



Oyster Point Pharma Announces Preclinical Study Results and Pipeline Expansion with Enriched Tear Film (ETF™) Gene Therapy to Target Ocular Surface Diseases

June 3, 2021

- **Introduction of proprietary ETF™ Gene Therapy and first gene candidate, nerve growth factor (NGF), to target Stages 2 and 3 Neurotrophic Keratopathy (NK)**
- **Preclinical study results from a 42-day proof-of-concept *in vivo* study demonstrated a single, intralacrimal gland injection of an adeno-associated virus (AAV) containing the NGF gene (OC-101) produced statistically significant increase of NGF in tear film, as compared to control, as early as Day 7**
- **Preclinical study results also demonstrated that following AAV transduction of the lacrimal gland, cholinergic activation with OC-01 (varenicline) nasal spray produced statistically significant increase of NGF levels in tear film, as compared to control, potentially indicating OC-01's ability to modulate lacrimal secretion of NGF**
- **No macroscopic or microscopic safety findings were observed associated with either the intralacrimal gland administration of OC-101 or intranasal administration of OC-01**
- **Oyster Point Pharma plans to present proof of concept *in vivo* study data at the upcoming Oyster Point Analyst Day, planned for July 15, 2021**

PRINCETON, N.J., June 03, 2021 (GLOBE NEWSWIRE) -- Oyster Point Pharma, Inc. (Nasdaq: OYST), a clinical-stage biopharmaceutical company focused on the discovery, development and commercialization of first-in-class therapies to treat ocular surface diseases, today announced the expansion of its pipeline with the introduction of Enriched Tear Film (ETF™) Gene Therapy and proof-of-concept *in vivo* study results from its first gene therapy candidate, OC-101.

ETF™ Gene Therapy is a proprietary adeno-associated virus (AAV) based gene therapy approach where a target gene is delivered to human lacrimal gland cells via intralacrimal gland injection. Rather than replacing a gene that is defective or missing, a new target gene is delivered that may potentially produce a selected naturally occurring protein, enzyme, or other therapeutic gene product. The goal for this target gene is to produce a selected gene product to change cell behavior and function on the ocular surface. Oyster Point's investigational drug, OC-01 (varenicline) nasal spray, a highly selective cholinergic agonist, may play a role in ocular surface diseases treated with ETF™ Gene Therapy through its potential to modulate the secretion of a selected gene product.

In this proof-of-concept *in vivo* study evaluating OC-101 (AAV-NGF), a single, intralacrimal gland injection of an AAV containing the human NGF (hNGF) gene resulted in statistically significant levels of hNGF protein being expressed within the lacrimal gland and tear film of a rabbit model, as compared to control. hNGF was secreted into the tear film as early as Day 7, after the intralacrimal gland injection. No control animals showed evidence of hNGF in the lacrimal gland or tear film. Additionally, three weeks following OC-101 (AAV-NGF) transduction of the lacrimal gland, cholinergic activation of the lacrimal gland with OC-01 (varenicline) nasal spray resulted in statistically significant increases in hNGF expression in the tear film, as compared to pre-cholinergic stimulation levels and as compared to control. After cessation of OC-01 (varenicline) nasal spray, hNGF tear protein levels returned to pre-cholinergic activation levels (measured at Day 14). During the 42-day study, there were no macroscopic or microscopic safety findings observed associated with the intralacrimal gland administration of OC-101 (AAV-NGF) or OC-01 (varenicline) nasal spray.

"Oyster Point's proprietary ETF™ Gene Therapy approach has shown the potential to increase basal levels of NGF in the tear film and sustain NGF secretion onto the ocular surface as a part of the natural tear film," said Jeffrey Nau, Ph.D., MMS, president and chief executive officer of Oyster Point Pharma. "With additional preclinical studies underway, Oyster Point plans to meet with the U.S. Food and Drug Administration (FDA) for a pre-IND meeting to discuss development of OC-101 (AAV-NGF) for patients with Stage 2 and Stage 3 neurotrophic keratopathy. In addition, Oyster Point will focus its Phase 2 OLYMPIA study of OC-01 (varenicline) nasal spray monotherapy on Stage 1 neurotrophic keratopathy patients."

