Selecta Biosciences Announces Gene Therapy Programs for Two Rare Genetic Metabolic Disorders

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- *Selecta announces gene therapy programs for Methylmalonic Acidemia (MMA) and Ornithine Transcarbamylase Deficiency (OTC)*
- *Selecta is advancing these gene therapy programs with collaborators from the National Human Genome Research Institute (NHGRI), National Institutes of Health (NIH), Massachusetts Eye and Ear (MEE), and International Centre for Genetic Engineering and Biotechnology, Trieste, Italy (ICGEB)*
- *Both gene therapy programs integrate Selecta's proprietary SVP-Rapamycin (SEL-110) immune therapy to enable repeat dosing with the goal of enhanced gene therapy treatment*

WATERTOWN, Mass., July 19, 2016 (GLOBE NEWSWIRE) -- Selecta Biosciences, Inc. (Nasdaq:SELB), a clinical-stage biopharmaceutical company developing targeted antigen-specific immune therapies for rare and serious diseases, announced today two gene therapy programs for rare genetic disorders of metabolism, Methylmalonic Acidemia (MMA) and Ornithine Transcarbamylase Deficiency (OTC). Both of these gene therapy programs will use Selecta's proprietary SVP-Rapamycin (SEL-110) immune therapy, which is designed to enable repeated gene therapy dosing. Selecta believes a solution for repeat gene therapy dosing has the potential to significantly expand the number of diseases that could be treated with gene therapy, particularly in the case of pediatric patients.

"We are excited by the promise of Selecta's immune modulating therapies to enhance gene therapies for rare and serious diseases, like MMA and OTC," said Werner Cautreels, PhD, Chairman, CEO and President of Selecta Biosciences. "Selecta's novel approach is important for addressing the immunogenicity related to the administration of gene therapy vectors, and our collaboration agreements with the NHGRI, MEE, and ICGEB are expected to enable the development of these novel treatments."

Selecta's SVP-Rapamycin (SEL-110) demonstrated in animal models an ability to mitigate the formation of antibodies against gene therapy vectors and lessen inflammatory immune responses against transduced cells. By avoiding these undesired immune responses, SVP-Rapamycin (SEL-110) immunotherapy could have the potential to keep patients eligible for subsequent gene therapy doses, a feature not available with current gene therapies.

SEL-212, the combination of SVP-Rapamycin (SEL-110) with pegsiticase, a uricase enzyme used for the treatment of gout, has demonstrated the ability to mitigate antibody responses to pegsiticase in an ongoing phase 1b clinical trial.

Selecta's Methylmalonic Acidemia (MMA) Program

Selecta intends to combine the gene therapy vector Anc80 with transgenes discovered in the Venditti laboratory at NHGRI and Selecta's SVP-Rapamycin (SEL-110) to create a new product candidate designed to incorporate several features that are important for a gene therapy approach in MMA. The objective of the development program is to address the ability to treat patients with pre-existing antibodies; the ability to administer several doses to achieve sufficient levels of methylmalonyl-CoA mutase (MUT), the enzyme that MMA patients are lacking; and the prevention of cellular immune responses that often reduce the expression levels of gene therapies.

MMA is an inborn error of metabolism that affects approximately one in 50,000 newborns in the United States. Patients cannot process certain proteins and fats leading to accumulation of toxic metabolites. Symptoms start to develop in early childhood and despite strict diet, patients suffer from a wide range of disease-related complications.

To advance the MMA program, Selecta has entered into a Collaborative Research and Development Agreement (CRADA) with MEE and NHGRI. Principal investigators in this CRADA initiative are Charles Venditti, MD, PhD, Senior Investigator and Head, Organic Acid Research Section, Medical Genomics and Metabolic Genetics Branch at NIH and Luk Vandenberghe, PhD, Director of the Grousbeck Gene Therapy Center at MEE and an Assistant Professor at Harvard Medical School. A physician-scientist specializing in the study of inborn errors of metabolism including MMA, Dr.

Venditti, with his group, has published several studies showing the effectiveness of gene therapy as a treatment for MMA in mice. Dr. Vandenberghe from MEE is the inventor of Anc80.

Selecta's Ornithine Transcarbamylase Deficiency (OTC) program

Selecta's proprietary program for OTC combines an adeno associated virus (AAV)-based gene therapy with Selecta's SVP-Rapamycin (SEL-110). The combination of both products is designed to enable repeated doses of the gene therapy treatment, which may be required when treating infants and young children with this disease to maintain required expression levels of the missing OTC enzyme. The treatment approach would also be designed to prevent liver damage that can be associated with cellular immune reactions to gene therapy vectors such as AAV.

OTC incidence is approximately one in 70,000 live births in the United States and Europe. In patients with OTC, consumption of protein results in the accumulation of undesirable levels of ammonia in the blood, which can cause irreversible brain damage. Patients with the most severe form of the disease require liver transplantation in early childhood and suffer intellectual disability, developmental delays and reduced life expectancy.

