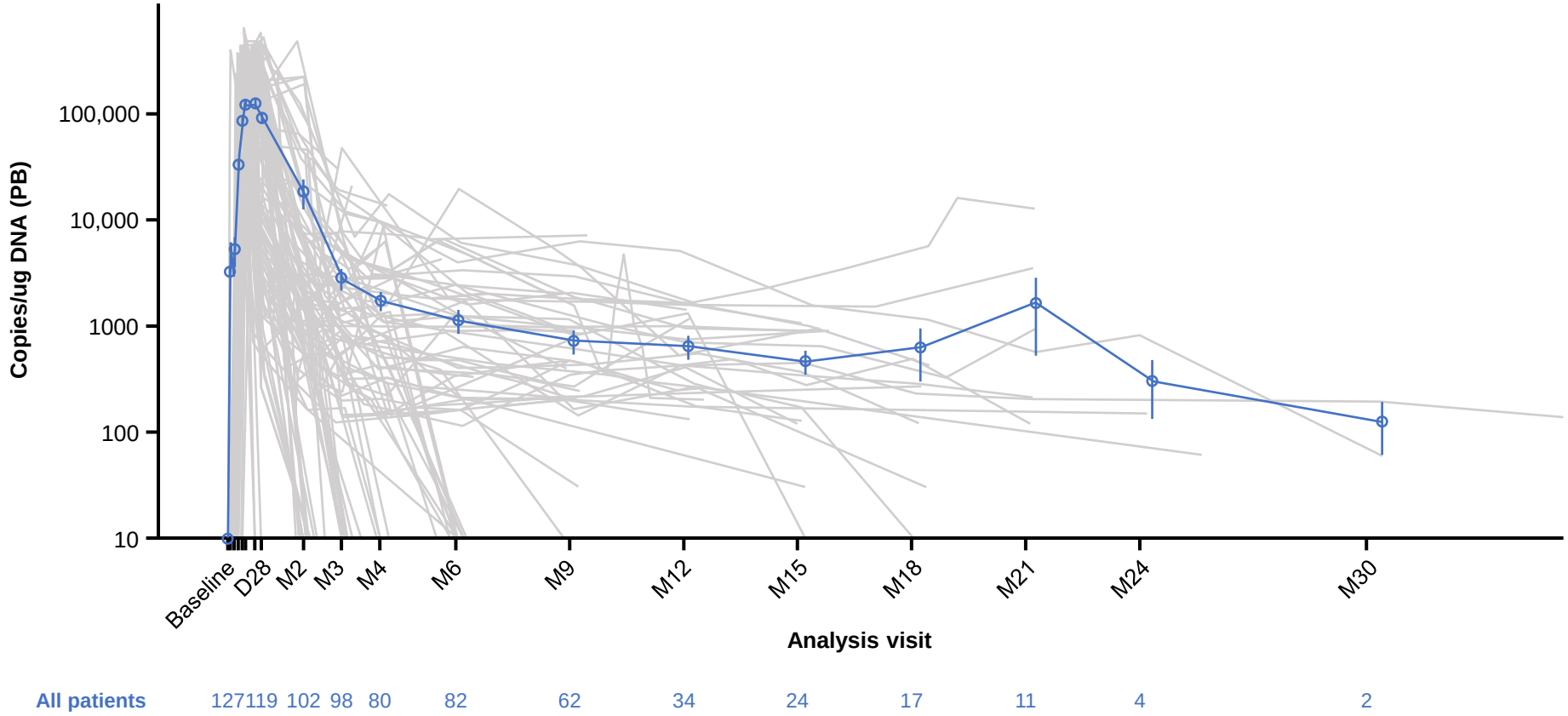
- The median follow-up time was 16.6 months (range: 3.7−36.6 months)
- 17/99 (17%) responders proceeded to SCT while in remission
- A pooled analysis from the ALLCAR19 and FELIX Phase Ib studies will be presented as a poster on Saturday, December 9, 2023 5:30–7:30pm (Roddie C, et al. Abstract 2114)

*Censoring new non-protocol anti-cancer therapies including SCT with disease assessment by IRRC (data cut-off date: September 13, 2023)
Median EFS: ITT population − 9.8 months (95% CI: 5.9, 12.9)
CI, confidence interval; EFS, event-free survival; IRRC, Independent Response Review Committee; ITT, intent-to-treat; NE, not evaluable; obe-cel, obecabtagene autoleucel; SCT, stem cell transplant

FELIX: obe-cel persistence in responders

Obe-cel has high expansion and long-term persistence

	All treated patients (N = 127)
C_{max}, copies/ug Geo-Mean, CV%	110,896 (254)
T_{max}, days Median, range	14 (2–55)
$AUC_{0–28d}$, copies/ug×d Geo-Mean, CV%	1,105,176 (212)



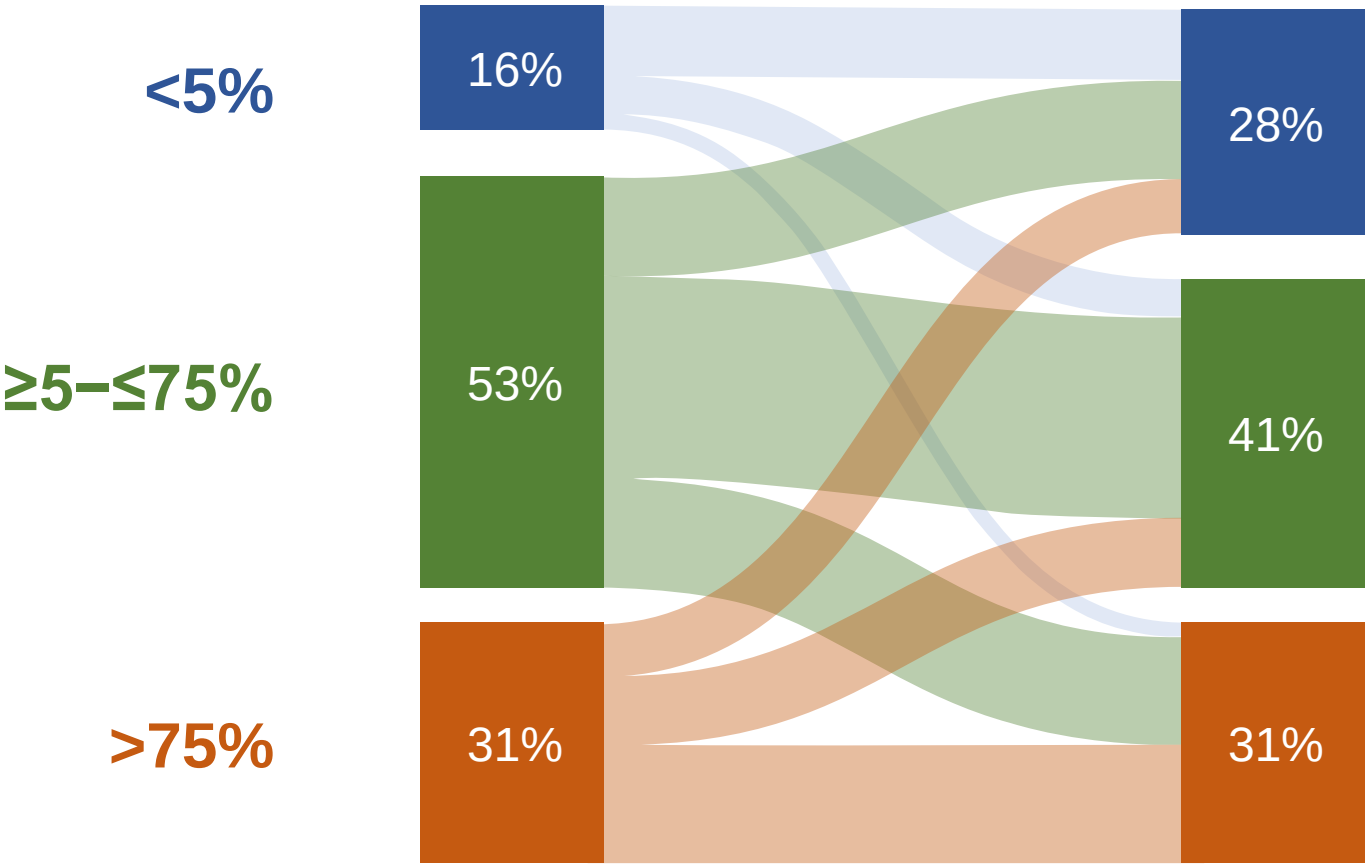
- CAR-T persistence was detected in 72% of ongoing responders at the latest follow-up

