

# INOVIO Announces Survival Results for INO-5401 + INO-9012 in Combination with Libtayo® (cemiplimab) in Patients with Newly Diagnosed GBM at ASCO Annual Meeting 2022

5/27/2022

INOVIO's DNA medicines immunotherapy in combination with Libtayo® elicits vaccine-associated immune responses when administered with RT/TMZ to newly diagnosed GBM patients

INO-5401 + INO-9012 + Libtayo® elicits cancer antigen-specific T cells

55% of MGMT methylated subjects remain alive at a median of 32.5 months

Dr. David Reardon, Principal Investigator, to present on June 6, 2022 at ASCO

PLYMOUTH MEETING, Pa., May 27, 2022 /PRNewswire/ -- INOVIO (NASDAQ: INO) announced results from the company's novel Phase 1/2 trial of INO-5401 and INO-9012 in combination with PD-1 inhibitor Libtayo® (cemiplimab) in the treatment of newly diagnosed glioblastoma (GBM), including encouraging median overall survival (OS) data from fifty-two subjects. Median OS duration in unmethylated MGMT (Cohort A) was 17.9 months. Median OS data in MGMT Methylated patients (Cohort B) are being presented for the first time, at a median of 32.5 months, which compares favorably to historical comparisons (23.2-25 months).

Overall, INO-5401 + INO-9012 is demonstrated to be tolerable and immunogenic when administered with Libtayo and RT/TMZ (radiation and temozolomide) to newly diagnosed GBM patients. Notably, INO-5401 elicited antigen-specific T cells that may infiltrate GBM tumors. The data from this study was selected to be presented in an oral presentation by Dr. David Reardon on Monday, June 6, 2022, at the 2022 American Society of Clinical Oncology (ASCO) at the McCormick Place Convention Center in Chicago, Illinois.

Presentation Details: June 6, 2022, 12:42 – 12:54 p.m. CDT

Presenting Author: David A. Reardon  
Central Nervous System Tumors Session

## Abstract #2004: Intramuscular (IM) INO-5401 + INO-9012 with electroporation (EP) in combination with cemiplimab (REGN2810) in newly diagnosed glioblastoma

Fifty-two subjects were enrolled: 32 in Cohort A; 20 in Cohort B (35% women; median age 60 years [range 19-78 years]). The adverse event profile was consistent with known single-agent (INO-5401, INO-9012, EP or Libtayo) events; most events were  $\leq$ Grade 2 and no related events were Grade  $\geq$ 4. Median OS durations in Cohorts A and B were 17.9 months (95% CI 14.5-19.8) and 32.5 months (95% CI 18.4-not reached), respectively. Flow cytometry revealed activated, antigen specific CD4+CD69+PD1+ and CD8+CD69+PD1+ T cells, the latter with lytic potential as defined by presence of perforin and granzyme A. Both subsets exhibited HR < 1.0 and p < 0.05 when accounting for a 0.1% T cell frequency change, translating to a 23% and 28% reduced risk of death at 18 months, respectively.

A post-hoc exploratory analysis showed that gene expression levels of INO-5401 antigens and immune cell markers from pre-treatment tumor tissues were similar between alive and deceased groups; however, the alive group displayed significant differential expression of genes regulating apoptosis, proliferation, and immune responses. Post-treatment tumor tissue displayed altered gene expression for immune-related markers versus pre-treatment tissue, including markers of T cell infiltration, activation, and lytic potential.

Dr. David Reardon, Clinical Director, Center for Neuro-Oncology of Dana-Farber Cancer Institute and coordinating principal investigator of the study said, "GBM remains one of the most aggressive and hard-to-treat cancers. The fact that we have seen this novel combination trial of a T cell generating DNA medicine combined with a PD-1 checkpoint benefit a large percent of trial participants past 32 months is very encouraging. These latest results and continued development are welcoming as it continues to improve upon a standard of care which was defined 17 years ago and remains sub-optimal for our patients with GBM."

Dr. Jeffrey Skolnik, INOVIO's Senior Vice President, Clinical Development, said, "We, along with our collaborative partner Regeneron, remain encouraged with the progress to date from this novel combination therapy study. As concluded in the abstract, INO-5401 + INO-9012 has an acceptable risk/benefit profile and elicits robust immune responses that may correlate with a potentially enhanced survival when administered with Libtayo and RT/TMZ to newly diagnosed GBM patients. Our goal is to build upon INO-5401's ability to elicit antigen-specific T cells that can infiltrate GBM tumors and complement the clinically-active profile of Libtayo to a potentially larger study in the future."

