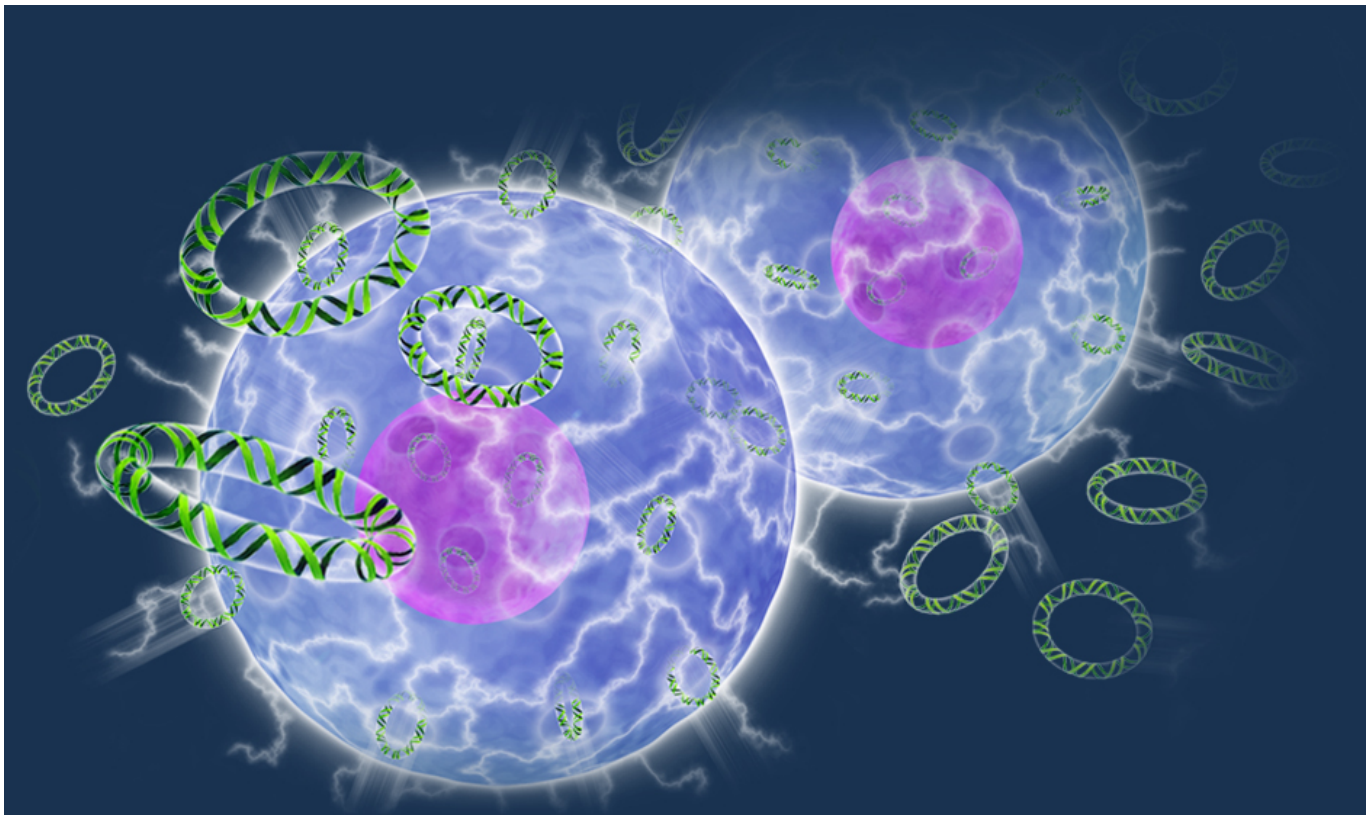
Inovio Updates on MedImmune Combination Trial for HPV-associated Head & Neck Cancer

Inovio Pharmaceuticals, Inc. {NASDAQ: INO} today announced that **MedImmune**, AstraZeneca's global biologics research and development arm, will start a new clinical trial investigating the combination of MEDI0457, an immunotherapy designed to generate antigen specific killer T cell responses targeting HPV-associated tumors, and durvalumab, an investigational PD-L1 checkpoint inhibitor.



