AUTOLUS INVESTOR EVENT

Spotlight on the Acute Lymphoblastic Leukemia (ALL) Business

April 8, 2026

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 and commercialization of its product candidates; Autolus' manufacturing, sales and marketing plans for AUCATZYL, including expectations regarding the commercial launch in the United States and the ability to reach patients in a timely manner; the amount and timing of milestone payments under Autolus' collaboration and license agreements; and future development plans of obe-cel, including the timing or likelihood of expansion into additional markets or geographies and related regulatory approvals. 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. Actual results and the timing of events could differ materially from those anticipated in such forward-looking statements as a result of various risks and uncertainties, which include, without limitation: Autolus' ability to maintain regulatory approval of AUCATZYL; its ability to execute its commercialization strategy for AUCATZYL; its ability to develop, manufacture and commercialize its other product candidates and the timing or likelihood of expansion of AUCATZYL into additional markets or geographies; Autolus' ability to establish and expand a commercial infrastructure and to successfully launch, market and sell AUCATZYL; actions of regulatory agencies, which may affect the initiation, timing and progress of clinical trials or future regulatory approval; the labelling for AUCATZYL/obe-cel in any future indication or patient population, if approved; the potential for payors to delay, limit or deny coverage for AUCATZYL; Autolus' ability to obtain, maintain and enforce intellectual property protection for AUCATZYL or any product candidates it is developing; the results of 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; and 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 10-K filed with the Securities and Exchange Commission, or the SEC, on March 27, 2026, 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 presentation, 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.

Important Safety Information

- AUCATZYL indicated for the treatment of adults with relapsed or refractory B-cell precursor acute lymphoblastic leukemia (B-ALL)
- The safety of AUCATZYL includes a boxed warning for CRS, neurologic toxicities, and secondary hematological malignancies. ICANS, including fatal or life-threatening reactions, occurred in patients receiving AUCATZYL. T-cell malignancies have occurred following treatment of hematologic malignancies with BCMA- and CD19-directed genetically modified autologous T-cell immunotherapies.
- In the FELIX trial, severe, including life-threatening and fatal infections occurred in patients after AUCATZYL infusion. The non-COVID-19 infections of all grades occurred in 67% (67/100) of patients. Grade 3 or higher non-COVID-19 infections occurred in 41% (41/100) of patients.
- Please see full Prescribing Information, including **BOXED WARNING** and Medication Guide.

AUCATZYL®
obecabtagene autoleucel
suspension for IV infusion

Spotlight on the ALL Business

Agenda – April 8, 2026; 1:00 – 2:15pm EDT

Welcome and introduction of speakers	Dr. Matthias Will
Adult ALL treatment landscape & unmet medical need	Dr. Jae Park
ROCCA real world experience with AUCATZYL®	Dr. Lori Muffly
IST focus on exploring obe-cel as definitive frontline consolidation	Dr. Elias Jabbour
Pediatric medical need and Autolus' recent CATULUS data	Dr. Michael Pulsipher
Q&A	All
ALL business opportunity and outlook	Dr. Christian Itin

Jae H. Park, MD
Memorial Sloan Kettering Cancer Center

Lori Muffly, MD, MS
Stanford School of Medicine

Elias Jabbour, MD
MD Anderson Cancer Center

Michael Pulsipher, MD
University of Utah Huntsman Cancer Institute

Jae Park, Lori Muffly, Elias Jabbour and Michael Pulsipher are paid consultants of Autolus Therapeutics.

Memorial Sloan Kettering Cancer Center

AUTOLUS INVESTOR SERIES · 2026

Unmet Needs in Relapsed / Refractory Adult B-ALL

Independent Perspectives on the Present and Future of the Field

Jae H. Park, MD

Director, Adult ALL Program | Acting Chief, Cellular Therapeutics

Memorial Sloan Kettering Cancer Center · New York, NY

The views expressed represent the independent scientific perspective of Dr. Park and are not intended as promotional statements regarding any specific product. Dr. Park discloses a consulting relationship with Autolus Therapeutics.

Adult R/R B-ALL: A Disease Where Standard Approaches Fall Short

~1,800

New R/R ALL cases annually in the US

<40%

5-year OS with standard salvage

~50%

Patients ineligible for allo-SCT

≥2 Lines

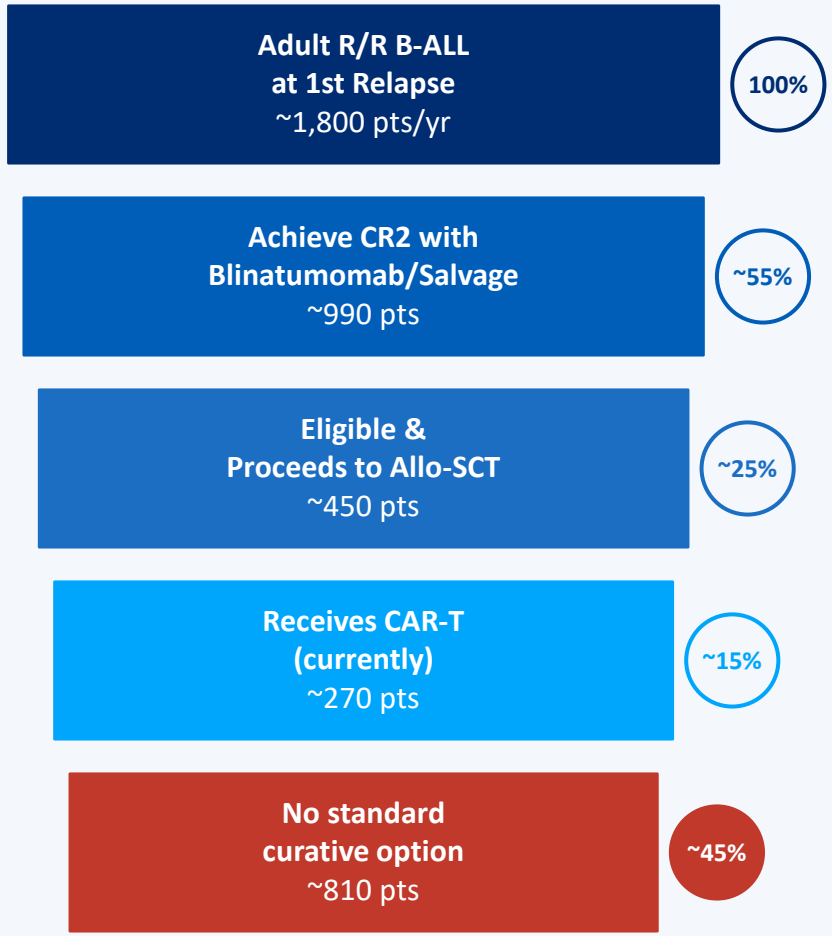
Average prior therapy before CAR-T access

The clinical reality:

Adult R/R B-ALL carries a fundamentally different biology and risk profile than pediatric disease. Median OS after first relapse is approximately **6–9 months** with chemotherapy- and non-CAR immunotherapy-based salvage. Even for patients who achieve CR2, sustained remission without transplant is rare. The field urgently needs therapies that are **durable without requiring SCT** — particularly for transplant-ineligible patients due to age, comorbidity, or prior treatment.

Sources: SEER data; Gökbuget et al., Blood 2012; Roddie et al., NEJM 2025

The R/R ALL Treatment Pathway: A Cascade of Attrition



Where the unmet need concentrates

Transplant-ineligible patients (largest gap)

~45-50% of R/R adults cannot proceed to allo-SCT. For these patients, there is no curative standard of care. CAR-T is the only approach with potential for durable remission without transplant.

Post-relapse after blinatumomab

Outcomes after blinatumomab failure are dismal — ORR with subsequent chemotherapy is <30%. CAR-T in this population represents a critical salvage option, and sequencing data are emerging.

Ph+ ALL after TKI failure

Despite ponatinib combinations improving frontline outcomes, Ph+ ALL patients who relapse on TKI therapy have extremely limited options. CD19 CAR-T efficacy appears maintained regardless of Ph status.

CNS disease involvement

CNS relapse and extramedullary disease in B-ALL carry particularly poor prognosis with conventional agents. Early CAR-T data suggest CNS penetration and activity, but this population remains underrepresented in trials.

Source: Park et al., NEJM 2025; Gökbuget et al.; NCCN B-ALL Guidelines v2.2025

CAR-T Therapy: Improving Outcomes in Adult B-ALL

FELIX Study

77%	Overall response rate across all patients
>3 yrs	Durable remissions in low disease burden cohort
MRD	Strong predictor of long-term OS after CAR-T
CAT-19	Differentiated CAT-19 binder with intermediate affinity due to a fast binding off rate

What the data tell us about the future

1 Disease burden at infusion is the critical variable

Patients with low disease burden have dramatically improved outcomes — both efficacy and toxicity. This argues strongly for earlier deployment of CAR-T, before extensive salvage therapy exhausts the patient.

2 CAR-T can be a bridge to transplant — or a bridge away from it

For patients who achieve deep MRD-negative remission, the data support durable remission without SCT. This is a paradigm shift for transplant-ineligible patients.

3 Product phenotype matters as much as cell dose

Memory T cell content, exhaustion markers, Tscm/Tcm ratio — these are independent predictors of durability. Manufacturing science is now a direct clinical differentiator.

Source: Roddie et al., New England Journal of Medicine, 2024; Park JH et al. EHA 2025; Simpson et al. ASH Annual Meeting 2025; MSK Phase I 19-28z trial (NCT01044069)

Current Limitations/Aucatzyl Solutions

01 Toxicity profile in heavily pretreated adults

Safety

Older adults with comorbidities have poor tolerance of severe CRS and ICANS. Current approved products carry meaningful Grade 3+ toxicity rates that limit eligibility — particularly in community settings. A safer toxicity profile determines who can access therapy.

