



ArsenalBio Launches With \$85 Million Series A Financing to Advance New Paradigm to Discover and Develop Immune Cell Therapies

-- Aims to create immune cells with significantly larger DNA payloads encoding synthetic biological instructions to overcome solid tumors' complex defense systems --

-- Aspires to evolve critical success metrics of immune cell therapies -- efficacy, safety, cost, and access -- with programmable, non-viral vector, computationally driven approach --

South San Francisco, Calif., Oct. 17, 2019 – ArsenalBio makes its debut today backed by \$85 million Series A financing to build a programmable cell therapy company to create highly effective and accessible immune cell therapies. The company will integrate technologies such as CRISPR-based genome engineering, scaled and high throughput target identification, synthetic biology, and machine learning to advance a new paradigm to discover and develop immune cell therapies, initially for cancer. ArsenalBio's foundation stems from the contributions of scientific leaders from a consortium of academic medical and research institutions.

Investors include Westlake Village BioPartners, the Parker Institute for Cancer Immunotherapy (PICI), Kleiner Perkins, the University of California, San Francisco (UCSF) Foundation Investment Company, Euclidean Capital, and Osage Venture Partners.

“Our goal is to address the unmet need and suffering of patients with cancer, and ultimately other diseases, by developing and advancing a new paradigm of human immune cell therapy design and treatment,” said Ken Drazan, MD, ArsenalBio's founding Chief Executive Officer. “The integrated technology approach we're embarking upon will create a new arsenal of tools and medicines for researchers, patients and their physicians to reduce cancer morbidity and mortality.”

Today's commercialized, first-generation T cell therapies are designed and manufactured with the goal of inserting into T cells a single cell-targeting transgene, a chimeric antigen receptor or a new T cell receptor through viral delivery. ArsenalBio seeks to exponentially advance this process by precisely inserting, without viral vectors, significantly larger DNA payloads, designed with proprietary tools and encoding a broader set of biological “software” instructions to enable immune cells to effectively target and destroy solid organ and hematologic cancers. ArsenalBio's approach will move beyond the current model of tumor-targeting strategies to enable the rewiring of immune cell circuitry through computationally driven design. The

company aspires to evolve critical metrics of success for immune cell therapies, including enhanced and broader efficacy, increased patient safety, reduced provider costs, and expanded market access.

“The technology ArsenalBio is developing represents a significant advance in how cancer could be treated. The experience leaders such as Jane Grogan, Michael Kalos and Tarjei Mikkelsen bring, combined with Dr. Drazan’s results-oriented management approach, will help rapidly advance this transformational platform to benefit patients,” added Beth Seidenberg, MD, co-founding Managing Director of Westlake Village BioPartners, a Los Angeles area-based venture capital firm focused on incubating and building life sciences companies.

“ArsenalBio is taking different approaches to gene editing, target selection, cell circuit engineering, and computation to reimagine dosing, delivery, persistence, and affordability of cell therapy. The networks of pharma, science, and talent relationships of PICI, Westlake and Kleiner Perkins is a booster to ArsenalBio’s remarkable team and R&D progress,” said Brook Byers, Founding Partner of Kleiner Perkins of Menlo Park, CA.

“ArsenalBio allows us to rewrite vast stretches of code to give T cells dramatic new functions--that means they can be made to be more effective at killing cancer and a broad spectrum of other diseases,” said Sean Parker, founder and Chairman of PICI. “It’s also very rewarding to see ArsenalBio born from the deep collaboration of PICI investigators---who worked together across research centers, hospitals and universities on the science behind these technologies. The company’s very existence demonstrates how much faster and better we can get therapies from bench to bedside when we collaborate and put patients first.”

Experienced Management Team

ArsenalBio’s management team includes seasoned industry executives who bring immuno-oncology, cell therapy and genomic expertise:

- Ken Drazan, MD, who most recently served as President of GRAIL, Inc.
- Jane Grogan, PhD, Chief Scientific Officer (formerly Principal Scientist, Head of Adaptive Tumor Immunity and Cell Therapy, Genentech)
- Michael Kalos, PhD, Executive Vice President, Head of Research & Development (formerly Vice President, Immuno-Oncology and Cell Therapies, Janssen Oncology)
- Tarjei Mikkelsen, PhD, Chief Technology Officer (formerly Vice President, Biology at 10x Genomics)

Board of Directors with Proven Track Record

ArsenalBio’s board brings together industry leaders who have proven track records building successful companies:

- Ken Drazan, MD, Founding CEO, ArsenalBio
- Beth Seidenberg, MD, Managing Director, Westlake Village BioPartners
- Brook Byers, Founding Partner, Kleiner Perkins
- Sean Parker, Chairman and Founder, PICI

- Alexander Marson, MD, PhD, Associate Professor of Microbiology/Immunology, UCSF and PICI Investigator

Scientific Founders

The company's scientific founders comprise a bi-coastal, multi-disciplinary consortium of leading academic researchers:

- Bradley Bernstein, MD, PhD, Professor of Pathology, Massachusetts General Hospital / Broad Institute
- W. Nicholas Haining, BM BCh, Vice President, Discovery Oncology at Merck Research Laboratories, previously Associate Professor of Pediatrics, Dana-Farber Cancer Institute
- Alexander Marson, MD, PhD, Associate Professor of Immunology, UCSF and PICI Investigator
- Theodore Roth, PhD, UCSF School of Medicine, ArsenalBio's founding interim Chief Scientific Officer
- Kole Roybal, PhD, Assistant Professor of Immunology, UCSF and PICI Investigator
- E. John Wherry, PhD, Chairman and Distinguished Presidential Professor of Systems Immunology, UPenn and PICI Investigator, Chair Arsenal Science Advisory Board

About ArsenalBio

ArsenalBio is building a programmable cell therapy company to create highly effective and accessible immune cell therapies to impact outcomes for a much broader number of patients, initially those with cancer. Founded in 2019, ArsenalBio is focused on integrating technologies such as CRISPR-based genome engineering, scaled and high throughput target identification, synthetic biology, and machine learning to advance a new paradigm to discover and develop in immune cell therapies. With its programmable and computationally driven approach, ArsenalBio aspires to evolve critical metrics of success for immune cell therapies, including enhanced and broader efficacy, increased patient safety, reduced provider costs, and expanded market access. Visit www.arsenalbio.com to learn more.

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