Inovio Provides Update on MedImmune Launch of Combination

Trial for HPV-associated Head & Neck Cancer

Phase 1b/2a study combines MedImmune's MEDI0457 (INO-3112), a DNA-based immunotherapy targeting HPV-associated cancer, and durvalumab, an immune checkpoint (PD-L1) inhibitor

PLYMOUTH MEETING, Pa. – May 10, 2017 – **Inovio Pharmaceuticals, Inc. {NASDAQ: INO}** today announced MedImmune, AstraZeneca's global biologics research and development arm, will start a new clinical trial investigating the combination of MEDI0457, an immunotherapy designed to generate antigen specific killer T cell responses targeting HPV-associated tumors, and durvalumab, an investigational PD-L1 checkpoint inhibitor.

The combination trial will enroll patients with metastatic HPV-associated squamous cell carcinoma of the head & neck (SCCHN) with persistent or recurrent disease after chemotherapy treatment.

The open-label study is designed to evaluate the safety and efficacy of the combination therapy in approximately 50 subjects at multiple U.S. sites. Subjects will receive multiple doses of MEDI0457 (previously known as INO-3112) and durvalumab. The primary endpoints of the study are safety and objective response rate. The study will also evaluate immunological impact, progression-free survival and overall survival.

Dr. J. Joseph Kim, Inovio's President and CEO, said, *"This study marks a significant moment for Inovio as we transition into a late-stage biotechnology company. MedImmune is investigating the possibility of elevating the response rate of checkpoint inhibitors by using durvalumab in combination with a DNA plasmid vaccine originally from Inovio which has*

shown the ability to generate killer T cells. I'm a strong believer in this combination regimen strategy against cancer: utilize Inovio's cancer vaccine to generate significant levels of antigen-specific killer T cells, have them infiltrate into tumors – or what is being referenced as turning a tumor from "cold" to "hot" – then suppress the cancer cells' defensive mechanisms utilizing a checkpoint inhibitor. We think that powerful combination can be effective in treating multiple tumors going forward."

Increasing evidence suggests that response rates from checkpoint inhibitors such as MedImmune's durvalumab can be enhanced when used in combination with cancer vaccines like MEDI0457 that generate tumor-specific T cells. Interim data from a MEDI0457 monotherapy study of head and neck cancer patients demonstrated that MEDI0457 generated robust HPV16/18 specific CD8+ T cell responses in peripheral blood and increased CD8+ T cell infiltration in resected tumour tissue samples.

In 2015, MedImmune acquired exclusive rights to Inovio's INO-3112 immunotherapy for all HPV-associated cancers. MedImmune provided an upfront payment of $27.5 million to Inovio as well as potential future payments upon reaching development and commercial milestones totaling up to $700 million. MedImmune will fund all development costs. Inovio is entitled to receive up to double-digit tiered royalties on INO-3112 product sales.

About HPV-associated Head & Neck Cancer

Head and neck cancer is the sixth most common cancer worldwide. Human papillomavirus (HPV), the most common

sexually transmitted disease in the US, is known to play a major role in the development of head and neck cancers, which include cancers of the oral cavity, oropharynx, nose/nasal passages and larynx. New cases of HPV-associated squamous cell carcinoma of the head & neck (SCCHN) are growing fastest in developed countries like the US. There are approximately 16,000 new cases of HPV-associated SCCHN per year in the US alone. In contrast, the rate of smoking and alcohol-related SCCHN has been steadily declining. Men are four times more likely than women to be diagnosed with this disease. Patients with HPV-associated SCCHN tend to be diagnosed at a younger age than those with smoking and alcohol related disease.

