



NEWS RELEASE

Inovio Completes Enrollment of VGX-3100 Phase 2 Trial for the Treatment of HPV-Related Vulvar Dysplasia (VIN)

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Biotech company will report interim data later this year

PLYMOUTH MEETING, Pa., July 8, 2019 /PRNewswire/ -- Inovio Pharmaceuticals, Inc. (NASDAQ:INO) announced today that it has completed enrollment in its Phase 2 trial with VGX-3100 in patients with precancerous lesions of the vulva or vulvar intraepithelial neoplasia (VIN). VGX-3100 is an immunotherapy that targets human papillomavirus (HPV) 16 and 18 and is being studied for the treatment of HPV-related precancerous lesions and the HPV infection that causes these lesions. Inovio is already evaluating VGX-3100 in two Phase 3 registration trials (REVEAL 1 and REVEAL 2) to treat cervical dysplasia caused by HPV.

This randomized, open-label Phase 2 study will assess the efficacy of VGX-3100 in 33 women with high-grade HPV-related vulvar lesions. The immunotherapy is administered with Inovio's CELLECTRA® device. The primary endpoint of the study is histologic clearance of high-grade lesions and virologic clearance of the HPV virus in vulvar tissue samples. The study will also evaluate safety and tolerability of VGX-3100. The company intends to report interim clinical data from this study before year's end.

Dr. Prakash Bhuyan, MD PhD, VP, Clinical Development and the Lead for the VGX-3100 Program, said, "Inovio is developing VGX-3100 to be the first, comprehensive non-surgical treatment option for HPV-related precancer. Surgical treatment of VIN is often disfiguring, and recurrence occurs in approximately one third of women. The enrollment of our US-based Phase 2 study of VIN exemplifies the outstanding commitment of our Investigators and their patients to making it possible to improve the current standard of care for VIN and ultimately reduce the occurrence of vulvar cancer."

VIN has a very low rate of spontaneous, or natural, regression – below 5%. Currently there are no FDA-approved non-surgical treatments for precancerous lesions of the vulva. Surgery, the most common treatment, is associated with high rates of disease recurrence and can cause disfigurement, long-term pain, and psychological distress for the women who undergo the procedure. VIN recurs in approximately one of every two patients who undergo surgical treatment.

Inovio's immunotherapy aims to address the unmet medical need for VIN by providing a non-surgical option for women with this disease. In a previously conducted Phase 2b randomized, placebo-controlled study of 167 women with HPV-associated cervical pre-

cancer, VGX-3100 led to a significantly higher rate of lesion regression and clearance of the underlying HPV viral infection. Inovio is currently conducting a Phase 3 study of VGX-3100 as a treatment for high grade cervical dysplasia, and the treatment of VIN represents an important additional indication for the lead product.

About Vulvar Pre-Cancers

If left untreated vulvar pre-cancers can progress to invasive cancer of the vulva. Approximately 27,000 cases of HPV-related vulvar pre-cancers occur in the U.S. each year with a similar number of estimated cases in Europe each year. HPV-16 and/or HPV-18 are involved in about 80% of HPV-related vulvar pre-cancers cases in the U.S. and Europe. Once vulvar pre-cancers develop, spontaneous regression (i.e. natural disappearance of the lesion) is rare and occurs in 1.5% to 5% of cases. An estimated 6,000 new cases of vulvar cancer occur in the U.S. each year with about 50% to 80% of those being HPV-associated. About 1,110 deaths occur annually due to vulvar cancer in the U.S. Standard of care treatment of vulvar pre-cancer usually involves surgery, which has significant physical and psychosocial impacts in women (e.g. severe pain, disfigurement, sexual dysfunction), and the success of such surgery is marginal, as the recurrence rate of high grade vulvar pre-cancer is extremely high, i.e. about 30 to 50% three years post-treatment.

About VGX-3100

VGX-3100 is a DNA-based immunotherapy under investigation for the treatment of HPV 16 and HPV 18 infection and precancerous lesions of the cervix (Phase 3) and vulva and anus (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 precancerous 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 precancerous 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 precancerous lesions without the increased risks associated with surgery, such as loss of reproductive health and negative psychosocial impacts.

About Inovio Pharmaceuticals Inc.

Inovio is an innovative biotechnology company focused on the discovery, development, and commercialization of its synthetic nucleic technology targeted against cancers and infectious diseases. Inovio's proprietary technology platform applies antigen sequencing and 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, GeneOne Life Science, The Bill & Melinda Gates

Foundation, Coalition for Epidemic Preparedness Innovations, Defense Advanced Research Projects Agency, National Institutes of Health, National Institute of Allergy and Infectious Diseases, National Cancer Institute, HIV Vaccines Trial Network, Walter Reed Army Institute of Research, The Wistar Institute, and the University of Pennsylvania. For more information, visit www.inovio.com.

This press release contains certain forward-looking statements relating to our business, including our plans to develop DNA-based immunotherapies, 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 immunotherapies, 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, our Quarterly Report on Form 10-Q for the quarter ended March 31, 2019 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.

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