AUC, area under the curve; CAR-T, chimeric antigen receptor T-cell; C_{max}, maximum concentration; CV, coefficient of variation; d, day; D, day; Geo, geometric; M, month; obe-cel, obecabtagene autoleucel; PB, peripheral blood; T_{max}, time to maximum concentration

FELIX: leukemic burden in all treated patients

Leukemic burden at screening is not predictive of leukemic burden prior to lymphodepletion

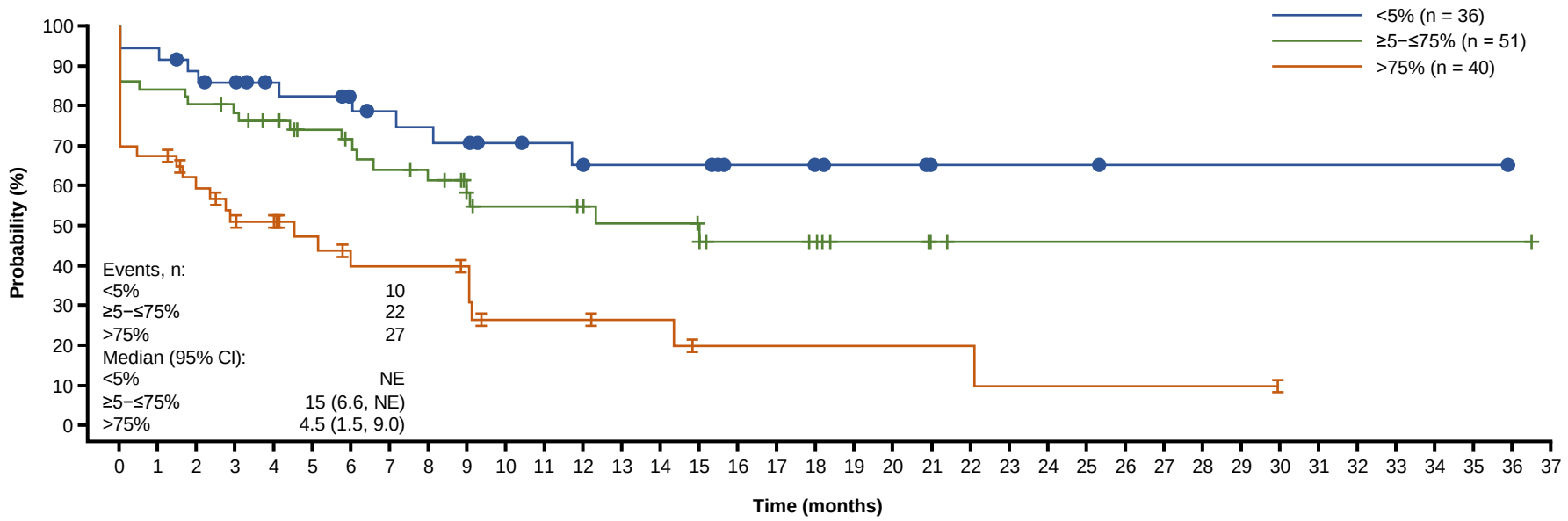
118/127 (93%) patients received bridging therapy*



*Bridging therapy per physician's choice, including inotuzumab ozogamicin
BM, bone marrow

FELIX: EFS by leukemic burden prior to lymphodepletion*

Lower leukemic burden is associated with better outcomes



Patients at risk

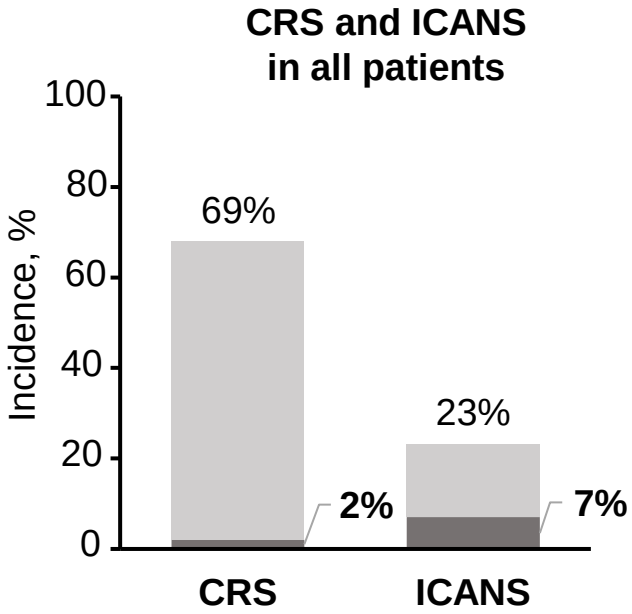
<5% (n = 36)	36	34	31	28	25	24	22	20	19	18	14	13	11	11	11	11	8	8	7	6	6	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	0	0
≥5–≤75% (n = 51)	51	43	41	39	36	31	28	25	23	18	15	15	13	12	12	9	8	8	7	4	4	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
>75% (n = 40)	40	27	22	18	17	13	10	10	10	9	5	5	5	4	4	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0