"We believe that this is the first proof of concept study to show that a cholinergic agonist nasal spray (OC-01) has modulated protein secretion into the tear film after intralacrimal injection of an AAV-based gene therapy," said Eric Carlson, Ph.D., chief scientific officer of Oyster Point Pharma. "We believe the translated protein may be processed and secreted in the same manner as endogenous proteins in the lacrimal gland by incorporating the proper post-translational modifications and folding. Cholinergic stimulation of the lacrimal gland to increase secretion of tear film components and protein content may represent a potential new approach to treating a number of ocular surface diseases."

Oyster Point Pharma plans to present the proof of concept *in vivo* data at the upcoming Oyster Point Analyst Day, planned for July 15, 2021. Please use the following link to register for the Analyst Day (<https://media.rampard.com/20210715/>).

About Oyster Point Pharma

Oyster Point Pharma is a clinical-stage biopharmaceutical company focused on the discovery, development and commercialization of first-in-class

therapies to treat ophthalmic diseases.

About Enriched Team Film (ETF™) Gene Therapy

ETF™ Gene Therapy is a proprietary adeno-associated virus (AAV) based gene therapy approach where a target gene is delivered to human lacrimal gland cells via intralacrimal gland injection. Rather than replacing a gene that is defective or missing, a new gene is delivered that potentially may produce a selected naturally occurring protein, enzyme, or other therapeutic gene product. The goal for this target gene is to produce a gene product to change cell behavior and function on the ocular surface. The human lacrimal gland is a seromucous gland that secretes over 1,500 proteins and multiple classes of mucins into the tear film that help protect and nourish the ocular surface.¹ It has been shown that when an ocular surface stress occurs, the lacrimal gland responds by up-regulating the production of proteins which are then secreted into the tear film in order to heal the ocular surface.² The ETF™ Gene Therapy approach intends to leverage this same concept for ocular surface diseases by delivering a target gene to the lacrimal gland to direct the production of the selected gene product that may be secreted in the tear film and then delivered to the ocular surface. In addition, OC-01 (varenicline) nasal spray may play a role in ocular surface diseases treated with ETF™ Gene Therapy through its potential to modulate the secretion of a selected gene product. In ocular surface diseases with inadequate tear film production (such as neurotrophic keratopathy [NK]) and diseases where increased amounts of the selected gene product (such as a protein or enzyme) are required, cholinergic activation of the parasympathetic nervous system with OC-01 (varenicline) nasal spray has the potential to modulate the concentration of the selected gene product.

About OC-101 (AAV-NGF) for Injection

Adeno-associated virus (AAV) vectors are nonreplicating DNA delivery vehicles that are currently not known to cause disease. OC-101 (AAV-NGF) is Oyster Point's investigational gene therapy in development as part of Oyster Point's proprietary Enriched Tear Film (ETF™) Gene Therapy pipeline expansion. OC-101 (AAV-NGF) is an AAV containing the nerve growth factor (NGF) gene. NGF is a naturally occurring protein secreted by cells on the surface of the cornea and is involved in the differentiation and maintenance of neurons that has been shown to improve corneal nerve architecture and corneal epithelium integrity.³ OC-101 (AAV-NGF) is an investigational gene therapy that has not been tested in humans and has not been approved for any use in any country. The safety and efficacy of OC-101 (AAV-NGF) have not been established.

About OC-01 (varenicline) Nasal Spray

OC-01 (varenicline) nasal spray is a highly selective cholinergic agonist being developed as a multidose preservative-free nasal spray to treat the signs and symptoms of dry eye disease and neurotrophic keratopathy. The parasympathetic nervous system, the "rest and digest" system of the body, controls tear film homeostasis partially via the trigeminal nerve, which is accessible within the nose. Administered as a preservative-free, aqueous nasal spray, in pre-clinical and clinical studies, OC-01 (varenicline) nasal spray was shown to have a novel mechanism of action with activation of the trigeminal parasympathetic pathway in the nasal cavity to activate natural tear film production. Human tear film is a complex mixture of more than 1,500 different proteins, including growth factors and antibodies, as well as numerous classes of lipids and mucins. This complex tear film is responsible for forming the primary refracting surface of the eye, as well as protecting and moisturizing the cornea. In December 2020, Oyster Point submitted to the U.S. Food and Drug Administration (FDA) a New Drug Application (NDA) for OC-01 (varenicline) nasal spray for the treatment of signs and symptoms of dry eye disease. The Prescription Drug User Fee Act (PDUFA) target action date is October 17, 2021, with a planned U.S. launch of OC-01 (varenicline) nasal spray in the fourth quarter of 2021, if approved by the FDA. OC-01 (varenicline) nasal spray is an investigational new drug and has not been approved for any use in any country. The safety and efficacy of OC-01 (varenicline) nasal spray have not been established.