02 CAR-T product fitness and manufacturing reliability

Manufacturing

T cells from heavily pretreated, lymphopenic ALL patients are challenging to manufacture. Vein-to-vein time, product failure rates, and infusion product phenotype vary significantly across approved products. Consistency of manufacturing is a clinical outcome variable.

03 Long-term persistence and resistance mechanisms

Response

Persistency testing is now available for Aucaztyl. CD19 antigen loss or downregulation is observed in 20-30% of relapses post-CAR-T.

04 Access, vein-to-vein time, and operational barriers

Access

Median vein-to-vein times of 28–56 days create a critical window where patients may deteriorate before receiving therapy. Shortening this timeline — through process innovation and manufacturing efficiency — is a direct patient outcome intervention.

INDEPENDENT PERSPECTIVE

Where Is the Field Heading? An Honest Assessment.

CAR-T will move earlier in the treatment algorithm

The strongest predictor of durable response is low disease burden at the time of infusion. The data now support investigating CAR-T in the CR1 or MRD-positive setting in earlier line treatment — not just as a last resort.

Product biology will become the competitive differentiator

As more CD19 CAR-T products enter the market, differentiation will come from product phenotype — memory enrichment, persistence, tonic signaling control. Constructs optimized for T cell fitness will outperform older designs.

Manufacturing speed and reliability are clinical outcomes

Vein-to-vein time is a survival variable in ALL. Products that reliably deliver a fit product in <30 days will have a meaningful clinical and commercial advantage. This is a medical issue, not a supply chain issue.

Combination strategies will define the next generation

Single-agent CD19 CAR-T will be surpassed by rational combinations — dual antigen targeting to prevent escape, checkpoint blockade to sustain persistence, or armored CAR-T to overcome the immunosuppressive TME.

These perspectives reflect Dr. Park's independent scientific views based on published evidence and clinical experience. Dr. Park discloses a consulting relationship with Autolus Therapeutics.

Defining Success: What the Field Needs to Deliver for Patients

> *"The goal for the next decade in adult ALL is straightforward but demanding: a therapy potent enough to produce deep MRD-negative remission, safe enough to be administered broadly including in the elderly and those with comorbidities, fast enough that patients don't deteriorate waiting for their product, and durable enough that transplant becomes optional rather than mandatory for appropriate patients."*

— Jae H. Park, MD | MSK

1

Durable MRD-negative remission without mandatory SCT

Redefining cure as accessible to transplant-ineligible patients

2

Fit-for-purpose T cell products

Manufacturing science that preserves memory phenotype and minimizes exhaustion

3

Reduced toxicity enabling earlier use

CRS/ICANS profiles manageable in community settings and in older adults

Stanford MEDICINE
School of Medicine

ROCCA Real World Experience in AUCATZYL® First Year

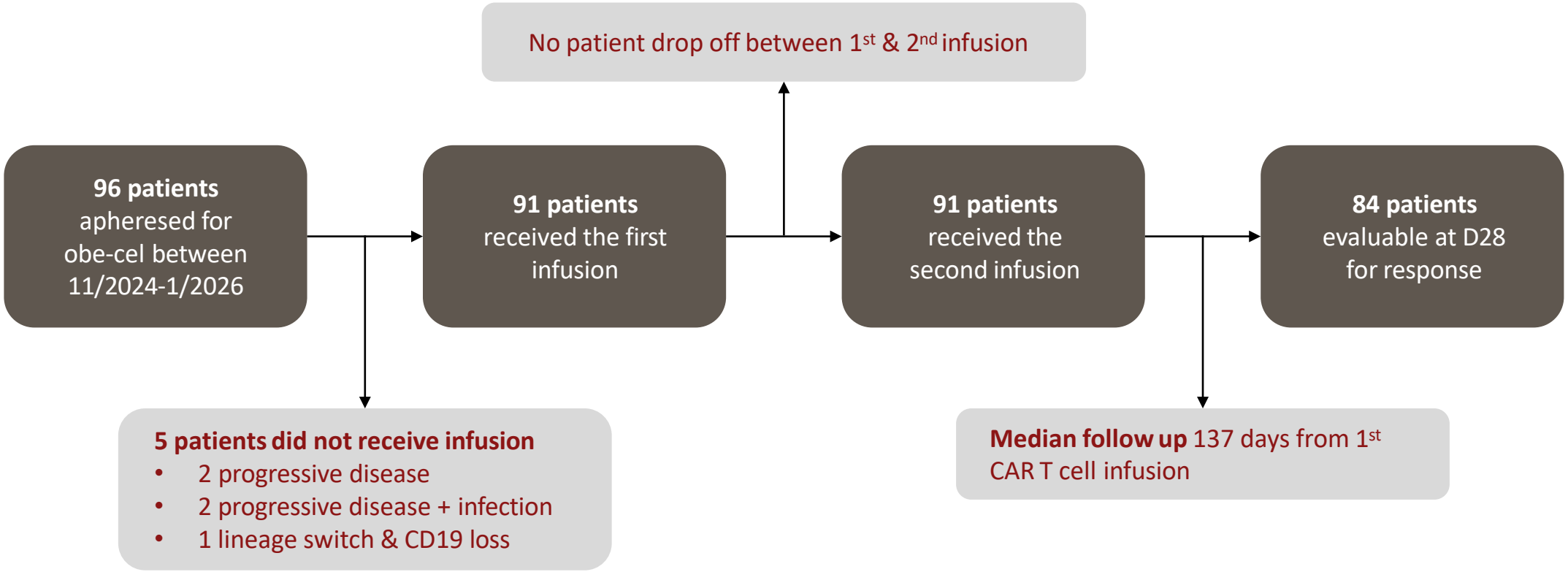
Lori Muffly, MD, MS
PROFESSOR OF MEDICINE
BLOOD AND MARROW TRANSPLANTATION AND CELLULAR THERAPY

Understanding the Real-World Performance of Obe-cel

ROCCA Consortium registry covers approximately 60% of U.S. commercial patients at data cutoff of January 2026

- The ROCCA registry includes ALL CAR patients from >40 centers in North America
- Patients were included if apheresed for obe-cel since 11/18/2024 (approval) with data-cut on

Obe-cel cohort overview



Median F/U: 4.5 Months

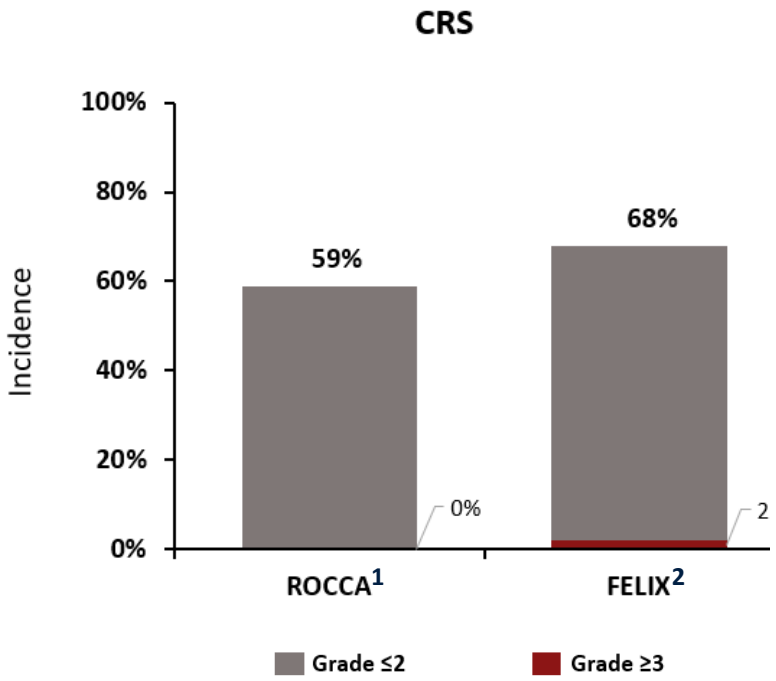
~60% of U.S Commercial Patients treated in ROCCA Centers

