CARIBOU BIOSCIENCES®

June 2, 2024

CB-010 ANTLER Phase 1 trial update and KOL discussion

Transformative genome-edited therapies for patients

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As a result of many factors, including risks related to our limited operating history, history of net operating losses, financial position and our ability to raise additional capital as needed to fund our operations and product candidate development; uncertainties related to the initiation, cost, timing, and progress, and results of our current and future research and development programs, preclinical studies, and clinical trials; risks that initial or interim clinical trial data will not ultimately be predictive of the safety and efficacy of our product candidates or that clinical outcomes may differ as more clinical data becomes available; the risk that preclinical study results we observed will not be borne out in human patients; our ability to obtain and maintain regulatory approval for our product candidates; risks that our product candidates, if approved, may not gain market acceptance due to negative public opinion and increased regulatory scrutiny of cell therapies involving genome editing; our ability to meet future regulatory standards with respect to our products; our ability to obtain key regulatory input and approvals, our ability to establish and/or maintain intellectual property rights covering our product candidates and genome-editing technology; risks of third parties asserting that our product candidates infringe their patents; developments related to our competitors and our industry; our reliance on third parties to conduct our clinical trials and manufacture our product candidates; the impact of public health crises and geopolitical events on our business and operations; and other risks described in greater detail in our filings with the Securities and Exchange Commission (the "SEC"), including the section titled "Risk Factors" of our Annual Report on Form 10-K for the year ended December 31, 2023, and other filings we make with the SEC; the events and circumstances reflected in our forward-looking statements may not be achieved or may not occur, and actual results could differ materially from those described in or implied by the forward-looking statements contained in this presentation.

Caution should be exercised when interpreting results from separate trials involving other CAR-T cell therapies. The results of other CAR-T cell therapies presented or referenced in these slides have been derived from publicly available reports of clinical trials not conducted by us, and we have not performed any head-to-head trials comparing any of these other CAR-T cell therapies with CB-010. As such, the results of these other clinical trials may not be comparable to clinical results for CB-010. The design of these other trials vary in material ways from the design of the clinical trials for CB-010, including with respect to patient populations, follow-up times, the clinical trial phase, and subject characteristics. As a result, cross-trial comparisons may have no interpretive value on our existing or future results. For further information and to understand these material differences, you should read the reports for the other CAR-T cell therapies' clinical trials and the sources included in this presentation.

In light of the foregoing, you are urged not to rely on any forward-looking statement in reaching any conclusion or making any investment decision about our securities. The forward-looking statements in this presentation are made only as of the date hereof. Except to the extent required by law, the Company assumes no obligation and does not intend to update any of these forward-looking statements after the date of this presentation or to conform these statements to actual results or revised expectations. From time to time, we may release additional clinical data from our ongoing ANTLER phase 1 clinical trial, our CaMMouflage phase 1 clinical trial, our AMpLify phase 1 clinical trial, and our GALLOP phase 1 clinical trial. We make no representations regarding such additional clinical data or the timing of its release, or whether any such data will support or contradict the findings of the clinical data reported earlier.

This presentation shall not constitute an offer to sell or the solicitation of an offer to buy any securities.

The future of CAR-T cell therapies is off-the-shelf

CB-010 ANTLER Phase 1 trial

Rachel Haurwitz, PhD
President & CEO
Caribou Biosciences, Inc.

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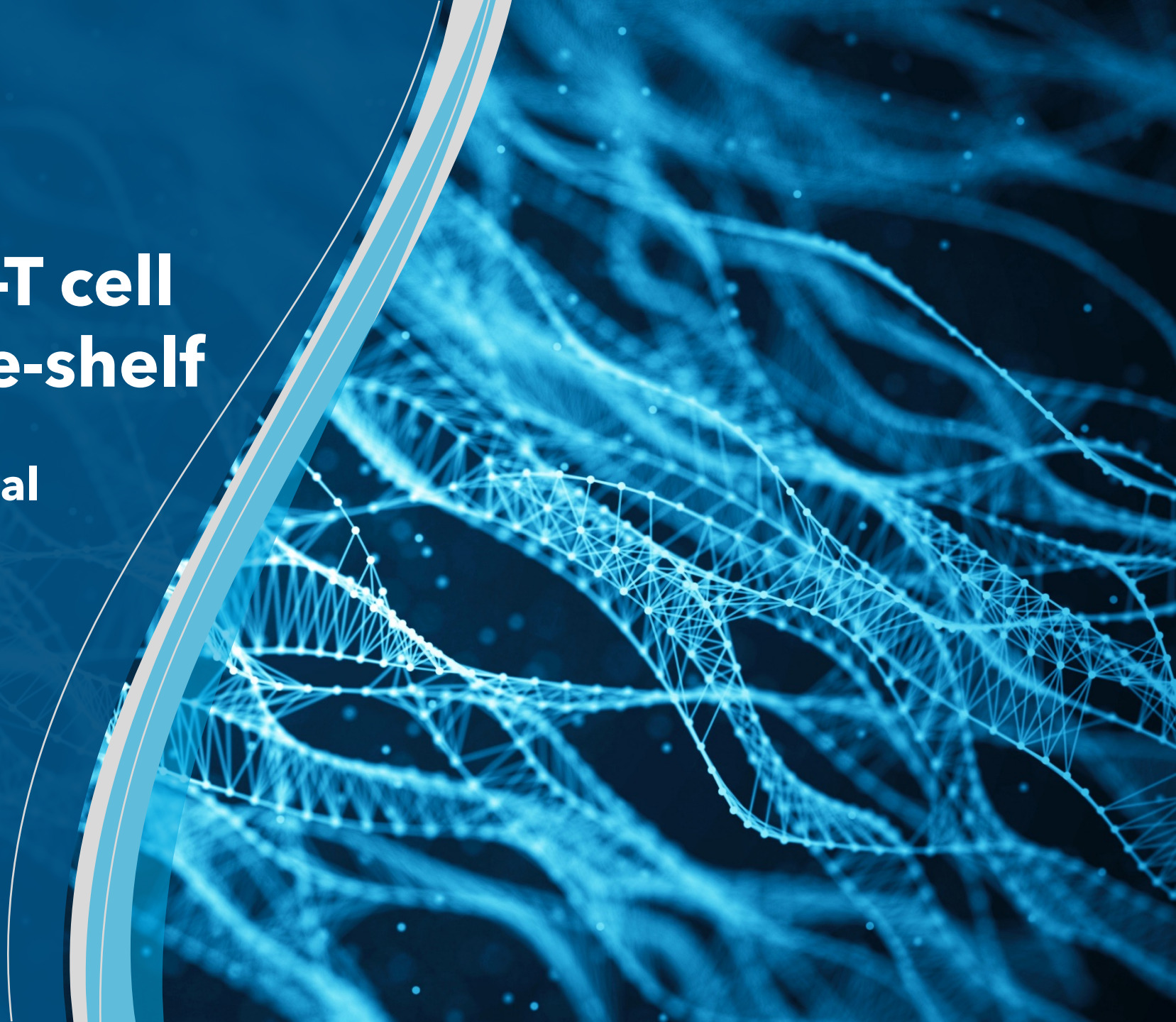
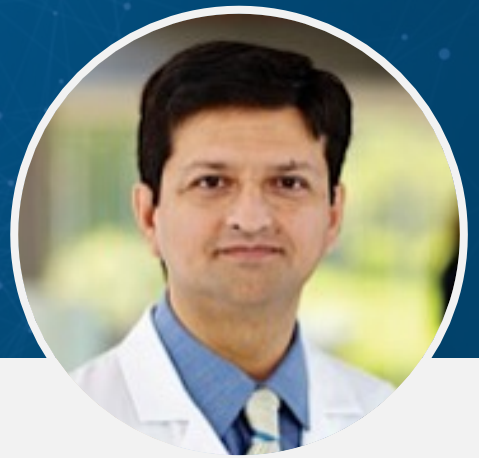


Today's guests

Boyu Hu, MD

Assistant professor, director of lymphoma and CLL in the division of hematology and hematologic malignancies

Huntsman Cancer Institute
University of Utah



Mehdi Hamadani, MD

Professor of medicine and section chief of hematologic malignancies

Medical College of Wisconsin

Patients shouldn't have to wait for treatment

Allogeneic therapy
N=many
per batch

Screening

Product shipment

Days **Lymphodepletion**

The future of cell therapy is off-the-shelf

Autologous therapy
N=1
per batch

Screening

Queuing, leukapheresis scheduling

Leukapheresis

Sample shipment

Manufacturing, product failure identification

Bridging therapy

Product shipment

Weeks to months[1] **Lymphodepletion**

[1] Mikhael, J. et al. JCO Oncology Practice 2022 18:12, 800-807

CB-010

Allogeneic anti-CD19 CAR-T cell therapy with a PD-1 knockout for r/r B cell non-Hodgkin lymphoma (B-NHL)

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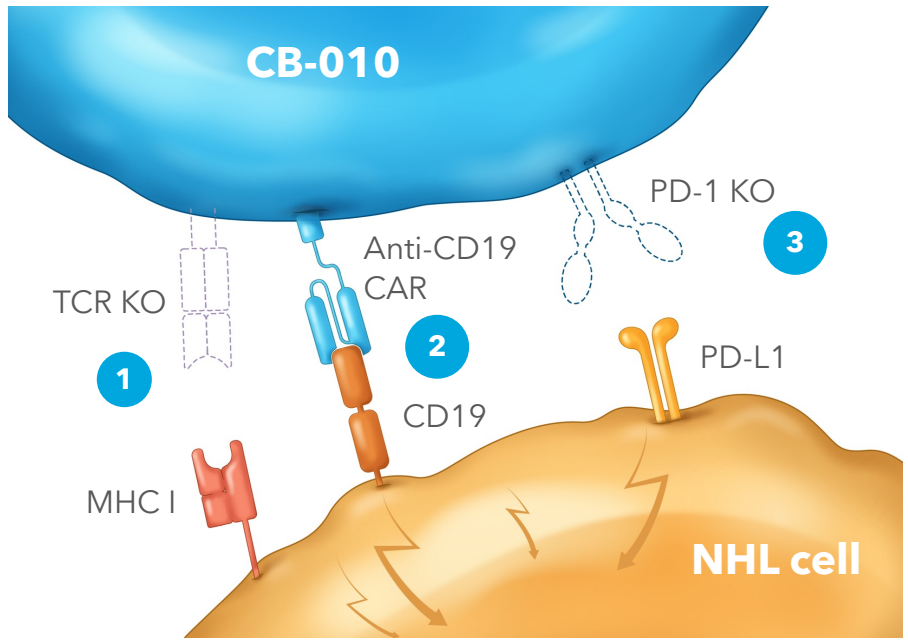
CB-010 has a PD-1 KO designed to reduce CAR-T cell exhaustion



Armored with 3 genome edits

1. ***TRAC* gene knockout (KO)**
   - Eliminates TCR expression, reduces GvHD risk
2. **Anti-CD19 CAR site-specific insertion into *TRAC* locus**
   - Eliminates random integration, targets tumor antigen
3. **PD-1 KO for enhanced antitumor activity**
   - Reduces CAR-T cell exhaustion
   - Potentially contributes to initial tumor debulking

- 1st CAR-T in the clinic with **checkpoint disruption** via PD-1 KO[1]
- Cas9 chRDNA editing for **reduced off-target editing** and enhanced genomic integrity
- **Anti-CD19** scFv FMC63 with a 4-1BB costimulatory domain

CAR: chimeric antigen receptor; KO: knockout; CD: cluster of differentiation; chRDNA: CRISPR hybrid RNA-DNA; CRISPR: clustered regularly interspaced short palindromic repeats; PD-1: programmed cell death protein 1; TCR: T cell receptor; *TRAC*: T cell receptor alpha constant; scFv: single-chain variable fragment

[1] To Caribou's knowledge.

CB-010 ANTLER Phase 1 trial in 2L LBCL

Part A: 3+3 dose escalation – completed (N=16)
- Eligibility: aggressive r/r B-NHL[1] with ≥2 prior lines of chemoimmunotherapy or primary refractory
- Exclusion: prior CD19-targeted therapy

Part B: dose expansion – enrolling
- Eligibility: 2nd line LBCL[2]
- Exclusion: prior CD19-targeted therapy
- Objective: tumor response, RP2D

r/r B-NHL

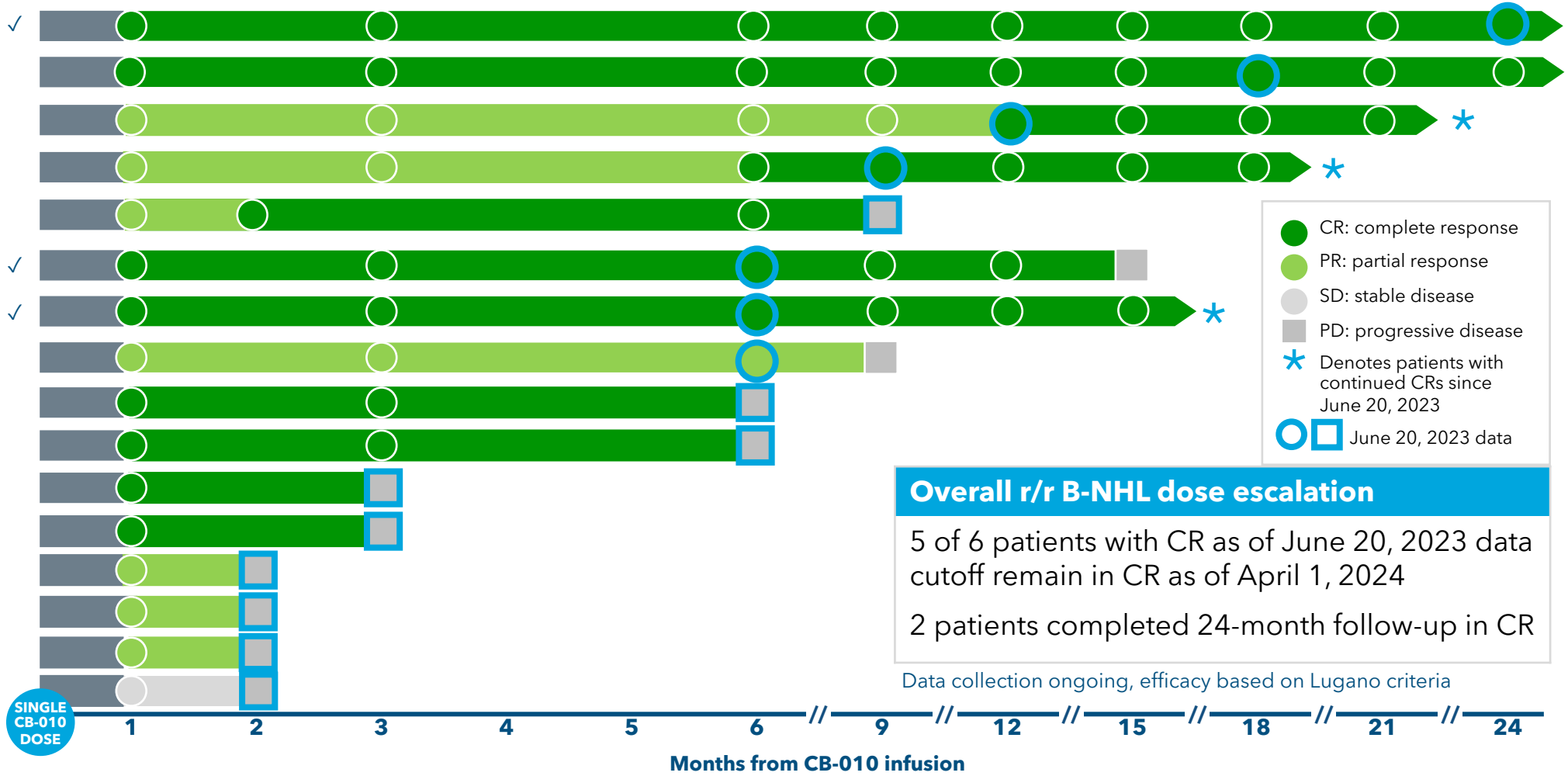
Dose level 1: 40x10⁶ CAR-T cells
Dose level 2: 80x10⁶ CAR-T cells
Dose level 3: 120x10⁶ CAR-T cells
Dose expansion: 30th patient dosed; 80x10⁶ CAR-T cells selected as RP2D
Will enroll ~20 patients at RP2D to prospectively evaluate partial (≥4) HLA matching, DSA screening