About Neurotrophic Keratopathy

Neurotrophic Keratopathy (NK) is a disease characterized by decreased corneal sensitivity and poor corneal healing. The most common causes of corneal sensation loss are viral infection (herpes simplex virus and herpes zoster keratoconjunctivitis) followed by chemical burns, physical injuries, and ocular surface surgery. In addition, systemic diseases such as diabetes and multiple sclerosis may decrease sensory nerve function or damage sensory fibers. NK can be classified broadly into three stages: Stage 1 (mild) consists of ocular surface irregularities and reduced vision, Stage 2 (moderate) exhibits a non-healing persistent defect of the corneal epithelium, and Stage 3 (severe) exhibits corneal ulceration, which may progress to corneal melting and perforation. If not adequately addressed, the progression of NK can lead to vision loss and a breakdown of corneal integrity, can lead to cornea transplantation.

Forward-Looking Statements

This press release contains "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995 that reflect the current beliefs, expectations and assumptions of the Company regarding the future of the Company's business, our future plans and strategies, regulatory approvals, clinical results, future financial condition and other future conditions. All statements other than statements of historical facts contained in this press release, including express or implied statements regarding product candidates, regulatory approvals, planned pre-clinical studies and clinical trials, expected results of pre-clinical studies or clinical trials, and their timing and likelihood of success, expected research and development costs, as well as plans and objectives of management for future operations, are forward-looking statements. The words "if approved," "may," "will," "should," "would," "expect," "plan," "anticipate," "could," "intend," "target," "project," "contemplate," "believe," "estimate," "predict," "potential" or "continue" or the negative of these terms or other similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. These forward-looking statements are subject to a number of risks, uncertainties and assumptions, including, among other things: the uncertainties inherent in pharmaceutical research and development, including pre-clinical study and clinical trial results and additional analysis of existing data, and the likelihood of our pre-clinical studies and clinical trials demonstrating the safety and efficacy of our product candidates, and other positive results; the timing of initiation of our future clinical trials, and the reporting of data from our current and future trials; the timing or likelihood of regulatory filings and approvals for our product candidates; our ability to obtain and maintain regulatory approvals of our product candidates; our plans relating to commercializing our product candidates, if approved; the success of competing therapies that are or may become available; the beneficial characteristics, safety, efficacy and therapeutic effects of our product candidates; our plans relating to the further pre-clinical and clinical development and manufacturing of our product candidates, including additional indications which we may pursue; the prevalence of dry eye disease and neurotrophic keratopathy and the size of the market opportunity for our product candidates; the expected potential benefits of strategic collaborations with third parties and our ability to attract collaborators with development, regulatory and commercialization expertise; our ability to recruit and retain key personnel needed to develop and commercialize our product candidates, if approved, and to grow our company; existing regulations and regulatory developments in the United States and other jurisdictions; our plans and ability to obtain or protect intellectual property rights, including extensions of existing patent terms where available; our continued reliance on third parties to conduct additional clinical trials of our product candidates, and for the manufacture of our product candidates for pre-clinical studies and clinical trials; the accuracy of our estimates regarding expenses, future revenue, capital requirements and needs for additional financing; our financial performance; market conditions; the sufficiency of our existing capital resources to fund our future operating expenses and capital expenditure requirements; and

other risks described in the “Risk Factors” section included in our public filings that we have made and will make with the Securities and Exchange Commission. The Company is providing the information in this press release as of this date and does not undertake any obligation to update any forward-looking statements contained in this press release as a result of new information, future events or otherwise.

¹ Dartt, D. A. (2009). Neural regulation of lacrimal gland secretory processes: relevance in dry eye diseases. *Progress in retinal and eye research*, 28(3), 155-177.

² Wilson, S. E., Liang, Q., & Kim, W. J. (1999). Lacrimal gland HGF, KGF, and EGF mRNA levels increase after corneal epithelial wounding. *Investigative ophthalmology & visual science*, 40 (10), 2185-2190

³ Bonini, S., Lambiase, A., Rama, P., Caprioglio, G., & Aloe, L. (2000). Topical treatment with nerve growth factor for neurotrophic keratitis. *Ophthalmology*, 107(7), 1347-1351.

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