



NEWS RELEASE

Clinical Proof-of-Concept Data for DNA-Encoded Monoclonal Antibodies (DMAbs) Published in Nature Medicine

2025-10-21

- Publication includes complete data for all participants (n=39) up to week 72, further demonstrating durable and tolerable expression of DMAbs
 - Effective target binding and confirmed functional activity through week 72
 - No immune rejection of the DMAbs detected across ~1,000 blood samples
 - Most common side effects were mild, temporary injection site reactions such as pain and redness; no serious adverse events (SAEs) related to study drug

PLYMOUTH MEETING, Pa., Oct. 21, 2025 /PRNewswire/ -- INOVIO (NASDAQ: INO), a biotechnology company focused on developing and commercializing DNA medicines to help treat and protect people from HPV-related diseases, cancer, and infectious diseases, today announced results from a Phase 1 proof-of-concept trial evaluating DMAbs for COVID-19 were published online in Nature Medicine under the title "**Safety and pharmacokinetics of SARS-CoV-2 DNA-encoded monoclonal antibodies in healthy adults: a phase 1 trial.**" Interim pharmacokinetic results were previously available as a preprint on Research Square. The research program underlying the study is being led by The Wistar Institute in collaboration with INOVIO, AstraZeneca, and clinical investigators at the Perelman School of Medicine at the University of Pennsylvania.

"We believe the data from all participants, now published in a premiere scientific journal, demonstrates the breakthrough potential of DMAbs as a long-acting, scalable and tolerable alternative to traditional delivery of monoclonal antibodies," said INOVIO's Chief Scientific Officer, Laurent Humeau, Ph.D. "With promise in a broad range of diseases, we're excited to advance this novel technology with our current collaborators and through potential future partnerships."

In the trial, all participants (39/39) maintained biologically relevant levels of DMAbs through week 72 follow up, confirming the durability of in vivo antibody production, and the expressed DMAbs successfully bound to the SARS-CoV-2 Spike protein and neutralized the SARS-CoV-2 pseudovirus target in all tested participants, confirming functional activity. Notably, no participant developed anti-drug antibodies (ADA) across ~1,000 blood samples. ADA is a common challenge observed in other gene-based delivery platforms, such as adeno-associated virus (AAV) mediated antibody expression.

Additionally, the DMAbs were well tolerated, with the most common side effects being mild, temporary injection site reactions, such as pain and redness. Investigators are continuing exploratory analysis of clinical samples for additional insights into the in vivo expression of DMAbs.

About the Phase 1 Trial

The Phase 1 trial reports using synthetic DNA technology to enable in vivo production of monoclonal antibodies (mAbs) directly from muscle cells. Participants received an intramuscular (IM) injection of synthetic DNA plasmids encoding AZD5396 and AZD8076 (derived from AstraZeneca's cilgavimab and tixagevimab) delivered via INOVIO's proprietary CELLECTRA 2000 electroporation (EP) device. This delivery method temporarily increases cell permeability, which is intended to facilitate efficient DNA uptake and enable sustained antibody production.

The study is an open-label, single center, dose-escalation trial. Enrollment began in May 2022 and was completed in March 2024. The primary endpoints were safety and pharmacokinetics. DMAbs were detected in 100% of evaluable participants (n=39), with serum concentrations reaching a peak of 1.61 µg/mL. Sustained expression was observed in all participants during the 72 weeks of follow-up. The most common side effects observed were temporary local injection site reactions, such as pain and erythema, associated with the administration of the study product. There were three SAEs, all of which were considered unrelated to the study product.

About INOVIO's DNA Medicines Platform

INOVIO's DNA medicines platform has two innovative components: precisely designed DNA plasmids, delivered by INOVIO's proprietary investigational medical device, CELLECTRA®. INOVIO uses proprietary technology to design its DNA plasmids, which are small circular DNA molecules that work like software that the body's cells can download to produce specific proteins to target and fight disease. INOVIO's proprietary CELLECTRA delivery devices are designed to optimally deliver its DNA medicines to the body's cells without requiring chemical adjuvants or lipid nanoparticles and without the risk of the anti-vector response historically seen with viral vector platforms.

About INOVIO

INOVIO is a biotechnology company focused on developing and commercializing DNA medicines to help treat and protect people from HPV-related diseases, cancer, and infectious diseases. INOVIO's technology optimizes the design and delivery of innovative DNA medicines that teach the body to manufacture its own disease-fighting tools. For more information, visit www.inovio.com.

Forward-Looking Statements

This press release contains certain forward-looking statements relating to INOVIO's business, including the potential benefits of INOVIO's DMAb technology platform. Actual events or results may differ from the expectations set forth herein as a result of a number of factors, including uncertainties inherent in pre-clinical studies, clinical trials, product

development programs and commercialization activities and outcomes, the availability of funding to support continuing research and studies in an effort to prove safety and efficacy of electroporation technology as a delivery mechanism or develop viable DNA medicines, our ability to support our pipeline of DNA medicine products, the ability of our collaborators to attain development and commercial milestones for products we license and product sales that will enable us to receive future payments and royalties, the adequacy of our capital resources, the availability or potential availability of alternative therapies or treatments for the conditions targeted by us or collaborators, including alternatives that may be more efficacious or cost effective than any therapy or treatment that we and our collaborators hope to develop, issues involving product liability, issues involving patents and whether they or licenses to them will provide us with meaningful protection from others using the covered technologies, whether such proprietary rights are enforceable or defensible or infringe or allegedly infringe on rights of others or can withstand claims of invalidity and whether we can finance or devote other significant resources that may be necessary to prosecute, protect or defend them, the level of corporate expenditures, assessments of our technology by potential corporate or other partners or collaborators, capital market conditions, the impact of government healthcare proposals and other factors set forth in our Annual Report on Form 10-K for the year ended December 31, 2024, our Quarterly Report on Form 10-Q for the quarter ended June 30, 2025, and other filings we make from time to time with the Securities and Exchange Commission. There can be no assurance that any product candidate in our pipeline will be successfully developed, manufactured, or commercialized, that the results of clinical trials will be supportive of regulatory approvals required to market products, or that any of the forward-looking information provided herein will be proven accurate. Forward-looking statements speak only as of the date of this release, and we undertake no obligation to update or revise these statements, except as may be required by law.

The views expressed in this press release reflect the views of the authors and do not necessarily reflect the position of the Department of the Army, Department of War, nor the United States Government. References to non-federal entities do not constitute or imply Department of War or Army endorsement of any company or organization.

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Penn and Dr. Weiner have either received, or may receive in the future, financial consideration related to the licensing of certain Penn intellectual property to INOVIO. Dr. Weiner is a member of the Scientific Advisory Board and Board of Directors for INOVIO.

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