NCT04637763
DSA: donor-specific antibodies; HLA: human leukocyte antigen
[1] Subtypes include: DLBCL (diffuse large B cell lymphoma), HGBL (high-grade B cell lymphoma), tFL (transformed DLBCL from follicular lymphoma, PMBCL (primary mediastinal large B cell lymphoma), FL (follicular lymphoma, aggressively behaving with POD24 (high risk)), MZL (marginal zone lymphoma).
[2] LBCL subtypes include: DLBCL NOS (DLBCL not otherwise specified), HGBL, transformed DLBLC from FL or MZL, and PMBCL.
[3] Clin Cancer Res. 2011 July 1; 17(13): 4550–4557. doi:10.1158/1078-0432.CCR-11-0116.

CB-010's foundational data: durable responses in dose escalation

4 of 4 DLBCL patients remain in CR since last data cutoff June 20, 2023

Subtype	Dose	PLoT	Pt #	≥4 HLA
FL[1]	40M	8	1	✓
DLBCL	40M	4	4	
DLBCL	80M	1	7	
DLBCL	80M	1	8	
PMBCL[2]	40M	2	5	
MCL	40M	2	13	✓
DLBCL	80M	2	9	✓
MZL	80M	4	15	
MCL	40M	4	2	
FL[1]	40M	2	3	
DLBCL	40M	2	6	
DLBCL	120M	2	10	
HGBL	40M	1	14	
MCL	80M	2	16	
HGBL	120M	1	12	
DLBCL	120M	2	11	



Overall r/r B-NHL dose escalation

5 of 6 patients with CR as of June 20, 2023 data cutoff remain in CR as of April 1, 2024

2 patients completed 24-month follow-up in CR

Data collection ongoing, efficacy based on Lugano criteria

DLBCL: diffuse large B cell lymphoma; FL: follicular lymphoma; HGBL: high-grade B cell lymphoma; MCL: mantle cell lymphoma; MZL: marginal zone lymphoma; PLoT: prior lines of therapy (#); PMBCL: primary mediastinal large B cell lymphoma

✓ = patients with ≥4 HLA (human leukocyte antigen) matches (all other patients have ≤3 HLA matches).

[1] Aggressively behaving, with POD24 (high risk).

[2] Patient 5's 3-month scan conducted on day 63 post CB-010 as per investigator's discretion.

ANTLER Phase 1 clinical trial as of April 1, 2024 cutoff date, data collection ongoing.

CB-010 with partial HLA matching shows safety, efficacy, and durability can potentially rival autologous CAR-T cell therapies

1 dose per patient,
3 dose levels evaluated,
all generally well tolerated

RP2D selected
80x10^6 CAR-T cells

2L LBCL at RP2D
CR rate: 50%
Median duration of CR: NR

Median PFS
14.4 months
(95% CI: 1.7-NE)
observed in 13 patients with partial (≥4) HLA matching[1]

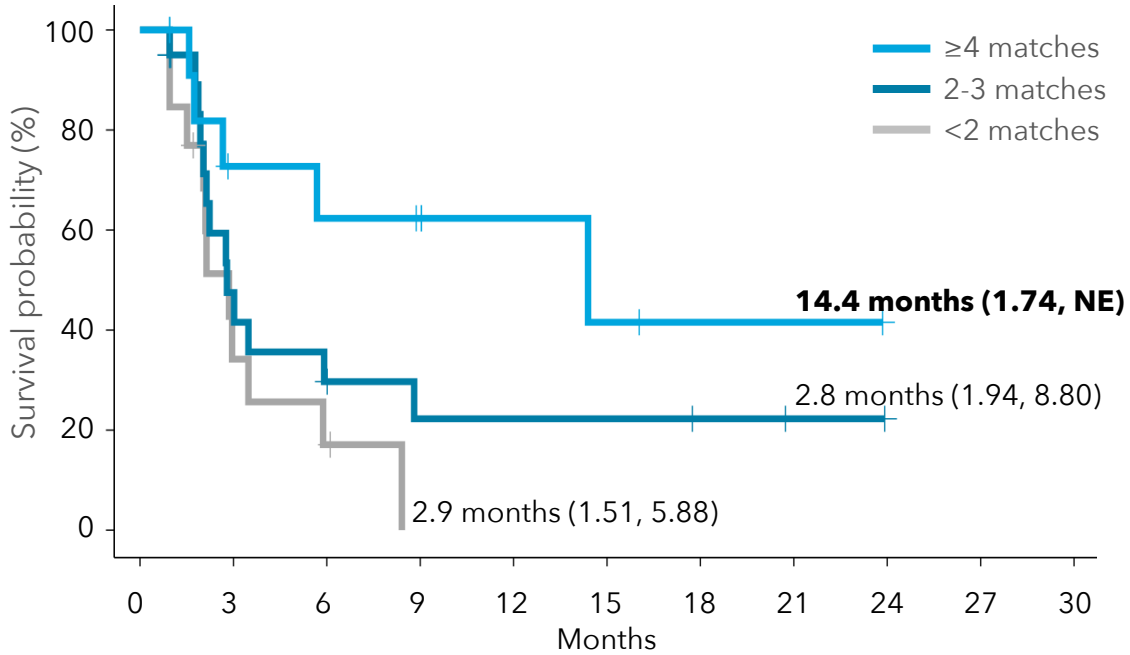
Advancing CB-010 with partial HLA matching
in 2L LBCL and lupus
Phase 1 clinical trials

2L: second-line; 3L: third-line; B-NH: B cell non-Hodgkin's lymphoma; CI: confidence interval; CR: complete response; HLA: human leukocyte antigen; LBCL: large B cell lymphoma; NE: not estimable; NR: not reached; PFS: progression free survival; partial HLA matching: patient has ≥4 HLA alleles that match donor T cells used for CB-010 manufacturing; RP2D: recommended Phase 2 dose; CR: complete response; NR: not reached

[1]Retrospective analysis in 13 patients with ≥4 HLA allele matching; subset includes: 2L LBCL (N=10), 3L LBCL (N=1), and 3L+ B-NHL (N=2). ANTLER Phase 1 clinical trial as of April 1, 2024 cutoff date, data collection ongoing.

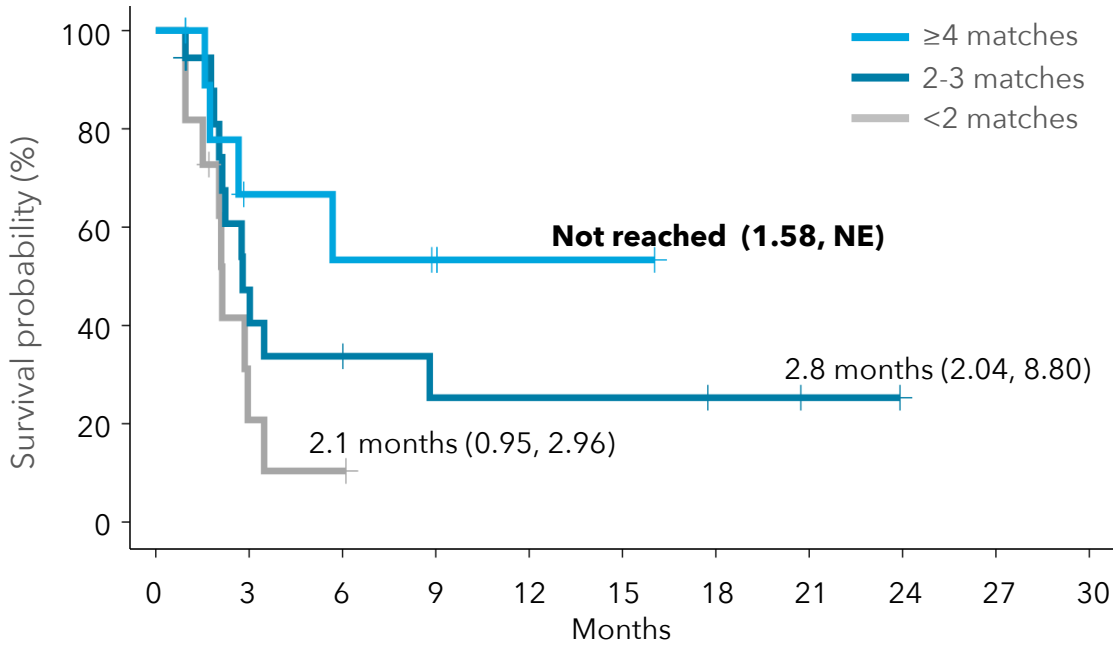
Improved PFS for all patients treated with CB-010 from a donor with partial (≥4) HLA matching

PFS by level of HLA matching
All patients
N=46*, median PFS (95% CI)



≥4	13	7	6	5	3	2	1	1	0		
2-3	20	8	5	3	3	3	2	1	0		
<2	13	4	2	0							

PFS by level of HLA matching
LBCL patients
N=40*, median PFS (95% CI)



≥4	11	5	4	3	1	1	0				
2-3	18	7	5	3	3	3	2	1	0		
<2	11	2	1	0							

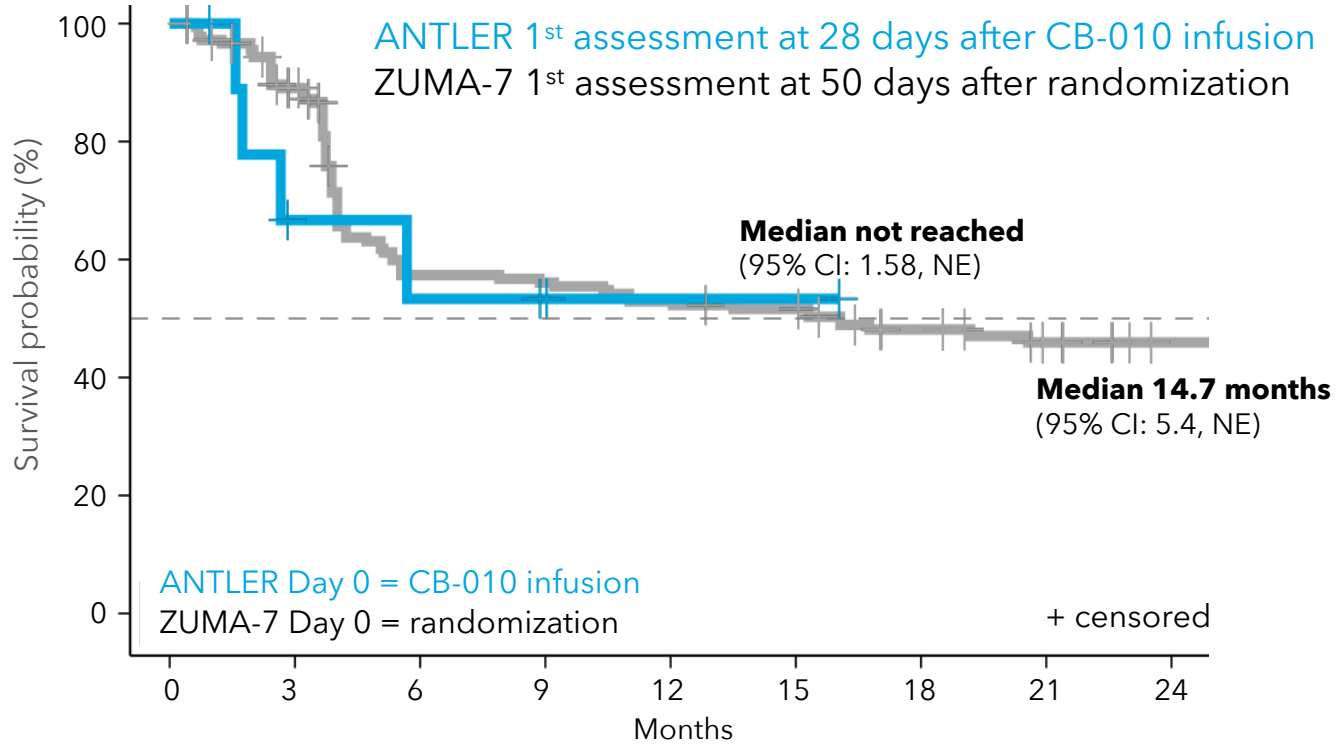
CI: confidence interval; HLA: human leukocyte antigen; NE: not estimable; partial HLA matching: patient has ≥4 HLA alleles that match donor T cells used for CB-010 manufacturing

*Retrospective analysis of HLA allele matching for class I and class II antigens.

ANTLER Phase 1 clinical trial as of April 1, 2024 cutoff date, data collection ongoing.