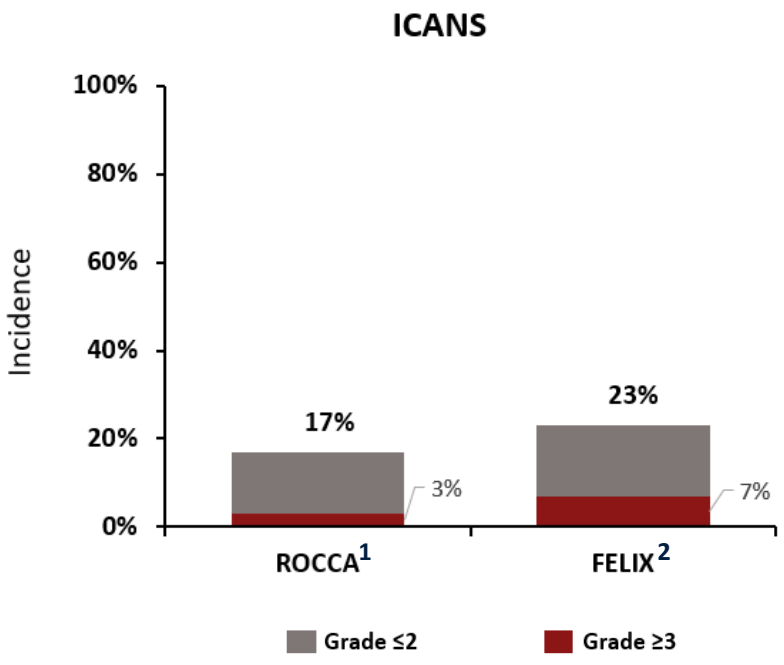
Patient and disease characteristics

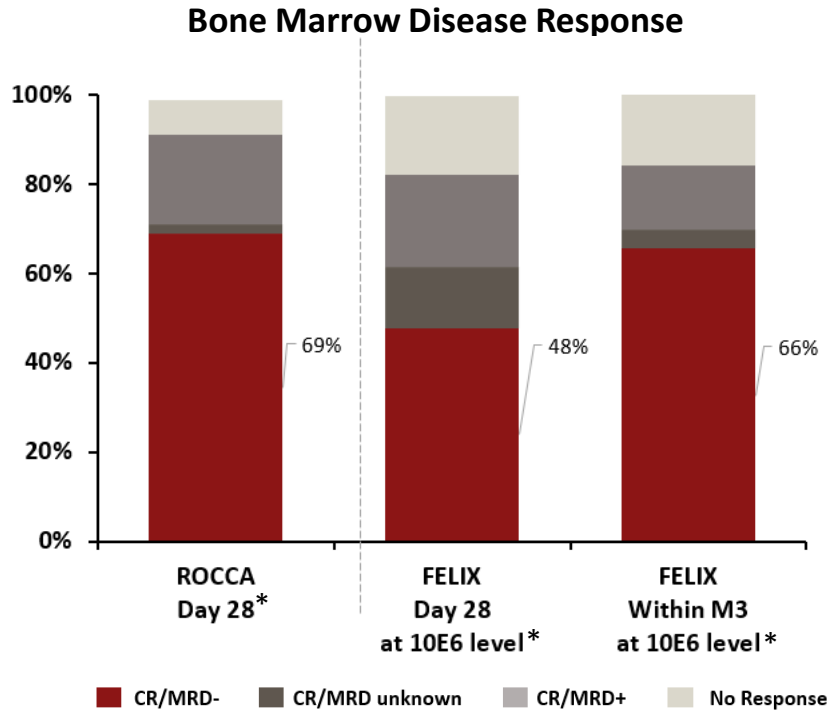
Older and more heavily pre-treated patients being treated in real-world setting

	ROCCA TANDEM 2026 (N=96)	FELIX (N=127)
Age, median (IQR)	50 (31 – 65)	47 (33 – 60)
ECOG ≥2 prior to obe-cel, %	12	5
Ph+, %	27	28
Ph-like, %	24	8
Median prior lines of therapy (range)	3 (2 – 4)	2 (1 – 6)
≥3 prior lines of therapy, %	68	35
Prior Blinatumomab, %	59	42
Prior Inotuzumab, %	38	31
Prior allo-SCT, %	27	44
BM Blast ≥5% Prior to Leukapheresis, %	36	85
BM Blast ≥5% Prior to LD, %	27	72
EMD Prior to LD, %	18	21

Real world data are demonstrating favorable profile







- ✓ Patients with lower tumor burden being treated in real-world setting compared to FELIX trial[1]
- ✓ Improvements in both safety and efficacy in real-world data compared to FELIX trial[1]
- ✓ Real world data show favorable safety profile with no high-grade CRS; 3% high-grade ICANS[1]
- ✓ Disease response in FELIX trial deepened between Day 28 and Month 3[2]

1 Valtis Y, et al. "Patient characteristics, toxicity, and response after real world administration of obecabtagene autoleucel and brexucabtagene autoleucel for R/R ALL: A ROCCA analysis"; TANDEM Transplantation & Cellular Therapy Meetings of ASTCT & CIBMTR; February 2026
2 Roddie C, et al "Obecabtagene autoleucel in B-cell acute lymphoblastic leukemia" N Engl J Med 2024; DOI: 10.1056/NEJMoa2406526;
* ROCCA: MRD measured by NGS/flow per institutional standards; FELIX: MRD measured by clonoSEQ® next-generation sequencing (NGS) assessment at 10^{-6} level among all patients with NGS calibration.

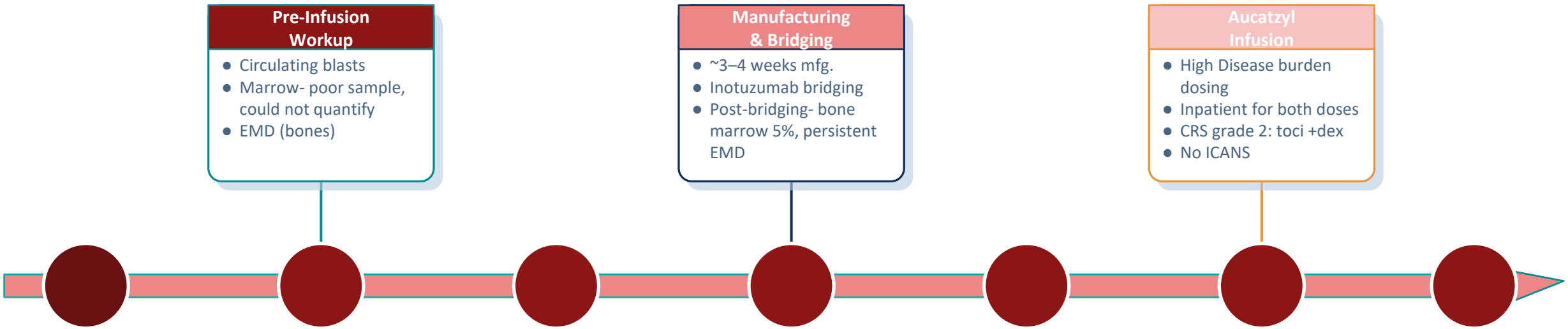
AUCATZYL is redefining CAR T eligibility

- Obe-cel's high response rate combined with minimal side effect profile allows us to treat older, frailer patients, and to treat patients exclusively in the outpatient setting.

- Obe-cel has been mostly used in patients with a variety of disease burdens, from MRD-negative to high-burden disease, along with patients with both medullary and extra-medullary leukemia.

- Our strategy is to consider obe-cel for all patients with relapsed or refractory B-ALL. We typically use bridging therapy for patients with morphologic disease or high levels of MRD prior to apheresis. We do not routinely offer allogeneic transplant following obe-cel.

33 yo woman with Down Syndrome, Ph-neg B-ALL refractory to 3 prior lines of therapy



Pre-Infusion Workup
- Circulating blasts
- Marrow- poor sample, could not quantify
- EMD (bones)

Manufacturing & Bridging
- ~3–4 weeks mfg.
- Inotuzumab bridging
- Post-bridging- bone marrow 5%, persistent EMD

Aucatzyl Infusion
- High Disease burden dosing
- Inpatient for both doses
- CRS grade 2: toci +dex
- No ICANS

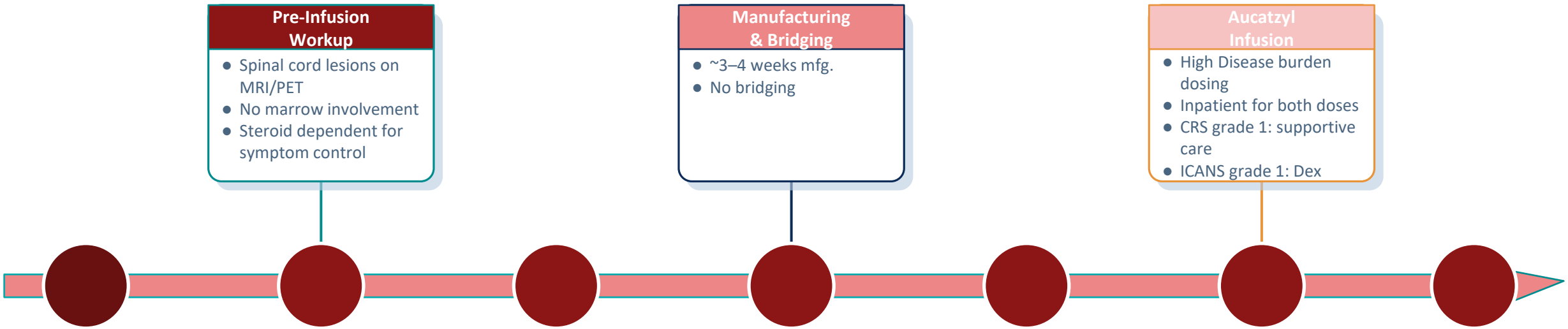
Patient Demographics
- 33 yo woman
- Ph-neg B-ALL
- Downs and DM2
- ECOG 2
- Minimally verbal
- Prior chemo, blin

Leukapheresis
- T-cell collection
- Certified apheresis center

Lympho-depletion
- Flu/Cy × 3 days
- Days −7 to −5
- Optimize performance status

Response Assessment
- CR MRD neg
- Remains in CR, MRD neg (clonoseq) now >1 year post CAR
- No return of B cells

26 yo woman with Ph+ B-ALL, multiple CNS relapses, refractory spinal column involvement with paraplegia



Pre-Infusion Workup
- Spinal cord lesions on MRI/PET
- No marrow involvement
- Steroid dependent for symptom control

Manufacturing & Bridging
- ~3–4 weeks mfg.
- No bridging

Aucatzyl Infusion
- High Disease burden dosing
- Inpatient for both doses
- CRS grade 1: supportive care
- ICANS grade 1: Dex

Patient Demographics
- 26 yo woman
- Ph+ B-ALL
- ECOG 3 (paralysis, loss of urinary function
- Prior chemo, allo HCT, blin, ino, dasatinib ponatinib, asciminib, cranial RT, IT therapy

