NEWS RELEASE

Inovio's Novel HPV Therapy INO-3106 Demonstrates Clinical Efficacy Against Rare Respiratory Tract Tumors in Pilot Clinical Study

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Clinical Data Presented at Annual Meeting of American Association for Cancer Research

PLYMOUTH MEETING, Pa., April 3, 2019 /PRNewswire/ -- Inovio Pharmaceuticals, Inc. (NASDAQ:INO) today announced its novel therapy INO-3106 against the human papilloma virus type 6 (HPV 6) demonstrated clinical efficacy in a study of two patients with recurrent respiratory papillomatosis (RRP). RRP is an HPV-associated disease that can cause noncancerous tumor growths leading to life-threatening airway obstructions, and occasionally progresses to cancer. RRP is primarily caused by two strains of HPV, HPV 6 and 11, which also predominantly cause genital warts. RRP may occur in adults (adult-onset RRP) as well as in children (juvenile-onset RRP) who are thought to have contracted the virus during childbirth. Currently, the disease is incurable and can only be treated by surgery to remove the tumors, which temporarily restores the airway. The tumor always recurs and the surgery must be repeated, usually multiple times a year.

Inovio's pilot clinical study enrolled two adult patients with RRP and one adult patient with tracheal cancer, all positive for HPV 6. One patient with tracheal cancer discontinued the study prior to the completion of follow-up. In the two patients with RRP, their condition had required surgery approximately every six months to clear the tumor growths. Following their last dose of Inovio's HPV therapy, both patients have been surgery-free, due to lack of tumor recurrence. One patient has not needed surgery for over two years; the other has been surgery-free for over one year. A complete study report is being prepared as a medical publication. Inovio plans to further develop INO-3106 as a novel non-invasive immunotherapy for the treatment of RRP, a rare, orphan disease, for both adult and pediatric populations.

This data was presented at this week's Annual Meeting of American Association for Cancer Research by David B. Weiner, Ph.D., Executive Vice President and Director of the Vaccine & Immunotherapy Center at the Wistar Institute and Inovio's co-founder.

Dr. J. Joseph Kim, Inovio's President and CEO, said, "This exciting new data adds to the growing body of evidence that Inovio's immunotherapies drive clinical efficacy in multiple HPV-related diseases. We've already demonstrated clinical efficacy of our therapies in three separate clinical indications: in cervical precancers with VGX-3100, in head and neck cancer with MEDI0457 with

our partner AstraZeneca, and now in a challenging respiratory tumor with INO-3106. Our goal is to become the "go-to" immunotherapy provider to effectively treat all major HPV-related precancers and cancers, and I believe we are on our way there. With this RRP clinical data, Inovio plans to rapidly advance this product as a non-surgical treatment for this rare orphan disease."

Inovio's most advanced HPV therapy VGX-3100 in Phase 3 targets HPV types 16 and 18, which accounts for most HPV-associated cancers. However, most RRP are caused by HPV types 6 and 11. Inovio is developing INO-3106 as a separate product through its own regulatory pathway as part of the company's overall HPV franchise. For this pilot study, Inovio designed INO-3106 encoding HPV 6 antigens alone or in combination with INO-9012, an IL-12 molecular adjuvant. Each patient received four doses administered by Inovio's CELLECTRA® delivery technology.

About RRP

Recurrent respiratory papillomatosis (RRP) is a rare disease (estimated at 20,000 active cases in the U.S.) that is characterized by the growth of tumors in the respiratory tract caused by the human papilloma virus. Although benign, papillomas can cause severe, even life-threatening airway obstruction and respiratory complications. A distinguishing aspect of this disease is the tendency for the papilloma to recur after surgical procedures to remove them. Left untreated, if RRP develops in the lungs, affected individuals can potentially experience recurrent pneumonia, chronic lung disease (bronchiectasis) and, ultimately, progressive pulmonary failure. In extremely rare cases (i.e. less than 1% of cases), papillomas can become cancerous (malignant transformation) developing into squamous cell carcinoma. Additional symptoms of RRP can include hoarse voice, difficulty in sleeping and swallowing, and chronic coughing. RRP symptoms are more severe in children than in adults. In children, the disorder is most often diagnosed between the ages of 2-4. In adults, the disorder occurs most often in the third or fourth decade.

About Genital Warts

HPV 6 and HPV 11 collectively cause about 90% of genital warts. Genital warts are somewhat common in the U.S., with a prevalence of about 1 to 3 cases per 1,000 females age 15 to 39 years and about 1 to 5 cases per 1,000 males. An estimated 465,000 patients with initial visits due to this condition occurred in the U.S. in the year 2014. Anogenital warts are usually asymptomatic, but even their visibility alone can cause significant psychological and social distress. In those who have symptoms, pain and/or itching occur and some cases result in bleeding or ulceration. Latex condoms do not protect against genital warts, because HPV-6 & HPV-11 can be transmitted via skin-to-skin contact alone. Current recommended treatments of genital warts include certain topical medicated creams, cryotherapy, surgical removal, and application of acid solutions, and these result resolution of the warts in most patients. However, these therapies also do not prevent the skin-to-skin transmission of HPV.

About Inovio Pharmaceuticals, Inc.

Inovio is a late-stage biotechnology company focused on the discovery, development, and commercialization of DNA-based immunotherapies and vaccines that transform the treatment and prevention of cancer and infectious disease. Inovio's proprietary

technology platform applies 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'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 HPV-related cancers, bladder cancer, and glioblastoma, as well as platform development programs in hepatitis B, Zika, Ebola, MERS, and HIV. Partners and collaborators include AstraZeneca, Regeneron, Roche/Genentech, ApolloBio Corporation, The Wistar Institute, The Bill & Melinda Gates Foundation, the University of Pennsylvania, Parker Institute for Cancer Immunotherapy, CEPI, DARPA, GeneOne Life Science, Plumbline Life Sciences, NIH, HIV Vaccines Trial Network, National Cancer Institute, Walter Reed Army Institute of Research, Drexel University, 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. 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, 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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