Preliminary PFS with partial HLA matching has potential to be on par with an approved autologous CAR-T cell therapy

ANTLER LBCL patients with partial HLA matching and Yescarta ZUMA-7 trial



CB-010[1]	11	5	4	3	1	1	0		
Yescarta	180	147	90	88	83	80	56	35	12

FOR ILLUSTRATIVE PURPOSES ONLY: The results of other CAR-T cell therapies presented on this slide have been derived from publicly available reports of clinical trials run independently of Caribou and the data has been digitally recreated from publicly available original sources to compare approximations of the findings. The Company has not performed any head-to-head trials comparing any of these other CAR-T cell therapies with CB-010. As such, the results of these other clinical trials may not be comparable to clinical results for CB-010. The design of these other trials vary in material ways from the design of the clinical trials for CB-010, including with respect to patient populations, follow-up times, the clinical trial phase, and subject characteristics. As a result, cross-trial comparisons may have no interpretive value on the Company's existing or future results. For further information and to understand these material differences, you should read the reports for the other trials at the sources included below.

Source: ZUMA-7, Locke et al, NEJM, 2022
PFS: progression free survival; 2L: second-line; 3L: third-line; LBCL: large B cell lymphoma; HLA: human leukocyte antigen; NE: not estimable; partial HLA matching: patient has ≥4 HLA alleles that match donor T cells used for CB-010 manufacturing
[1] N=11 ≥4 HLA matching subset includes: 2L LBCL patients (N=10) and 3L LBCL patient (N=1).
ANTLER Phase 1 clinical trial as of April 1, 2024 cutoff date, data collection ongoing.

ANTLER Phase 1 trial initial dose expansion data

Boyu Hu, MD

Director of Lymphoma and CLL

Division of Hematology and Hematologic Malignancies

Huntsman Cancer Institute

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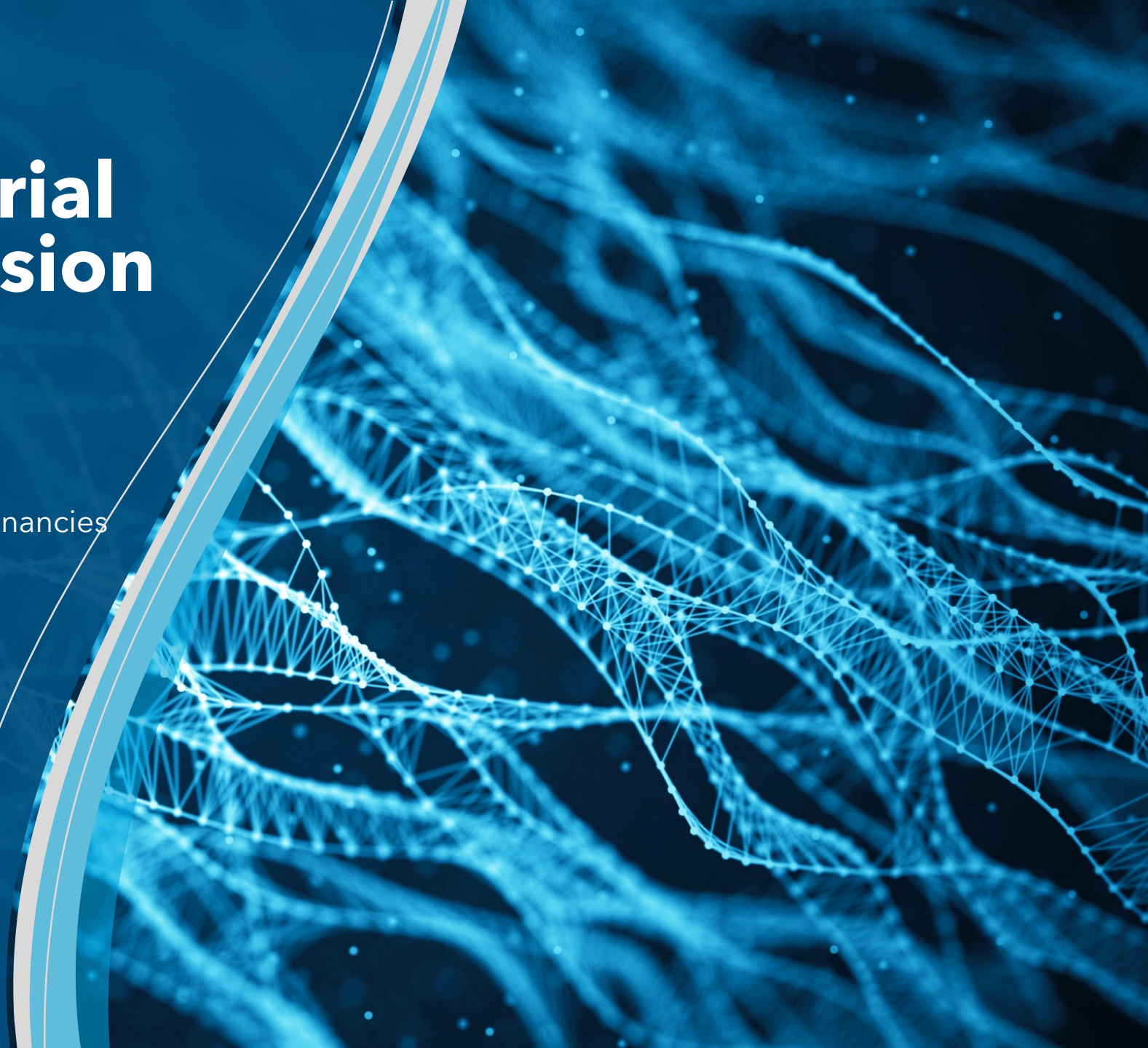

Disclosures

Consulting: Novartis, Bristol Meyers Squibb, Eli Lilly, GenMab, ADC Therapeutics, ImmPACT Bio, Seattle Genetics, Regeneron, Caribou Biosciences, Abbvie

Research Funding: Genentech, Celgene, CRISPR Therapeutics, Morphosys AG, Caribou Biosciences, Repare Therapeutics, Artiva Biotherapeutics, Newave, AstraZeneca, ImmPACT Bio

Patients in ANTLER all had aggressive r/r B-NHL

Patient and disease characteristics	All treated (N=46)	Dose escalation (N=16)	Dose expansion (N=30)
Age, years, median (range)	65.0 (21-82)	66.0 (55-82)	63.0 (21-78)
Men, n (%)	36 (78.3)	14 (87.5)	22 (73.3)
ECOG performance status, n (%)			
0	21 (45.7)	6 (37.5)	15 (50.0)
1	25 (54.3)	10 (62.5)	15 (50.0)
Time since diagnosis, months, median (range)	10.6 (2.9-196.4)	29.0 (2.9-196.4)	9.5 (4.9-79.6)
NHL subtype, n (%)			
LBCL			
DLBCL	26 (56.5)	7 (43.8)	19 (63.3)
HGBL	8 (17.4)	2 (12.5)	6 (20.0)
tFL	4 (8.7)	0	4 (13.3)
PMBCL	2 (4.3)	1 (6.3)	1 (3.3)
Other B-NHL			
MCL	3 (6.5)	3 (18.8)	0
FL[1]	2 (4.3)	2 (12.5)	0
MZL	1 (2.2)	1 (6.3)	0
Prior systemic therapies, median (range)[2]	1 (1-8)	2 (1-8)	1 (1-1)
IPI score at screening, n (%)[3]			
0 or 1	11 (23.9)	4 (25.0)	7 (23.3)
2	8 (17.4)	2 (12.5)	6 (20.0)
≥3	18 (39.1)	3 (18.8)	15 (50.0)
Maximum lesion diameter ≥7.5 cm, n (%)	10 (21.7)	3 (18.8)	7 (23.3)
LDH at screening, U/L, median (range)	216 (126-1799)	202 (126-710)	233.5 (140-1799)
Baseline LDH > ULN, n (%)	23 (50.0)	5 (31.3)	18 (60.0)
LDH >2 x ULN, n (%)	7 (15.2)	1 (6.3)	6 (20.0)

DLBCL: diffuse large B cell lymphoma; FL: follicular lymphoma; HGBL: high-grade B cell lymphoma; MCL: mantle cell lymphoma; MZL: marginal zone lymphoma; PMBCL: primary mediastinal large B cell lymphoma; IPI: International Prognostic Index; LDH: lactate dehydrogenase; ULN: upper limit of normal

[1] Aggressively behaving, with POD24 (high risk).

[2] Patients are CD19 CAR-T naïve.

[3] IPI scores were not recorded for all patients.

As of April 1, 2024 cutoff date.

Rapid timeline to treatment key to patients choosing CB-010 over approved autologous CAR-T cell therapies

2 days
(median, range 0-12)
from confirmation of eligibility to LD

Lymphodepletion
(7 days)

Rest
(2 days)

CB-010

Reasons that investigators cited for enrolling patients in ANTLER[1]

- Rapid disease progression prohibited waiting for autologous CAR-T
- Patient not wanting to go through apheresis
- Preference for no bridging therapy during autologous CAR-T cell manufacturing
- Insurance rejection of autologous CAR-T
- Preference for an off-the-shelf therapy

LD: lymphodepletion

[1] Based on survey answers from ANTLER investigators asking why patients were dosed with CB-010 versus autologous CAR-T cell therapy; 86% of ANTLER sites offer one of the approved auto CAR-Ts in 2L LBCL.

CB-010 is generally well tolerated

Treatment-emergent adverse events (TEAE[1]) in ≥20% of all patients

System organ class, n (%) Preferred term, n (%)	All treated (N = 46)			LBCL subgroup (N=40)			2L LBCL RP2D subgroup (N=20)		
	Any grade	Grade ≥3	Related grade ≥3	Any grade	Grade ≥3	Related grade ≥3	Any grade	Grade ≥3	Related grade ≥3
Any TEAE	46 (100)	41 (89)	23 (50)	40 (100)	35 (88)	20 (50)	20 (100)	18 (90)	10 (50)
Thrombocytopenia	30 (65)	29 (63)	15 (33)	26 (65)	25 (63)	13 (33)	12 (60)	11 (55)	6 (30)
Anemia	27 (59)	24 (52)	10 (22)	24 (60)	22 (55)	10 (25)	13 (65)	11 (55)	6 (30)
Neutropenia	22 (48)	19 (41)	7 (15)	18 (45)	15 (38)	6 (15)	10 (50)	8 (40)	4 (20)
White blood cell count decreased	15 (33)	14 (30)	6 (13)	14 (35)	13 (33)	5 (13)	9 (45)	8 (40)	2 (10)
CRS	26 (57)	0	0	23 (58)	0	0	13 (65)	0	0
Infections	22 (48)	10 (22)	4 (9)	19 (48)	8 (20)	4 (10)	9 (45)	6 (30)	3 (15)
Hypokalemia	11 (24)	0	0	9 (23)	0	0	4 (20)	0	0
Pyrexia	11 (24)	0	0	10 (25)	0	0	2 (10)	0	0
ICANS	10 (22)	3 (7)	3 (7)	8 (20)	2 (5)	2 (5)	5 (25)	1 (5)	1 (5)
Diarrhea	10 (22)	0	0	7 (18)	0	0	3 (15)	0	0

Five patients died due to adverse events following CB-010 infusion (4 unrelated, 1 possibly related[2] to CB-010)

CRS: cytokine release syndrome; ICANS: immune effector cell-associated neurotoxicity syndrome

[1] TEAEs are defined as adverse events (AEs) with a start date on or after the CB-010 infusion date.

[2] One death possibly related to CB-010 per investigator due to complications of a bladder perforation in the context of BK virus hemorrhagic cystitis. As of April 1, 2024 cutoff date.

CB-010 has generally well-tolerated safety profile

No Grade ≥3 CRS, no GvHD observed (N=46)

	All CB-010 treated (N=46)		Yescarta (N=170)	
	Any grade (n, %)	Grade ≥3 (n, %)	Any grade (n, %)	Grade ≥3 (n, %)
Prolonged cytopenias	9 (20)[1]	9 (20)[1]	49 (29)[2]	49 (29)[2]
CRS	26 (57)[3]	0 (0)	157 (92)	11 (6)
Infections	22 (47)[4]	10 (22)[4]	76 (45)	28 (17)
ICANS	10 (22)[5]	3 (7)[6]	102 (60)	36 (21)
Hemophagocytic lymphohistiocytosis (HLH)	1 (2)	0	NR	NR
GvHD	0	0	NR	NR

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CRS: cytokine release syndrome; GvHD: graft-versus-host disease; ICANS: immune effector cell–associated neurotoxicity syndrome; NR: not reported

[1] Prolonged cytopenias are defined as grade 3 or higher events lasting beyond 30 days following CB-010 infusion; 37/46 (80%) recovered from cytopenias to grade ≤2 by day 35 post CB-010 treatment.

[2] Prolonged cytopenias of grade 3 or higher that were present at or after 30 days from Yescarta infusion.

[3] Median time of onset was 3 days (range 0-22) and median duration was 3 days (range 1-19).

[4] Infection events reported were on or after CB-010 infusion, with highest grade reported per patient; median onset 8 days (range 0-279) and media duration is 14 days (range 1-239).