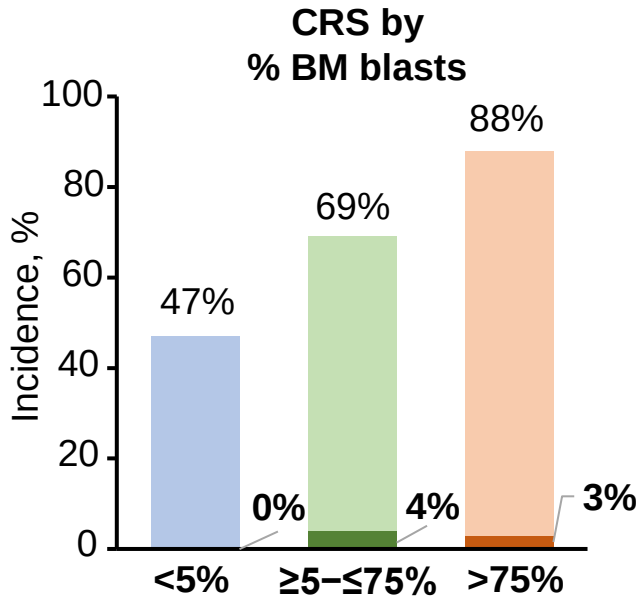
BM blasts % prior to lymphodepletion	<5% (n = 36)	≥5–≤75% (n = 51)	>75% (n = 40)
Median EFS (95% CI), months	**NE**	**15.0** (6.6, NE)	**4.5** (1.5, 9.0)
6-month EFS (95% CI), %	**83** (65, 92)	**72** (57, 82)	**40** (23, 56)
12-month EFS (95% CI), %	**65** (44, 80)	**55** (38, 69)	**27** (12, 44)

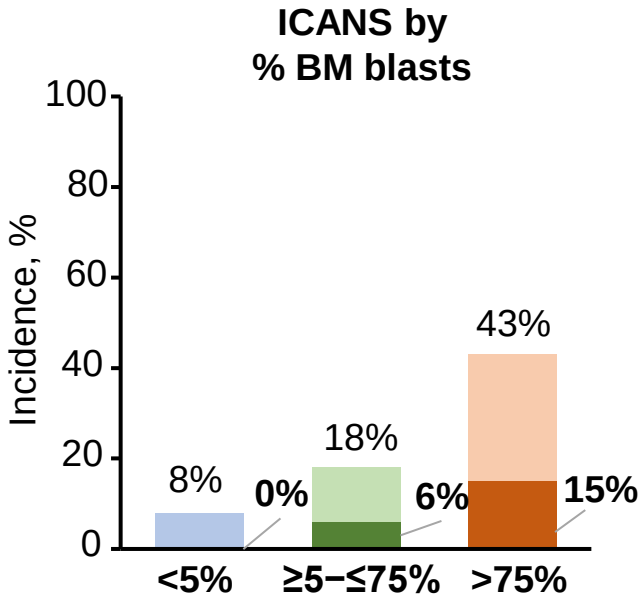
*Censoring new non-protocol anti-cancer therapies including SCT with disease assessment by IRRC (data cut-off date: September 13, 2023)
BM, bone marrow; CI, confidence interval; EFS, event-free survival; IRRC, Independent Response Review Committee; NE, not evaluable; SCT, stem cell transplant

FELIX: CRS and ICANS

Low rates of Grade ≥3 CRS and/or ICANS were observed







Light colors = grade ≤2
Dark colors = grade ≥3

BM blasts % at lymphodepletion

- No grade ≥3 CRS and/or ICANS were observed in patients with <5% BM blasts at lymphodepletion
- Vasopressors were used to treat CRS in 2.4% of patients

BM, bone marrow; CRS, cytokine release syndrome; ICANS, immune effector cell-associated neurotoxicity syndrome; ICU, intensive care unit

FELIX: Phase Ib/II conclusions

- Obe-cel successfully manufactured in 95% of leukapheresed patients
- High remission rates independent of leukemic burden at lymphodepletion
- 50% EFS estimate at 12 months, with only 17% of responders proceeding to SCT while in remission
- Favorable safety profile: 2% grade ≥3 CRS and 7% grade ≥3 ICANS
  - Severe toxicity mostly limited to patients with high leukemic burden at lymphodepletion
- Durable remission rates and toxicity inversely correlated with leukemic burden at lymphodepletion
  - Assessment of leukemic burden at lymphodepletion is essential for risk/benefit stratification

Obe-cel is effective treatment for R/R adult B-ALL, with better outcomes observed in patients with lower leukemic burden at lymphodepletion; longer follow-up is required

B-ALL, B-cell acute lymphoblastic leukemia; CRS, cytokine release syndrome; EFS, event-free survival; ICANS, immune effector cell-associated neurotoxicity syndrome; obe-cel, obecabtagene autoleucel; R/R, relapsed/refractory; SCT, stem cell transplant

FELIX: TEAEs

Favorable safety profile

TEAEs that occurred in ≥20% of patients regardless of causality	All treated patients (N = 127)	
	Any grade, %	Grade ≥3, %
Patients with any TEAE	100	81
CRS	69	2
Pyrexia	29	2
Nausea	26	2
Diarrhea	25	2
Febrile neutropenia	24	24
Anemia	24	21
Headache	24	0
Neutropenia	23	21
ICANS	23	7
Hypotension	22	5
Hypokalemia	21	6
Neutrophil count decreased	20	20

- 15% of patients were admitted to the ICU
- Two deaths were considered treatment-related per investigator assessment: neutropenic sepsis (n = 1); acute respiratory distress syndrome and ICANS (n = 1)

CRS, cytokine release syndrome; ICANS, immune effector cell-associated neurotoxicity syndrome; TEAE, treatment emergent adverse event

Acknowledgments

- The authors would like to acknowledge:
  - Patients, families, friends, and caregivers
  - Study investigators and coordinators
  - Healthcare staff at the study sites
  - Autolus Therapeutics Teams

Contact: Dr Claire Roddie c.roddie@ucl.ac.uk

ASH 2023

Longer-term follow up in B-ALL

Pooled analysis from ALLCAR 19 Phase 1b and FELIX Phase 1b trials in B-ALL

Dr. Christian Itin, CEO, Autolus

ALLCAR19 and FELIX are investigating obe-cel in adults with B-cell malignancies

- Obe-cel is an autologous CD19 CAR T-cell product with a fast off-rate CD19-binding domain designed to reduce toxicity and improve persistence[1–3]
- **ALLCAR19** (NCT02935257) is a multicenter, non-randomized, open-label Phase I study of obe-cel in patients aged ≥16 years with B-cell malignancies[1,2]
- **FELIX** (NCT04404660) is a global, open-label, single-arm Phase Ib/II study of obe-cel in patients aged ≥18 years with R/R B-ALL[3]

Here, we report long-term obe-cel data from a pooled analysis of the ALLCAR19* and FELIX† Phase Ib studies in R/R B-ALL, and from the ALLCAR19* extension phase in R/R B-CLL and B-NHL

*Data cut-off: November 01, 2023; †Data cut-off: September 13, 2023.
B-ALL, B-cell acute lymphoblastic leukemia; B-CLL, B-cell chronic lymphocytic leukemia; B-NHL, B-cell non-Hodgkin lymphoma; CAR, chimeric antigen receptor; obe-cel, obecabtagene autoleucel; R/R, relapsed/refractory.

