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April 4, 2024

Caribou Biosciences Expands Clinical Development of CB-010 with FDA Clearance of IND in Lupus

Forward-looking statements

All statements in this presentation, other than statements of historical facts, are forward-looking statements, within the meaning of the Private Securities Litigation Reform Act of 1995. These forward-looking statements speak only as of the date of this presentation and are subject to a number of known and unknown risks, assumptions, uncertainties, and other factors that may cause the actual results, levels of activity, performance, or achievements of Caribou Biosciences, Inc. (the "Company," "Caribou," "we," or "our") to be materially different from those expressed or implied by any forward-looking statements. The words "may," "will," "should," "expect," "plan," "anticipate," "could," "intend," "target," "project," "contemplate," "believe," "estimate," "predict," "potential," or "continue" or the negative of these terms or other similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. All statements, other than statements of historical facts contained in this presentation, are forward-looking statements, including but not limited to any statements regarding the initiation, timing, progress, strategy, plans, objectives, expectations (including as to the results) with respect to our product candidate preclinical studies, clinical trials, and research programs, including our expectations and timing regarding the release of dose expansion clinical data, and emerging translational data from our ongoing ANTLER phase 1 clinical trial for our CB-010 product candidate, disclosure of the recommended Phase 2 dose for CB-010, and an updated timeline for our planned phase 3 pivotal trial for CB-010 in second line LBCL patients; the status, progress, and expectations relating to the timing of release of clinical data from our ongoing CaMMouflage phase 1 clinical trial for our CB-011 product candidate; the status, progress, and expectations relating to the timing of release of clinical data from our ongoing AMpLify phase 1 clinical trial for our CB-012 product candidate; the timing for the initiation of our GALLOP phase 1 clinical trial for adults with lupus nephritis and extrarenal lupus; our ability to successfully develop our product candidates and to obtain and maintain regulatory approval for our product candidates; the number and type of diseases, indications, or applications we intend to pursue for our product candidates; the beneficial characteristics, safety, efficacy, therapeutic effects, and potential advantages of our product candidates; the expected timing or likelihood of regulatory filings and approval for our product candidates; our expected cash runway; and the sufficiency and anticipated use of our existing capital resources to fund our future operating expenses and capital expenditure requirements and needs for additional financing. You are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date this presentation is given. This presentation discusses product candidates that are or will be under clinical investigation and that have not yet been approved for marketing by the U.S. Food and Drug Administration. No representation is made as to the safety or effectiveness of these product candidates for the therapeutic uses for which such product candidates are being or will be studied.

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 separate product candidates. 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 companies' 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 its ongoing ANTLER phase 1 clinical trial, its CaMMouflage phase 1 clinical trial, and its AMpLify 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.

Caribou's partners in lupus

"Lupus is a complex, chronic, heterogeneous autoimmune disease impacting millions of people worldwide, often causing debilitating outcomes. There is a pressing need for more innovative therapies that address the underlying causes of lupus while minimizing symptoms and effects of this systemic disease."

Stacie Bell, PhD

Executive vice president, Lupus Therapeutics,
an affiliate of the Lupus Research Alliance

Today's guests

Richard Lafayette, MD

Professor of medicine

Director of glomerular disease center

Stanford University

Mehdi Hamadani, MD

Professor of medicine

Section chief of hematologic malignancies

Investigator for the ANTLER Phase 1 trial

Medical College of Wisconsin

Advancing pipeline of clinical-stage allogeneic CAR-T cell therapies for hematologic malignancies and autoimmune diseases

Program	Clinical trial	Target	Indication	Preclinical	Phase 1	Phase 2	Phase 3	Designations
Hematologic malignancies								
CB-010	ANTLER Dose expansion	CD19	r/r B-NHL					RMAT, Fast Track, Orphan Drug
CB-011	CaMMouflage Dose escalation	BCMA	r/r MM					Fast Track, Orphan Drug
CB-012	AMpLify Dose escalation	CLL-1*	r/r AML					
Autoimmune diseases								
CB-010	GALLOP Site activation	CD19	LN and ERL					

ERL: extrarenal lupus; LN: lupus nephritis, RMAT: Regenerative Medicine Advanced Therapy
*Also known as CD371