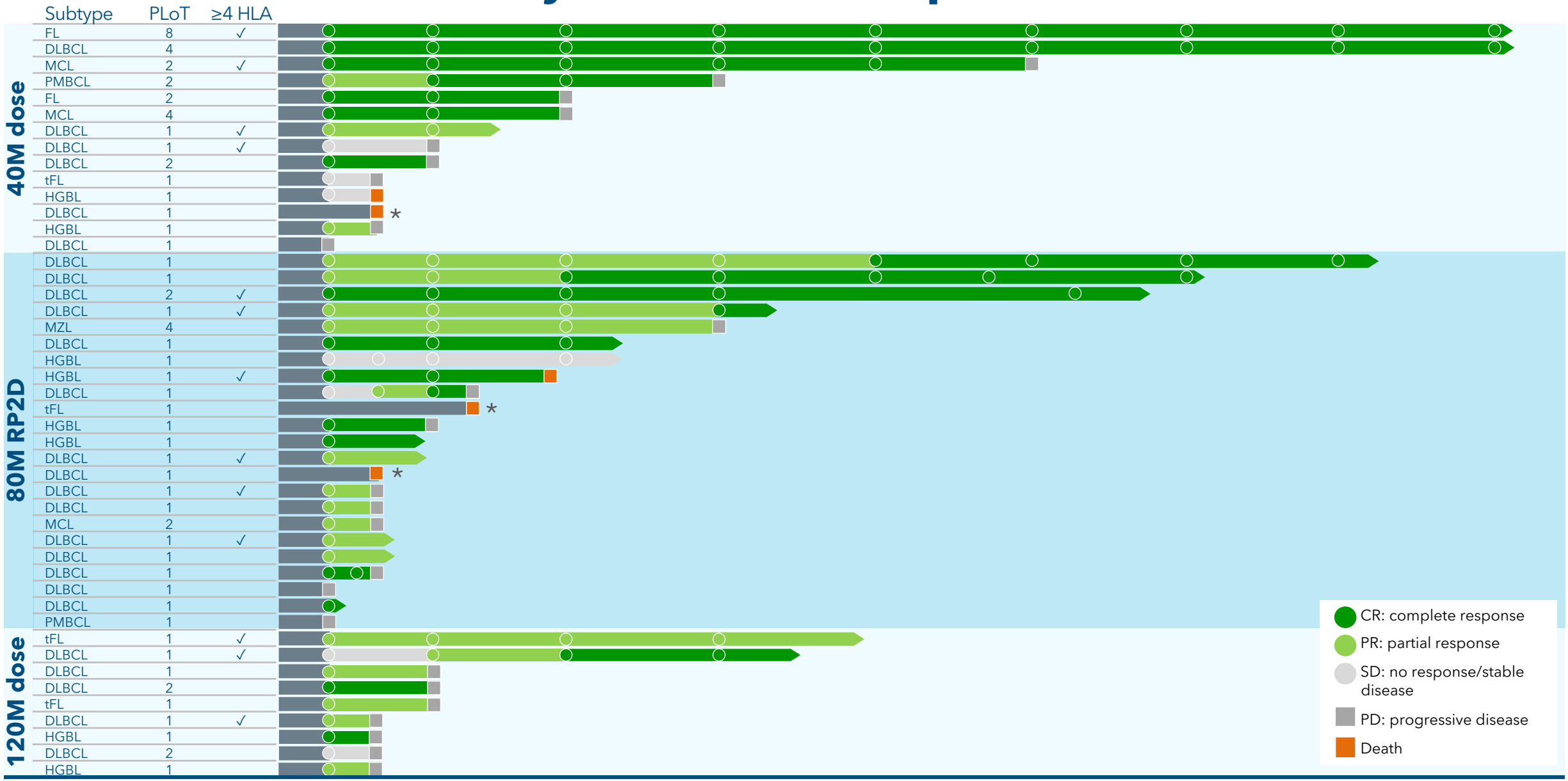
[5] Median time of onset was 7.5 days (range 6-34) and median duration was 2 days (range 1-27).

[6] 2 Grade 3 and 1 Grade 4; all resolved with supportive care. Median time of onset was 8 days and median duration 2 days.

ANTLER Phase 1 clinical trial as of April 1, 2024 cutoff date, data collection ongoing.

Source: ZUMA-7, Locke et al, NEJM, 2022 (prolonged cytopenia at 30 days), Westin et al, NEJM, 2023 (CRS, infections, ICANs/neurological events)

CB-010 ANTLER efficacy assessment all patients



PLoT: prior lines of therapy (#)
✓ = patients with ≥4 HLA (human leukocyte antigen) matches (all other patients have ≤3 HLA matches); *Denotes patient that did not have Day 28 efficacy scan.
ANTLER Phase 1 clinical trial as of April 1, 2024 cutoff date, data collection ongoing, efficacy based on Lugano criteria.

CB-010 ANTLER efficacy assessment by all patients and LBCL subgroups

Endpoints (N, %)	All patients (N=46)	LBCL (N=40)	2L LBCL 80M (N=20)
Overall response rate (ORR)[1]	35 (76%)	29 (73%)	15 (75%)
DoR, median months (range)	5 (1-23+)	2 (1-23+)	5 (1-20+)
Complete response (CR) rate[1]	21 (46%)	17 (43%)	10 (50%)
Duration of CR, Median months (range)	7 (1-23+)	7 (1-23+)	NR (1-12+)
6-month PFS	35%	28%	38%
PFS, median months (range)	3 (1-24+)	3 (1-24+)	3.5 (1-21+)

+ censored observation

As of April 1, 2024 cutoff date.

CB-010 ANTLER efficacy assessment with and without partial HLA matching

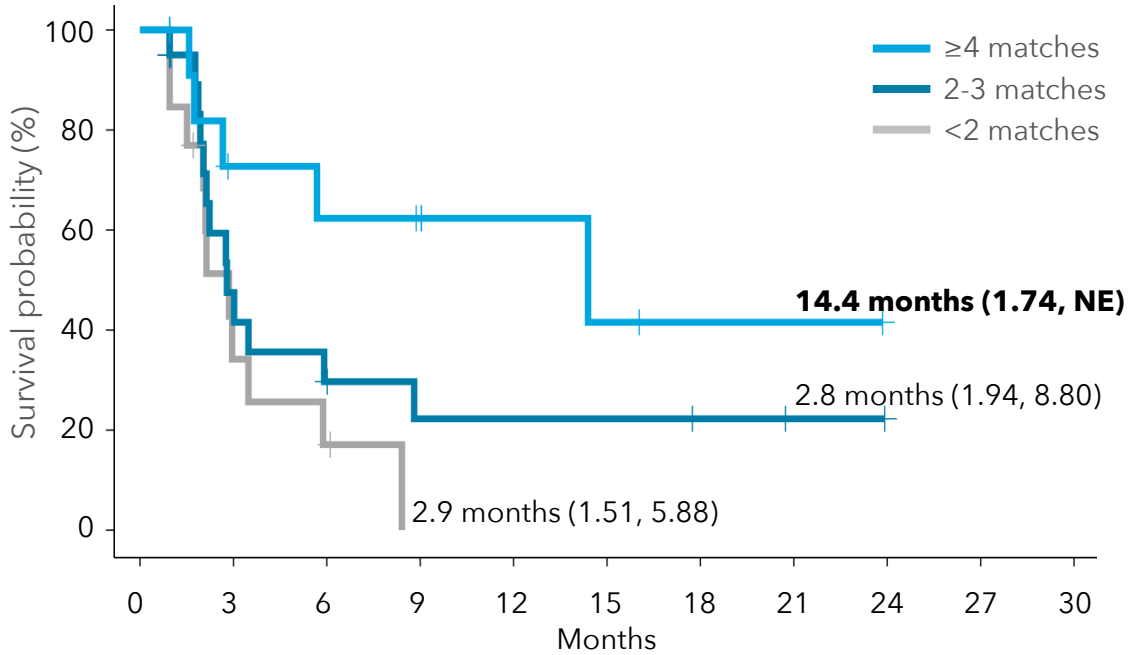
Endpoints (N, %)	All patients ≤3 HLA matches (N=33)	All patients ≥4 HLA matches (N=13)	LBCL ≥4 HLA matches (N=11)
Overall response rate (ORR)	23 (69%)	12 (92%)	10 (91%)
Duration of response (DoR), median months (range)	2.0 (1-23+)	13.5 (1-23+)	NR (1-15+)
Complete response (CR) rate	15 (45%)	6 (46%)	4 (36%)
Duration of CR, median months (range)	5.0 (1-23+)	NR (5-23+)	NR (5-15+)
6-month PFS	25%	62%	53%
PFS, median months (range)	2.8 (1-24+)	14.4 (2-24+)	NR (2-16+)

+ censored observation

HLA: human leukocyte antigen; partial HLA matching: patient has ≥4 HLA alleles that match donor T cells used for CB-010 manufacturing; NR: not reached
ANTLER Phase 1 clinical trial as of April 1, 2024 cutoff date, data collection ongoing.

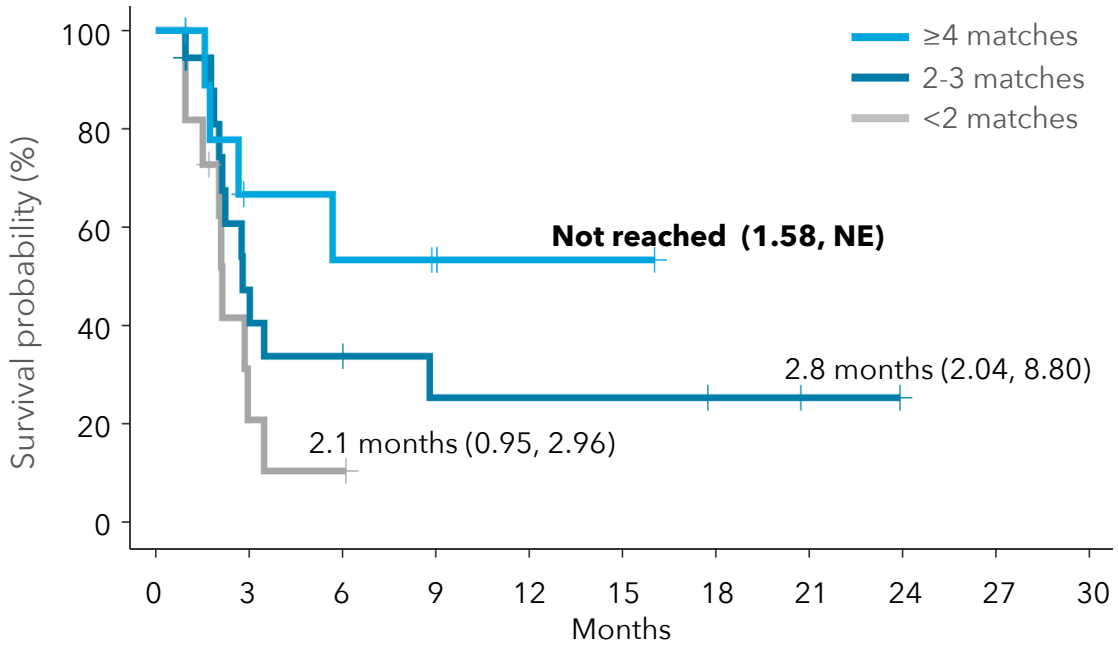
Improved PFS for all patients treated with CB-010 from a donor with partial HLA matching

PFS by level of HLA matching
All patients
N=46*, median PFS (95% CI)



≥4	13	7	6	5	3	2	1	1	0		
2-3	20	8	5	3	3	3	2	1	0		
<2	13	4	2	0							

PFS by level of HLA matching
LBCL patients
N=40*, median PFS (95% CI)



≥4	11	5	4	3	1	1	0				
2-3	18	7	5	3	3	3	2	1	0		
<2	11	2	1	0							

CI: confidence interval; HLA: human leukocyte antigen; NE: not estimable; partial HLA matching: patient has ≥4 HLA alleles that match donor T cells used for CB-010 manufacturing

*Retrospective analysis of HLA allele matching for class I and class II antigens.

ANTLER Phase 1 clinical trial as of April 1, 2024 cutoff date, data collection ongoing.

CB-010 translational research data

Kike Zudaire, PhD

SVP of translational sciences and therapeutic discovery

Caribou Biosciences

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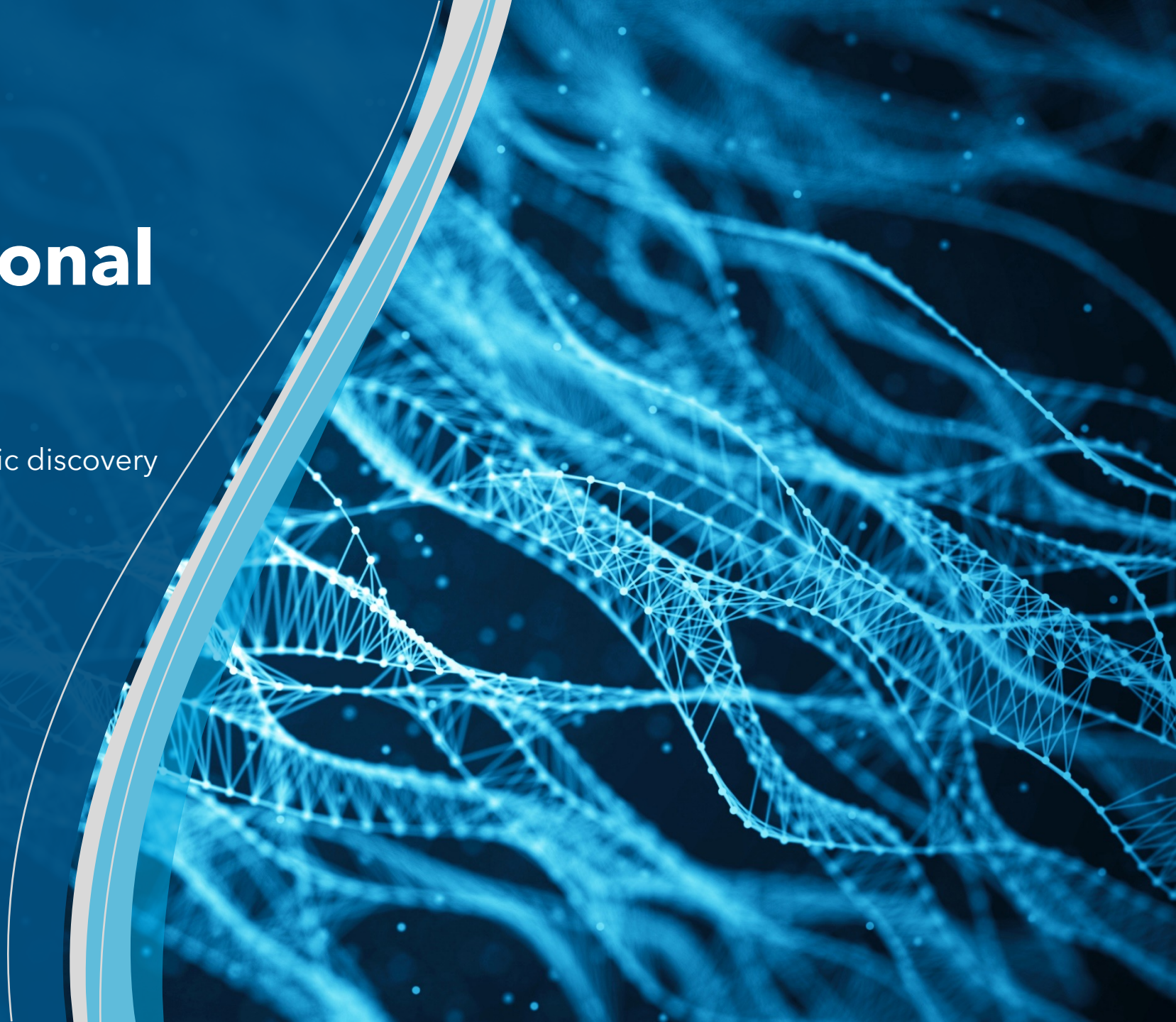
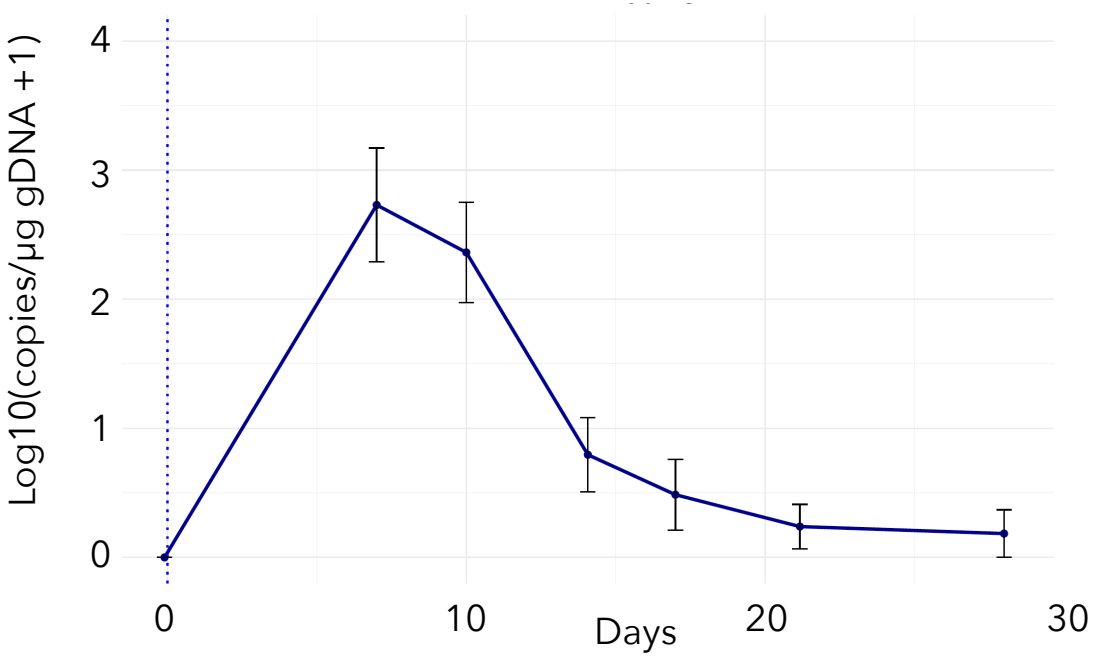