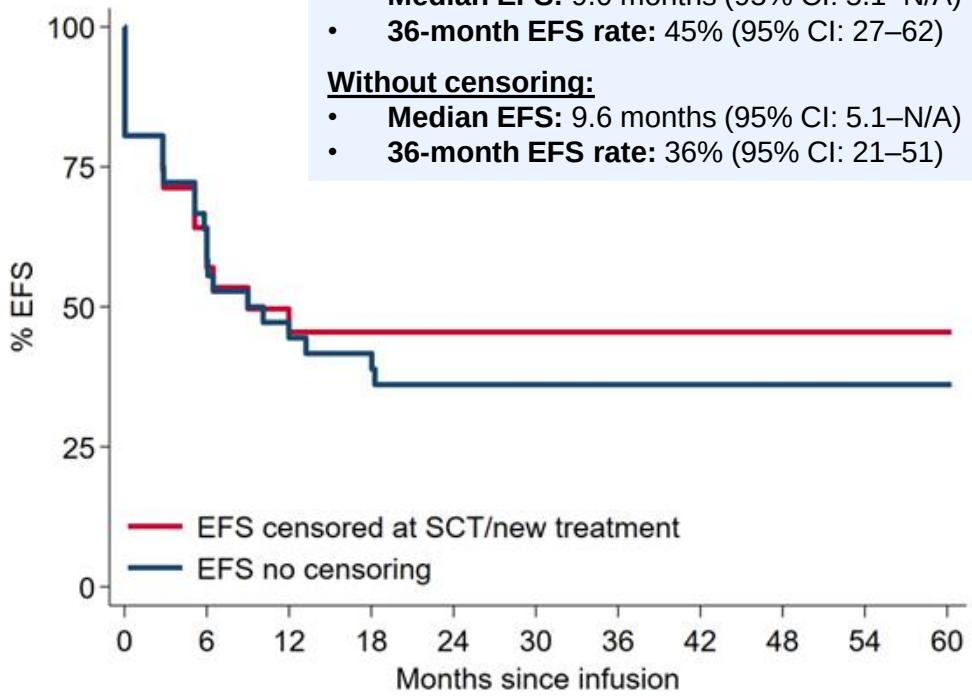
1. Roddie C, et al. *J Clin Oncol* 2021;39(30):3352–63
2. Roddie C, et al. *Blood* 2022;140(Suppl 1):7452–3
3. Roddie C, et al. *J Clin Oncol* 2023;41:16_suppl, 7000

Long-term follow up in R/R B-ALL demonstrates favorable EFS and OS

Median follow up 36.5 months; pooled analysis of Ph. 1b ALLCAR19 and Ph. 1b FELIX study in r/r B-ALL

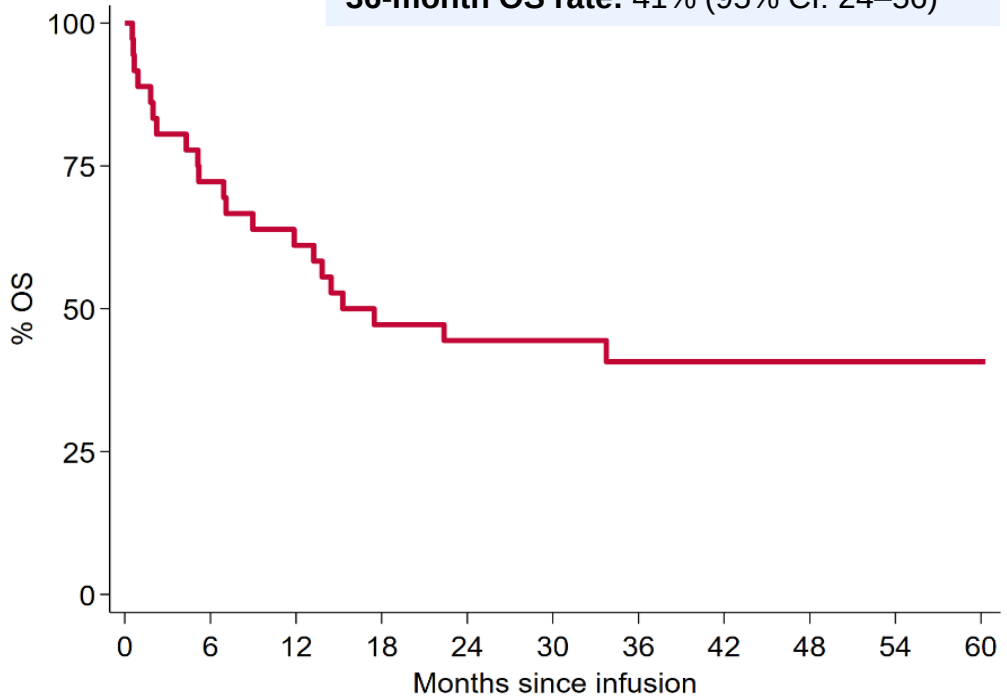
With censoring*:
- **Median EFS:** 9.0 months (95% CI: 5.1–N/A)
- **36-month EFS rate:** 45% (95% CI: 27–62)

Without censoring:
- **Median EFS:** 9.6 months (95% CI: 5.1–N/A)
- **36-month EFS rate:** 36% (95% CI: 21–51)



Number at risk											
With censoring	36	18	11	11	11	9	8	5	4	2	2
Without censoring	36	23	16	15	12	10	9	6	5	3	3

Median OS: 16.4 months (95% CI: 7.1–N/A)
36-month OS rate: 41% (95% CI: 24–56)