Leukapheresis
- T-cell collection
- Certified apheresis center

Lympho-depletion
- Flu/Cy × 3 days
- Days −7 to −5
- Optimize performance status

Response Assessment
- CR MRD neg
- Spinal lesions resolved
- Now 6 months post-CAR and walking without assistance
- Urinating without catheter

ROCCA Consortium Research Domains

1 Efficacy & Survival Outcomes

- ~150-200 obe-cel treated patients
- Populations of interest:
  - Older adults
  - AYAs
  - CNS/EMD

2 Toxicity: CRS & ICANS Management

- General toxicity assessment
- Predictors of toxicity
- Toxicity management strategies

3 Prognostic Biomarkers

- Correlative studies:
  - Persistence
  - MRD
  - B cell aplasia
  - T cell phenotypes

4 Bridging Therapy Strategy

- Optimal bridging
- Pre vs post-bridging disease assessments

5 Post-CAR Consolidation & Maintenance

- TKI Maintenance in Ph+ ALL
- Allo HCT
- Menin inhibitor maintenance

6 Healthcare Utilization

- CAR T administration setting
- Access and equity
- LTFU/QOL

7 Disease burden Considerations

- Earlier CAR administration
- Duration of remission among MRD-negative patients

8 Comparative Analyses

- Obe-cel superiority over alternative CAR/immunotherapy agents
- CAR vs allo HCT studies

AUTOLUS INVESTOR EVENT · 2026

THE UNIVERSITY OF TEXAS
MD Anderson Cancer Center
Making Cancer History®

Obe-cel in Frontline Consolidation for Adult B-ALL

The Opportunity, the Evidence, and the Path Forward

- Adult B-ALL
- Frontline immunotherapy
- CAR-T consolidation

PRESENTING FACULTY

Elias Jabbour, MD

D.B. Lane Cancer Research Fund
Distinguished Professor
in Leukemia Research

Section Chief
Acute Lymphoblastic Leukemia

MD Anderson Cancer Center
Houston, Texas

The views expressed represent the independent scientific perspective of Dr. Jabbour. Dr. Jabbour discloses a consulting/advisory relationship with Autolus Therapeutics.

Department of Leukemia

Division of Cancer Medicine · Houston, Texas

THE UNIVERSITY OF TEXAS MD Anderson Cancer Center

Making Cancer History®

Why Frontline? The Biological and Clinical Rationale for Earlier CAR-T

The disease burden argument

Low burden	Best CAR-T outcomes consistently observed in patients with minimal disease at infusion — established across all approved CD19 products
~70%	MRD-negative CR rate achievable with modern induction (hyper-CVAD + InO + blina) — an ideal pre-CAR-T platform
T cell fitness	Apheresis from patients in early CR1 is less exhausted, less lymphopenic, and yields a higher-quality CAR-T product than R/R patients
No escape	CD19 expression is uniformly high in newly diagnosed B-ALL — antigen loss risk is dramatically lower than in multiply relapsed disease

Jabbour et al., Leukemia & Lymphoma 2025 — published position

> *"CAR T-cell therapies as a consolidation approach have shown positive outcomes. Newer generation CAR T-cell products like obecabtagene autoleucel appear as effective and safer."*

Senapati, Kantarjian, Jabbour et al., Leukemia & Lymphoma, 2025

The MDACC consolidation framework

MDACC has pioneered immunotherapy-based induction (hyper-CVAD/mini-hCVD + InO + blinatumomab) achieving deep CR1 in the majority of adults — creating the ideal disease-burden state for CAR-T consolidation.

The MRD-negativity gateway

Patients achieving MRD-negative CR1 with modern induction may not need allo-SCT if followed by durable CAR-T consolidation. This is the most significant paradigm shift in adult ALL in decades.

The independent investigator view

Jabbour's group has directly validated the frontline consolidation hypothesis in peer-reviewed literature and active clinical investigation — the highest-credibility endorsement of this strategy.

Senapati J, Kantarjian H, Jabbour E et al. Leukemia & Lymphoma 2025; MDACC frontline consolidation trial

Department of Leukemia

Division of Cancer Medicine · Houston, Texas

THE UNIVERSITY OF TEXAS MD Anderson Cancer Center
Making Cancer History®

The Frontline B-ALL Landscape Is Being Redefined by Immunotherapy

Era 1 · 1980–2010

Intensive chemo ± allo-SCT

Hyper-CVAD dominant
~40% OS at 5 years

Era 2 · 2011–2020

TKI + chemo (Ph+ ALL)

Ponatinib combinations
improved Ph+ outcomes

Era 3 · 2021–2024

Immunotherapy in consolidation

Blinatumomab approved FL
Inotuzumab combinations

Era 4 · 2025+

CAR-T frontline consolidation

SCT-sparing intent for
high-risk & MRD+ patients

What changed the calculus for frontline CAR-T

01 Modern induction achieves MRD-negative CR1 in ~70% of patients — the optimal pre-CAR-T state, achievable in real practice today

02 R/R data prove disease burden at infusion is the single strongest predictor of durable response — frontline is the optimal intervention window

03 Obe-cel's low Grade 3+ CRS/ICANS profile makes frontline administration feasible where competitor toxicity profiles would preclude it

04 MRD-guided intensification is rapidly becoming the NCCN/ASH framework — CAR-T consolidation maps directly onto that clinical decision point

Senapati et al., Leukemia & Lymphoma 2025; Jabbour et al., JCO 2024; NCCN B-ALL Guidelines v2.2025

Department of Leukemia

Division of Cancer Medicine · Houston, Texas

THE UNIVERSITY OF TEXAS MD Anderson Cancer Center

Making Cancer History®

Why Obe-cel Specifically: Product Design Advantages in the Frontline Context

77%

ORR in FELIX

97%

MRD-negative rate among responders

44 days

Median vein-to-vein (shortest approved)

Low G3+

CRS/ICANS vs competitor products

Fast off-rate binder — the frontline advantage

Obe-cel's CAT-19 binder has a faster dissociation rate from CD19 than FMC63 — reducing tonic signaling and preserving a memory-enriched, less exhausted product. In frontline patients with healthier apheresis material, this advantage is amplified further.

4-1BB costimulation — memory preservation

4-1BB drives oxidative phosphorylation and mitochondrial biogenesis — the metabolic signature of long-lived memory T cells. In frontline patients, 4-1BB costimulation is expected to produce even more durable responses, with greater potential to render allo-SCT unnecessary.

Toxicity profile enables frontline feasibility

Obe-cel's Grade 3+ CRS rate (<5% in FELIX) and minimal neurotoxicity make it feasible to administer immediately post-induction. Competitor toxicity profiles that are manageable in R/R patients become significant barriers in the frontline consolidation setting.

Manufacturing speed — a clinical feasibility argument

In frontline consolidation, CAR-T must be manufactured while the patient is still in remission on a defined timeline. A 44-day median vein-to-vein time means patients don't lose their treatment window. This is a clinical feasibility point — not a supply chain one.

Jabbour E, SOHO 2024; FELIX trial (Roddie C et al., Blood 2024); tonic signaling literature (Frigault MJ et al.)

Department of Leukemia

Division of Cancer Medicine · Houston, Texas

THE UNIVERSITY OF TEXAS MD Anderson Cancer Center

Making Cancer History®

Patient Selection Framework: Who Benefits Most from Frontline Consolidation

Priority patient populations

Adverse genomics in CR1

HIGHEST PRIORITY

CRLF2r, KMT2Ar, TP53 mutation, complex karyotype, hypodiploidy — these patients have poor outcomes with SCT alone. CAR-T offers a novel mechanism independent of cytogenetic risk.

MRD-positive after induction

HIGHEST PRIORITY

Failure to achieve MRD negativity after cycle 2 signals dramatically worse prognosis. CAR-T consolidation before overt relapse is the optimal intervention point.

Transplant-ineligible adults in CR1

HIGH PRIORITY

Older adults and those with comorbidities or no matched donor in CR1 currently have no durable consolidation option. Obe-cel's safety profile makes it the leading candidate.

SCT-eligible patients preferring avoidance

EMERGING

A growing proportion of adults in CR1 prefer to avoid transplant morbidity. Shared decision-making increasingly incorporates CAR-T as a consolidation option.

MDACC proposed treatment schema (Jabbour framework)

1. **Induction**

   Hyper-CVAD / mini-hCVD
   + Inotuzumab + Blinatumomab

2. **MRD assessment at C2**

   NGS-MRD: risk-stratify for
   consolidation pathway selection

3. **Leukapheresis in CR1**

   Collect at remission — optimal
   T cell fitness window

4. **Obe-cel consolidation**

   CAR-T infusion ~44 days post-collection
   Post-lymphodepleting chemotherapy

5. **Response-adapted follow-up**

   MRD-neg CR → surveillance
   MRD-persistent → escalation or SCT

Senapati et al., Leukemia & Lymphoma 2025; MDACC Phase 2 frontline consolidation trial; Jabbour EJ, frontline ALL review 2024

The Independent View: What Frontline Success Would Mean for Patients and the Field

> *"We went from survival of 10% to 90% [in Ph+ ALL] and from full-fledged chemotherapy and transplant to a chemotherapy-free regimen. The same transformation is coming for Ph-negative B-ALL. CAR-T in frontline consolidation — used at the right moment in the right patient — is the next chapter of that story."*

— Elias Jabbour, MD · MD Anderson Cancer Center

01

The biology favors frontline

Low disease burden + fit T cells + uniform CD19 expression = maximum CAR-T efficacy. The frontline state is the optimal infusion moment.

02

Obe-cel is the right product

Safety, manufacturing speed, and T cell fitness advantages are uniquely maximized in frontline patients — where product quality determines outcomes.

03

Expanding the addressable patients

Positive frontline data would expand the addressable population significantly — transforming obe-cel from an R/R product into a frontline standard of care.