CB-010

Allogeneic anti-CD19 CAR-T cell therapy with a PD-1 knockout for lupus

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Lupus is a chronic, inflammatory autoimmune disease driven by autoantibody-producing B cells

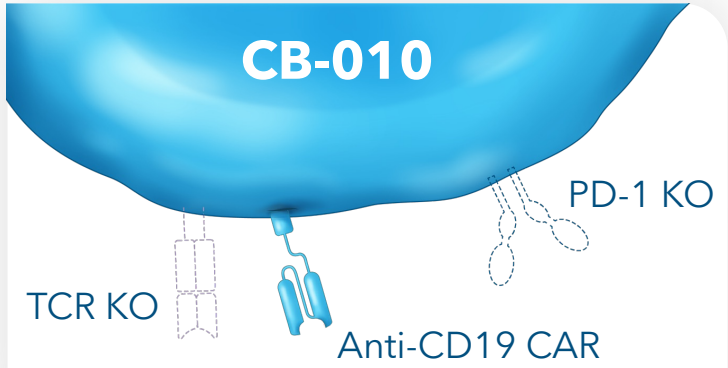
Lupus is a chronic disease affecting **~320,000** individuals in the US[1]

- Lupus is caused by B cell production of autoantibodies that drive damage of healthy tissue
- Lupus can cause widespread organ damage, increase cardiovascular risk, and significantly impair patient quality of life
- Urgent unmet need for new treatment options that can offer sustained, drug-free remission

[1] Li D, et al. Rheumatology (Oxford). 2020 Mar 1;59(3):495-504.

CB-010 is an allogeneic CAR-T cell therapy that targets autoantibody-producing B cells

Anti-CD19 CAR targets autoantibody-producing B cells



Engineered for improved activity

chRDNA genome editing enables **precision engineering** and **reduced off-target** edits

CB-010 is **engineered with a PD-1 KO[1]** to potentially enhance anti-B cell activity and may drive **sustained remission**

Encouraging clinical data

Encouraging initial safety and efficacy demonstrated for CB-010 in ANTLER Phase 1 trial

ANTLER **B cell depletion is on par** with depletion data published on autologous CAR-T cells in lupus[2]

[1] To Caribou's knowledge, CB-010 is the first allogeneic CAR-T in the clinic with checkpoint disruption via PD-1 KO
[2] Müller F, et al. N Engl J Med. 2024

Donor-derived CAR-T cell therapy precision engineered with chRDNA genome editing technology

CB-010 advantages

- PD-1 KO designed to enhance anti-B cell activity
- No lentiviral or retroviral vectors for genome editing
- Precise insertion of CAR using chRDNA genome-editing technology
- Derived from healthy donor T cells vs. patient T cells exposed to prior treatments
- No patient apheresis or medication wash out needed
- Manufactured in advance, at scale

- Engineered to address disease biology
- Encouraging initial safety and efficacy profile in r/r B-NHL
- Off-the-shelf, readily available, single dose treatment