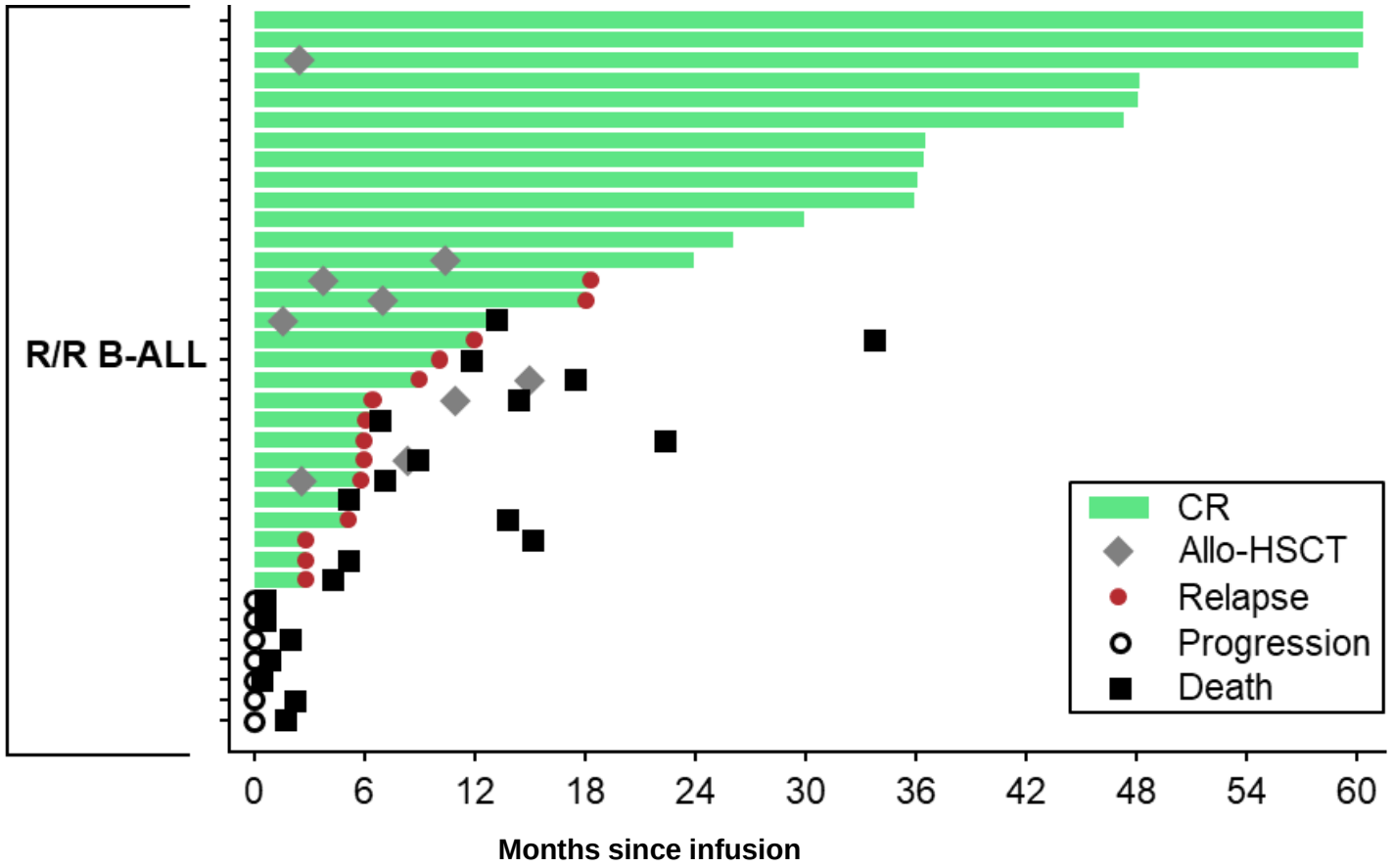


Number at risk											
	36	26	22	17	15	12	10	7	5	3	3

*Censored for allo-HSCT and other anti-cancer treatment. Investigator-assessed disease evaluations were performed locally by CT and BM biopsy for B-ALL. Allo-HSCT, allogeneic hematopoietic stem cell transplant; B-ALL, B-cell acute lymphoblastic leukemia; BM, bone marrow; CI, confidence interval; CT, computed tomography; EFS, event-free survival; N/A, not available; obe-cel, obecabtagene autoleucel; OS, overall survival; R/R, relapsed/refractory. Roddie et al, ASH 2023, Poster 2114.

Durable remissions in patients with R/R B-ALL and no new safety signals

All patients in ongoing remission were MRD negative at the last assessment



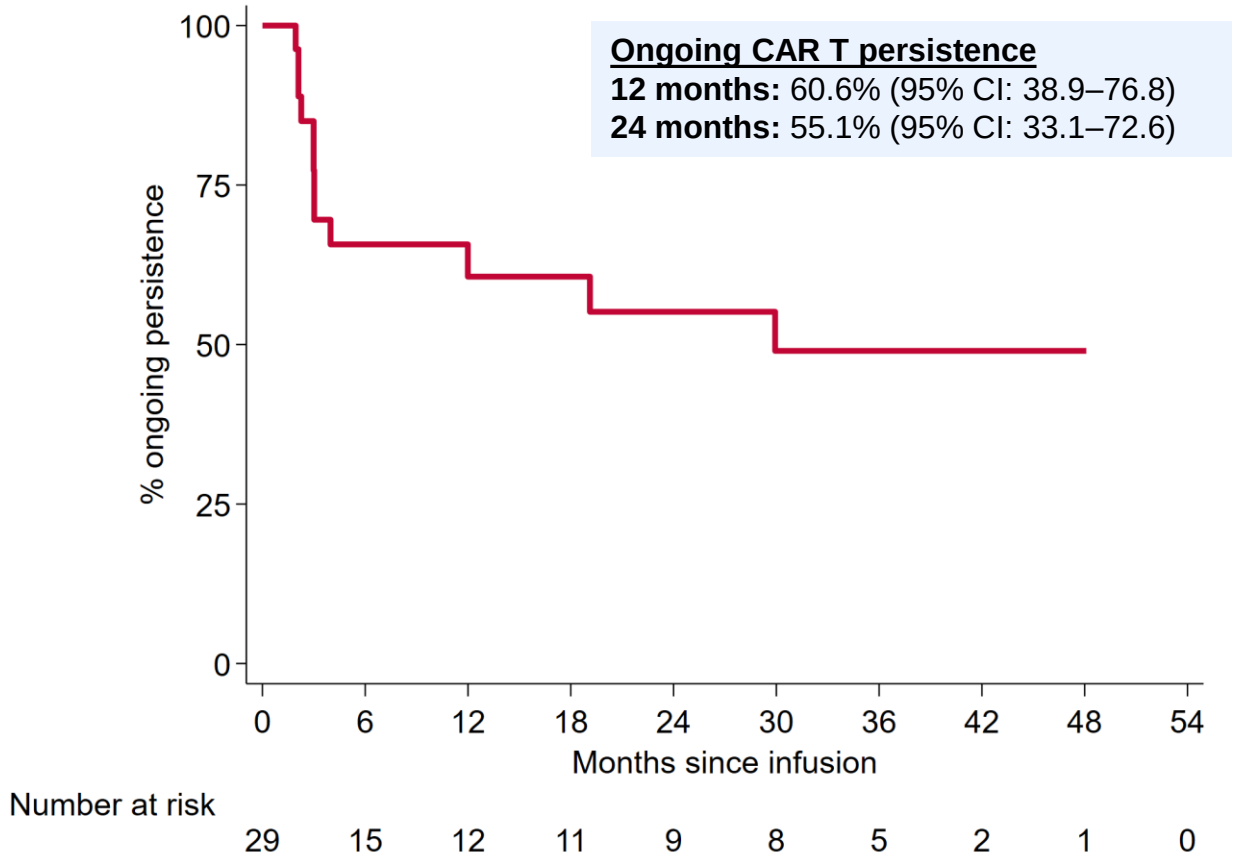
- **ORR:** 80.6% (95% CI: 64.0–91.8)
- **All patients in ongoing remission were MRD-negative at the last assessment**
- **Median DOR (n = 29):**
  Not reached (95% CI: 5.1–N/A)

- No ≥ grade 3 CRS reported
- 4/36 ≥ grade 3 ICANS reported
- No new safety signals or deaths related to obe-cel in R/R B-ALL

Investigator-assessed disease evaluations were performed locally by CT and BM biopsy for B-ALL. MRD status was determined using flow cytometry or IgH PCR/NGS (MRD-negative: $<10^{-4}$ [<0.01%]). Allo-HSCT, allogeneic hematopoietic stem cell transplant; B-ALL, B-cell acute lymphoblastic leukemia; BM, bone marrow; CI, confidence interval; CR, complete remission; CT, computed tomography; DOR, duration of response; MRD, measurable residual disease; N/A, not available; NGS, next-generation sequencing; ORR, overall response rate; PCR, polymerase chain reaction; R/R, relapsed/refractory. Roddie et al, ASH 2023, Poster 2114.