Use and Research Priorities of CAR T-Cells for Pediatric/AYA ALL; Catulus Data to Date/Plans

Michael A. Pulsipher, MD

Division Chief, Pediatric Hematology and Oncology

Director, Children's and Adolescent Cancer Initiative at Huntsman Cancer Institute and Intermountain Primary Children's Hospital

IPCH-HCI Presidential Chair in Pediatric Oncology and Hematology

Intermountain Cancer Center

Intermountain Healthcare

Intermountain Primary Children's Hospital
The Child First and Always®

HUNTSMAN CANCER INSTITUTE

HEALTH UNIVERSITY OF UTAH

Overview

- Critical Role for CD19 targeted CAR T-cells in Relapsed/ Refractory ALL for Children, Adolescents and Young Adults (CAYA)
- Research Gaps and Challenges for CAR T-cell use in CAYA
- Results to date of Catulus Phase Ib (Auto1-PY1)
- Plans moving forward for extension and regulatory approval:
  - AALL2523/AFFI2522: A Single-Arm, Open-Label, Multi-Centre, Phase 1b/2 Study Evaluating the Safety and Preliminary Efficacy of AUTO1 (Obe-cel) in Pediatric Patients with CD19-Positive Relapsed/Refractory (r/r) B cell Acute Lymphoblastic Leukemia (B ALL) and Aggressive Mature B cell NON-HODGKIN Lymphoma (B NHL)

Current Role of CAR T-cells in CAYA with B-ALL

- FDA Approved Tisa-cel in 2017 for relapsed/refractory B-ALL
- Originally use mainly for rescue post-HCT or after multiple remissions
  - Better outcomes when used with low disease burden/earlier in the Rx course
  - Increased in usage in the use each year 2018-2022
  - Use shifting more to primary refractory or secondary refractory
  - Role of HCT after 4-IBB CAR T-cells much debated
    - Loss of B-cell aplasia and NGS-MRD assays sometimes used to guide therapy
- Survival has improved significantly!
  - Previous survival <10%
  - Now, 5-year EFS approximately 40%, OS exceeds 60%

Research Questions and Needs in CAYA

- Early first relapse of ALL has dismal outcomes
  - Would planned use of CAR T-cells at first relapse decrease toxicity/improve survival?
- MRD level disease post-consolidation generally requires transplant
  - Can use of CART cells in this patient population avoid HSCT and improve outcomes?
    - AALL 1721 outcomes pending
- Special populations need CAR T-cell therapy early
  - Children/AYA with Down Syndrome
  - Frail children—history of multiple complications with chemotherapy, organ damage, infections, etc.
  - Genetic subtypes susceptible to secondary malignancies with chemotherapy/TBI approaches (hypodiploid ALL, TP53 germline mutations)
  - Infants with VHR B-ALL—generally very poor prognosis

American Society of Hematology (ASH) Annual Meeting 2025: This presentation has been adapted from Poster 3337 originally presented at the conference

Treatment of paediatric patients with relapsed/refractory B-cell acute lymphoblastic leukemia (R/R B-ALL) with obecabtagene autoleucel (obe-cel), a CD19-directed chimeric antigen receptor (CAR) T-cell therapy: preliminary findings from the Phase Ib CATULUS trial

Sara Ghorashian[1*], Michael A Pulsipher[2], Juliana Silva[1], Alba Rubio-San-Simón[3], Amanda Lipsitt[4], Denise Bonney[5], Cristina Díaz-de-Heredia[6], Geoff Shenton[7], Justin Shang[8], Kapil Saxena[8], Wolfram Brugger[9], Pierre Lao-Sirieix[10], Shannon L Maude[11]

1. Great Ormond Street Hospital for Children NHS Foundation Trust, London, UK; 2. Intermountain Primary Children's Hospital, Huntsman Cancer Institute, Spencer Fox Eccles School of Medicine at the University of Utah, Salt Lake City, UT, USA; 3. Hospital Universitario Niño Jesús, Madrid, Spain; 4. Methodist Children's Hospital, San Antonio, TX, USA; 5. Royal Manchester Children's Hospital, Paediatric Oncology and Haematology Research Team, St Mary's Hospital, Manchester, UK; 6. Pediatric Hematology and Oncology Department, Hospital Vall d'Hebron and Vall d'Hebron Research Institute, Barcelona, Spain; 7. Great North Children's Hospital, Paediatric Oncology Clinical Trials Team, Newcastle Upon Tyne, UK; 8. Autolus Therapeutics, Rockville, MD, USA; 9. Autolus Therapeutics, Munich, Germany; 10. Autolus Therapeutics, London, UK; 11. Children's Hospital of Philadelphia, Philadelphia, PA, USA.

Acknowledgments

This study was sponsored by Autolus Therapeutics PLC. Third-party medical writing assistance, under the direction of authors, was provided by Emily Fang, MPharm, of Ashfield MedComms (Manchester, UK), an Inizio company, and was funded by Autolus Therapeutics PLC.

*Presenter.

This presentation is adapted from Poster 3337, originally presented at the American Society of Hematology (ASH) Annual Meeting 2025, December 6-9 in Orlando, FL, USA.

Methods

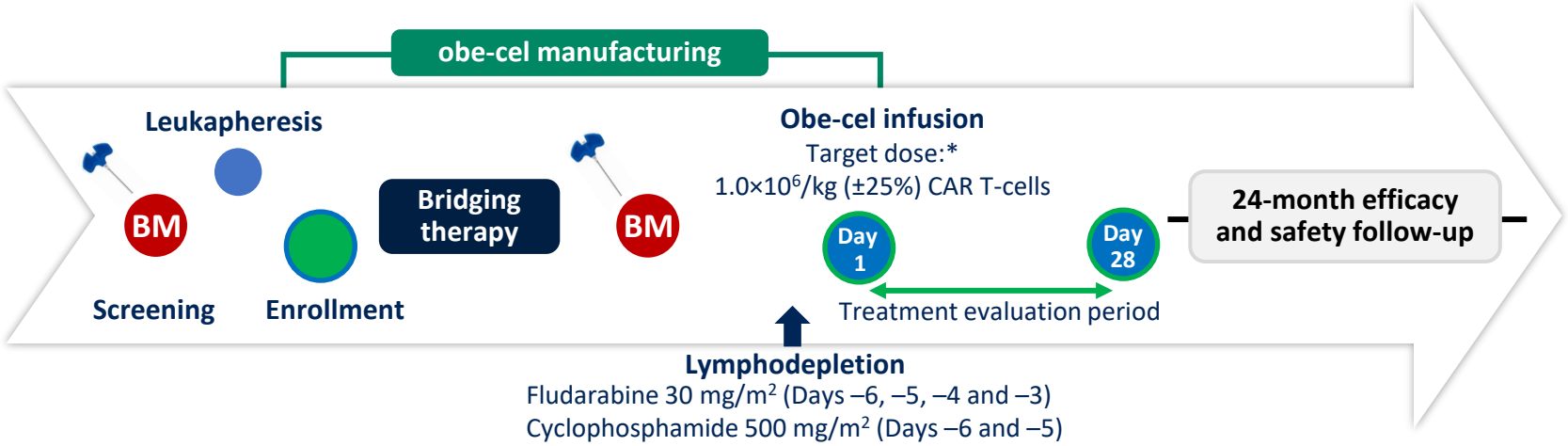
CATULUS is a single-arm, open-label, international, multi-center study

Patients eligible for enrollment were aged <18 years at screening and had a diagnosis of R/R B-ALL that was either:

- Primary refractory
- In very high-risk first relapse (if first remission ≤18 months)
- R/R after ≥2 lines of therapy, after SCT

OR

- Where the patient had Philadelphia chromosome-positive disease and failed treatment with ≥1 tyrosine kinase inhibitor (TKI)



Bridging therapy was permitted at the investigator's discretion

- Following lymphodepletion, a single infusion of obe-cel at the target dose of 1.0×10⁶/kg (±25%) CAR T-cells was administered

Phase Ib primary endpoints included

- Frequency and severity of adverse events

Secondary endpoints included

- Overall remission rate (ORR; CR/CRi)
- CAR T-cell expansion (measured by ddPCR in peripheral blood)
- CAR T-cell persistence
- B-cell aplasia

*In patients with a body weight >100 kg, the dose was capped at 100x10⁶ total CAR T-cells.

B-ALL, B-cell acute lymphoblastic leukemia; CAR-T, chimeric antigen receptor T-cell; obe-cel, obecabtagene autoleucel; CR, complete remission; Cri, complete remission with incomplete hematologic recovery; ddPCR, droplet digital polymerase chain; R/R, relapsed/refractory; SCT, stem cell transplant.