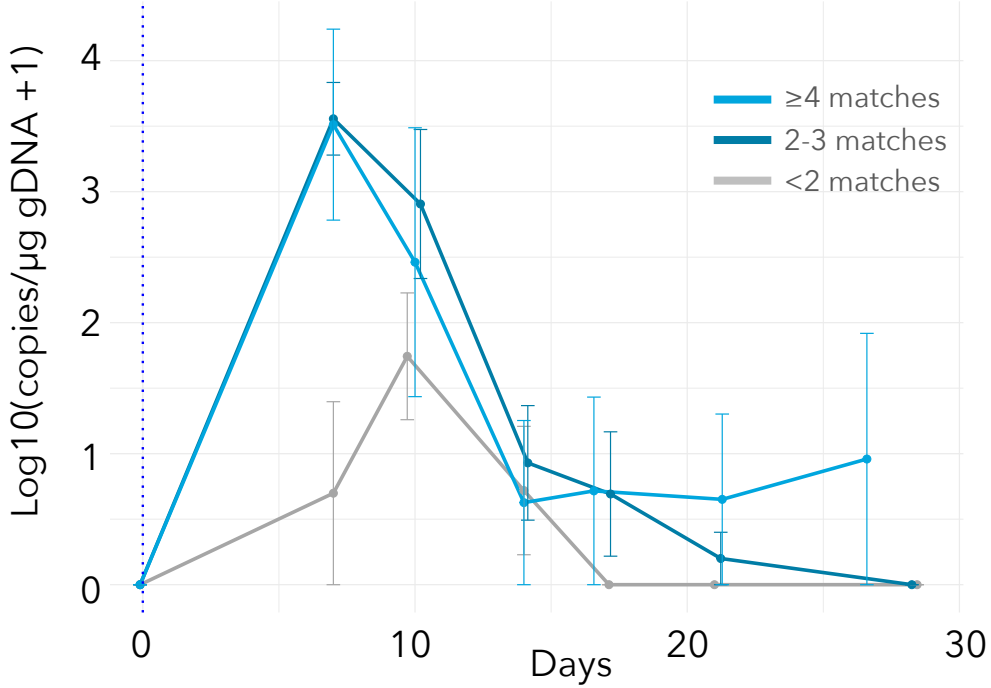
Partial HLA matching improves exposure of CB-010

Pharmacokinetic (PK) exposure



- Peak expansion (C_{max}) occurred 7 to 10 days post infusion
- Persistence was observed up to ~30 days
- PK consistent for three dose levels evaluated

Partial HLA matching impact on PK

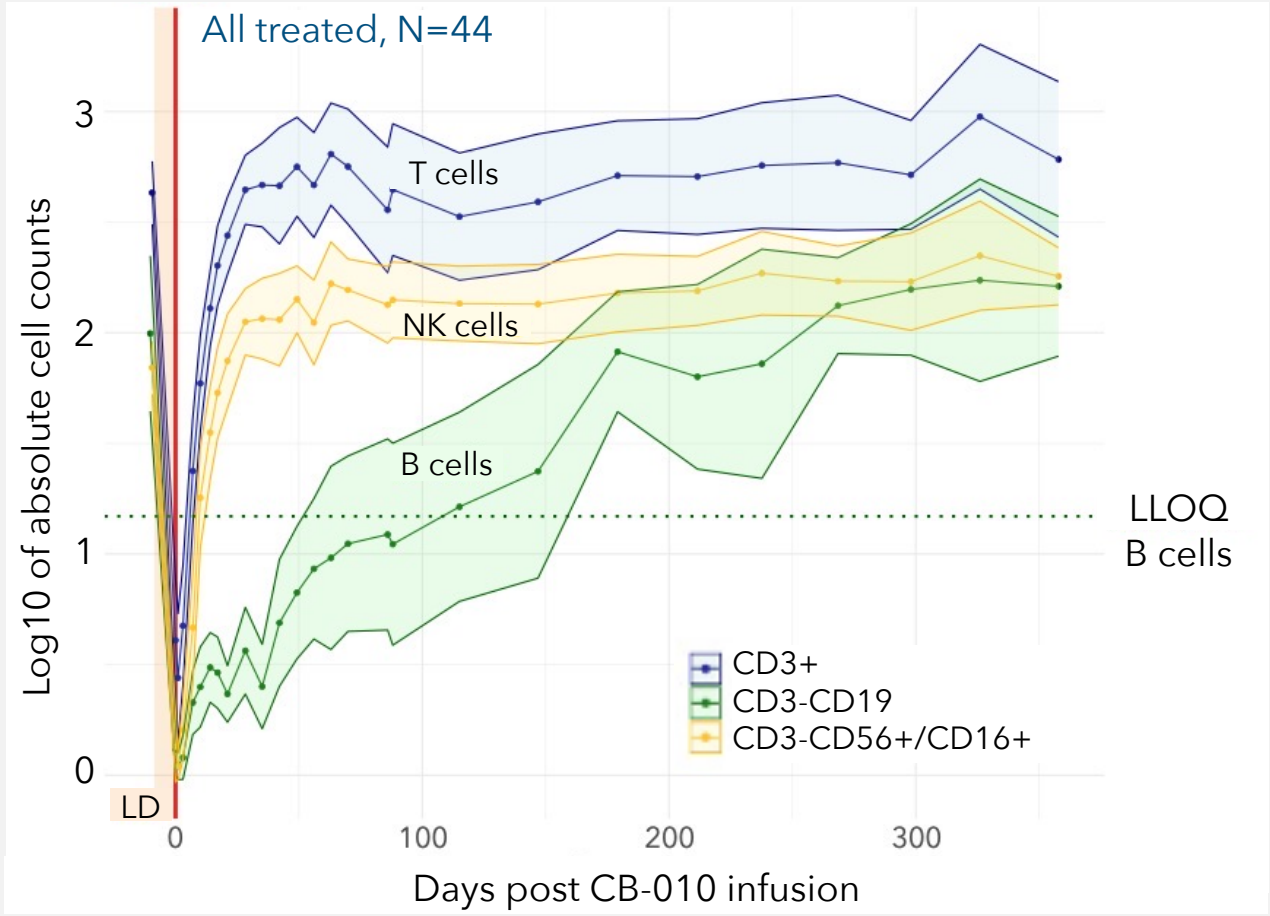


- Higher numbers of HLA matched alleles demonstrate more expansion and persistence vs. lower numbers

LLOQ: lower limit of quantification
Mean values represented by dots with standard error shown; values below LLOQ converted to 0; Includes all available data from the V2 ddPCR assay; visits up to D28 shown; D0 values represent pre-infusion level set to 0.
N=35 total number of patients included in PK analysis based on samples analyzed as of data cutoff of April 1, 2024.

Single dose of CB-010 results in extended B cell aplasia and rapid recovery of immune cells

B cell, T cell, and NK cell depletion and recovery



- CB-010 specifically targets B cells, resulting in extended B cell aplasia for ~114 days
- B cells recover to normal levels by ~268 days
- T cells and NK cells recovered ~3 weeks after LD regimen

LD: lymphodepletion; LLOQ: lower limit of quantification
Baseline B cells absolute levels calculated with samples of 10 cells/µl or above.

CB-010 duration of B cell aplasia is similar to lupus case studies

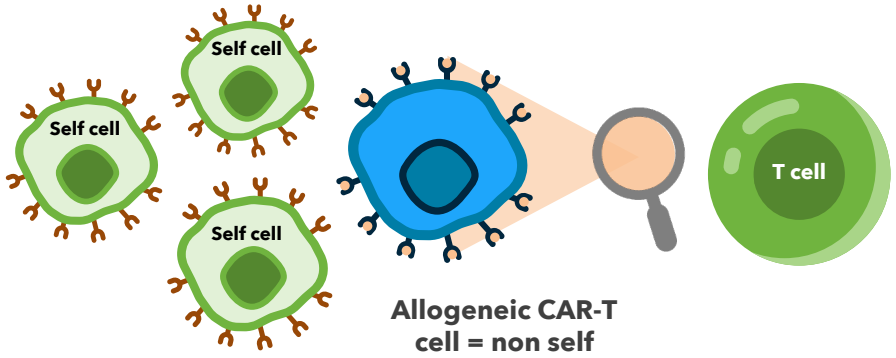
Duration of B cell aplasia Days	
CB-010 N=44	114 Mean (IQR 42-150)
Müller et al N=14[1]	112 Mean (IQR 72-153)

FOR ILLUSTRATIVE PURPOSES ONLY: The results of other CAR-T cell therapies presented on this slide have been derived from publicly available reports of clinical trials run independently of Caribou. The Company has not performed any head-to-head trials comparing any of these other CAR-T cell therapies with CB-010. As such, the results of these other clinical trials may not be comparable to clinical results for CB-010. The design of these other trials vary in material ways from the design of the clinical trials for CB-010, including with respect to patient populations, follow-up times, the clinical trial phase, and subject characteristics. As a result, cross-trial comparisons may have no interpretive value on the Company's existing or future results. For further information and to understand these material differences, you should read the reports for the other trials at the sources included below.

[1] Patient population included severe SLE (8 patients), idiopathic inflammatory myositis (3 patients), or systemic sclerosis (3 patients) who received a single infusion of CD19 chimeric antigen receptor (CAR) T cells after preconditioning with fludarabine and cyclophosphamide.
Source: Müller et al , NEJM, 2024; B cell aplasia defined as being below the limit of quantification.

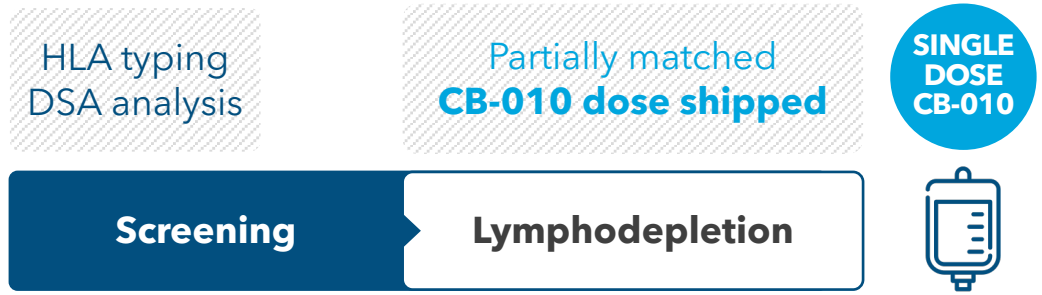
Partial HLA matching does not impact time to treatment

How does HLA matching work?



- Human leukocyte antigens (HLAs) help the immune system identify “self” from “non-self”
- Patient’s immune cells recognize allogeneic CAR-T cells as “non-self” and initiate rejection

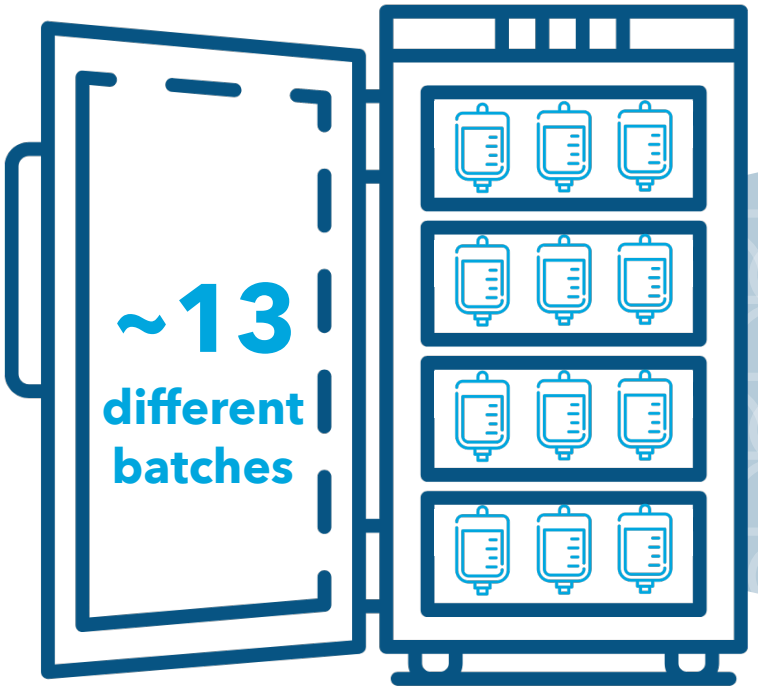
Partial HLA matching and DSA screening for ANTLER and GALLOP Phase 1 trials



- HLA typing and DSA analysis occur within screening timeline and does not impact time to receive treatment
- Partial HLA matching could result in enhanced outcomes for patients[1]

DSA: donor-specific antibodies
[1] Based on data from the ongoing ANTLER Phase 1 trial in r/r B-NHL and to be confirmed in the ANTLER and GALLOP Phase 1 trials.