"Preclinical studies showed that with the combination of gene therapy and Selecta's SVP-Rapamycin (SEL-110), we have an opportunity to cure a urea cycle defect affecting infants, children and young adults. These persons are continuously at risk of neurological injury or even death, have to follow strict dietary and medical treatments and are at risk of requiring liver transplantation," said Lorenzo D'Antiga, MD, director of Child Health and Pediatric Transplantation at the hospital of Bergamo, Italy. "Our novel approach would provide the opportunity for repeated doses of the gene therapy, a likely requirement to optimize therapy for OTC."

About Anc80

Developed by the laboratory of Luk H. Vandenberghe, PhD, of MEE and Harvard Medical School, Anc80 is an *in silico* designed predicted ancestor of AAV1, AAV2, AAV8 and AAV9. In preclinical studies, Anc80 has been shown to be a potent gene therapy vector that has demonstrated the capability of yielding superior gene expression levels in the liver. As a synthetic vector, Anc80 has reduced pre-existing ADAs and limited cross-reactivity to naturally-occurring AAVs. Dr. Vandenberghe is a co-inventor on several AAV vector technologies and methods, including Anc80, which are licensed to biotech and pharmaceutical entities for which he receives royalties. Selecta has an exclusive license to the Anc80 technology for a rare genetic disease and has options for additional pre-defined indications in the areas of lysosomal storage diseases, genetic muscular diseases and genetic metabolic diseases.

About Selecta

Selecta Biosciences, Inc. is a clinical-stage biopharmaceutical company developing targeted therapies that use immunomodulators encapsulated in nanoparticles to induce antigen-specific immune responses to prevent and treat disease. Selecta's proprietary Synthetic Vaccine Particle (SVP) technology is a highly flexible nanoparticle platform, capable of incorporating a wide range of antigens and immunomodulators, allowing the SVP products to either induce antigen-specific tolerance or activate the immune system.

Selecta's focus is on developing and commercializing differentiated therapies that are designed to modulate the immune system to effectively and safely treat rare diseases by mitigating the formation of anti-drug antibodies (ADAs) in response to life-sustaining biologic drugs. Tolerance-inducing SVP products also have potential applications in the treatment of allergies and autoimmune diseases.

Selecta is also developing SVP products that activate the immune system to prevent and treat cancer, infections and other diseases.

Selecta is based in Watertown, Massachusetts, USA.

Forward-Looking Statements

This press release contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. All statements contained in this press release that do not relate to matters of historical fact should be considered forward-looking statements, including without limitation statements regarding the potential utility of SVP-Rapamycin (SEL-110) immune therapy to enable repeat dosing and to enhance gene therapy treatment for rare and serious diseases.

These forward-looking statements are based on management's current expectations. These statements are neither promises nor guarantees, but involve known and unknown risks, uncertainties and other important factors that may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements, including, but not limited to, the following: we have incurred significant losses, are not currently profitable and may never become profitable; our need for additional funding, which may not be available; our limited operating history; the impact on our operations and financial flexibility of the restrictive covenants of our indebtedness; limitations on our ability to use our net operating loss and research and development tax credit carryforwards; the unpredictable nature of our development efforts for marketable drugs; the unproven approach to antigen-specific immune therapies; the lengthy, expensive and uncertain process of clinical drug development; potential delays in enrollment of patients, which could affect the receipt of necessary regulatory approvals; potential delays in regulatory approval, which would impact the ability to commercialize our product candidates and affect our ability to generate revenue; our inability to obtain orphan drug designation or breakthrough therapy designation for our product candidates; our reliance on third parties to manufacture our product candidates and to conduct our clinical trials; our inability to maintain our existing collaborations; our lack of experience in manufacturing our product candidates; failure to achieve market acceptance in the medical community; our inability to establish effective sales, marketing and distribution capabilities; potential competition with respect to our product candidates; failure to obtain marketing approval internationally; post-marketing restrictions or withdrawal from the market; anti-kickback, fraud, abuse, and other healthcare laws and regulations exposing us to potential criminal sanctions; negative public opinion and increased regulatory scrutiny of gene therapy and genetic research; our inability to adequately protect our proprietary technology; changes in United States patent law; potential lawsuits for infringement of third-party intellectual property; our patents being found invalid or unenforceable; claims challenging the inventorship or ownership of our patents and other intellectual property; claims asserting that we or our employees misappropriated a third-party's intellectual property or otherwise claiming ownership of what we regard as our intellectual property; adequate protection of our trademarks; ability to attract and retain key executives; our inability to manage our growth; risks associated with operating internationally; potential system failures; the price of our common stock may fluctuate substantially; a significant portion of our total outstanding shares are eligible to be sold into the market in the near future; and we may be subject to securities class action litigation.

These and other important factors discussed under the caption "Risk Factors" in our final prospectus filed with the Securities and Exchange Commission, or SEC, on June 23, 2016 relating to our Registration Statement on Form S-1, and our other reports filed with the SEC could cause actual results to differ materially from those indicated by the forward-looking statements made in this press release. Any such forward-looking statements represent management's estimates as of the date of this press release. While we may elect to update such forward-looking statements at some point in the future, we disclaim any obligation to do so, even if subsequent events cause our views to change. These forward-looking statements should not be relied upon as representing our views as of any date subsequent to the date of this press release.

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