ArsenalBio Announces Presentation of Four Abstracts at ASGCT Annual Meeting Highlighting New Mechanisms for Leveraging CAR T Cells to Address Solid Tumor Cancers

Company to share research on new approaches to overcome the immunosuppressive tumor microenvironment and combat T cell exhaustion through integrated circuit T cell technology

South San Francisco, Calif. – May 6, 2024 – Arsenal Biosciences, Inc. (ArsenalBio), a clinical stage programmable cell therapy company focused on engineering advanced CAR T-cell therapies for solid tumors, today announced the presentation of four abstracts at the American Society of Gene + Cell Therapy (ASGCT) annual meeting in Baltimore, Md., May 7-11, 2024. These data highlight the portfolio of solutions ArsenalBio is developing to address unmet need in solid tumor cancers, including those currently being studied as potential treatments for ovarian cancer (NCT05617755) and kidney cancer (NCT06245915).

"We continue to advance the science of CAR T-cell therapy and to develop new tools to improve the potency and persistence of our fundamental integrated circuit T cell technology," said Nick Haining, B.M., B.Ch., ArsenalBio's Co-Founder and Chief Scientific Officer. "The entry into the clinic with our second T cell medicine just five years into our company's journey is a testament to the rigorous nature of our approach, the robustness of our data, and the urgency of our purpose – to address the unmet need for safe and effective treatments for solid tumor cancers."

The following abstracts will be presented as poster presentations during the ASGCT annual meeting.

Abstract 811: Development of AB-2100, a PSMA-inducible anti-CA9 CAR T cell therapy intended for the treatment of ccRCC
Date and Time: May 8, 2024 at 12:00 p.m.
Presenter: Mark Landon

AB-2100 is designed to treat relapsed/refractory clear cell renal cell carcinoma (ccRCC). It is an autologous integrated circuit T (ICT) cell product, generated by inserting a DNA cassette into a safe harbor locus within the T cell. It is designed to use three mechanisms to attack tumors while sparing healthy tissues: a logic gate requiring the presence of two antigens in the tumor microenvironment; a synthetic pathway activator (SPA) that enhances antitumor activity; and shRNAs that armor it against immunosuppression. These T cell functions were tested in xenograft models to study the specificity of the logic gate in addressing tumors expressing CA9 as well as both PSMA and CA9 (as the CAR T cells are designed to do). This approach was shown to be successful in overcoming the suppressive mechanisms of the tumor microenvironment and addressing ccRCC expressing both PSMA and CA9 in xenograft models.

Abstract 782: Development of a microscopy-based IF/ISH assay for detection of ICT cells in patients treated with AB-1015
Date and Time: May 8, 2024 at 12:00 p.m.
Presenter: Nickolas Attanasio

AB-1015 is an autologous, genetically modified integrated circuit T (ICT) cell product in clinical development for the treatment of ovarian cancer. It integrates an "AND" logic gate designed to limit off-tumor toxicity through a requirement for dual tumor antigen recognition. To better understand the performance characteristics of AB-1015 ICT cells in human tissue, a custom multiplex immunofluorescence (mIF) assay was developed using the RNAScope platform to detect CD3 protein and mRNA transcripts of both the PrimeR and CAR portion of the circuit by in situ hybridization (ISH). After validation in xenograft models, the assay was used to detect ICTs in one on-trial tumor biopsy sample of an AB-1015 patient.

Abstract 839: Single-cell, pooled CRISPR screening reveals T cell intrinsic regulators of exhaustion in context of chronic antigen stimulation
Date and Time: May 8, 2024 at 12:00 p.m.
Presenter: Glenn Wozniak, Ph.D.

T cell exhaustion from chronic antigen stimulation and an immunosuppressive tumor microenvironment limits the efficacy of T cell therapies used to treat solid tumors. This research used CRISPR/Cas9-based screening, paired with deep sequencing, to identify intrinsic genetic perturbations that can prevent T cell exhaustion. By developing pools of genetically engineered CAR T cells each designed to achieve up- or down-regulation of a single target gene and subjecting the pools to chronic antigen stimulation to replicate hallmarks of T cell exhaustion, we can understand the function of individual genetic changes on T cell function. Our results demonstrated the potential for pooled CRISPR screening to measure complex phenotypes and provided data to direct the development of future advanced CAR T cell therapies.

Abstract 814: Development of logic-gated "Payload" module in CAR T cells aimed at increasing local concentration of a secreted pro-inflammatory module in an antigen-dependent manner
Date and Time: May 8, 2024 at 12:00 p.m.
Presenter: Gavin Shavey, M.S.

This experiment aimed to study whether the logic-gated secretion of a pro-inflammatory module (Payload) could provide an ICT-extrinsic enhancement to the success of these therapies by supporting activation of the endogenous immune system to aid in the anti-tumor response. The study evaluated the ability of a variety of supplemented cytokines to enhance both the ICT and the bystander immune cells anti-tumor function *in vitro* by engineering and testing 30+ cytokine variants to be secreted as Payloads. Incorporation of such Payloads into ICT cells resulted in significant augmentation of anti-tumor activity. We showed Payloads can enhance the function of both ICT and bystander immune cells without signs of increased transformation

risk and can increase capacity for tumor clearance *in vivo* at significantly lower dosage.

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 focusing on discovering and developing a pipeline of next-generation autologous T cell therapies to defeat cancer. Our full-stack R&D engine is designed to generate multifunctional T cell medicines, enabled by precise and specific CRISPR-mediated insertion of large synthetic DNA cassettes. ArsenalBio is aiming to build the industry's largest DNA library of potential therapeutic enhancing integrated circuits, incorporating 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 X (Twitter) @ArsenalBio, LinkedIn, and Facebook.

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