Precision BioSciences Announces Publication in Nucleic Acids Research Elucidating the Mechanisms for High Efficiency Gene Insertion in Dividing and Non-Dividing Cells Using ARCUS Nucleases

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- Publication describes how the unique qualities of ARCUS nucleases contribute to precise and efficient gene editing for gene insertion, single base editing, specific small and large deletions, and replacement of large stretches of genomic DNA -

DURHAM, N.C.--(BUSINESS WIRE)--Oct. 9, 2025-- Precision BioSciences, Inc. (Nasdaq: DTIL), a clinical stage gene editing company utilizing its novel proprietary ARCUS® platform to develop *in vivo* gene editing therapies for high unmet need diseases, today announced the publication of a peer-reviewed manuscript titled "*High-Efficiency Homology-Directed Insertion into the Genome using the Engineered Homing Endonuclease ARCUS"* in the journal *Nucleic Acids Research.* This publication demonstrates a wide variety of gene edits including high-frequency transgene insertions using ARCUS nucleases to stimulate a homology dependent repair mechanism. The publication provides evidence to understand the repair mechanism and how ARCUS can produce high insertion frequencies in both dividing and non-dividing cells.

"We are pleased to have been published in *Nucleic Acids Research* and to be able to highlight many of the key areas where ARCUS is able to differentiate itself as a premier genomic editing platform. ARCUS continues to demonstrate capabilities beyond what is possible with other current genome editing technologies," said Jeff Smith, Ph.D., Co-Founder and Chief Research Officer at Precision BioSciences. "With ARCUS, we're able to unlock the full spectrum of DNA editing approaches, from precise single base changes and small targeted deletions to more complex insertions, even replacing large segments of genomic DNA with efficiencies of 60-90% in dividing cells and 20-40% in non-dividing cells. The small size of ARCUS and its broad capabilities present advantages for application in a diverse range of diseases including those we are validating in ongoing clinical trials."

Highlights from the publication include:

- ARCUS nucleases support rates of transgene insertion exceeding 85% in T lymphocytes via homology-directed repair (HDR).
- Through its unique ability to generate 3' overhang ends at the DNA break, ARCUS can facilitate transgene insertion in up to 40% of non-dividing primary human hepatocytes.
- ARCUS editing by HDR can also be used to achieve other gene editing objectives such as gene insertion, single base editing, specific small and large deletions, and replacement of large stretches of genomic DNA which could enable editing of genes that are too large for gene therapy approaches.
- Mechanistic studies demonstrate the necessity of the 3' overhang that ARCUS nucleases create to drive homology-mediated gene insertion in dividing and non-dividing cells.

"Our pipeline of wholly owned and partnered *in vivo* gene editing programs demonstrate the broad applicability of ARCUS, leveraging the unique properties for gene insertion (e.g. ECUR-506), gene elimination (e.g. PBGENE-HBV), and excision of large sequences of DNA (e.g. PBGENE-DMD) to address the broadest variety of diseases. We're excited about the continued progress with our ARCUS platform and the opportunity to durably improve the lives of people with genetic and infectious diseases," said Cassie Gorsuch, Ph.D., Chief Scientific Officer at Precision BioSciences.

About Precision BioSciences, Inc.

Precision BioSciences, Inc. is a clinical stage gene editing company dedicated to improving life (DTIL) with its novel and proprietary ARCUS® genome editing platform that differs from other technologies in the way it cuts, its smaller size, and its simpler structure. Key capabilities and differentiating characteristics may enable ARCUS nucleases to drive more intended, defined therapeutic outcomes. Using ARCUS, the Company's pipeline is comprised of *in vivo* gene editing candidates designed to deliver lasting cures for the broadest range of genetic and infectious diseases where no adequate treatments exist. For more information about Precision BioSciences, please visit www.precisionbiosciences.com.

The ARCUS® platform is being used to develop *in vivo* gene editing therapies for sophisticated gene edits, including gene insertion (inserting DNA into gene to cause expression/add function), elimination (removing a genome e.g. viral DNA such as in the Company's PBGENE-HBV program), and excision (removing a large portion of a defective gene by delivering two ARCUS nucleases in a single AAV such as in the Company's DMD program).

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 the key advantages of ARCUS and its key capabilities and differentiating characteristics, including capabilities beyond what is possible with other current genome editing technologies; the ability of ARCUS to unlock the full spectrum of DNA editing approaches, from precise single base changes and small targeted deletions to more complex insertions; ARCUS's ability to replace large segments of genomic DNA with efficiencies of 60-90% in dividing cells and 20-40% in non-dividing cells; and ARCUS's unique ability to generate 3' overhang ends at the DNA

break. In some cases, you can identify forward-looking statements by terms such as “aim,” “anticipate,” “approach,” “believe,” “contemplate,” “could,” “design,” “designed,” “estimate,” “expect,” “goal,” “intend,” “look,” “may,” “mission,” “plan,” “possible,” “potential,” “predict,” “project,” “pursue,” “should,” “strive,” “suggest,” “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. These statements are neither promises nor guarantees, and involve 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 to advance our programs; risks associated with our capital requirements, anticipated cash runway, requirements under our current debt instruments and effects of restrictions thereunder, including our ability to raise additional capital due to market conditions and/or our market capitalization; our operating expenses and our ability to predict what those expenses will be; our limited operating history; the progression and 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; the risk that other genome-editing technologies may provide significant advantages over our ARCUS technology; our dependence on our ARCUS technology; the initiation, cost, timing, progress, achievement of milestones and results of research and development activities and preclinical and clinical studies, including clinical trial and investigational new drug applications; public perception about genome editing technology and its applications; competition in the genome editing, biopharmaceutical, and biotechnology fields; our or our collaborators’ or other licensees’ ability to identify, develop and commercialize product candidates; pending and potential product liability lawsuits and penalties against us or our collaborators or other licensees related to our technology and our product candidates; the U.S. and foreign regulatory landscape applicable to our and our collaborators’ or other licensees’ development of product candidates; our or our collaborators’ or other licensees’ ability to advance product candidates into, and successfully design, implement and complete, clinical trials; potential manufacturing problems associated with the development or commercialization of any of our product candidates; delays or difficulties in our and our collaborators’ and other licensees’ 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; our or our licensees’ ability to obtain orphan drug designation or fast track designation for our product candidates or to realize the expected benefits of these designations; our or our collaborators’ or other licensees’ 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; the rate and degree of market acceptance of any of our product candidates; our ability to effectively manage the growth of our operations; our ability to attract, retain, and motivate executives and personnel; effects of system failures and security breaches; insurance expenses and exposure to uninsured liabilities; effects of tax rules; effects of any pandemic, epidemic, or outbreak of an infectious disease; the success of our existing collaboration and other license 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; effects of natural and manmade disasters, public health emergencies and other natural catastrophic events; effects of sustained inflation, supply chain disruptions and major central bank policy actions; market and economic conditions; risks related to ownership of our common stock, including fluctuations in our stock price; our ability to meet the requirements of and maintain listing of our common stock on Nasdaq or other public stock exchanges; and other important factors discussed under the caption “Risk Factors” in our Quarterly Report on Form 10-Q for the quarterly period ended June 30, 2025, as any such factors may be updated from time to time in our other filings 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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