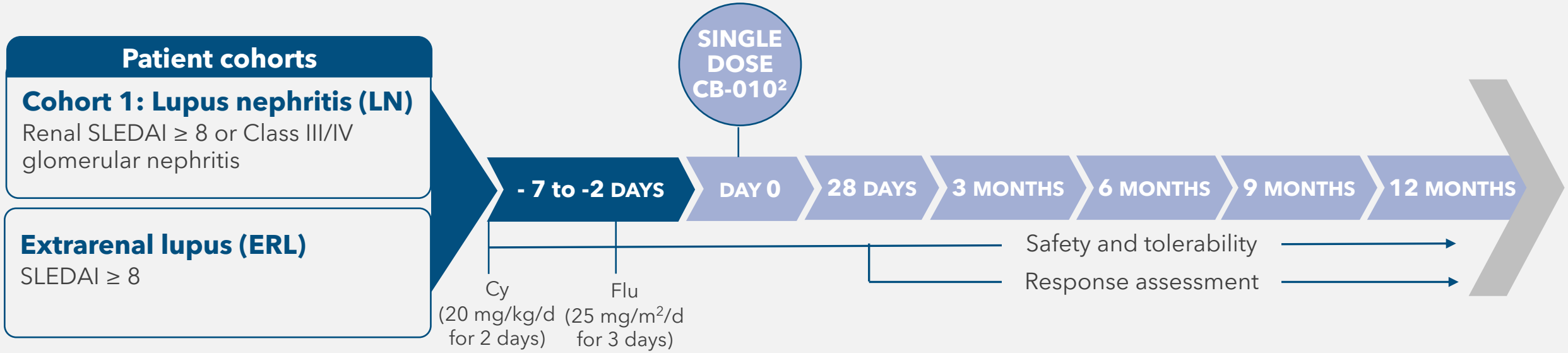
CB-010 GALLOP Phase 1 trial design

Eligibility and matching

- Non-responsive to glucocorticoids and have tried and failed at least 2 defined immunosuppressive therapies
- Excludes cardiac and CNS involvement
- Partial HLA matching and absence of baseline DSAs

Treatment and objective

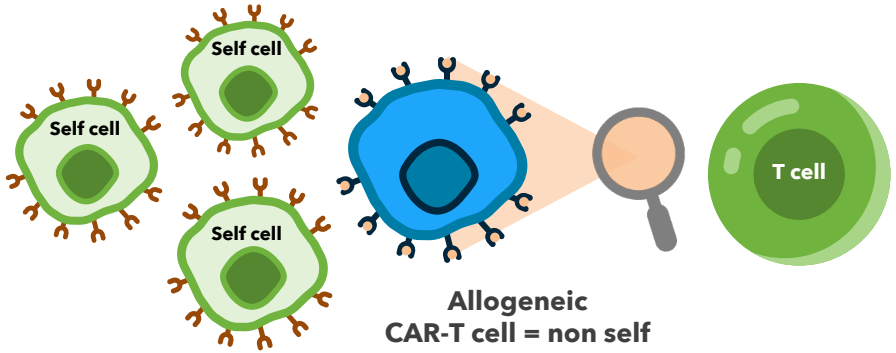
- Single dose level of CB-010 following LD
- Primary endpoint: safety



Cy: cyclophosphamide; DSAs: donor-specific antibodies; Flu: fludarabine; HLA: human leukocyte antigen; LD: lymphodepletion; SLEDAI: Systemic Lupus Erythematosus Disease Activity Index

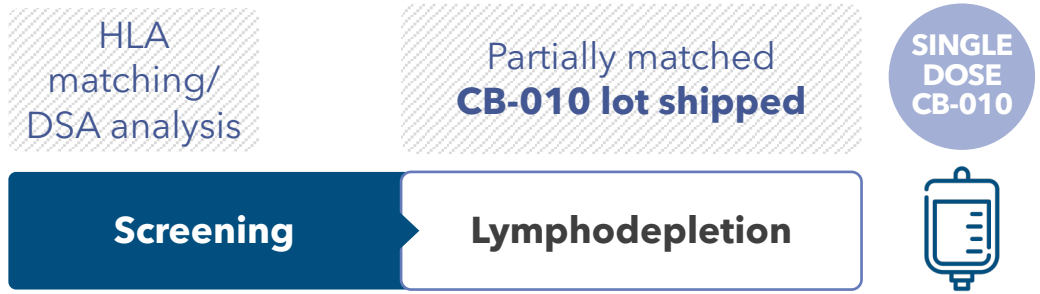
Partial HLA matching to potentially improve patient outcomes