Prolonged persistence seen in most long-term R/R B-ALL responders

Obe-cel persistence since infusion



Loss of CAR T persistency was defined as the time from first obe-cel infusion to undetectable CAR T transgene (copies/µg DNA) in peripheral blood. Patients who proceeded to allo-HSCT with ongoing CAR T persistency were censored at the last result prior to receiving allo-HSCT. Allo-HSCT, allogeneic hematopoietic stem cell transplant; B-cell acute lymphoblastic leukemia; CAR T, CD19 chimeric antigen receptor (CAR) T-cell; CI, confidence interval; DNA, deoxyribonucleic acid; obe-cel, obecabtagene autoleucel; R/R, relapsed/refractory. Roddie et al, ASH 2023, Poster 2114.

Obe-cel Next Steps

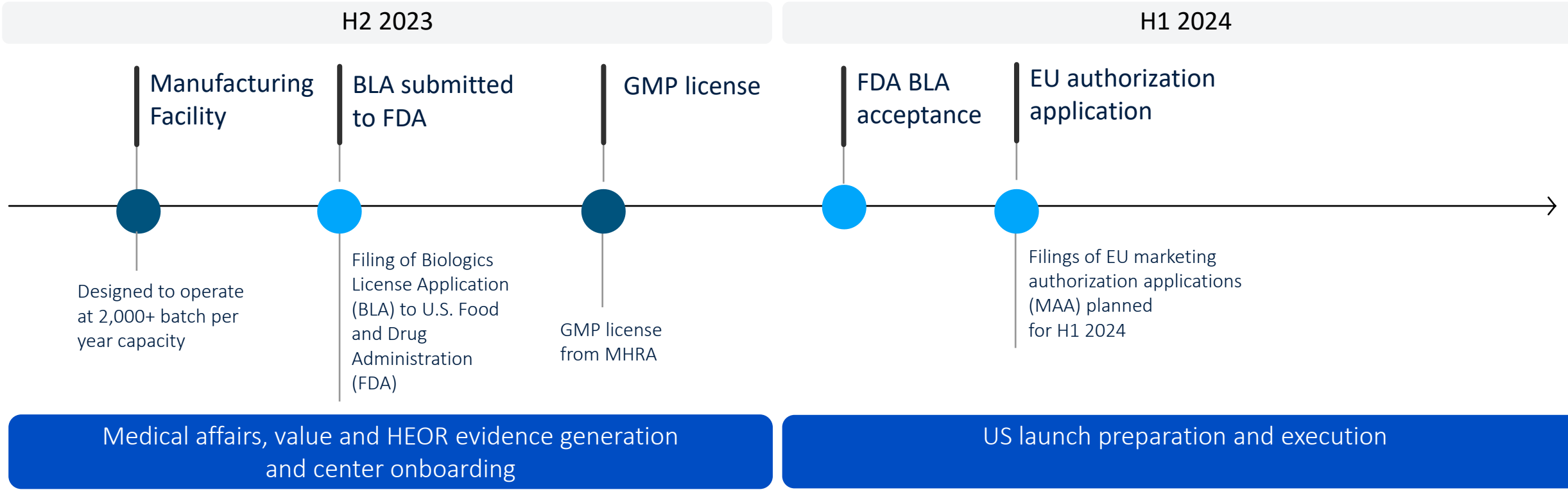
Commercial Launch Readiness in r/r aALL

Starting Phase 1 SLE study

Dr. Christian Itin, CEO, Autolus

Obe-cel steps to commercialization in r/r adult ALL

Roadmap to a 2024 commercial launch



- Regulatory
- Manufacturing
- Commercialization

Plan to start SLE Phase 1 study in early 2024

Uniquely positioned to deliver CAR T therapy in autoimmune disease

Obe-cel's potential advantages	Supporting evidence
Outstanding tolerability to drive physician and patient acceptability in rheumatology settings	✓ Potential best-in-class risk/benefit profile in pivotal FELIX trial in adult ALL ✓ Low rates of high-grade CRS and ICANS across all patients
Deep cut into the CD19+ B and plasma cell compartment to remove all autoreactive clones	✓ Demonstrated in B-ALL with very high rate of MRD negative complete remissions (97% of responders) in FELIX Phase 2 study
Development of robust, economical and scalable manufacturing and commercial infrastructure	✓ Potential approved, commercial manufacturing facility in adult ALL with attractive cost of goods at launch for SLE ✓ Commercial systems and CAR T center services established with potential adult ALL launch
High treatment effect enables smaller clinical program and accelerated regulatory path to launch	✓ Treatment effect demonstrated in Erlangen proof-of concept ✓ Clinical safety data from ALLCAR19 and FELIX as well as potential commercial patient data to supplement SLE pivotal study

Expanding the obe-cel opportunity

Deep value program with potentially broad applicability

The obe-cel product family and franchise opportunity

= ASH 2023 updates

Obe-cel
CD19

- Optimal CD19 CAR design
- Potential best-in-class efficacy and safety profile
- Supported by state-of-the-art manufacturing
- Supported by mature FELIX clinical/CMC package

→ B-ALL and B-NHL
→ B-cell mediated autoimmune disease

AUTO1/22
CD19/CD22

- Dual CD19 & CD22 Targeting
- Designed to prevent antigen negative escape
- Supported by Phase 1 data in pediatric B-ALL

→ B-ALL and B-NHL

AUTO8
CD19/BCMA

- Dual CD19 & BCMA Targeting
- Designed to induce deep and durable responses
- Phase 1 data at ASH 2023

