NEWS RELEASE

Inovio Announces Initiation of Phase 2 Trial in New HPV Indications

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Phase 2 cancer study will evaluate T cell-activating immunotherapy MEDI0457 with MedImmune's durvalumab targeting several HPV-related cancers

PLYMOUTH MEETING, Pa., Dec. 04, 2018 (GLOBE NEWSWIRE) -- Inovio Pharmaceuticals, Inc. (NASDAQ:INO) announced today the dosing of the first patient in a Phase 2 combination trial to evaluate MedImmune's MEDI0457 (formerly called INO-3112 which MedImmune in-licensed from Inovio) in combination with durvalumab targeting a broad array of cancers associated with the human papilloma virus (HPV).

This open-label trial funded by MedImmune, the global biologics research and development arm of AstraZeneca, is sponsored by noted cancer researcher Dr. Michael Frumovitz, MD, MPH, of the MD Anderson Cancer Center in Houston, Texas. MedImmune is evaluating MEDI0457 in combination with durvalumab, an anti-PD-L1 immune checkpoint inhibitor, in patients with HPV-associated cervical, anal, penile, and vulvar cancers in arms of a clinical trial with an estimated total enrollment of 77 patients. For additional information about the study, please visit **www.clinicaltrials.gov** (search identifier NCT03439085).

The opening of this trial will result in a milestone payment from MedImmune to Inovio. Financial arrangements were not disclosed.

Dr. Frumovitz said, "This is the first Phase 2 clinical trial at MD Anderson that is focused not on the site of disease origin, but instead on the cause of a cancer -- in this case exposure to HPV 16 or 18. The HPV Moon Shot at MD Anderson has developed an entire research program with this philosophy in mind — that HPV-associated cancers behave similarly, regardless of site of origin, and should be studied as a whole, not as individual cancers. This study will be "site agnostic", meaning any patient with an HPV 16/18 associated cancer, regardless of primary site, will be eligible. Another truly unique aspect of this study is a separate cohort for patients who are HIV positive with an HPV 16/18 associated cancer."

Dr. J. Joseph Kim, Inovio's President and Chief Executive Officer, said, "We are pleased to see Inovio's cancer-fighting immunotherapy, in MEDI0457, expand to new cancer indications. Such expansion is great for patients and the oncology community. For Inovio,

amplification of HPV cancer targets holds the potential to bring about additional milestone and royalty payments."

An article in the online edition of **Clinical Cancer Research** highlights a recent Phase 1 study of MEDI0457 as a monotherapy in 22 HPV-positive patients with HPV-associated head and neck cancer that demonstrated MEDI0457 generated robust HPV16/18 specific CD8+ T cell responses in peripheral blood and increased CD8+ T cell infiltration in resected tumor tissue. One patient in that trial who initially displayed a slight increase in T cell immune responses developed progressive disease at 11 months into the study and subsequently received a PD-1 checkpoint inhibitor. The patient achieved a complete response, which has sustained for over two years and counting. Increasing evidence suggests that response rates from checkpoint inhibitors can be enhanced when used in combination with cancer vaccines like MEDI0457 that generate tumor-specific T cells.

About MEDI0457 and VGX-3100

MEDI0457 (formerly called INO-3112 (VGX-3100, plus IL-12) which MedImmune in-licensed from Inovio) is under evaluation by MedImmune to treat HPV-associated cancers. Inovio is investigating VGX-3100, a DNA-based immunotherapy for the treatment of HPV-16 and HPV-18 infection and pre-cancerous lesions of the cervix (Phase 3) and vulva (Phase 2) and anal (Phase 2). VGX-3100 has the potential to be the first approved treatment for HPV infection of the cervix and the first non-surgical treatment for pre-cancerous cervical lesions. VGX-3100 works by stimulating a specific immune response to HPV-16 and HPV-18, which targets the infection and causes destruction of pre-cancerous cells. In a randomized, double-blind, placebo-controlled Phase 2b study in 167 adult women with histologically documented HPV-16/18 cervical HSIL (CIN2/3), treatment with VGX-3100 resulted in a statistically significantly greater decrease in cervical HSIL and clearance of HPV infection vs. placebo. The most common side effect was injection site pain, and no serious adverse events were reported. VGX-3100 utilizes the patient's own immune system to clear HPV-16 and HPV-18 infection and pre-cancerous lesions without the increased risks associated with surgery, such as loss of reproductive health and negative psychosocial impacts.

Under the 2015 agreement, MedImmune acquired exclusive rights to Inovio's INO-3112, now called MEDI0457. MEDI0457 targets cancers caused by HPV types 16 and 18 which are responsible for more than 70 percent of cervical pre-cancers and cancers and are involved in the development of other tumors. Within the broader license and collaboration agreement, MedImmune and Inovio are co-developing one additional DNA-based cancer therapy product not included in Inovio's current product pipeline, which MedImmune has exclusive rights to develop and commercialize. Inovio will receive development, regulatory and commercialization milestone payments for these additional cancer vaccine products and will be eligible to receive royalties on worldwide net sales.

About Durvalumab

Durvalumab, a human monoclonal antibody directed against PD-L1, blocks PD-L1 interaction with PD-1 and CD80 on T cells, countering the tumor's immune-evading tactics and inducing an immune response. As part of a broad development program, durvalumab is being investigated as monotherapy and in combination with IO, small molecules, and chemotherapies across a range of tumors and stages of disease.

About Inovio Pharmaceuticals, Inc.

Inovio is a late-stage biotechnology company focused on the discovery, development, and commercialization of DNA immunotherapies that transform the treatment of cancer and infectious diseases. Inovio's proprietary platform technology applies next-generation antigen sequencing and DNA delivery to activate potent immune responses to targeted diseases. The technology functions exclusively in vivo, and has been demonstrated to consistently activate robust and fully functional T cell and antibody responses against targeted cancers and pathogens. Inovio is the only immunotherapy company that has reported generating T cells whose killing capacity correlates with relevant clinical outcomes. Inovio's most advanced clinical program, VGX-3100, is in Phase 3 for the treatment of HPV-related cervical pre-cancer. Also in development are Phase 2 immuno-oncology programs targeting head and neck cancer, bladder cancer, and glioblastoma, as well as platform development programs in hepatitis B, Zika, Ebola, MERS, and HIV. Partners and collaborators include MedImmune, Regeneron, Roche/Genentech, ApolloBio Corporation, The Wistar Institute, University of Pennsylvania, Parker Institute for Cancer Immunotherapy, CEPI, DARPA, GeneOne Life Science, Plumbline Life Sciences, Drexel University, NIH, HIV Vaccines Trial Network, National Cancer Institute, U.S. Military HIV Research Program, and Laval University. For more information, visit **www.inovio.com**.

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, including the planned initiation and conduct of clinical trials and the availability and timing of data from those trials, and our plans and expectations regarding partnerships. 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, 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 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 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, 2017, our Quarterly Report on Form 10-Q for the quarter ended September 30, 2018 and other regulatory filings we make from time to time. 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 licensed 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.

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