Head and neck cancers are currently treated by surgical removal of the cancer and lymph nodes, often followed by radiation and chemotherapy based on the extent of the disease. While patients may achieve good long-term survival, standard treatments can change their physical appearance and are associated with significant short and long-term toxicities which may interfere with salivary gland function, taste, smell, and the ability to swallow. The biology and natural history of oropharyngeal HPV infection and the best clinical management of patients with HPV-associated SCCHN are not well understood.

About MEDI0457 (INO-3112)

Inovio’s DNA-based immunotherapies help the immune system activate disease-specific killer T cells to fight a targeted disease. INO-3112 targets disease associated with the high-risk HPV types 16 and 18, which are responsible for over 70% of cervical pre-cancers and cancers and 60% of head and neck cancers. INO-3112 combines Inovio’s VGX-3100, its immunotherapy targeting HPV-associated diseases, with its DNA-

based immune activator encoding IL-12.

About Durvalumab

Durvalumab, previously known as MEDI4736, a human monoclonal antibody directed against PD-L1, blocks PD-L1 interaction with PD-1 and CD80 on T cells, countering the tumour's immune-evading tactics and inducing an immune response. Additional clinical trials are ongoing to investigate durvalumab as monotherapy or in combination with tremelimumab in non-small cell lung cancer, head and neck squamous cell carcinoma, bladder, hepatocellular carcinoma and blood cancers.

About MedImmune

MedImmune is the global biologics research and development arm of AstraZeneca, a global, innovation-driven biopharmaceutical business that focuses on the discovery, development and commercialization of small molecule and biologic prescription medicines. MedImmune is pioneering innovative research and exploring novel pathways across Oncology; Respiratory, Cardiovascular & Metabolic Diseases; and Infection and Vaccines. The MedImmune headquarters is located in Gaithersburg, MD., one of AstraZeneca's three global R&D centers, with additional sites in Cambridge, UK, and Mountain View, CA.

For more information, please visit www.medimmune.com

About AstraZeneca

AstraZeneca is a global, science-led biopharmaceutical company that focuses on the discovery, development and commercialization of prescription medicines, primarily for the

treatment of diseases in three main therapy areas – Oncology, Cardiovascular & Metabolic Diseases and Respiratory. The Company also is selectively active in the areas of autoimmunity, neuroscience and infection. AstraZeneca operates in over 100 countries and its innovative medicines are used by millions of patients worldwide.

For more information, please visit www.astrazeneca.com

About Inovio Pharmaceuticals, Inc.

Inovio is taking immunotherapy to the next level in the fight against cancer and infectious diseases. We are the only immunotherapy company that has reported generating T cells in vivo in high quantity that are fully functional and whose killing capacity correlates with relevant clinical outcomes with a favorable safety profile. With an expanding portfolio of immune therapies, the company is advancing a growing preclinical and clinical stage product pipeline. Partners and collaborators include MedImmune, Regeneron, The Wistar Institute, University of Pennsylvania, DARPA, GeneOne Life Science, Plumbline Life Sciences, ApolloBio Corporation, Drexel University, NIH, HIV Vaccines Trial Network, National Cancer Institute, U.S. Military HIV Research Program, and Laval University.

For more information, please visit www.inovio.com

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This press release contains certain forward-looking statements relating to our business, including our plans to develop electroporation-based drug and gene delivery technologies and DNA vaccines, our expectations regarding our research and development programs and our capital resources. 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 and product development programs, including the cancer immunotherapy INO-3112, 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 vaccines, our ability to support our broad pipeline of SynCon® active immunotherapy and vaccine 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 the company or its collaborators, including alternatives that may be more efficacious or cost effective than any therapy or treatment that the company and its collaborators hope to develop, issues involving product liability, issues involving patents and whether they or licenses to them will provide the company 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 the company can finance or devote other significant resources that may be necessary to prosecute, protect or defend them, the level of corporate expenditures, assessments of the company’s 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, 2016, and other regulatory filings from time to time. There can be no assurance that any product in Inovio’s pipeline will be successfully developed or manufactured, that final results of clinical studies will be supportive of regulatory approvals required to market licensed products, or that any of the forward-looking information provided herein will be proven accurate.