Precision BioSciences Announces Publication in Molecular Therapy of ARCUS® In Vivo Gene Editing as a Promising Therapeutic Approach to Cure Chronic Hepatitis B Infection

May 18, 2022

- ARCUS Genome Editing Achieved Substantial Reductions in both cccDNA and Hepatitis B Surface Antigen (HBsAg), 85% and 77% respectively, in HBV-infected Primary Human Hepatocytes (PHH)

- Significant Decrease in HBsAg and High On-target Editing Achieved in Novel Mouse and Non-human Primate Models Following Lipid Nanoparticle (LNP) Delivery of ARCUS mRNA

- Circulating HBsAg Surface Antigen was Durably Decreased by 96% in Mice

- Data Published also Presented at the 2022 American Society of Gene and Cell Therapy (ASGCT) Annual Meeting

- Precision to Continue Developing PBGENE-HBV Product Candidate Using LNP Delivery and Expects to Submit an IND/CTA in 2024

DURHAM, N.C.--(BUSINESS WIRE)--May 18, 2022-- Precision BioSciences, Inc. (Nasdaq: DTIL), a clinical stage gene editing company developing ARCUS-based *ex vivo* allogeneic CAR T and *in vivo* gene editing therapies, today announced preclinical research from its ongoing *in vivo* gene editing program targeting hepatitis B virus (HBV) has been published online in *Molecular Therapy*. Data from this study, "*Targeting the Hepatitis B cccDNA with a Sequence-Specific ARCUS Nuclease to Eliminate Hepatitis B Virus In Vivo*," support the Company's continued development of its PBGENE-HBV candidate as a promising gene editing approach that aims to eliminate virus persistence by targeting covalently closed circular DNA (cccDNA) in patients with chronic hepatitis B. This study was conducted in collaboration with Gilead Sciences and Acuitas Therapeutics and was also presented this week during the Gene Editing in Cancer and Complex Diseases oral session at the ASGCT Annual Meeting.

"We're very excited to see this study published in *Molecular Therapy* and to showcase the compelling reductions in cccDNA and surface antigen obtained with our ARCUS gene editing platform in two novel animal models of HBV infection. Our data suggest that LNP-delivered ARCUS mRNA is worth further exploration as a possible functional cure for chronic hepatitis B," said Derek Jantz, Chief Scientific Officer and Co-founder of Precision BioSciences.

Precision's gene editing program for chronic hepatitis B is designed to apply ARCUS to knock out persistent cccDNA and inactivate integrated hepatitis B genomes, potentially achieving durable HBsAg loss and functional cure. In this preclinical study, ARCUS efficiently targeted and degraded HBV cccDNA by 85% and reduced expression of HBsAg by 77% in HBV-infected PHH. Importantly, the optimized specificity of the ARCUS nuclease completely prevented detectable chromosomal translocations in the PHH model.

To evaluate ARCUS *in vivo*, novel mouse and non-human primate models were developed that utilized an episomal adeno-associated virus (AAV) containing a portion of the HBV genome to serve as a surrogate for cccDNA. After administration of LNP containing ARCUS mRNA, high on-target editing and a robust decrease in the cccDNA surrogate was observed in both episomal models, along with a durable 96% reduction of HBsAg in mice.

"The real challenge with HBV is that it persists in chronically infected hepatocytes as an extrachromosomal genome called cccDNA. Unless we can eliminate cccDNA, there's always the potential that the virus can reactivate," continued Cassandra Gorsuch, Ph.D., Head of Gene Therapy at Precision BioSciences and lead author of the paper. "Current standard-of-care treatments for chronic hepatitis B work by lowering or suppressing the amount of HBV found in infected cells in the body but have no direct impact on the presence of cccDNA, and therefore rarely clear the virus fully, necessitating life-long therapy."

Precision's *in vivo* development pipeline currently comprises six novel product candidates for genetic diseases. Three of these product candidates are wholly owned -- PBGENE-HBV for chronic hepatitis B, PBGENE-PH1 for primary hyperoxaluria type 1 and PBGENE-PCSK9 for familial hypercholesteremia -- and Precision expects to advance them to IND or CTA over the next three years.

About Precision BioSciences, Inc.