Baseline Characteristics

As of August 6, 2025 (median follow-up: 8.8 months; range: 0.5–18.4), 23/25 enrolled patients (82.1%) with R/R B-ALL were infused with obe-cel

One patient was not infused per physician decision, and one patient was pending obe-cel infusion at the time of data cut-off

- All 23 patients received obe-cel at the target dose; all products were in specification, with no manufacturing failures
  - Median time from leukapheresis to product certification was 19 days (range: 15–31)
- Overall, all 23 patients received bridging therapy with:
  - chemotherapy (n=18),
  - chemotherapy and inotuzumab ozogamicin (n=3)
  - chemotherapy and a tyrosine kinase inhibitor (n=2)

Demographics and baseline characteristics at screening

	All infused Patients, B-ALL Cohort (N=23)
Age in years, median (range)	9.2 (0.8–17.8)
<2, n (%)	2 (8.7)
≥2–<6, n (%)	6 (26.1)
≥6–<12, n (%)	5 (21.7)
≥12, n (%)	10 (43.5)
Male/female, n (%)	11/12 (47.8/52.2)
Ethnicity, n (%)	
Hispanic or Latino	6 (26.1)
Not Hispanic or Latino	17 (73.9)
Down syndrome, n (%)	1 (4.3)
KMT2A rearrangement, n (%)	2 (8.7)
Philadelphia chromosome-positive, n (%)	3 (13.0)
Prior treatment, n (%)	
Prior allogeneic SCT	3 (13.0)
Prior blinatumomab	6 (26.1)
Prior inotuzumab ozogamicin	0
Primary refractory disease, n (%)	6 (26.1)
First relapse, n (%)	5 (21.7)
First relapse in BM, <36 months after initial diagnosis	2 (8.7)
First relapse isolated EMD, <18 months after initial diagnosis	2 (8.7)
Other	1 (4.3)
Second or greater relapse, n (%)	12 (52.2)
BM blast % at screening, median (range)	5.0 (0–95)
≥5% BM blast % at screening, n (%)	13 (56.5)
<5% BM blast % at screening,* n (%)	10 (43.5)
CR/CRi‡ at screening, n (%)	5 (21.7)
MRD-positive (≥0.01%–<1% leukemic cells, per local assessment)	5 (21.7)
MRD-negative (<0.01%)	0
Not CR/CRi‡ at screening, n (%)	18 (78.3)
BM and/or blood disease with/without EMD	14 (60.9)
Isolated EMD	4 (17.4)
EMD disease at screening, n (%)	6 (26.1)
Central nervous system	5 (21.7)
Testis	2 (8.7)
Other	1 (4.3)

*Four patients had isolated EMD and one patient had MRD ≥1% by molecular testing.
‡Morphologic CR/CRi, defined as <5% BM blasts or <1% by molecular testing and no EMD.
B-ALL, B-cell acute lymphoblastic leukemia; BM, bone marrow; CR, complete remission; CRi, complete remission with incomplete hematologic recovery; EMD, extramedullary; MRD, measurable residual disease; R/R, relapsed/refractory; SCT, stem cell transplant.

Results: Safety

The rates of Grade ≥3 CRS and ICANS were low (both 8.7%) post obe-cel infusion

- The patients who had Grade ≥3 CRS/ICANS also had high tumor burden (>5% bone marrow blasts) at lymphodepletion

Five patients had Grade ≥3 infections post obe-cel infusion; all were assessed to be unrelated to obe-cel

- The types of Grade ≥3 infections were
  - Sepsis (n=2)
  - Respiratory syncytial virus (n=1)
  - Device-related infection (n=1)
  - Device-related sepsis (n=1)
  - Splenic infection (n=1)

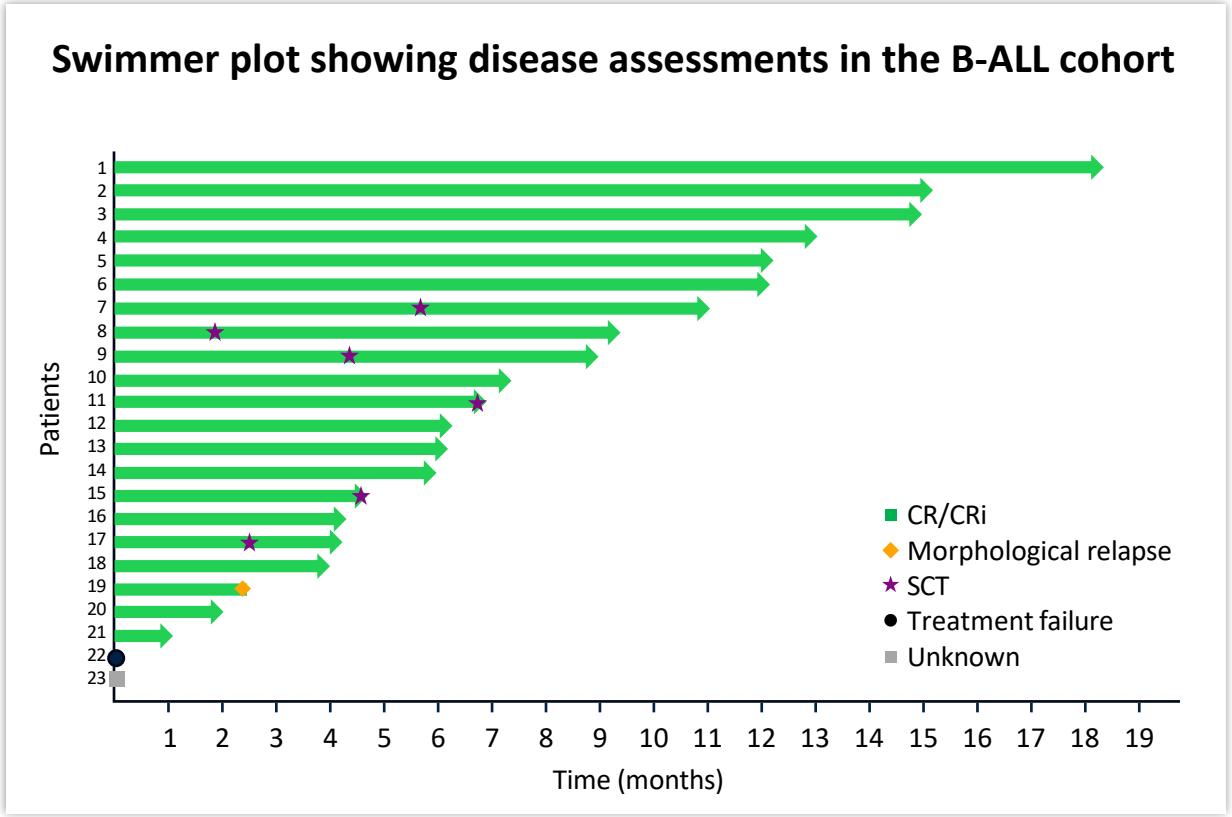
Safety outcomes

	All infused patients, B-ALL cohort (N=23)	
	Any Grade	Grade ≥3
Treatment-emergent adverse events, n (%)	23 (100)	17 (73.9)
CRS, n (%)	12 (52.2)	2* (8.7)
Time to onset of CRS in days,‡ median (range)	7.0 (1–11)	9.5 (8–11)
ICANS, n (%)	4 (17.4)	2* (8.7)
Time to onset of ICANS in days,‡ median (range)	8.5 (8–20)	8.5 (8–9)
Infections, n (%)	15 (65.2)	5 (21.7)
Sepsis, n (%)	2 (8.7)	2 (8.7)
Febrile neutropenia, n (%)	7 (30.4)	6 (26.1)
Treatment-related mortality, n (%)	0	

*One patient experienced both Grade 3 CRS and Grade 3 ICANS.
‡Time to onset (days) = [(Date of start of any-grade/Grade ≥3 CRS/ICANS – Date of first obe-cel infusion) +1].
B-ALL, B-cell acute lymphoblastic leukemia; CRS, cytokine release syndrome; ICANS, immune effector cell-associated neurotoxicity syndrome; obe-cel, obecabtagene autoleucel.

Results: Efficacy

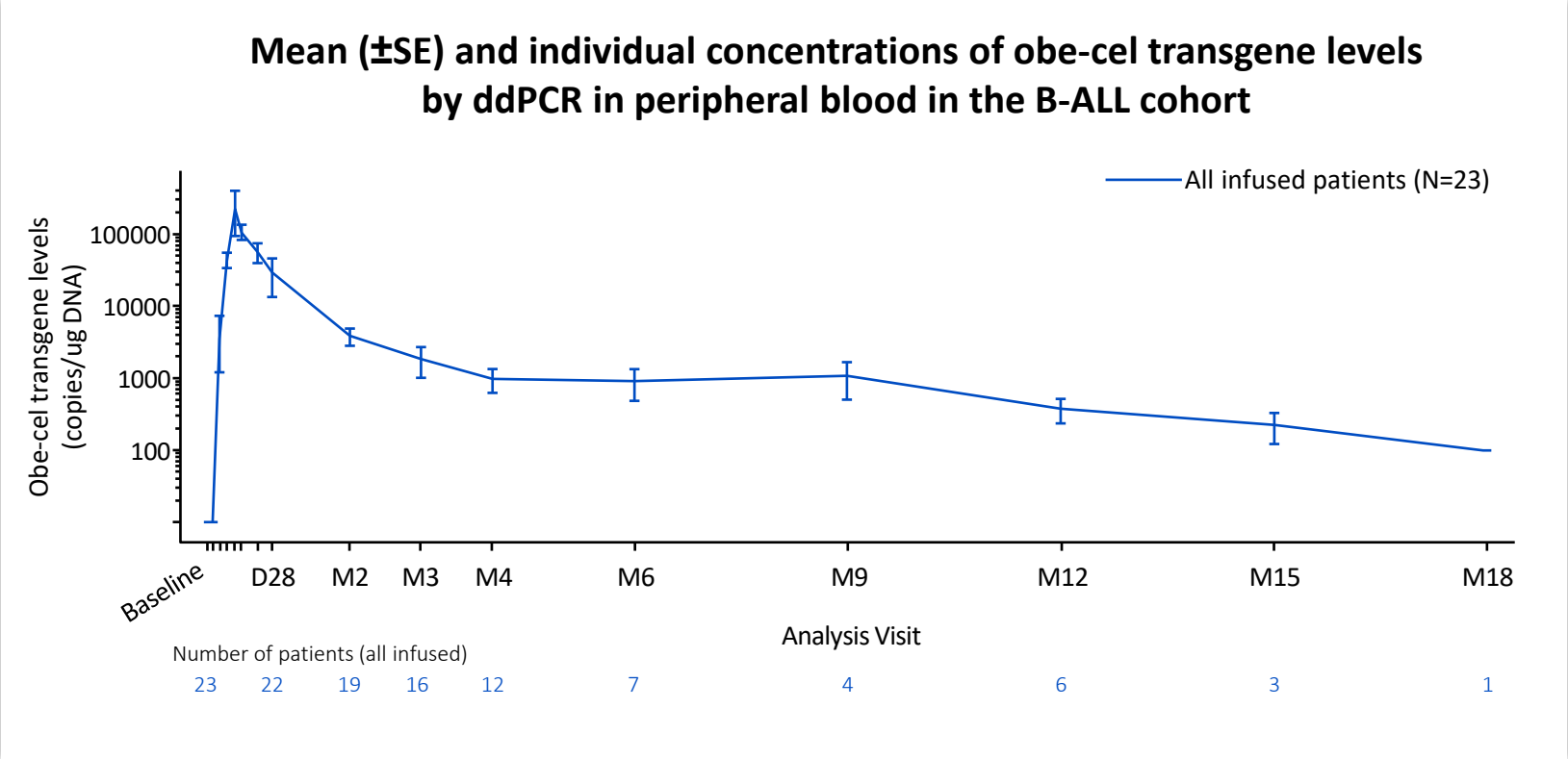
- A total of 22 patients had disease assessment at Month 1
  - At median follow-up (8.8 months), 21/22 patients responded to obe-cel; the ORR was 95.5% CI (95% CI: 77.2–99.9)
  - CR was achieved in 20 patients (90.9%; 95% CI: 70.8–98.9)
- All responders had MRD-negativity ($<10^{-4}$ or <0.01% leukemic cells per local assessment)
- Overall, 20 patients were in ongoing remission. Of those in remission, 6 patients received post obe-cel SCT per investigator decision; 14 patients did not receive post obe-cel SCT and among those patients, 11 had ongoing B-cell aplasia
  - Of the 6 patients who received post obe-cel SCT, 5 patients had lost CAR T-cell persistence and 4 patients were in B-cell recovery
- Morphological relapse with CD19-negative disease was observed in one patient, who subsequently passed away, one patient had no response, and one patient was pending evaluation at Day 28