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

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

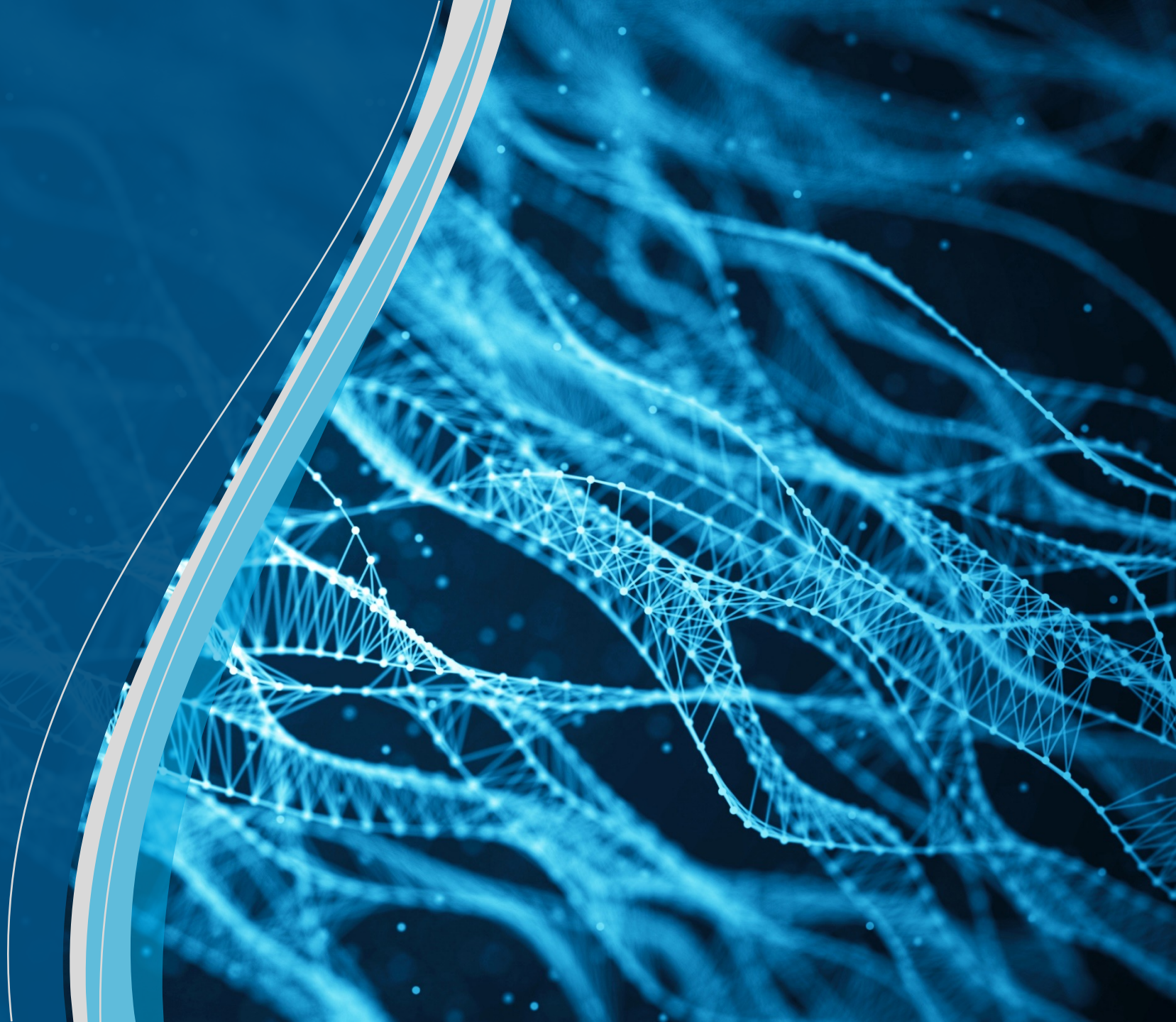


- HLA matching and DSA analysis occur within screening timeline
- Partial HLA matching could result in enhanced outcomes for patients[1]

DSA: donor-specific antibodies

[1]Based on data from the ANTLER Phase 1 trial in r/r B-NHL and to be confirmed in the trials; initial data to be presented at medical congress in Q2 2024

Fireside chat



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Fireside chat with leaders in rheumatology and oncology

Rachel Haurwitz, PhD

President and chief executive officer

Caribou Biosciences

Richard Lafayette, MD

Professor of medicine

Director of glomerular disease center

Stanford University

Mehdi Hamadani, MD

Professor of medicine

Section chief of hematologic malignancies

Investigator for the ANTLER Phase 1 trial

Medical College of Wisconsin

2024 accomplishments and upcoming milestones

Hematologic malignancies

CB-010 in 2L LBCL

○ Present initial ANTLER 2L LBCL dose expansion data, RP2D, translational data	Q2 2024

