Eloxx Pharmaceuticals Presents Positive New Data for Lead Investigational Drug, ELX-02, at the North American Cystic Fibrosis Conference (NACFC)

October 18, 2018

ELX-02 shows significant increases in CFTR function in Cystic Fibrosis patient-derived organoids bearing nonsense mutations in the CFTR gene

ELX-02 demonstrated significant increases in CFTR mRNA, with elevations above wild-type, that correlated to the organoid response

WALTHAM, Mass., Oct. 18, 2018 (GLOBE NEWSWIRE) -- **Eloxx Pharmaceuticals, Inc. ("Eloxx"),** (NASDAQ: ELOX), a clinical-stage biopharmaceutical company dedicated to the discovery and development of novel therapeutics to treat cystic fibrosis, cystinosis and other diseases caused by nonsense mutations limiting production of functional proteins, today announced positive data demonstrating that ELX-02 showed significant increases in CFTR functional assay ($P<0.0001$) and mRNA levels ($P<0.05$) across multiple CFTR nonsense mutations in cystic fibrosis patient-derived organoids. ELX-02 demonstrated significant forskolin-induced swelling (FIS) in cystic fibrosis patient-derived organoids carrying homozygous and compound heterozygous CFTR nonsense mutations. These findings were presented today at the North American Cystic Fibrosis Conference in Denver, Colorado.

"We are extremely pleased with the emerging profile of ELX-02, as the first read-through agent to demonstrate increases in CFTR function and mRNA in organoids derived from cystic fibrosis patients with nonsense mutations," said Neal Sharpe, Ph.D., Vice President of Translational Sciences at Eloxx. "There is a high unmet medical need among the estimated 13% of cystic fibrosis patients with a nonsense mutation, as they have a high burden of disease and few, if any, treatment options."

Recent work with cystic fibrosis patient-derived organoids have extended the potential applications of the FIS assay to include use in stratifying patient disease severity (1) and as a potential predictor of CF patient response to drug therapy (2).

Eloxx plans to initiate a Phase 2 study in cystic fibrosis patients carrying at least one *G542X* mutation. The European Cystic Fibrosis Society-Clinical Trial Network has reviewed the program and assigned a "high priority" rating. Eloxx expects to report top-line data from the Phase 2 study in 2019.

In a Poster presentation titled **"Measuring mRNA levels in cystic fibrosis organoids with nonsense mutations following treatment with ELX-02,"** presented by Neal Sharpe, Ph.D., V. P. Translational Science, Eloxx reported that:

- ELX-02 demonstrated dose responsive increase in CFTR function and mRNA expression when tested in a correlative assay using organoids from cystic fibrosis patients with homozygous and heterozygous nonsense mutations. The FIS swelling was consistent across a range of concentrations of the swelling inducing agent, forskolin, and did not saturate in the timeframe of the assay. Additionally, the swelling response was demonstrated to be dependent on CFTR activity and the presence of a nonsense mutation. The response demonstrated is consistent with levels potentially predictive of clinical efficacy.

- Using nanoString™ technology, ELX-02 mediated organoid swelling was found to correlate with increased *CFTR* mRNA, with elevations above wild-type. ELX-02 appears to increase the steady state concentrations of *CFTR* mRNA suggesting that ELX-02 may be modulating nonsense mediated decay.

- The increased CFTR function demonstrated with ELX-02 was further enhanced with the addition of a potentiator and corrector in some organoids derived from patients with heterozygous nonsense mutations.

- These data demonstrate that ELX-02 promotes translation of functional CFTR and support continuing development of ELX-02 in patients with cystic fibrosis.

ELX-02 is an investigational agent not approved by any regulatory agency for therapeutic use.

About Organoids

Organoids are derived from stem cells isolated from cystic fibrosis patients and are differentiated into cell types found in organs of interest. Because organoids are made from stem cells, they contain the same mutations as the person from whom the biopsies originated. As CFTR functional activity is measurable in organoids, this model system is used to evaluate drug candidates across a range of mutations found in the cystic fibrosis patient population. Since some therapeutic candidates target the basic defect of cystic fibrosis, organoids are being evaluated as a potential biomarker to help identify which treatments can affect specific mutations.

1) de Winter-de Groot KM, Janssens HM, van Uum RT, et.al. (2018). "**Stratifying infants with cystic fibrosis for disease severity using intestinal organoid swelling as a biomarker of CFTR function"** Eur Respir J. Sep 17;52(3). pii: 1702529.

2) Dekkers JF, Berkers G, Kruisselbrink E. et.al. (2016) “**Characterizing responses to CFTR-modulating drugs using rectal organoids derived from subjects with cystic fibrosis”** Sci Transl Med, Jun 22;8(344):344ra84.

About Eloxx Pharmaceuticals

Eloxx Pharmaceuticals, Inc. is a clinical-stage biopharmaceutical company developing novel RNA-modulating drug candidates (designed to be eukaryotic ribosomal selective glycosides) that are designed to treat rare and ultra-rare premature stop codon diseases. Premature stop codons are point mutations that disrupt protein synthesis from messenger RNA. As a consequence, patients with premature stop codon diseases have reduced or eliminated protein production from the mutation bearing allele accounting for some of the most severe phenotypes in these genetic diseases. These premature stop codons have been identified in over 1,800 rare and ultra-rare diseases. Read-through therapeutic development is focused on extending mRNA half-life and increasing protein synthesis by enabling the cytoplasmic ribosome to read through premature stop codons to produce full-length proteins. Eloxx’s lead investigational product candidate, ELX-02, is a small molecule drug candidate designed to restore production of full-length functional proteins. ELX-02 is in the early stages of clinical development focusing on cystic fibrosis and cystinosis. ELX-02 is an investigational drug that has not been approved by any global regulatory body. Eloxx’s preclinical candidate pool consists of a library of novel drug candidates designed to be eukaryotic ribosomal selective glycosides identified based on read-through potential. Eloxx recently announced a new program focused on rare ocular genetic disorders. Eloxx is headquartered in Waltham, MA, with R&D operations in Rehovot, Israel. For more information, please visit www.eloxxpharma.com.

Forward-Looking Statements

This press release contains forward-looking statements, which are generally statements that are not historical facts. Forward-looking statements can be identified by the words "expects," "anticipates," "believes," "intends," "estimates," "plans," "will," "outlook" and similar expressions. Forward-looking statements are based on management's current plans, estimates, assumptions and projections, and speak only as of the date they are made. We undertake no obligation to update any forward-looking statement in light of new information or future events, except as otherwise required by law. Forward-looking statements involve inherent risks and uncertainties, most of which are difficult to predict and are generally beyond our control. Actual results or outcomes may differ materially from those implied by the forward-looking statements as a result of the impact of a number of factors,including: the development of the Company’s read-through technology; the approval of the Company’s patent applications; the Company’s ability to successfully defend its intellectual property or obtain necessary licenses at a cost acceptable to the Company, if at all; the successful implementation of the Company’s research and development programs and collaborations; the Company’s ability to obtain applicable regulatory approvals for its current and future product candidates; the acceptance by the market of the Company’s products should they receive regulatory approval; the timing and success of the Company’s preliminary studies, preclinical research, clinical trials, and related regulatory filings; the ability of the Company to consummate additional financings as needed; as well as those discussed in more detail in our Annual Report on Form 10-K and our other reports filed with the Securities and Exchange Commission.

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