B-ALL, B-cell acute lymphoblastic leukemia; CI, confidence interval; CR, complete remission; CRi, complete remission with incomplete hematologic recovery; MRD, measurable residual disease ; SCT, stem cell transplant.

Results: Pharmacokinetics and Pharmacodynamics Outcomes

- Following obe-cel infusion, the geometric mean maximal CAR T-cell expansion (C_{max}) was 90,383 copies/µg DNA (Geo-CV%: 142.3)
- The median time to maximal expansion (T_{max}) was 14 days (range: 9–21)
- Overall exposure during the first 28 days following infusion, measured as AUC was 803,308 copies/µg DNA×days (Geo-CV%: 172.0)



AUC, area under the curve; B-ALL, B-cell acute lymphoblastic leukemia; D, day; ddPCR, droplet digital polymerase chain reaction; Geo-CV%, geometric coefficient of variation; M, month; obe-cel, obecabtagene autoleucel; SE, standard error.

Conclusions

- The safety profile of obe-cel in Paediatric patients was consistent with that previously reported in adults, with low rates of high-grade CRS and ICANS
- The ORR was high at 95.5% (n=21) and 20 patients were in ongoing remission at data cut-off (median follow-up: 8.8 months)
- Manufacture of obe-cel was successful for all patients. Obe-cel effectively expanded (geometric mean: 90,383 copies/µg DNA) after a single infusion at the dose of 1.0×10^{6}/kg CAR T-cells
- While longer follow-up is needed, results demonstrate promising safety and preliminary efficacy in pediatric patients with R/R B-ALL treated with obe-cel
- These preliminary findings support further exploration of obe-cel in pediatric R/R B-ALL. Planning for the Phase II expansion is underway

B-ALL, B-cell acute lymphoblastic leukemia; CAR, chimeric antigen receptor;; CRS, cytokine release syndrome; ICANS, immune effector cell-associated neurotoxicity syndrome; obe-cel, obecabtagene autoleucel; ORR, Overall remission rate; R/R, relapsed/refractory.

AALL2523/AFFI2522: A Single-Arm, Open-Label, Multi-Centre, Phase 1b/2 Study Evaluating the Safety and Preliminary Efficacy of AUTO1 (Obe-cel) in Pediatric Patients with CD19-Positive Relapsed/Refractory (r/r) B cell Acute Lymphoblastic Leukemia (B ALL) and Aggressive Mature B cell NON-HODGKIN Lymphoma (B NHL).

Study Co-Chairs:
Deepa Bhojwani
Shannon Maude

CHILDREN'S ONCOLOGY GROUP

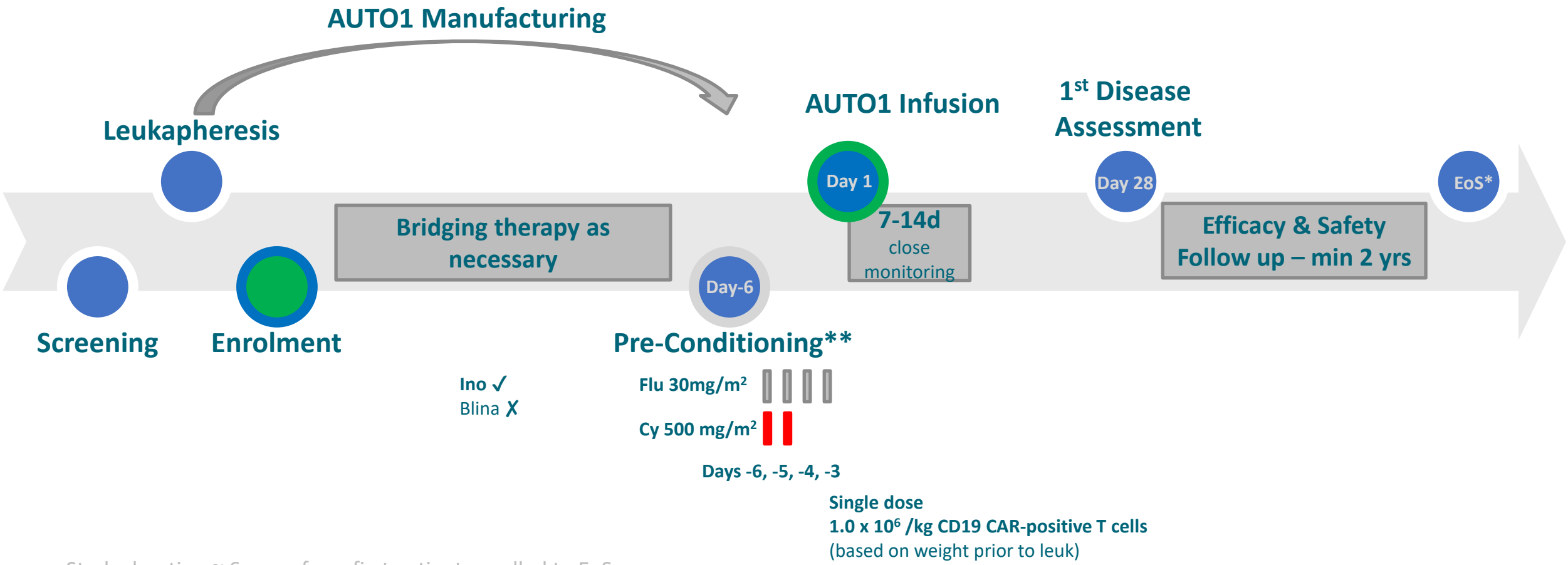
Background

- Critical need in first relapse of B-ALL
  - AALL1331 showed improved outcomes with addition of blinatumomab *but*
    - 4% TRM
    - 40% Grade 3-5 infection
    - 75% MRD+
    - ~40% of patients did not proceed to blina randomization
    - Intent-to-treat analysis for HR relapse: 2-year EFS 25%
  - No current indication for CAR T-cell therapy in first relapse

AUTO-PY1 Planned Expansion

- Collaborating with Autolus on their Phase II expansion
  - Initially focused on high-risk first relapse trial
  - First collaborating on Ph 2 expansion to support sBLA submission for pediatric indication in r/r B-ALL
- Additional 30 ALL patients (for total of 54), with at least 15 slots for high-risk first relapse
- Primary Endpoint:
  - Proportion of patients in remission (CR) per IRRC assessment within 3 months of obe-cel infusion
- Secondary endpoints include MRD-negative CR, DOR, EFS, OS, proportion consolidating with SCT, persistence

Study Design



- Study duration ~ 6 years from first patient enrolled to EoS
- *EoS = LPLV expected to be 24 mo after the LP dose
- All patients who dose will be eligible to consent to a separate LTFUP where they will undergo semi-annual and annual evaluations <15 years

AUTO-PY1 Phase 2 Expansion Inclusion:

B ALL: r/r CD19-positive B ALL defined as 1 of the following:

i. Primary refractory

a) NCI high-risk B ALL refractory after first-line induction, consolidation and blinatumomab

b) Refractory B ALL if BM disease ≥ 25% after first-line induction and consolidation.

c) KMT2A-rearranged infant ALL refractory after first-line induction and blinatumomab

ii. **First relapse**

a) COG high-risk first relapse defined as relapse in BM < 36 months after initial diagnosis or an isolated extramedullary relapse < 18 months after initial diagnosis.

b) Patients with Down syndrome and infants with KMT2A-r are eligible with first relapse at any time.

c) Refractory disease after re-induction for first relapse (+/- blinatumomab)

iii. Second or greater relapse

iv. Relapsed or refractory post-SCT

v. Ph+ ALL: intolerant to or has failed at least 1 TKI or if TKI therapy is contraindicated.