CB-011 in r/r MM

○ Present initial dose escalation data from CaMMouflage trial	YE 2024

CB-012 in r/r AML

✓ Dosed first patient in the AMpLify trial	

Autoimmune disease

CB-010 in LN and ERL

○ Initiate GALLOP trial	YE 2024

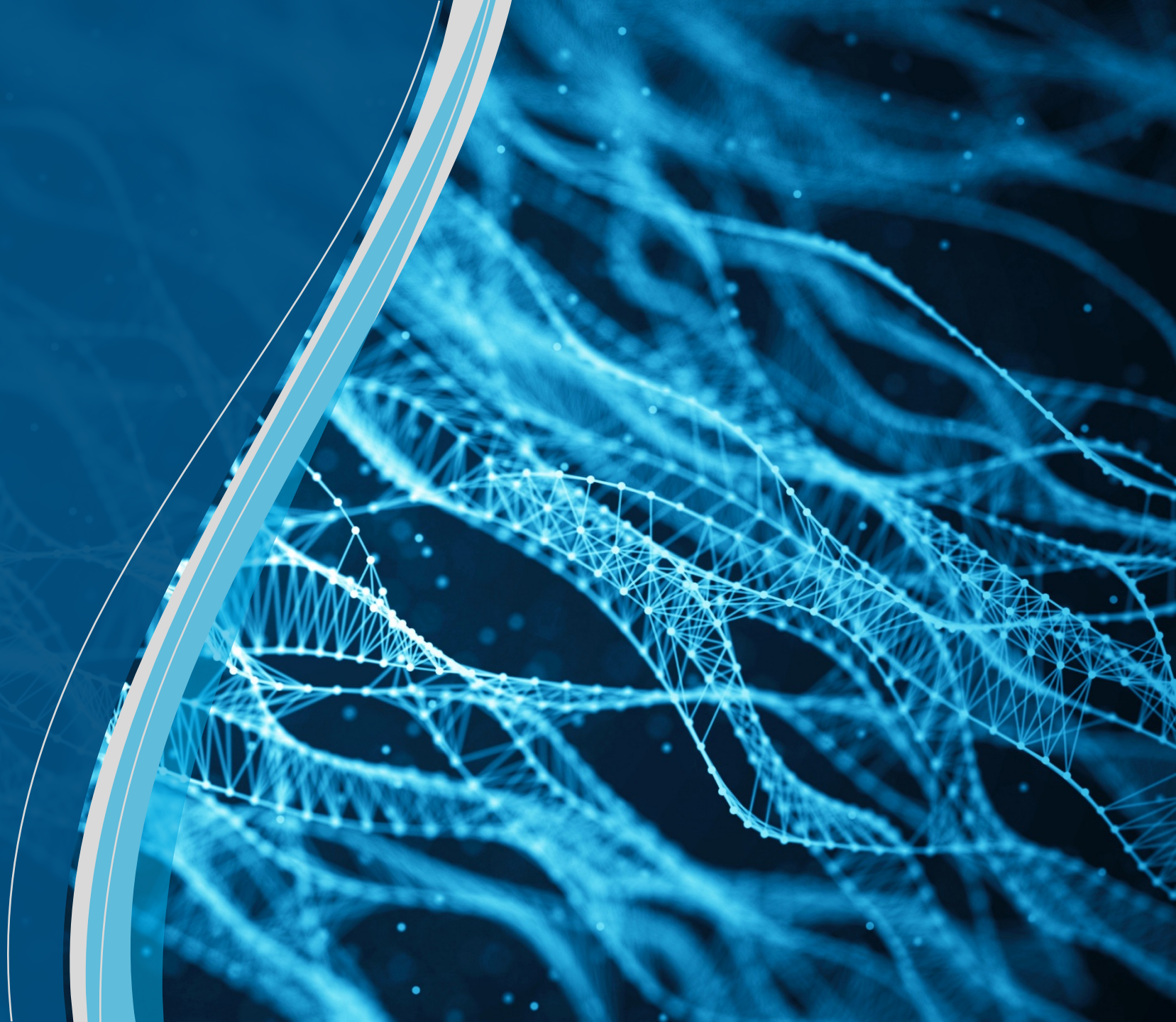
Corporate and financial

Well capitalized

- ✓ ~$372M[1] in cash
- ✓ Runway into Q1 2026

[1] $372.4M in cash, cash equivalents, and marketable securities as of December 31, 2023.