Precision BioSciences, Inc. is a clinical stage biotechnology company dedicated to improving life (DTIL) with its novel and proprietary ARCUS genome editing platform. ARCUS is a highly precise and versatile genome editing platform that was designed with therapeutic safety, delivery and control in mind. Using ARCUS, the Company's pipeline consists of multiple *ex vivo* "off-the-shelf" CAR T immunotherapy clinical candidates and several *in vivo* gene editing candidates designed to cure genetic and infectious diseases where no adequate treatments exist. For more information about Precision BioSciences, please visit www.precisionbiosciences.com.

Forward-Looking Statements

This press release contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. All statements contained in this press release that do not relate to matters of historical fact should be considered forward-looking statements, including, without limitation, statements regarding targeting hepatitis B cccDNA with ARCUS nucleases in novel animal models. In some cases, you can identify forward-looking statements by terms such as "aim," "anticipate," "approach," "believe," "contemplate," "could," "estimate," "expect," "goal," "intend," "look," "may," "mission," "plan," "potential," "predict," "project," "should," "target," "will," "would," or the negative thereof and similar words and expressions.

Forward-looking statements are based on management's current expectations, beliefs and assumptions and on information currently available to us. Such statements are subject to a number of known and unknown risks, uncertainties and assumptions, and actual results may differ materially from those expressed or implied in the forward-looking statements due to various important factors, including, but not limited to: our ability to become profitable; our ability to procure sufficient funding and requirements under our current debt instruments and effects of restrictions thereunder; risks associated with raising additional capital; our operating expenses and our ability to predict what those expenses will be; our limited operating history; the success of our programs and product candidates in which we expend our resources; our limited ability or inability to assess the safety and efficacy of our product candidates; our dependence on our ARCUS technology; the initiation, cost, timing, progress, achievement of milestones and results of research and development activities, preclinical studies and clinical trials; public perception about genome editing technology and its applications; competition in the genome editing, biopharmaceutical, and biotechnology fields; our or our collaborators' ability to identify, develop and commercialize product candidates; pending and potential liability lawsuits and penalties against us or our collaborators related to our technology and our product candidates; the U.S. and foreign regulatory landscape applicable to our and our collaborators' development of product candidates; our or our collaborators' ability to obtain and maintain regulatory approval of our product candidates, and any related restrictions, limitations and/or warnings in the label of an approved product candidate; our or our collaborators' ability to advance product candidates into, and successfully design, implement and complete, clinical or field trials; potential manufacturing problems associated with the development or commercialization of any of our product candidates; our ability to obtain an adequate supply of T cells from qualified donors; our ability to achieve our anticipated operating efficiencies at our manufacturing facility; delays or difficulties in our and our collaborators' ability to enroll patients; changes in interim "top-line" and initial data that we announce or publish; if our product candidates do not work as intended or cause undesirable side effects; risks associated with applicable healthcare, data protection, privacy and security regulations and our compliance therewith; the rate and degree of market acceptance of any of our product candidates; the success of our existing collaboration agreements, and our ability to enter into new collaboration arrangements; our current and future relationships with and reliance on third parties including suppliers and manufacturers; our ability to obtain and maintain intellectual property protection for our technology and any of our product candidates; potential litigation relating to infringement or misappropriation of intellectual property rights; our ability to effectively manage the growth of our operations; our ability to attract, retain, and motivate key executives and personnel; market and economic conditions; effects of system failures and security breaches; effects of natural and manmade disasters, public health emergencies and other natural catastrophic events; effects of COVID-19 pandemic and variants thereof, or any pandemic, epidemic or outbreak of an infectious disease; insurance expenses and exposure to uninsured liabilities; effects of tax rules; risks related to ownership of our common stock and other important factors discussed under the caption "Risk Factors" in our Annual Report on Form 10-K for the fiscal year ended December 31 2021, as any such factors may be updated from time to time in our other filings with the SEC, including, but not limited to, our Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2022, to be filed with the SEC, which are accessible on the SEC's website at www.sec.gov and the Investors page of our website under SEC Filings at investor.precisionbiosciences.com.

All forward-looking statements speak only as of the date of this press release and, except as required by applicable law, we have no obligation to update or revise any forward-looking statements contained herein, whether as a result of any new information, future events, changed circumstances or otherwise.

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