NB: NCCN ped ALL definitions used, ie BM 1% with confirmatory test

Key Exclusion:

i. CNS3 (treated to CNS2 eligible)
ii. CNS pathology
iii. Active of uncontrolled infection
iv. Prior CD19-directed therapy (blinatumomab allowed)
v. Grade ≥ 3 neurotoxicity following blinatumomab
vi. <90 days from HSCT
vii. Grade ≥ 2 acute GVHD or moderate/severe chronic GVHD requiring systemic steroids or other immunosuppressants within 4 weeks
viii. Rapidly progressive disease or chemo-unresponsive disease

NB: Blinatumomab cannot be used as bridging
Obe-cel is being investigated as definitive therapy; therefore, HSCT is not part of treatment plan for this study

Study Status

- AALL2523/AFFI2522: A Single-Arm, Open-Label, Multi-Centre, Phase 1b/2 Study Evaluating the Safety and Preliminary Efficacy of AUTO1 (Obe-cel) in Pediatric Patients with CD19-Positive Relapsed/Refractory (r/r) B cell Acute Lymphoblastic Leukemia (B ALL) and Aggressive Mature B cell NON-HODGKIN Lymphoma (B NHL)
- Approved by SC August 5, 2025
- Approved by FDA October 1, 2025
- **Activated in COG February 10, 2025**
- Currently open at CHOP, Primary Children's in Utah, and Methodist in San Antonio
- Working on opening 8, additional COG sites – CHLA, Seattle, Cincinnati, Denver, CHOA, Lurie, Atlanta and Columbia

Acknowledgements

- **Deepa Bhojwani**
- **Shannon Maude**
- Nirali Shah
- Dave Teachey
- Carrie Kitko
- Mike Pulsipher
- Lia Gore
- Brent Wood

- Lingyun Ji
- Mignon Loh
- Elizabeth Raetz
- Maureen O'Brien

- Nicole Towcimack
- Megan Johnson

GOSH

- **Sara Ghorashian**
- Persis Amrolia

Autolus

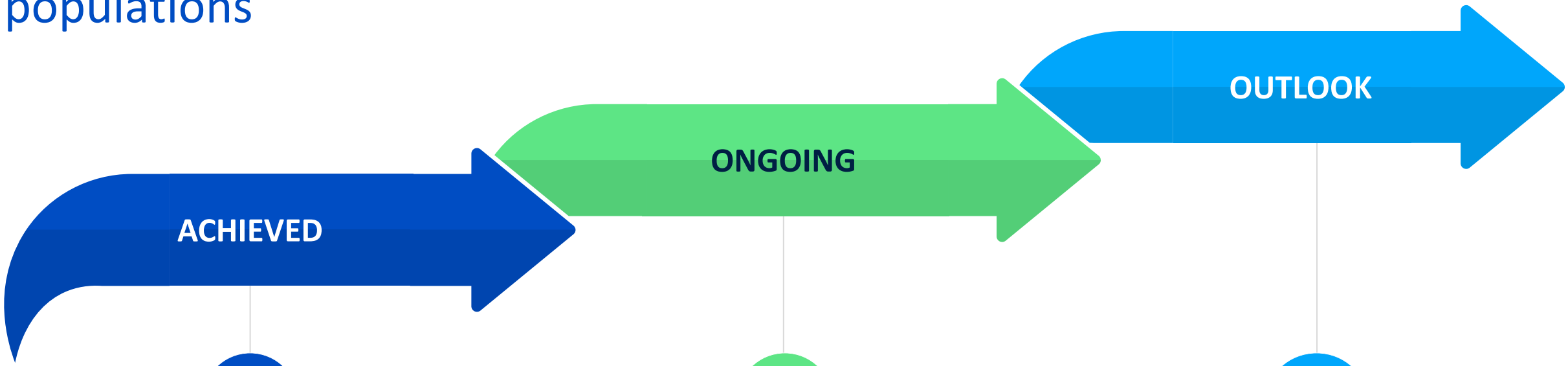
- Ram Malladi
- Matthias Will
- Ana Metelo
- Michael Zhang
- Pierre Lao-Sirieix

CHILDREN'S ONCOLOGY GROUP

Autolus

Q&A

Autolus's goal is to expand the utility AUCATZYL® for broader patient populations



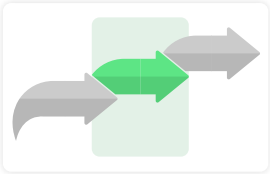
CD19 CAR T therapy in adult r/r ALL redefining CAR T eligibility; broad market access in US & UK

Become preferred CD19 CAR-T therapy for r/r ALL for all ages and lines of therapy; expand market access in EU

Towards an abbreviated frontline consolidation therapy with obe-cel

Placeholder for Source and/or Footnote

ONGOING: Opportunity in U.S. to be the preferred treatment for all age groups in r/r B-ALL with pediatric label expansion

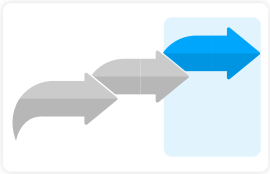


	Ages	Disease Stages: Refractory	1L Relapse	2L+ Relapse
TECARTUS Brexu-cel	0-18	✗	✗	✗
	18+	✓	✓	✓
KYMRIAH Tisa-cel	0-25	✓	✗	✓
	26+	✗	✗	✗
AUCATZYL® Obe-cel	0-18*	✓	✓	✓
	18+	✓	✓	✓

Source: USPI Features, Kymriah
*Assumes pediatric label expansion

OUTLOOK: Unmet Need Remains in 1stL ALL post ECOG1910

Focus on frontline adult ALL patients with limited response to current SoC

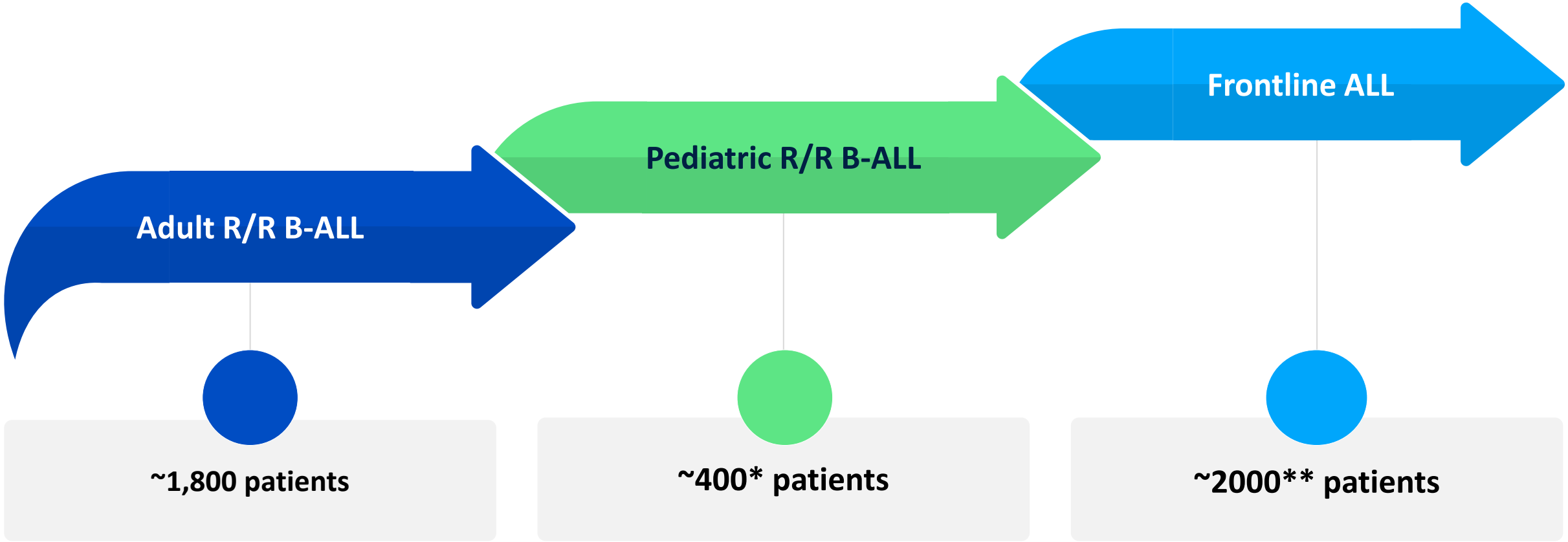


B-ALL subtype	Management	4-5 year survival
Ph-positive ALL	• Hyper CVAD with TKI • TKI maintenance • allo-HSCT in CR1 • Non-chemo regimen /w TKI + blina	>75%
AYA ALL	• Augmented BFM protocol • Hyper CVAD /w CD19/20/22 monoclonal AB	60-<70%
Ph-like ALL	• Hyper CVAD /w TKI or antibody	60-70%
Older ALL (≥60 y/age)	• Mini-hyper CVD plus inno and blina	50%
MRD positive ALL	• Prognosis is worse • Blinatumomab with or w/o allo-HSCT in CR1	40-50%
KMT2A-rearranged ALL Complex cytogenetics	• Allogeneic HSCT in CR1	50-60%

Source: Modified from Kantarjian, Pui and Jabbour Lancet 2025

Opportunity to significantly expand the addressable patient population

US Estimated Total Addressable Market



*Source: DRG/Clarivate, projected RR pts pool based on Blinatumumab adoption in 1L , ** Projected number of patients with 1L ALL in CR 1. B-Cell 1L ALL incidence cases: 2,801. Source: DRG/Clarivate

Autolus

Thank you