→ Multiple Myeloma
→ B-cell and plasma cell mediated autoimmune

Obe-cel in B-NHL/B-CLL: High response rates with durable remissions

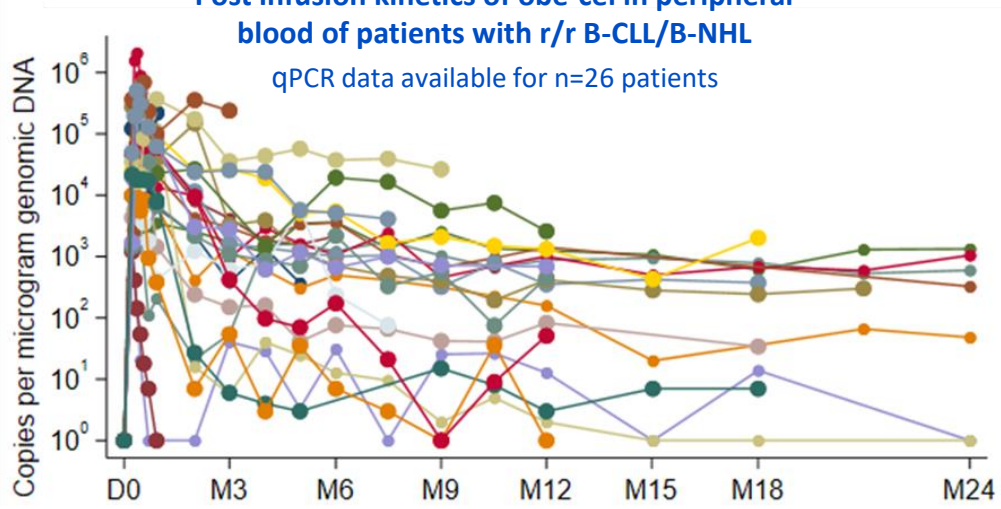
Data from ALLCAR19 extension: Long term persistence driving durable outcomes

Responses by subtype

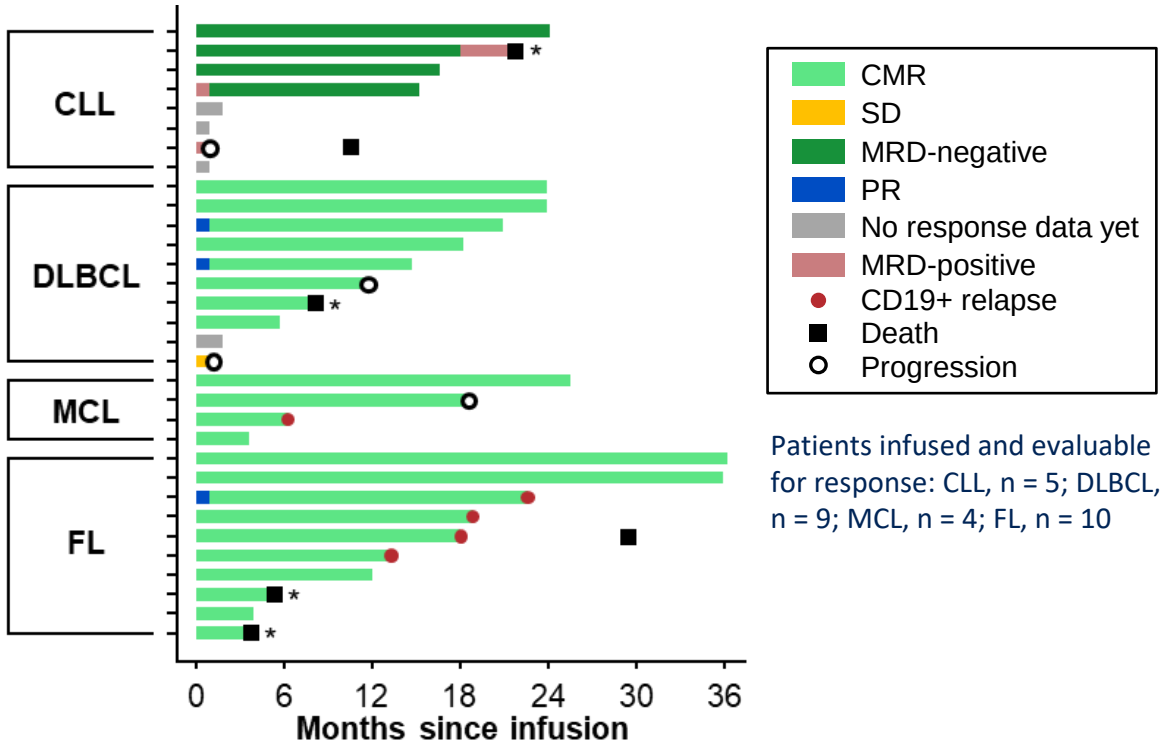
Subtype	ORR, n/N (%)
R/R CLL	4/5 (80)
R/R DLBCL	8/9 (89)
R/R MCL	4/4 (100)
R/R FL	10/10 (100)

Post infusion kinetics of obe-cel in peripheral blood of patients with r/r B-CLL/B-NHL

qPCR data available for n=26 patients



Median follow-up 20.9 months (range 0.9 – 36.2)



Patients infused and evaluable for response: CLL, n = 5; DLBCL, n = 9; MCL, n = 4; FL, n = 10

- No ≥ grade 3 CRS and ICANS reported

Collaboration with UCL

Analysis of ALLCAR19 extension phase in R/R B-CLL and B-NHL, data cut-off date September 13, 2023. *Patient death unrelated to obe-cel and without relapse or disease progression (COVID-19 [DLBCL and FL, n = 1 each]; grade 5 appendicitis on a background of myelodysplastic syndrome [FL, n = 1]; unrelated esophageal cancer [CLL, n = 1]). Roddie et al., ASH 2023 Poster 2114.

AUTO8: combining a sensitive BCMA CAR with the CD19 CAR from obe-cel

Designed to induce deep and durable responses

AUTO8

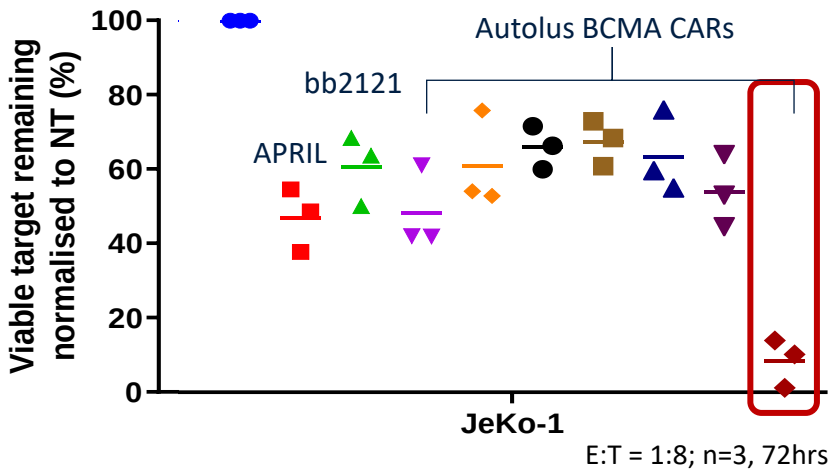
BCMA CAR

Novel format CAR designed to be highly sensitive to low BCMA density found on malignant plasma cells

CD19 CAR

Coupled to obe-cel to drive persistence and long-term durability of response, and to deplete CD19+ myeloma stem cell

