Axovant Licenses Investigational Gene Therapies for GM1 Gangliosidosis, Tay-Sachs and Sandhoff Diseases from University of Massachusetts Medical School

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- Two novel programs for fatal pediatric diseases deepen Axovant's neurological gene therapy pipeline
- AXO-AAV-GM1 expected to enter the clinic in first half 2019, with initial data expected in second half 2019
- First patient has been dosed with AXO-AAV-GM2, with initial data expected in first quarter 2019

BASEL, Switzerland, Dec. 13, 2018 (GLOBE NEWSWIRE) -- Axovant Sciences (NASDAQ: AXON), a clinical-stage company focused on innovative gene therapies for neurological and neuromuscular diseases, today announced that it has licensed exclusive worldwide rights for the development and commercialization of two novel gene therapy programs to address GM1 gangliosidosis and GM2 gangliosidosis (also known as Tay-Sachs and Sandhoff diseases) from the University of Massachusetts (UMass) Medical School.

GM1 gangliosidosis, Tay-Sachs and Sandhoff diseases are rapidly progressive and fatal pediatric lysosomal storage disorders that reduce life expectancy to less than two to four years of age in the severe forms of the diseases. GM1 gangliosidosis has an incidence of approximately one out of 100,000 live births worldwide, and Tay-Sachs and Sandhoff diseases have an incidence of approximately one out of 180,000 live births worldwide. GM1 gangliosidosis is caused by defects in the *GLB1* gene and GM2 gangliosidosis is caused by defects in the *HEXA* (leading to Tay-Sachs disease) and *HEXB* (leading to Sandhoff disease) genes, resulting in impaired enzyme function and the accumulation of toxic gangliosides primarily in the central nervous system.

AXO-AAV-GM1 and AXO-AAV-GM2 are each designed to introduce functional copies of the respective genes encoding the critical enzymes impacted in these diseases, with an aim to improve survival and enable children to reach key developmental milestones. In prior animal studies conducted with these gene therapies, dose-dependent increases in enzyme activity, reductions in accumulated gangliosides and prolonged survival have been observed.

AXO-AAV-GM1 will be evaluated in an investigator-initiated clinical program conducted at the National Institutes of Health (NIH), with the first patient expected to be dosed in the first half of 2019. The NIH has assembled one of the largest natural history databases of patients with GM1 gangliosidosis, Tay-Sachs and Sandhoff diseases that documents the clinical progression of the disease in affected patients, which could enable a historical control group for registrational studies. We expect initial data from this clinical program in the second half of 2019 and expect continued enrollment of patients in this program throughout 2019.

The AXO-AAV-GM2 clinical program is ongoing with the first subject having been dosed with the therapy. Initial data from this program are expected in first quarter 2019 and we expect patients to be enrolled in a multi-subject clinical trial in 2019.

"Diseases like Tay-Sachs are attractive targets for the transformative possibilities of gene therapy because we have been able to identify the underlying genetic cause of the disease and now have well-understood methods of delivering the corrective genes," said Miguel Sena-Esteves, Ph.D., associate professor of neurology at UMass Medical School and a principal scientist of the AXO-AAV-GM1 and AXO-AAV-GM2 programs. "Axovant's expertise in the development and manufacturing of investigational gene therapies and their focus on execution on behalf of patients makes them a strong partner to translate the impressive preclinical results for AXO-AAV-GM1 and AXO-AAV-GM2 into the clinic."

"We are excited to add these potentially life-saving gene therapy programs for GM1 gangliosidosis, Tay-Sachs and Sandhoff diseases to our growing pipeline of innovative gene therapy product candidates. The devastating nature of these disorders creates an urgent need to pursue opportunities that may offer hope to these children and their families," said Pavan Cheruvu, M.D., chief executive officer of Axovant. "We look forward to working with world-recognized pioneers in gene therapies at the University of Massachusetts Medical School and the National Institutes of Health to bring these treatments to patients. We are also inspired by and anticipate working closely with affected patient communities through the National Tay-Sachs & Allied Diseases Association and the Cure Tay-Sachs Foundation."

"We have lost too many children to these devastating diseases. Patients and their families deserve the hope that these potentially life-saving gene therapies could provide," said Sue Kahn, executive director of National Tay-Sachs & Allied Diseases Association. "The families of these children have been waiting for treatment options for too long and we are excited to see Axovant accelerate these gene therapies into the clinic."

In exchange for these exclusive worldwide licenses for the gene therapy programs for GM1 and GM2 gangliosidoses, Axovant will be making payments to UMass Medical School tied to development, regulatory and commercial milestones.

About the Collaboration with University of Massachusetts Medical School

Research into the causes and potential therapies for lysosomal storage diseases such as Tay-Sachs, Sandhoff diseases and GM1 gangliosidosis at UMass Medical School has led to significant advances in the field, including research and development of the gene therapy vector used to deliver functioning copies of the defective genes that cause disease. The AXO-AAV-GM1 and AXO-AAV-GM2 programs were developed by a team of researchers at UMass Medical School, including Miguel Sena-Esteves, Ph.D., Heather Gray-Edwards, Ph.D., D.V.M., and dean of the School of Medicine, Terence Flotte, M.D.