CB-010 is an off-the shelf CAR-T cell therapy that is easily matched to 2L LBCL patients



~90%

of 2L LBCL patients for planned Phase 3 clinical trial[1] are expected to receive ≥4 HLA matched product

Only a small number of manufacturing batches are needed to provide partially HLA matched CB-010 to ~90% of patients

HLA: human leukocyte antigen; partial HLA match: patient has ≥4 HLA alleles that match donor T cells used for CB-010 manufacturing

[1] Planned pivotal Phase 3 intends to enroll CD19 naïve 2L LBCL patients who will be dosed with best matched CB-010

Advancing CB-010 development

Tonia Nesheiwat, PharmD

VP of medical affairs and project leadership

Caribou Biosciences

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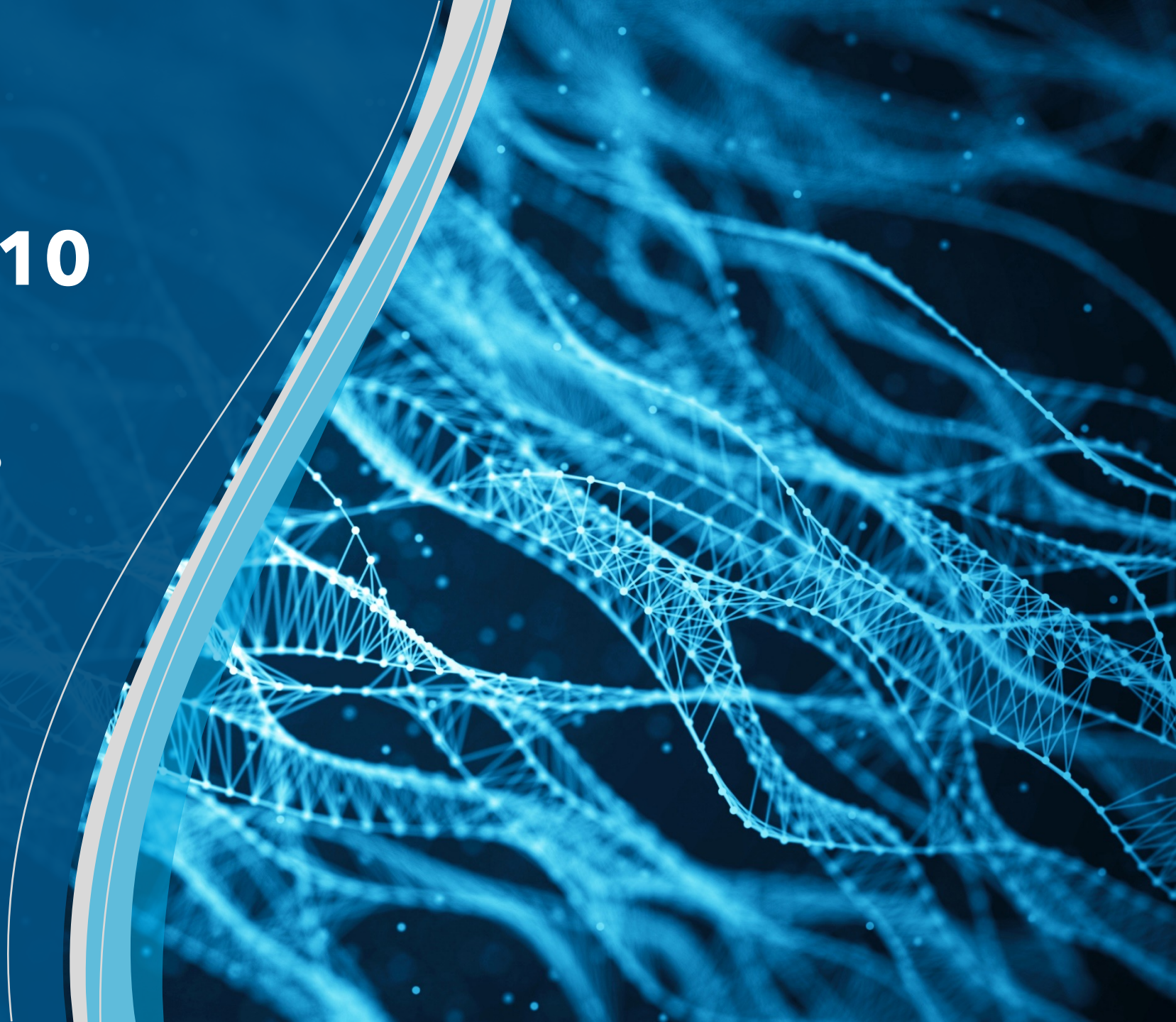


Broadening patient access through outpatient administration and expanding into an additional population of unmet need

New protocol amendment enables outpatient administration

Sites have the option to provide outpatient administration of both lymphodepletion and CB-010 treatment

Proof-of-concept cohort to evaluate CB-010 for patients who have relapsed following prior CD19-targeted therapy

Assess safety, efficacy, durability in patients who relapsed following any prior CD19-directed therapy (N=10)

Advancing CB-010 for 2L LBCL patients

Phase 1 trial dose escalation
r/r B-NHL[1]
N=16
- ⊘ Generally well tolerated
- ⊘ Responses rivaling autologous CAR-T cell therapies

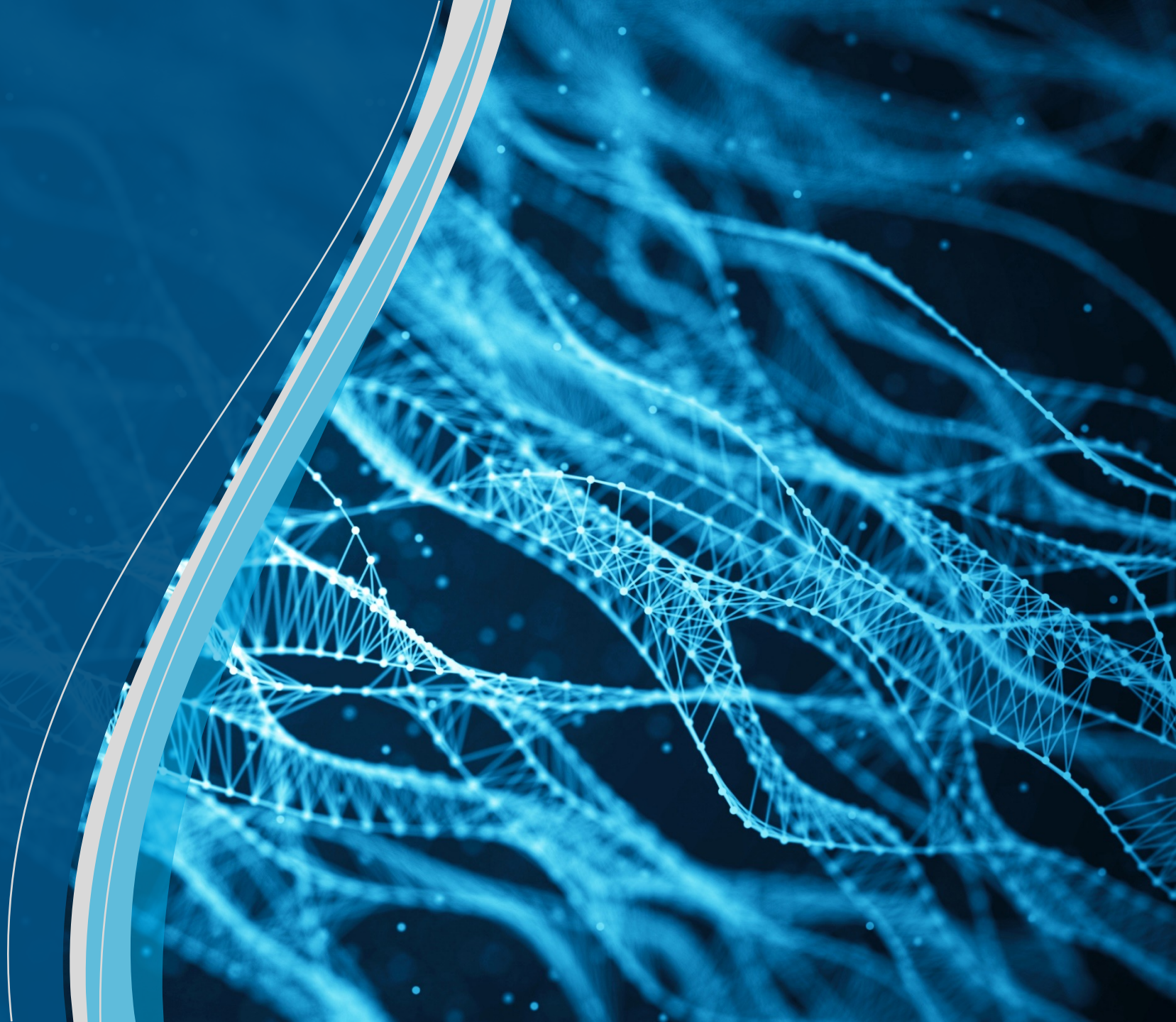
Phase 1 trial dose expansion
2L LBCL[2]
N=30
- ⊘ RP2D (80M) selected
- ⊘ Improved outcomes with ≥4 HLA matching observed retrospectively

Phase 1 trial partial (≥4) HLA matching
2L LBCL[2]
N=~20 at RP2D
and
CD19 relapsed LBCL
N=~10 at RP2D
- ○ Outpatient administration
- ○ Initial data in H1 2025

Pivotal Phase 3 trial CB-010
2L LBCL[2] regardless of HLA type
- ○ Initiation in H2 2025, upon CB-010 partial HLA matched data confirmation

NCT04637763
DSA: donor-specific antibodies; HLA: human leukocyte antigen
[1] Subtypes include: DLBCL (diffuse large B cell lymphoma), HGBL (high-grade B cell lymphoma), tFL (transformed DLBCL from follicular lymphoma, PMBCL (primary mediastinal large B cell lymphoma), FL (follicular lymphoma, aggressively behaving with POD24 (high risk)), MZL (marginal zone lymphoma).
[2] LBCL subtypes include: DLBCL NOS (DLBCL not otherwise specified), HGBL, transformed DLBCL from FL or MZL, and PMBCL.

Fireside chat



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Fireside chat with leaders in hematologic malignancies

Rachel Haurwitz, PhD

President and CEO

Caribou Biosciences

Boyu Hu, MD

Assistant professor, director of lymphoma and CLL in the division of hematology and hematologic malignancies

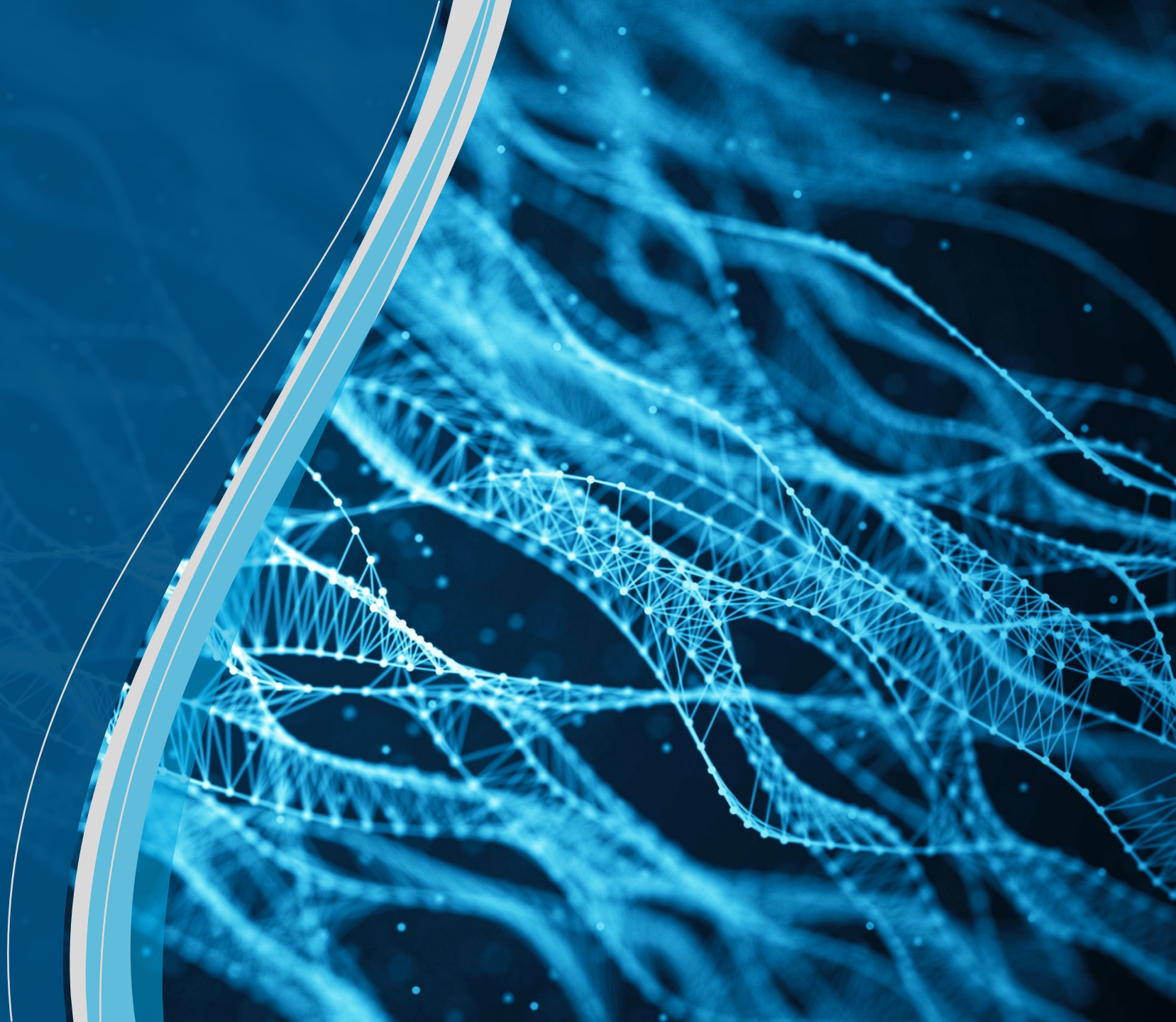
Huntsman Cancer Institute
University of Utah

Mehdi Hamadani, MD

Professor of medicine and section chief of hematologic malignancies

Medical College of Wisconsin

Q&A



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Open to your questions

Rachel Haurwitz, PhD
President and CEO

Steve Kanner, PhD
CSO

Jason O'Byrne
CFO

Kike Zudaire, PhD
SVP, translational sciences and therapeutic discovery

Tonia Nesheiwat, PharmD
VP, medical affairs and project leadership

Boyu Hu, MD

Assistant professor, director of lymphoma and CLL in the division of hematology and hematologic malignancies

Huntsman Cancer Institute
University of Utah

Mehdi Hamadani, MD

Professor of medicine and section chief of hematologic malignancies

Medical College of Wisconsin

Advancing CB-010 to establish new standard of care for 2L LBCL and broaden patient access

- With partial HLA matching, safety, efficacy, durability has the potential to rival approved autologous CAR-T cell therapies[1]
- Generally well-tolerated safety profile
- Off-the-shelf, readily-available single dose cell therapy
- RMAT and Fast Track designations enable FDA interactions
- Safety and efficacy profile supports clinical development for 2L LBCL and lupus patients and in outpatient setting

Progression free survival

14.4 months

median (95% CI: 1.7-NE)
all patients with ≥4 HLA matches

NR

median (95% CI: 1.6-NE)
all LBCL patients with ≥4 HLA matches

2L: second-line; LBCL: large B cell lymphoma; PFS: progression free survival; HLA: human leukocyte antigen
[1]To be confirmed with additional clinical data.
ANTLER Phase 1 clinical trial as of April 1, 2024 cutoff date, data collection ongoing.

