Aptinyx Exploratory Clinical Studies Provide First Evidence that NYX-2925 Elicits Rapid, Persistent, NMDAr-Mediated Pharmacodynamic Activity in Humans

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Studies in Healthy Human Volunteers Reinforce Mechanism of Action Observed in Preclinical Studies

EVANSTON, Ill., Nov. 12, 2018 (GLOBE NEWSWIRE) -- Aptinyx Inc. (NASDAQ: APTX), a clinical-stage biopharmaceutical company developing transformative therapies for the treatment of brain and nervous system disorders, today announced that exploratory clinical studies of its novel NMDA receptor (NMDAr) modulator, NYX-2925, provide the first evidence that oral dosing of the product candidate induces pharmacodynamic activities in humans that are understood to be NMDAr-mediated.

“The data from these studies demonstrate that NYX-2925 is biologically active in the human brain,” said Norbert Riedel, Ph.D., president and CEO of Aptinyx. “The NMDAr-mediated activity observed confirms that NYX-2925 acts in humans by the differentiated mechanism we have consistently observed in our preclinical studies. These data enhance our knowledge and confidence as we look forward to the results of our Phase 2 studies of NYX-2925, which are evaluating whether its novel mechanism of action can offer relief to patients suffering from chronic pain conditions.”

The two exploratory studies in healthy human volunteers employed electrophysiological measures to assess the pharmacodynamic effects of NYX-2925 at dose levels consistent with those under evaluation in ongoing Phase 2 studies. The findings from these exploratory studies reinforce observations in preclinical mechanistic studies of NYX-2925. The study results validate that NYX-2925 activates NMDAr-mediated pathways, provide further insight into its mechanism of action, and identify potential biomarkers for further investigation.

In the first exploratory study, Aptinyx utilized advanced electrophysiology measures in 32 healthy human subjects to evaluate the effects of a single administration of NYX-2925 versus placebo on synaptic plasticity, a biological measure of changes in neural cell communication. Electrical activity within the brain was recorded through multiple electrodes placed on the scalp. This electrical activity can occur at different frequencies and with different magnitude (voltage) over time. Different patterns observed in response to particular forms of sensory stimuli correspond to activities related to sensory processing, plasticity, learning, and memory. As demonstrated by differences in electroencephalography (EEG) wave-form responses, administration of NYX-2925 results in robust enhancements in synaptic plasticity. This observed plasticity enhancement, which is consistent with NMDAr pathway activation, was statistically significant two hours following administration and was observed across all dose levels studied. In addition, analysis of time-frequency EEG measures revealed an effect of NYX-2925 on enhanced stimulus processing that persisted for at least seven days. Both the immediate and long-lasting effects on synaptic plasticity are consistent with observations in preclinical studies of NYX-2925.

“The results observed in this exploratory study derive from advanced approaches to measuring sensory processing and plasticity in the human brain,” said Daniel Mathalon, M.D., Ph.D., professor of psychiatry at the University of California San Francisco, who has conducted significant research in the areas of EEG biomarkers and neuroplasticity. “The ability of a single dose of NYX-2925 to enhance synaptic plasticity as early as two hours following administration, and potentially lasting several days, is unique in this field. These encouraging data support further investigation of NYX-2925 in CNS disorders in which activating the NMDAr pathway can improve symptoms or modify disease processes.”

In the second exploratory study, Aptinyx used polysomnography and other measures to evaluate the effects of NYX-2925 on multiple components of sleep, which are also mediated through the NMDAr pathway. Polysomnography evaluates multiple parameters, including electrical activity in the brain. Together, these measures can indicate different states of sleep, including REM and non-REM. Twenty-seven healthy male participants were subjected to sleep disruption and evaluated in a two-arm crossover design study. One arm of the study, in which subjects received NYX-2925 followed by placebo, showed unexpectedly high variability within the small sample size, thus precluding analysis of this arm. However, analysis of the other arm, in which subjects received placebo followed by NYX-2925, showed that NYX-2925 significantly enhanced various measures, including overall sleep duration and non-REM sleep duration (without adversely affecting REM sleep). These results are consistent with observations in preclinical studies of NYX-2925 in sleep-disrupted rodents.

The company plans to submit the detailed results of both studies for publication and presentations at future scientific and medical meetings.

About NYX-2925
NYX-2925 is a novel NMDA receptor modulator currently in Phase 2 clinical development for the treatment of painful diabetic peripheral neuropathy (DPN) and also under evaluation in an exploratory Phase 2 study in fibromyalgia. NYX-2925 has demonstrated robust activity in preclinical models of numerous neuropathic pain conditions with a favorable tolerability profile. In a Phase 1 clinical study in healthy human subjects, NYX-2925 was well tolerated across a wide dose range, including dose levels well in excess of the expected therapeutic levels. The U.S. Food and Drug Administration has granted Fast Track designation to Aptinyx’s development of NYX-2925 for the treatment of neuropathic pain associated with DPN.

About Aptinyx
Aptinyx Inc. is a clinical-stage biopharmaceutical company focused on the discovery, development, and commercialization of proprietary synthetic small molecules for the treatment of brain and nervous system disorders. Aptinyx has a platform for discovery of novel compounds that work through a unique mechanism to modulate – rather than block or over-activate – NMDA receptors and enhance synaptic plasticity, the foundation of neural cell communication. The company has three product candidates in clinical development in central nervous system indications, including chronic pain, post-traumatic stress disorder (PTSD), and cognitive impairment associated with Parkinson’s disease. Aptinyx is also advancing additional compounds from its proprietary discovery platform, which continues to generate a rich and diverse pipeline of small-molecule NMDA receptor modulators with the potential to treat an array of neurologic disorders. For more information, visit www.aptinyx.com.

Forward-Looking Statements

Statements contained in this press release regarding matters that are not historical facts are "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995. Because such statements are subject to risks and uncertainties, actual results may differ materially from those expressed or implied by such forward-looking statements. Such statements include, but are not limited to, statements regarding the company's business plans and objectives, expectations regarding the design, implementation, enrollment, timing and success of its current and planned clinical trials, expectations regarding its preclinical development activities, and expectations regarding its uses of capital. Risks that contribute to the uncertain nature of the forward-looking statements include: the success, cost and timing of the company's product candidate development activities and planned clinical trials; the company's ability to execute on its strategy; regulatory developments in the United States and foreign countries; as well as those risks and uncertainties set forth in the company's most recent quarterly report on Form 10-Q and in its other filings and reports with the United States Securities and Exchange Commission. All forward-looking statements contained in this press release speak only as of the date on which they were made. Aptinyx undertakes no obligation to update such statements to reflect events that occur or circumstances that exist after the date on which they were made.

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