Q&A



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Open to your questions

Rachel Haurwitz, PhD
President and CEO

Steve Kanner, PhD
CSO

Jason O'Byrne
CFO

Tonia Nesheiwat, PharmD
VP, medical affairs and project leadership

Richard Lafayette, MD

Professor of medicine

Director of glomerular disease center

Stanford University

Mehdi Hamadani, MD

Professor of medicine

Section chief of hematologic malignancies

ANTLER Phase 1 trial investigator

Medical College of Wisconsin

Thank you

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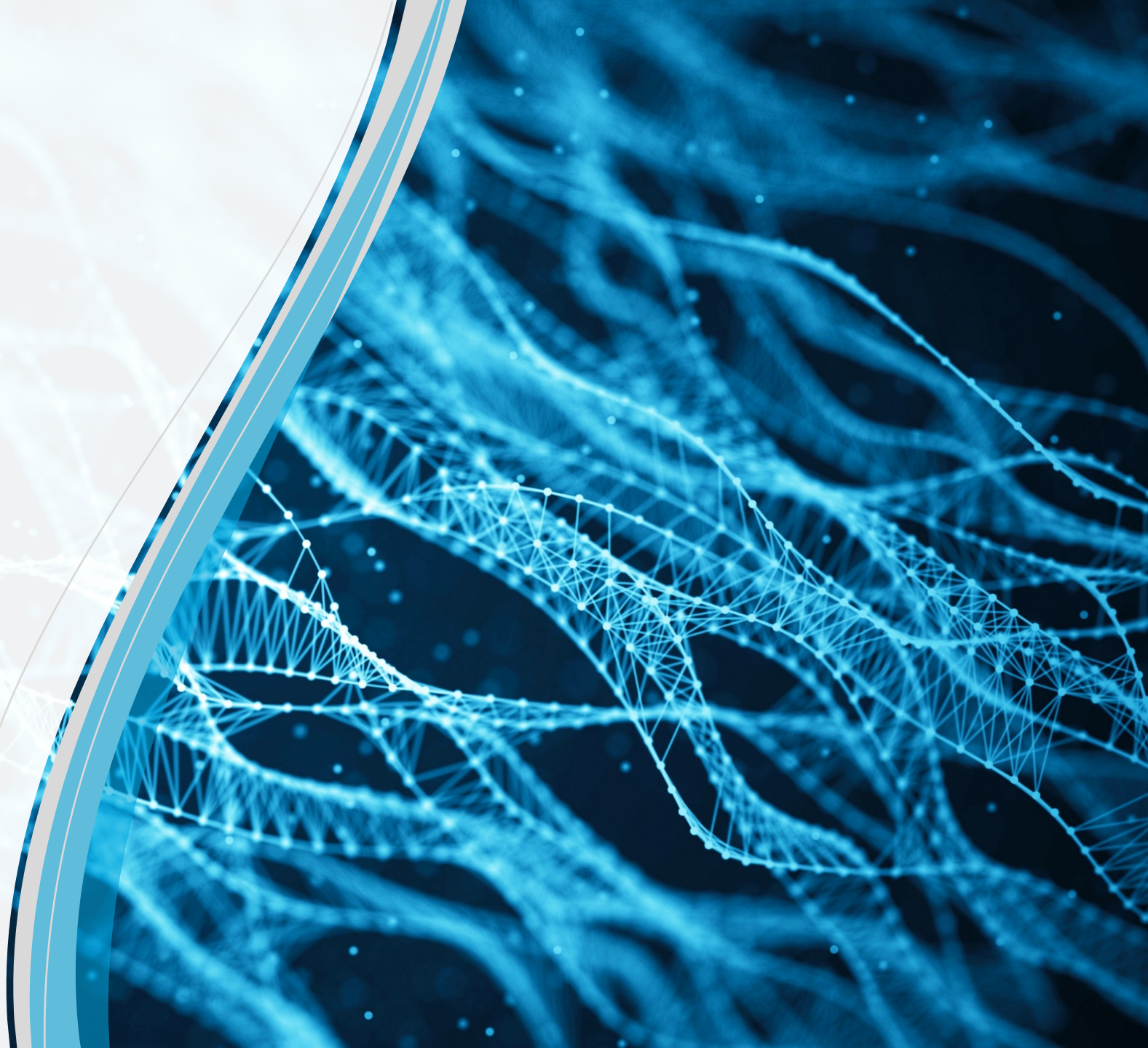
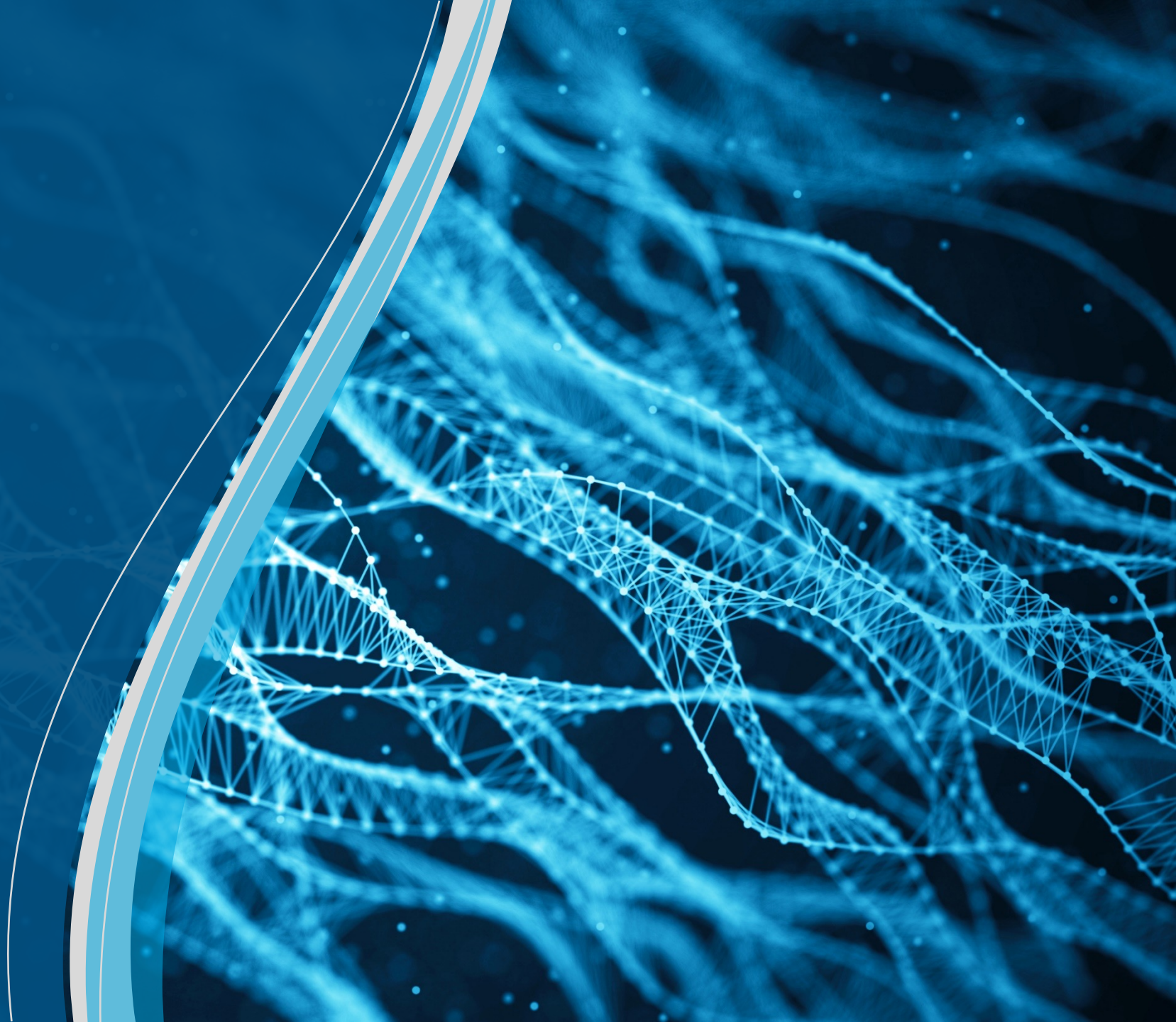


Appendix



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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

Australia
Westmead Hospital
Epworth Hospital

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

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)
Ohio State University (Denlinger)

Pennsylvania
University of Pennsylvania (Nasta)

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)