INO-5401, INO-9012, Libtayo, and the combination of these products have not been approved or evaluated by any Regulatory Authority worldwide for the treatment of newly diagnosed GBM.

## Study Design

The trial was designed to evaluate safety, immunogenicity and efficacy of INO-5401 and INO-9012 in combination with Libtayo, with radiation and chemotherapy, in subjects with newly diagnosed glioblastoma (GBM). This is a Phase 1/2, open-label, multi-center trial conducted in 52 evaluable patients with GBM. There are two cohorts in this trial. Cohort A includes 32 participants with a tumor with an unmethylated O6-methylguanine-deoxyribonucleic acid (DNA) methyltransferase (MGMT) promoter. Cohort B includes 20 participants with a tumor with a MGMT methylated promoter. Both cohorts received INO-5401 and INO-9012 and Libtayo at the same doses and on the same dosing schedule, and both cohorts received radiation and TMZ. For more information of the clinical study, see [www.clinicaltrials.gov](http://www.clinicaltrials.gov), identifier NCT03491683.

## About INO-5401 and INO-9012

INO-5401 encodes for INOVIO's SynCon® antigens for hTERT, WT1, and PSMA, and has the potential to be a powerful cancer immunotherapy in combination with checkpoint inhibitors. The National Cancer Institute previously highlighted hTERT, WT1, and PSMA among a list of important cancer antigens, designating them as high priorities for cancer immunotherapy development. These three antigens were reported to be over-expressed, and often mutated, in a variety of human cancers including glioblastoma, and targeting these antigens may prove efficacious in the treatment of patients with cancer. INO-9012 encodes for IL-12, which is a T cell immune activator.

## About Glioblastoma (GBM)

GBM is the most common and aggressive type of brain cancer and remains a devastating disease for both patients and caregivers. Its prognosis is extremely poor, with very few new therapies approved over the last 10 years. The median overall survival for patients receiving standard of care therapy is approximately 15 to 22 months and the median progression-free survival is approximately 7-10 months. In the U.S., the estimated annual incidence of GBM is 11,362 cases or 3.21 cases per 100,000 persons and the median age at diagnosis is 65 years.

## About INOVIO

INOVIO is a biotechnology company focused on developing and commercializing DNA medicines to help protect people from infectious diseases and help treat people with cancer and HPV-associated diseases. Our DNA medicines are delivered using our proprietary smart device to produce a robust and tolerable immune response against targeted pathogens and cancers.

Partners and collaborators include Advaccine, ApolloBio Corporation, AstraZeneca, The Bill & Melinda Gates Foundation, Coalition for Epidemic Preparedness Innovations, Defense Advanced Research Projects Agency/Joint

Program Executive Office for Chemical, Biological, Radiological and Nuclear Defense/Department of Defense, HIV Vaccines Trial Network, International Vaccine Institute, Kaneka Eurogentec, Medical CBRN Defense Consortium, National Cancer Institute, National Institutes of Health, National Institute of Allergy and Infectious Diseases, Ology Bioservices, the Parker Institute for Cancer Immunotherapy, Plumblin Life Sciences, Regeneron, Richter-Helm BioLogics, Thermo Fisher Scientific, University of Pennsylvania, Walter Reed Army Institute of Research, and The Wistar Institute. For more information, visit [www.inovio.com](http://www.inovio.com).

## CONTACTS:

Media: Jeff Richardson, 267-440-4211, [jrichardson@inovio.com](mailto:jrichardson@inovio.com)

Investors: Ben Matone, 484-362-0076, [ben.matone@inovio.com](mailto:ben.matone@inovio.com)

This press release contains certain forward-looking statements relating to our business, including our plans to develop DNA medicines, our expectations regarding our research and development programs, including the planned initiation and conduct of preclinical studies and clinical trials and the availability and timing of data from those studies and trials, and our ability to successfully manufacture and produce large quantities of our product candidates if they receive regulatory approval. 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, our ability to secure sufficient manufacturing capacity to mass produce our product candidates, 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 our 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, 2021, our Quarterly Report on Form 10-Q for the quarter ended March 31, 2022 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

final 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.

View original content:<https://www.prnewswire.com/news-releases/inovio-announces-survival-results-for-ino-5401--ino-9012-in-combination-with-libtayo-cemiplimab-in-patients-with-newly-diagnosed-gbm-at-asco-annual-meeting-2022-301556446.html>

SOURCE INOVIO Pharmaceuticals, Inc.