"We are enthusiastic to partner with Axovant and its experienced team in the treatment of GM1 gangliosidosis, Tay-Sachs and Sandhoff diseases," said Heather Gray-Edwards, Ph.D., D.V.M., an assistant professor of radiology at UMass Medical School. "The work of Dr. Esteves, Dr. Gray-Edwards and their collaborators is a wonderful example of UMass Medical School scientists and physicians bringing the power of gene therapy to bear on a medical condition that can be truly tragic for families with affected babies," said Terence R. Flotte, M.D., dean of the School of Medicine, professor of pediatrics at UMass Medical School and clinical principal investigator for the investigator-initiated protocol. "Bringing hope to families is what

translational research is all about. Tay-Sachs' families have waited an incredibly long time for this hope to be offered."

About GM1 Gangliosidosis, Tay-Sachs and Sandhoff Diseases

GM1 gangliosidosis, Tay-Sachs and Sandhoff diseases are a set of rare and fatal neurodegenerative genetic disorders caused by impaired β-galactosidase (β-gal) and β-hexosaminidase A (Hex A) enzyme activity, respectively. GM1 gangliosidosis is caused by defects in the *GLB1* gene, which encodes the β-gal enzyme. GM2 gangliosidosis, including Tay-Sachs and Sandhoff diseases, is caused by defects in the *HEXA* (leading to Tay-Sachs disease) and *HEXB* (leading to Sandhoff disease) genes that encode the two subunits of the Hex A enzyme. Defects in these genes cause impaired enzyme activity leading to the toxic accumulation of gangliosides, resulting in neurodegeneration that presents as cognitive impairment, paralysis and early death. There are currently no disease-modifying treatments for these diseases and children born with these disorders mostly have a life expectancy shortened to two to four years of age.

About the AXO-AAV-GM1 Program

AXO-AAV-GM1 delivers a functional copy of the *GLB1* gene via an adeno-associated viral (AAV) vector, AAV9, which is effective in crossing the blood-brain barrier and transducing neurons, with the goal of restoring β-gal enzyme activity for the treatment of GM1 gangliosidosis. The gene therapy is delivered intravenously, which has the potential to broadly transduce the central nervous system and treat peripheral manifestations of the disease. In preclinical studies, AXO-AAV-GM1 was shown to improve β-gal enzyme activity, reduce GM1 ganglioside accumulation, improve neuromuscular function, and extend survival. Magnetic resonance imaging (MRI) of felines with GM1 gangliosidosis treated with GM1 gene therapy showed normal brain architecture through at least two years of age.

About the AXO-AAV-GM2 Program

AXO-AAV-GM2 delivers functional copies of the *HEXA* and *HEXB* genes via two, co-administered AAVrh8 vectors delivered directly to the central nervous system with the goal of restoring Hex A enzyme activity to address both Tay-Sachs and Sandhoff diseases. The preclinical data for AXO-AAV-GM2 in murine models showed dose-dependent increases in Hex A enzyme activity, reductions of GM2 gangliosides in the brain and prolonged survival rates. A next-generation gene therapy for Tay-Sachs and Sandhoff diseases aimed at enabling systemic intravenous administration is in earlier-stage development.

About Axovant Sciences

Axovant is a clinical-stage gene therapy company focused on developing a pipeline of innovative product candidates for debilitating neurological diseases such as Parkinson's disease, GM1 gangliosidosis, Tay-Sachs and Sandhoff diseases, oculopharyngeal muscular dystrophy (OPMD), amyotrophic lateral sclerosis (ALS), frontotemporal dementia, and other indications. For more information, visit www.axovant.com

About the University of Massachusetts Medical School

The University of Massachusetts Medical School, one of five campuses of the University system, comprises the School of Medicine, the Graduate School of Biomedical Sciences, the Graduate School of Nursing, a thriving research enterprise and an innovative public service initiative, Commonwealth Medicine. Its mission is to advance the health of the people of the commonwealth through pioneering education, research, public service and health care delivery with its clinical partner, UMass Memorial Health Care. In doing so, it has built a reputation as a world-class research institution and as a leader in primary care education. The Medical School attracts more than $264 million annually in research funding, placing it among the top 50 medical schools in the nation. In 2006, UMass Medical School's Craig C. Mello, PhD, Howard Hughes Medical Institute Investigator and the Blais University Chair in Molecular Medicine, was awarded the Nobel Prize in Physiology or Medicine, along with colleague Andrew Z. Fire, PhD, of Stanford University, for their discoveries related to RNA interference. For more information, visit www.umassmed.edu

Forward-Looking Statements and Information

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," "expect," "plan," "anticipate," "believe," "intend," "future," or "continue" and other similar expressions are intended to identify forward-looking statements. For example, all statements Axovant makes regarding the potential efficacy of its product candidates; initiation, timing, progress, and reporting of results of its preclinical programs, clinical trials, and research and development programs; its ability to advance its product candidates into and successfully initiate, enroll, and complete clinical trials; 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 Axovant's management that, although Axovant 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 Axovant expected. Such risks and uncertainties include, among others, the initiation and conduct of preclinical studies and clinical trials; the availability of data from clinical trials; the expectations for regulatory submissions and approvals; the continued development of its product candidates and platforms; Axovant's scientific approach and general development progress; and the availability or commercial potential of Axovant's product candidates. These statements are also subject to a number of material risks and uncertainties that are described in Axovant's most recent Quarterly Report on Form 10-Q for the quarterly period ended September 30, 2018, filed with the Securities and Exchange Commission on November 7, 2018, 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. Axovant 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.

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