Potential to address high unmet medical need in 2L LBCL

LBCL patient treatment journey
(U.S. incidence 2022)

ANTLER dose expansion

- **Diagnosed** — **~32.4K patients**
- **1L** — **~30.8K patients**
- **2L** — **~10.0K patients**
- **3L** — **~4.4K patients**

Future: planned pivotal Phase 3 trial

~13
manufacturing batches allow for partial (≥4) HLA matching for **~90% of 2L LBCL patients**

KOL discussion CB-010 ANTLER Phase 1 data | June 2024

Upcoming clinical catalysts

Program	Clinical milestone	Expected timing
CB-010 2L LBCL	Present initial data on partial HLA matching (~20 patients, some outpatient), CD19 relapsed (~10 patients) from the ANTLER Phase 1 clinical trial	H1 2025
	Initiate pivotal Phase 3 trial	H2 2025
CB-011 r/r MM	Present initial dose escalation data from CaMMouflage Phase 1 trial	YE 2024
CB-010 LN/ERL	Initiate GALLOP Phase 1 trial	YE 2024

With gratitude for patients, caregivers, investigators contributing to CB-010's clinical development

ANTLER Phase 1 trial: 29 active sites in US, Australia, and Israel

Alabama
University of Alabama Birmingham (Mehta)

Arizona
HonorHealth Cancer Institute (Kanate)
University of Arizona (Husnain)
Banner MD Anderson (Nath)

California
University of California Irvine (O'Brien)
University of California San Diego (Hamdan)

Florida
Advent Health (Patel)

Georgia
Augusta (Kota)
BMT of Georgia (Sohl)

Iowa
University of Iowa (Farooq)

Kentucky
University of Kentucky (Yalniz)
Norton Cancer Institute (Stevens)

New Jersey
Morristown Memorial Hospital (Cherry)
Hackensack (Feldman)

New York
Montefiore (Kornblum)
NYU Langone (Diefenbach)

Ohio
Oncology Hematology Care (Essell)

Pennsylvania
University of Pennsylvania (Nasta)

Tennessee
Vanderbilt University (Oluwole)

Texas
Baylor Charles A. Sammons (Holmes)
MD Anderson Cancer Center (Nastoupil)

Utah
Huntsman Cancer Institute (Hu)

Washington
Swedish Cancer Institute (Patel)

Wisconsin
Medical College of Wisconsin (Hamadani)

Australia
Westmead Hospital
Epworth Hospital

Israel
Hadassah University Hospital
Rabin Medical Center
Tel Aviv Sourasky Medical Center

Thank you

https://cariboubio.com
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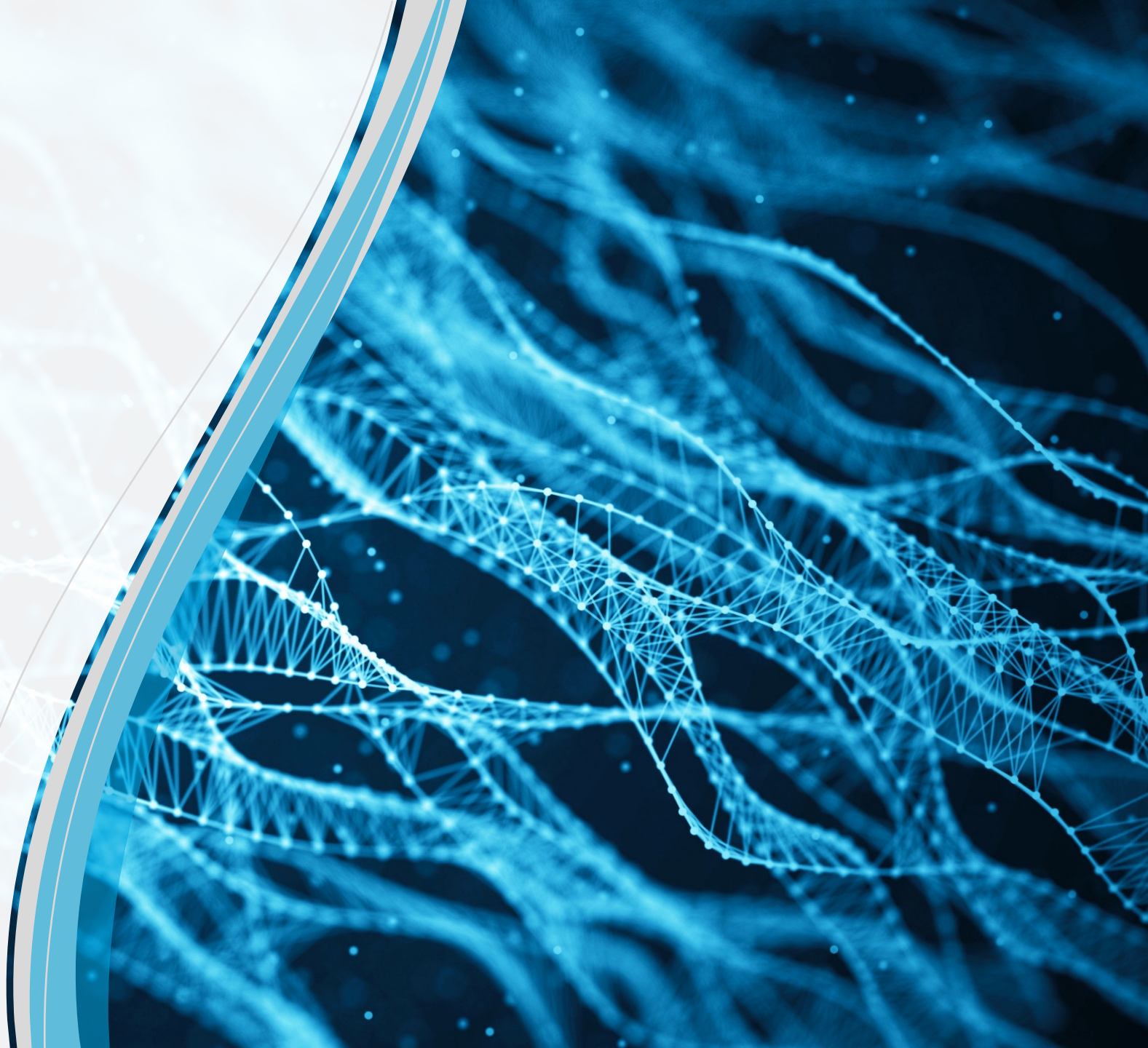
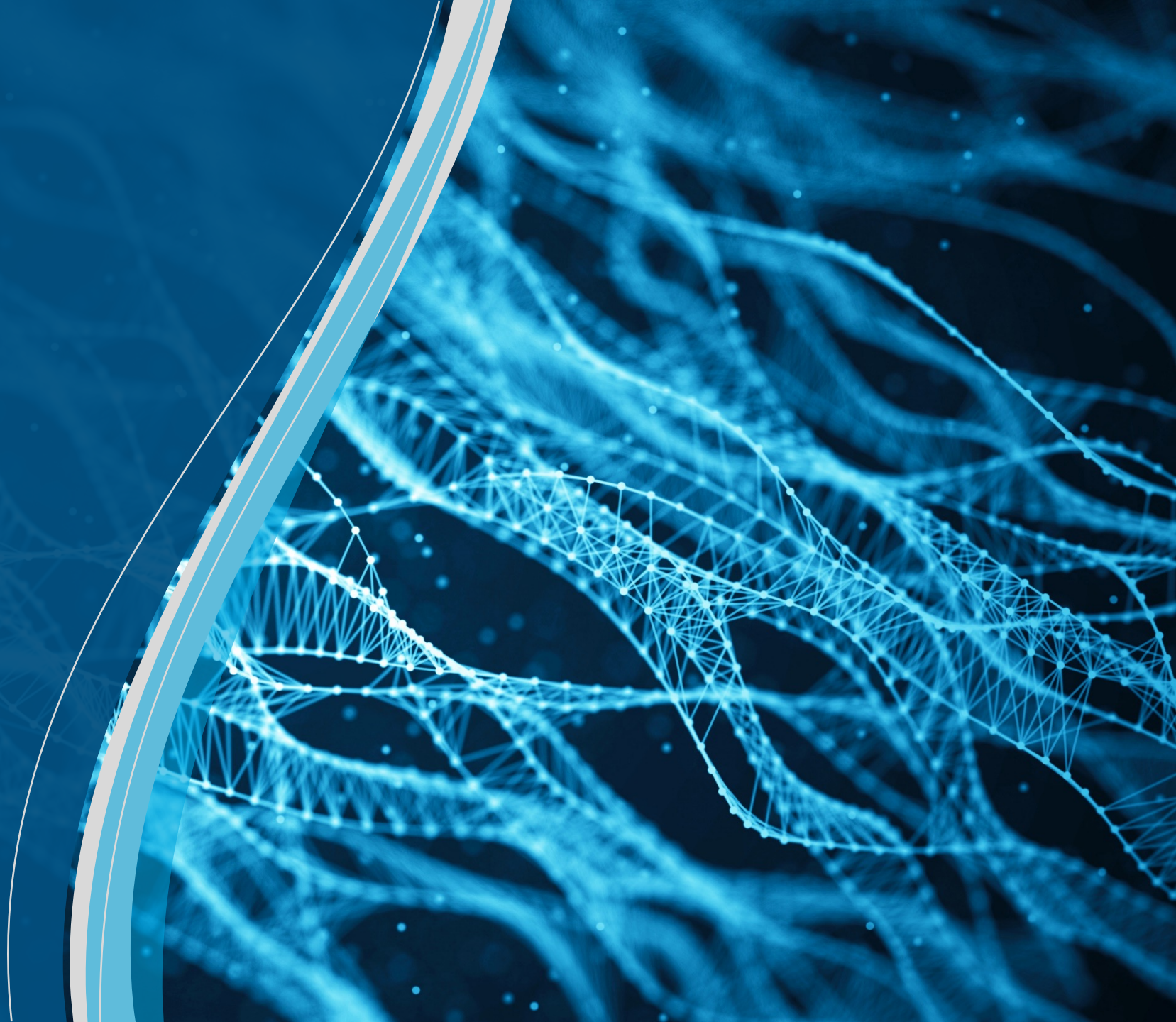


Appendix



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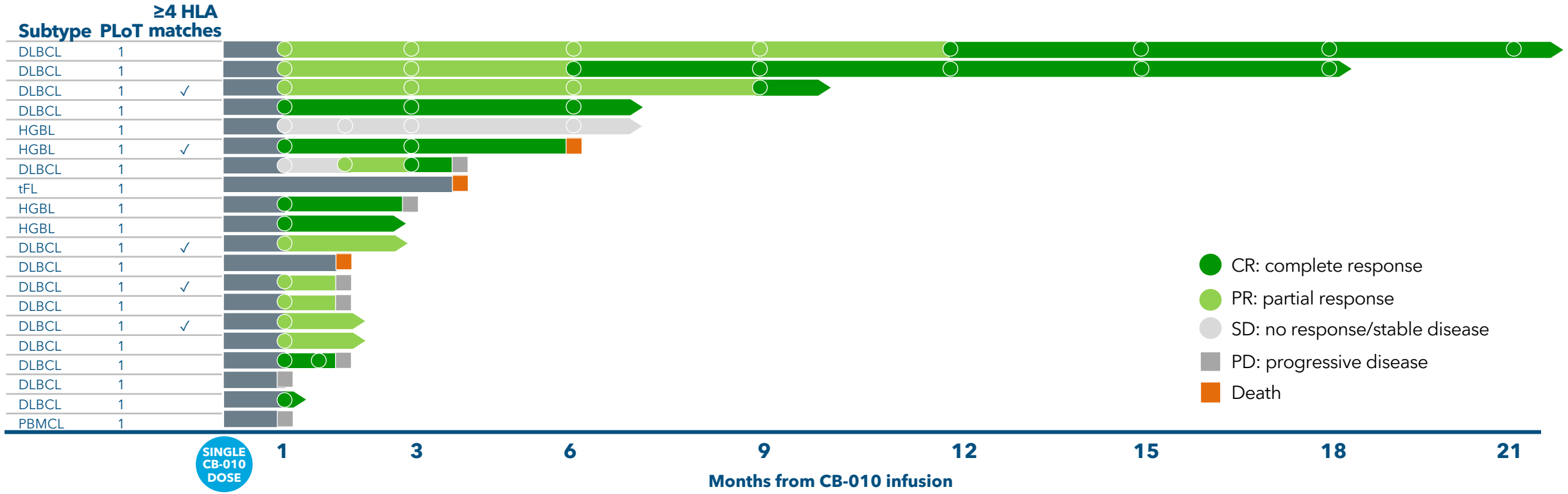
CB-010 ANTLER efficacy assessment in 2L LBCL at RP2D

Overall depth and duration of response in 2L LBCL at 80x10⁶ CAR-T cells (N=20)



CR[1] rate
50%

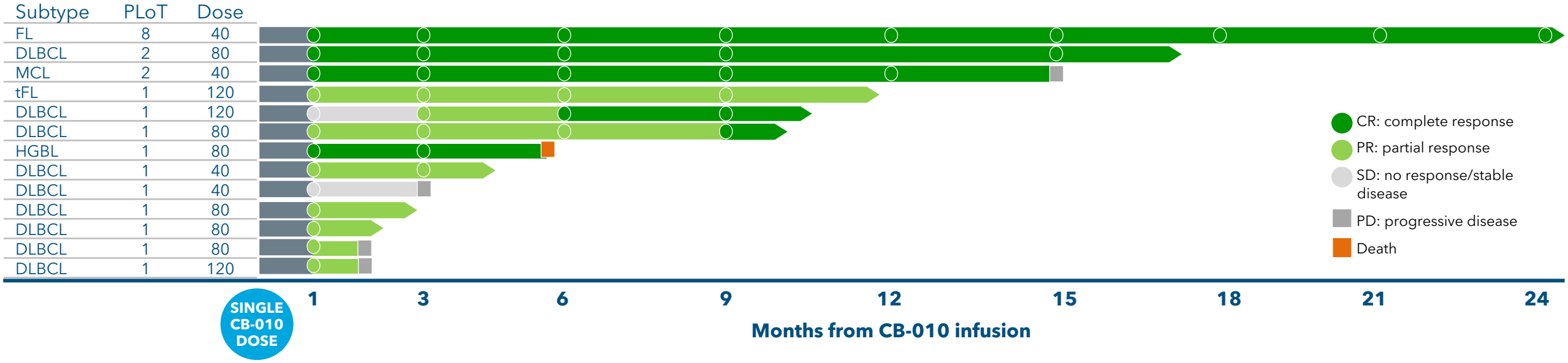
Median duration of CR
Not reached

DLBCL: diffuse large B cell lymphoma; CR: complete response; HGBL: high-grade B cell lymphoma; PMBCL: primary mediastinal large B cell lymphoma; tFL: transformed DLBCL from follicular lymphoma; PLoT: prior lines of therapy; HLA: human leukocyte antigen

[1] 50% CR rate measures the number of patients (10 of 20) achieving a CR at any time point after treatment with CB-010.
As of April 1, 2024, data collection ongoing, efficacy based on Lugano criteria.

