ArsenalBio Announces Presentations Highlighting Preclinical Data on AB-1015 and AB-2100 at ASGCT Annual Meeting

Company to share preclinical data on the development of integrated circuit T cell therapies for the potential treatment of ovarian cancer and kidney cancer

SOUTH SAN FRANCISCO, Calif.—May 16, 2023—Arsenal Biosciences, Inc. (ArsenalBio), a clinical stage programmable cell therapy company engineering advanced CAR T-cell therapies for solid tumors, today announced that it will present preclinical data on its ICT cell therapies, AB-1015 and AB-2100, in an oral abstract session and three posters at the American Society of Gene and Cell Therapy (ASGCT) annual meeting in Los Angeles, Calif., May 16-20, 2023.

"We are looking forward to sharing preclinical data that reflects our ongoing commitment to leveraging our unique CRISPR-based approach to the development of new cell therapies for the potential treatment of ovarian cancer and kidney cancer," said Susie Jun, M.D., Ph.D., ArsenalBio's Chief Medical Officer. "Utilizing our logic gate and shRNA technologies, we demonstrate the potential to enhance tumor specificity and anti-tumor activity of CAR T-cell therapy in solid tumor model systems."

ArsenalBio's oral abstract session will detail preclinical data on AB-1015, currently in phase 1 clinical development (NCT05617755) for patients with ovarian cancer, that incorporates ArsenalBio's technologies designed to address the barriers to successful adoptive T cell therapy. The three posters will disclose features and findings on AB-2100, a novel integrated circuit T cell therapeutic candidate engineered for the treatment of kidney cancer. AB-2100 is ArsenalBio's second pipeline program which is targeting the initiation of a phase 1 trial in 2024.

The following abstracts will be presented as an oral abstract session and three posters during the ASGCT annual meeting.

Abstract 149: Preclinical Development of AB-1015, an Integrated Circuit T Cell Therapy Containing an ALPG/MSLN Logic Gate and FAS/PTPN2 shRNA-miR, for the Treatment of Ovarian Cancer
Session title: Next Generation CAR, TCR, and AAV Technologies for Solid Tumors
Oral Abstract Presentation: Thursday, May 18, 2023, 2:45 - 3:00 p.m., Room 502 AB

CAR T cell activity in solid tumors is limited by off-tumor toxicity, antigen heterogeneity, poor persistence, and functional suppression resulting from the tumor microenvironment (TME). To address these challenges, we have developed AB-1015, an autologous, integrated circuit T (ICT) cell product for the potential treatment of ovarian cancer. The AB-1015 transgene cassette includes two functional modules: an "AND" logic gate designed to limit off-tumor toxicity through dual tumor antigen recognition, and a dual shRNA-miR targeting FAS and PTPN2 to resist TME suppression and to improve ICT cell function. AB-1015 is specific for ALPG/P+MSLN+, in preclinical studies, demonstrates superior potency, expansion, and persistence compared with logic gated T cells alone, and is resistant to ovarian TME suppression. Based on these promising preclinical data, AB-1015 is being studied in a phase I clinical trial (NCT05617755) to assess the safety, pharmacokinetics, immunogenicity, and efficacy for patients with platinum-resistant ovarian cancer.

Abstract 572: A PSMA Neovasculature-Inducible CA9 CAR Resistant to FASL and TGFB Mediated Suppression for the Treatment of ccRCC
Poster Session: Wednesday, May 17, 2023, 12:00 - 2:00 p.m. and 5:30 - 7:00 p.m.

Clinically effective CAR T-cell therapy for solid tumors will require substantial T cell engineering to increase their specificity and potency. We have developed an Integrated Circuit T cell (ICT) that encodes multiple synthetic "modules" to potentially overcome diverse barriers to efficacy in clear cell renal cell carcinoma (ccRCC). ICT cells are generated via CRISPR-mediated, targeted knock-in of a single large transgene into a newly identified safe-harbor locus (GS94). With the goal to improve the therapeutic index of CA9 CAR T cells, we developed an "AND" logic gated ICT cell that requires the presence of two antigens to trigger tumor cell killing, thereby enhancing tumor specificity. Our preclinical findings demonstrate that PSMA x CA9 ICT cells can (i) selectively target antigens that cannot be safely targeted by conventional CARs and (ii) overcome multiple suppressive mechanisms in the tumor microenvironment.

Abstract 1218: High-Throughput Arrayed Screening of Logic-Gated CARs Enables the Selection of Candidates for ccRCC with Optimal Potency and Fidelity Traits
Poster Session: Thursday, May 18, 2023, 12:00 - 2:00 p.m. and 5:30 - 7:00 p.m.

The development of clinically effective CAR T-cell products for solid tumors will require substantial cell engineering to confer sufficient specificity, potency, and persistence. Advances in genome engineering and synthetic biology have provided an increasingly complex set of features that can be introduced into CAR T cells to augment their function. However, combining multiple features may result in unpredictable negative interactions between components. Here, we report the use of high-throughput screening to optimize the design of a highly engineered Integrated Circuit T cell (ICT) product for the treatment of clear cell renal cell carcinoma (ccRCC). We leverage high-throughput screening to generate development-ready candidates for ccRCC with finely tuned desirability criteria in <18 months.

Abstract 1374: Synthetic Pathway Activators (SPAs) Increase Engineered T-Cell Potency and Persistence through Tunable STAT Activation
Poster Session: Friday, May 19, 2023, 12:00 - 2:00 p.m. and 5:30 - 7:00 p.m.

Clinically effective adoptive T cell therapy for the treatment of solid tumors requires robust T cell expansion, persistence, and potency. The Janus-kinase signal transducer and activator of transcription (JAK-STAT) pathway plays a critical role in governing T cell activation and differentiation, making it a potential axis for programming an effective T cell response against solid tumors. To exploit this potential, we synthetically engineered a library of proteins, termed Synthetic Pathway Activators (SPAs), that can constitutively drive STAT signaling at variable levels without external cytokine input. We have developed several classes of SPAs driving different STAT pathways, including what we term Class I SPAs (SPA.I), which primarily drive the STAT3 pathway. The SPA platform allows tuning of T cell biology to engineer T cell therapies with increased antitumor potency and cellular persistence.

For more information about ArsenalBio, visit www.arsenalbio.com.

About Arsenal Biosciences Inc.

Arsenal Biosciences, Inc. (ArsenalBio), headquartered in South San Francisco, Calif., is a clinical stage programmable cell therapy company discovering and developing a pipeline of

next-generation autologous T cell therapies to defeat cancer. Our full-stack R&D engine generates multifunctional engineered cell-based medicines, enabled by precise and specific CRISPR insertion of large synthetic DNA cassettes into patient-derived T cells. ArsenalBio is building the industry's largest DNA library of therapeutic enhancing integrated circuits, incorporating sequential-AND logic-gating for improved tumor targeting and synthetic features enabling multiple pharmaceutical functions. In pioneering a computationally driven approach alongside nonviral clinical manufacturing, we aspire to deliver enhanced efficacy, increased patient safety, reduced stakeholder costs, and expanded market access. To learn more, visit www.arsenalbio.com and follow us on Twitter @ArsenalBio, LinkedIn, and Facebook.

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