Screening for high sensitivity BCMA binders



Phase 1 Design

Cohort 1: BCMA CAR — 50MM — 150MM

Cohort 2: BCMA CAR + CD19CAR — 50MM — 150MM

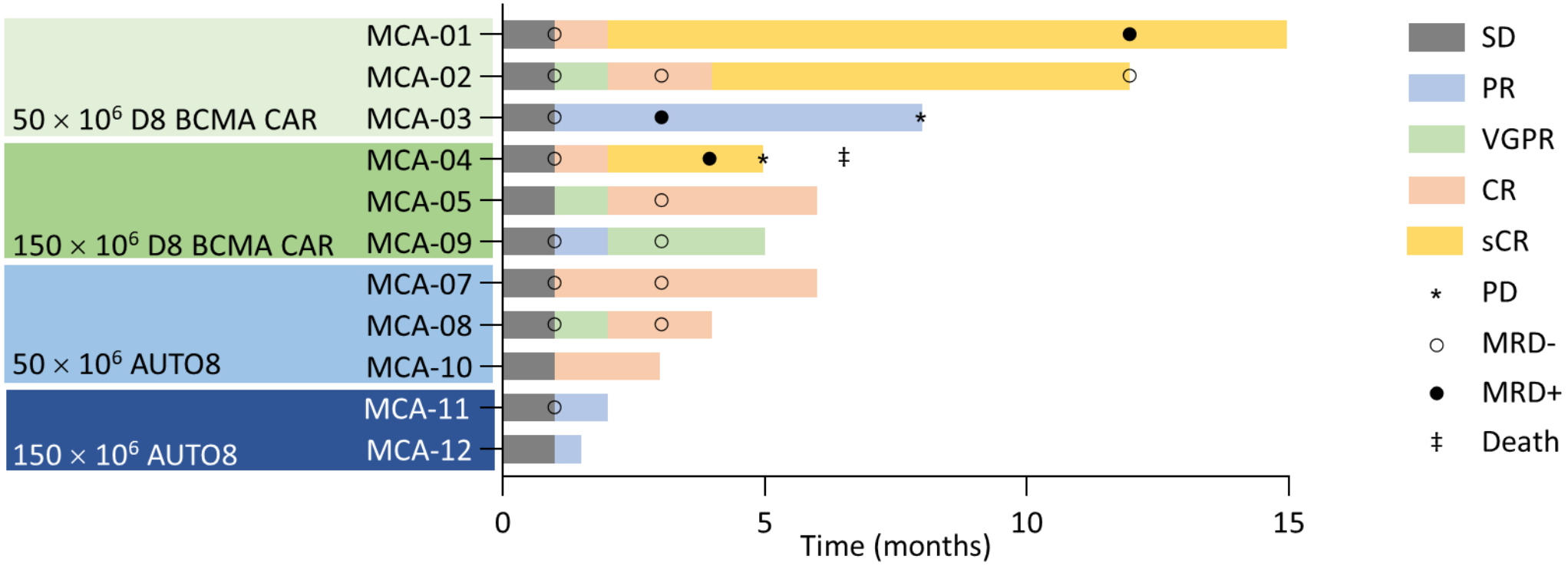
Initial data at ASH 2023; study ongoing

Collaboration with UCL

Initial data from MCARTY Phase 1 showed clinical responses in all patients

Both D8 BCMA CAR and AUTO8 associated with high response rate

- ORR 100%; 3 PR, 1 VGPR, 7 CR/sCR (all evaluable MRD-)
- Two patients remained in sCR at >12 months; overall PFS was not reached



Collaboration with UCL

AUTO8, D8 BCMA + obe-cel CARs; Median follow up 6 months (range 1–15); Lee et al., ASH 2023, Publication number 350.

Initial safety data Phase 1 MCARTY study

D8 BCMA CAR and AUTO8 did not result in severe ICANS/CRS and were well tolerated with no DLTs

Adverse events, n (%)	D8 BCMA CAR 50 x 10^6 (N = 3)		D8 BCMA CAR 150 x 10^6 (N = 3)		AUTO8 50 x 10^6 (N = 3)		AUTO8 150 x 10^6 (N = 2)	
	Grade 1–2	Grade ≥3	Grade 1–2	Grade ≥3	Grade 1–2	Grade ≥3	Grade 1–2	Grade ≥3
Hematological								
Anemia	0	1 (33)	1(33)	2(67)	0	2 (67)	1(50)	1(50)
Neutropenia	0	3 (100)	0	3 (100)	0	3 (100)	0	2 (100)
Thrombocytopenia	1 (33)	1 (33)	1 (33)	2 (67)	0	2 (67)	0	1 (50)
CRS	3 (100)	0	3 (100)	0	2 (67)	0	2 (100)	0
ICANS	0	0	0	0	0	0	0	0

- CRS in 10 patients (91%) and all low grade; no patients reported ICANS
- Tocilizumab given to 7 patients (64%) and steroids to 2 patients (18%)

Collaboration with UCL

AUTO8, D8 BCMA + obe-cel CARs; Lee et al., ASH 2023, Publication number 350.

Upcoming news flow

Autolus planned news flow

Anticipated Milestone or Data Catalysts	Timing
Obe-cel Biologics License Application (BLA) to FDA	**Complete**
Obe-cel FELIX data update at ASH	**Complete**
AUTO8 update (MCARTY) at ASH	**Complete**
AUTO6NG Phase 1 study start (MAGNETO)	**By end 2023**
Obe-cel in autoimmune disease – refractory SLE Phase 1 study start	**Early 2024**
Obe-cel 60-day FDA feedback on BLA submission	**January 2024**
Obe-cel Marketing Authorization Application (MAA) to EMA	**First half 2024**

Summary

Building a leading CAR T company developing transformational therapies for cancer and autoimmune diseases

Established excellence in R&D and Manufacturing; scaling company toward commercialization

Obe-cel potentially best in class CAR T for r/r adult ALL

- FELIX pivotal trial showed high ORR, encouraging EFS and favourable tolerability with low levels of high-grade CRS and ICANS
- BLA submitted to FDA
- EMA submission planned for 1H 2024

Pipeline expansion strategy

- Expand obe-cel opportunity in B cell malignancies, autoimmune diseases & life cycle strategy
  - SLE
  - B-NHL indications
  - Bi-specific therapies (CD19 /CD22; CD19/BCMA)
- Expand to additional indications with novel CAR T therapies, alone or with partners

Scalable manufacturing and in-house facility

- Demonstrated reliable clinical trial supply (96% target dose reached in FELIX pivotal study)
- New commercial cell manufacturing facility in qualification stage; planned annual capacity 2,000+ batches
- Vein-to-delivery time at launch of ~16 days

Strategic collaborations

- Established technology collaborations with Moderna, BMS and Cabaletta
- Longstanding academic collaboration with University College London
- Partnering opportunities on pipeline programs and platform technology

Strong cash position

- Cash $256.4M (Q3 2023)
- Runway into 2025
- Enables execution on current strategy through approval of obe-cel

Abbreviations and notes: r/r ALL - relapsed/refractory acute lymphoblastic leukemia; B-NHL – B-cell non-Hodgkin’s lymphoma; SLE – systemic lupus erythematosus

Autolus

Thank you