Voyager Therapeutics Announces FDA Clearance of Investigational New Drug Application for VY-AADC for Advanced Parkinson's Disease

January 23, 2018

Pivotal Phase 2-3 program on track to dose the first patient during the second quarter of 2018

CAMBRIDGE, Mass., Jan. 23, 2018 (GLOBE NEWSWIRE) -- Voyager Therapeutics, Inc. (NASDAQ:VYGR), a clinical-stage gene therapy company focused on developing life-changing treatments for severe neurological diseases today announced that the U.S. Food and Drug Administration (FDA) has cleared the Investigational New Drug (IND) application for VY-AADC, allowing the Company to formally initiate clinical trial sites, screen and begin dosing patients for its pivotal Phase 2-3 program for advanced Parkinson's disease. As part of this IND, the chemistry, manufacturing, and controls section included data demonstrating comparability between VY-AADC produced under good manufacturing practice (GMP) using Voyager's baculovirus/Sf9 manufacturing process and VY-AADC produced using a mammalian cell system consisting of triple-transfection of human embryonic kidney (HEK293) cells.

"Our baculovirus manufacturing process is designed for production of AAV vectors at clinical and commercial scale, with the potential for increased yields and efficient scalability compared with mammalian-based systems," said Bernard Ravina, M.D., M.S., chief medical officer of Voyager Therapeutics. "Having demonstrated comparability between the baculovirus and mammalian-based VY-AADC, we are pleased to initiate our pivotal program and begin dosing patients with the baculovirus-produced vector. Following institutional review board approval and patient screening at clinical referral and surgical sites, we continue to plan to dose the first patient in our pivotal program during the second quarter of this year, representing a very important milestone for both the program and the company."

About Parkinson's Disease and VY-AADC

Parkinson's disease is a chronic, progressive and debilitating neurodegenerative disease that affects approximately one million people in the U.S. and seven to 10 million people worldwide[1]. While the underlying cause of Parkinson's disease in most patients is unknown, the motor symptoms of the disease arise from a loss of neurons in the midbrain that produce the neurotransmitter dopamine. Declining levels of dopamine in this region of the brain, the putamen, leads to the motor symptoms associated with Parkinson's disease including tremors, slow movement or loss of movement, rigidity, and postural instability. Motor symptoms during the advanced stages of the disease include falling, gait freezing, and difficulty with speech and swallowing, with patients often requiring the daily assistance of a caregiver.

There are currently no therapies that effectively slow or reverse the progression of Parkinson's disease. Levodopa remains the standard of care treatment, with its beneficial effects on symptom control having been discovered over 40 years ago[2]. Patients are generally well-controlled with oral levodopa in the early stages of the disease, but become less responsive to treatment as the disease progresses. Patients experience longer periods of reduced mobility and stiffness termed off-time, or the time when medication is no longer providing benefit, and shorter periods of on-time when their medication is effective.

The progressive motor symptoms of Parkinson's disease are largely due to the death of dopamine neurons in the substantia nigra, a part of the midbrain that converts levodopa to dopamine, in a single step catalyzed by the enzyme AADC. Neurons in the substantia nigra release dopamine into the putamen where the receptors for dopamine reside. In advanced Parkinson's disease, neurons in the substantia nigra degenerate and the enzyme AADC is markedly reduced in the putamen, which limits the brain's ability to convert oral levodopa to dopamine [3]. The intrinsic neurons in the putamen, however, do not degenerate in Parkinson's disease [4,5]. VY-AADC, comprised of the adeno-associated virus-2 capsid and a cytomegalovirus promoter to drive AADC transgene expression, is designed to deliver the AADC gene directly into neurons of the putamen where dopamine receptors are located, bypassing the substantia nigra neurons and enabling the neurons of the putamen to express the AADC enzyme to convert levodopa into dopamine. The approach with VY-AADC, therefore, has the potential to durably enhance the conversion of levodopa to dopamine and provide clinically meaningful improvements by restoring motor function in patients and improving symptoms following a single administration.

About Voyager Therapeutics

Voyager Therapeutics is a clinical-stage gene therapy company focused on developing life-changing treatments for severe neurological diseases. Voyager is committed to advancing the field of AAV gene therapy through innovation and investment in vector engineering and optimization, manufacturing and dosing and delivery techniques. The company's pipeline focuses on severe neurological diseases in need of effective new therapies, including advanced Parkinson's disease, a monogenic form of ALS, Huntington's disease, Friedreich's ataxia, frontotemporal dementia, Alzheimer's disease and severe, chronic pain. Voyager has broad strategic collaborations with Sanofi Genzyme, the specialty care global business unit of Sanofi, and the University of Massachusetts Medical School. Founded by scientific and clinical leaders in the fields of AAV gene therapy, expressed RNA interference and neuroscience, Voyager Therapeutics is headquartered in Cambridge, Massachusetts. For more information, please visit www.voyagertherapeutics.com.

Forward-Looking Statements

This press release contains forward-looking statements for the purposes of the safe harbor provisions under The Private Securities Litigation Reform Act of 1995 and other federal securities laws. The use of words such as "may," "might," "will," "would," "should," "expect," "plan," "anticipate," "believe,"

"estimate," "undoubtedly," "project," "intend," "future," "potential," or "continue," and other similar expressions are intended to identify forward-looking statements. For example, all statements Voyager makes regarding the initiation, timing, progress and reporting of results of its preclinical programs and clinical trials and its research and development programs, its ability to advance its AAV-based gene therapies into, and successfully initiate, enroll and complete, clinical trials, the potential clinical utility of its product candidates, its ability to continue to develop its product engine, its ability to develop manufacturing capability for its products, its ability to add new programs to its pipeline, its ability to enter into new partnerships or collaborations, its expected cash, cash equivalents and marketable debt securities at the end of a fiscal period and anticipation for how long expected cash, cash equivalents and marketable debt securities will last, and the timing or likelihood of its regulatory filings and approvals, are forward looking. All forward-looking statements are based on estimates and assumptions by Voyager's management that, although Voyager believes to be reasonable, are inherently uncertain. All forward-looking statements are subject to risks and uncertainties that may cause actual results to differ materially from those that Voyager expected. Such risks and uncertainties include, among others, those related to the initiation and conduct of preclinical studies and clinical trials, the availability of data from clinical trials and the expectations for regulatory submissions and approvals; the continued development of the product engine; Voyager's scientific approach and general development progress; the availability or commercial potential of Voyager's product candidates; the sufficiency of cash resources; and need for additional financing. These statements are also subject to a number of material risks and uncertainties that are described in Voyager's most recent Annual Report on Form 10-K filed with the Securities and Exchange Commission, as updated by its subsequent filings with the Securities and Exchange Commission. Any forward-looking statement speaks only as of the date on which it was made. Voyager undertakes no obligation to publicly update or revise any forward-looking statement, whether as a result of new information, future events or otherwise, except as required by law.

[1] www.pdf.org/en/parkinson_statistics, www.michaeljfox.org

[2] Poewe W, et al, *Clinical Interventions in Aging*.2010;5:229-238.

[3] Lloyd, *J Pharmacol Exp Ther*. 1975;195:453-464, Nagatsu, *J Neural Transm Suppl*.2007

[4] Cold Spring Harb Perspect Med 2012;2:a009258

[5] Braak et al, *Cell Tissue Res*.2004;318:121-134

Investor Relations:
Matt Osborne
Vice President of Investor Relations & Corporate Communications
857-259-5353
mosborne@vygr.com

Media:
Katie Engleman
Pure Communications, Inc.
910-509-3977
Katie@purecommunicationsinc.com

Voyager Therapeutics, Inc.