CB-010 ANTLER efficacy assessment for patients with ≥4 HLA matching

(N=13)



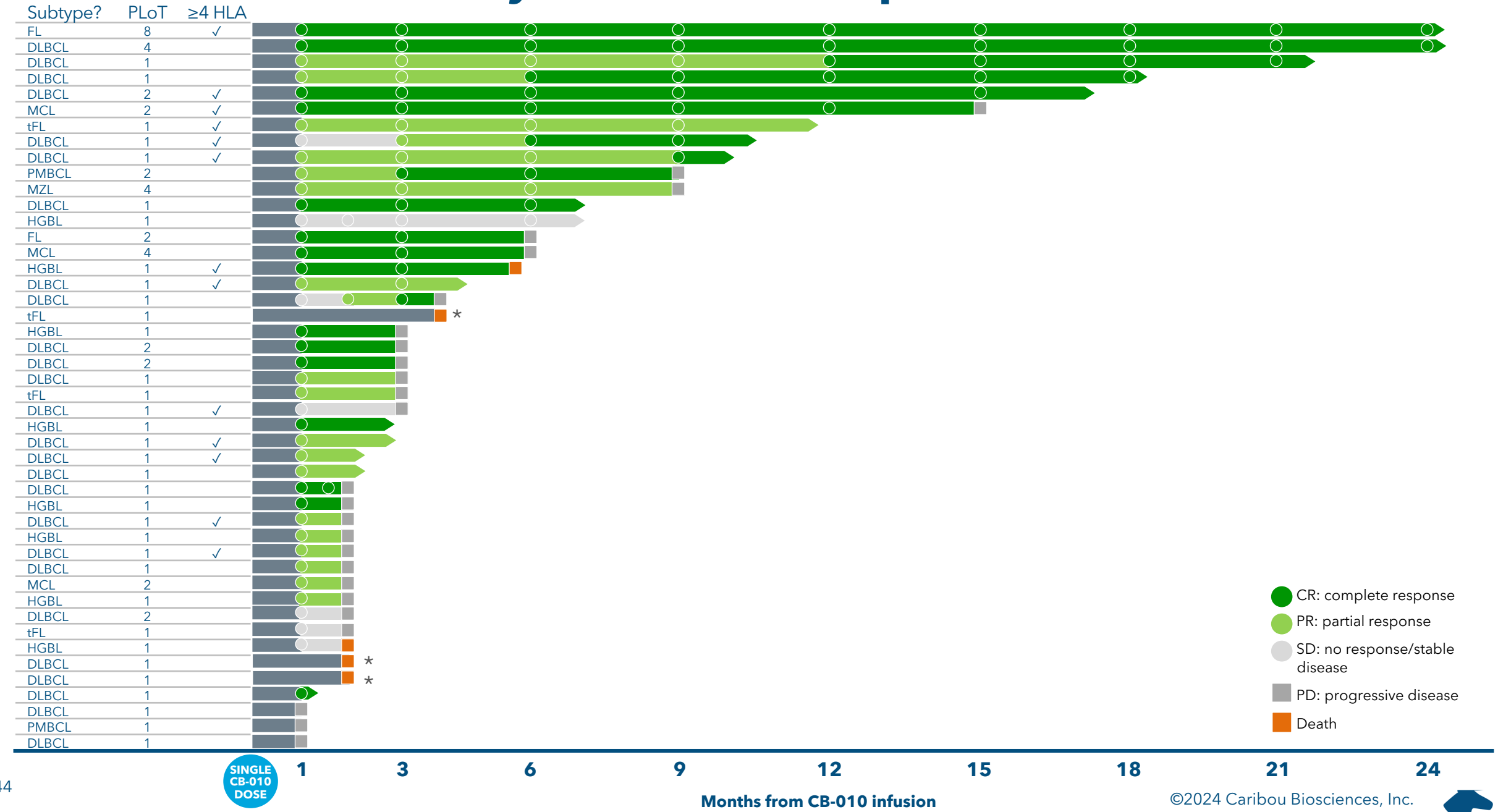
Median PFS	CR[1] rate	Median duration of CR
14.4 months	**46%**	**Not reached**

DLBCL: diffuse large B cell lymphoma; CR: complete response; HGBL: high-grade B cell lymphoma; PFS: progression free survival; PMBCL: primary mediastinal large B cell lymphoma; tFL: transformed DLBCL from follicular lymphoma; PLoT: prior lines of therapy

[1] 46% CR rate measures the number of patients (6 of 13) achieving a CR at any time point after treatment with CB-010.

As of April 1, 2024, data collection ongoing, efficacy based on Lugano criteria.

CB-010 ANTLER efficacy assessment all patients



As of April 1, 2024, data collection ongoing, efficacy based on Lugano criteria. *Denotes patient that did not have Day 28 efficacy scan.

CB-010 ANTLER efficacy assessment by dose level

80x10^6 selected as RP2D

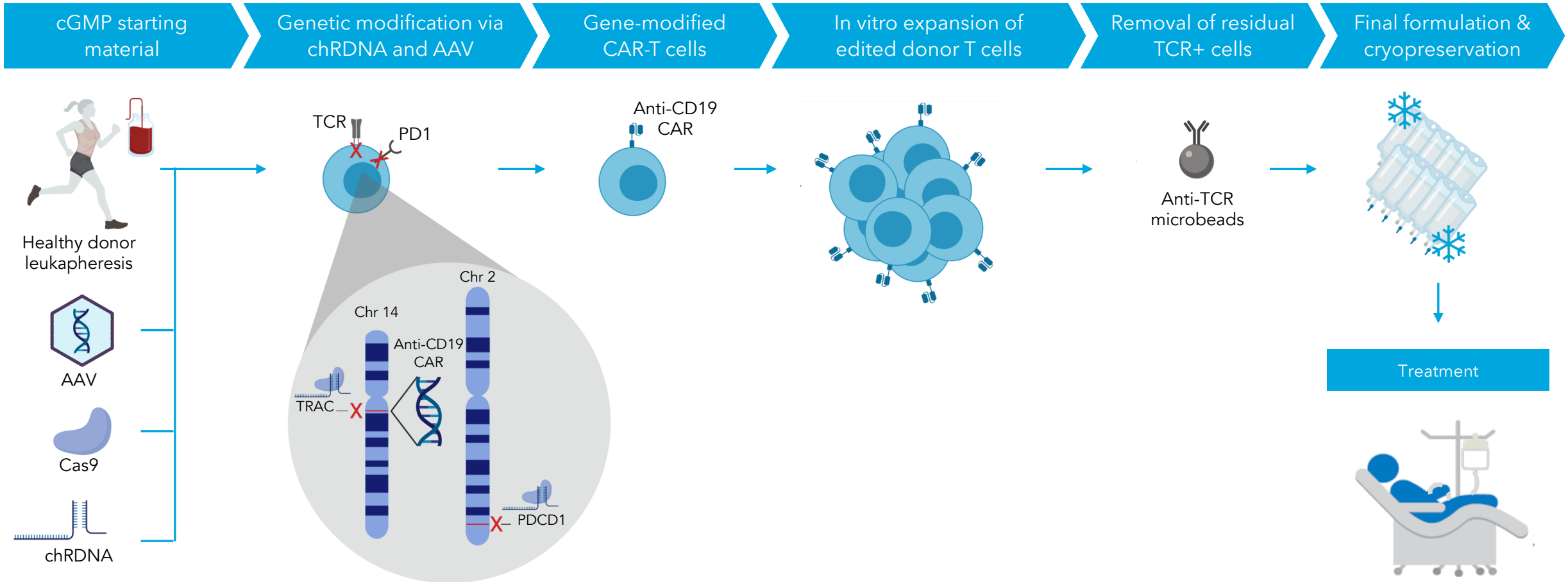
	r/r B-NHL	CB-010 dose level		
Endpoints (N, %)	**All patients** (N=46)	**40M** (N=14)	**80M** (N=23)	**120M** (N=9)
Overall response rate (ORR)	35 (76%)	9 (64%)	18 (78%)	8 (89%)
Duration of response (DoR), median months (range)	5 (1-23+)	7.9 (1-23+)	7.4 (1-20+)	1.9 (1-8+)
Complete response (CR) rate	21 (46%)	7 (50%)	11 (48%)	3 (33%)
Duration of CR, median months (range)	7 (1-23+)	6.7 (2-23+)	NR (1-15+)	1.8 (1-3+)
6-month PFS	35%	33%	43%	22%

+ censored observation

M: million cells per dose; NR: not reached; PFS: progression free survival; RP2D: recommended Phase 2 dose
ANTLER Phase 1 clinical trial as of April 1, 2024 cutoff date, data collection ongoing.

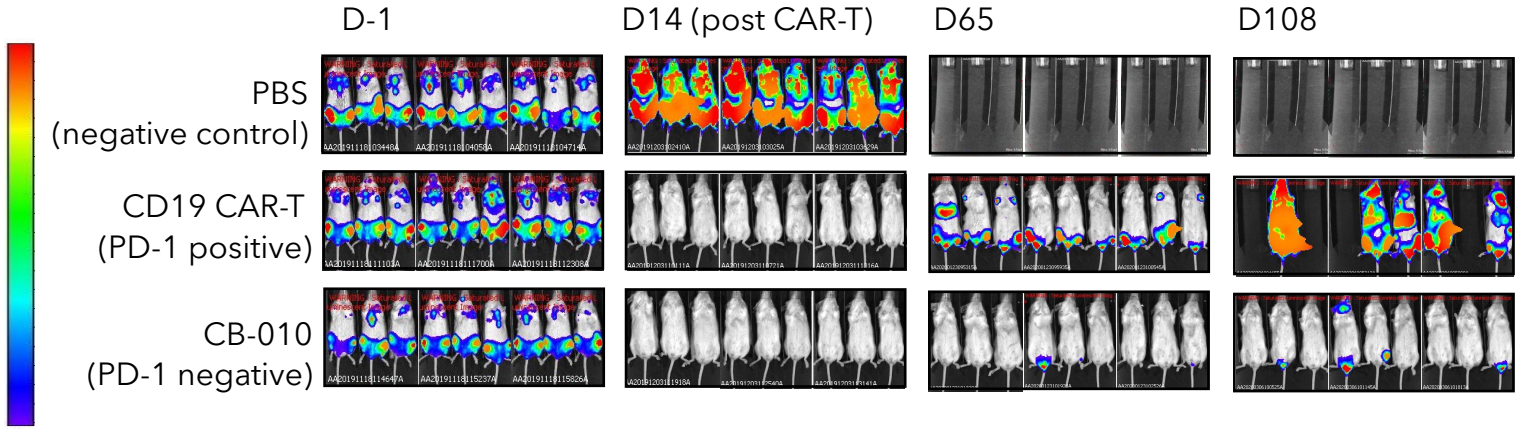
Allogeneic CAR-T cell manufacturing process overview for CB-010

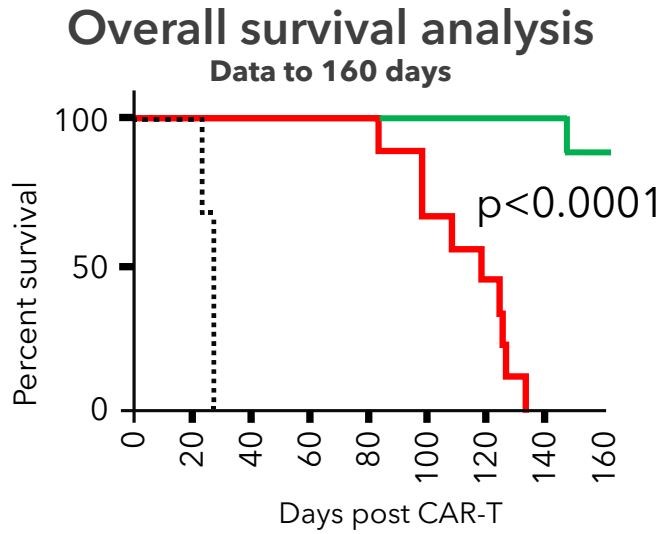
Caribou's process development team created the manufacturing process and transferred it to a CMO to generate phase 1 cGMP clinical material



CB-010 demonstrated differentiated, long-term antitumor activity in preclinical studies

A single dose of CB-010 resulted in profound tumor regression of metastatic CD19⁺ tumor xenografts and led to a significantly longer antitumor response and survival
vs. conventional CD19-specific allogeneic CAR-T cells (expressing PD-1)





- NALM-6/PD-L1⁺ B-ALL tumors were established by IV engraftment for 23 days (Day -1)
- A single dose treatment was administered by IV on Day 24 (PBS or 10^7 cells where indicated)

Lau E, et al. *Cytotherapy*. 2023;25(7):750