Zynerba Pharmaceuticals Announces Publication of Preclinical Data in Neuropsychopharmacology Demonstrating Effect of Cannabidiol Gel Treatment in Reduction of Relapse in an Addiction Model

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Results show effect of transdermally-delivered cannabidiol (ZYN002) in an animal model of drug relapse and extend its therapeutic potential to relapse prevention in substance use disorders

DEVON, Pa., March 26, 2018 (GLOBE NEWSWIRE) -- Zynerba Pharmaceuticals, Inc. (NASDAQ:ZYNE), a clinical-stage specialty neuropsychiatric pharmaceutical company dedicated to developing and commercializing innovative pharmaceutically-produced transdermal cannabinoid treatments for rare and near-rare neurological and psychiatric disorders with high unmet medical needs, today announced that researchers at The Scripps Research Institute and the University of Maryland have generated preclinical data from a study funded by NIH grants that suggest potential value in using transdermal cannabidiol (CBD) (ZYN002) to reduce the risk of relapse among recovering drug and alcohol addicts. ZYN002, which was provided by the Company for use in the study, is the first and only pharmaceutically-produced CBD formulated as a patent-protected permeation-enhanced transdermal gel. The results have been published in a paper entitled, 'Unique Treatment Potential of Cannabidiol for the Prevention of Relapse to Drug Use: Preclinical Proof of Principle' (Gonzalez-Cuevas, G *et al*.) in *Neuropsychopharmacology*, the official publication of the American College of Neuropsychopharmacology (ACNP).

"Remaining drug-free is a constant battle for former substance abusers, and their susceptibility to stress and anxiety can increase their vulnerability for relapse," said Dr. Friedbert Weiss, investigator for this study and Professor, Department of Neuroscience at The Scripps Research Institute in La Jolla, California. "These preclinical data are interesting as they show that we may be able to use transdermally-delivered CBD to impact multiple dimensions of relapse, namely benefit across a number of vulnerability states and effects that are maintained beyond the brief treatment period. CBD is broadly active and these data provide continued evidence that transdermal CBD may have therapeutic potential in a number of neurological disorders and conditions, including prevention of relapse."

In summary, according to the authors, the findings in this publication provide proof of principle supporting the potential of transdermal CBD for relapse prevention along two dimensions: beneficial actions across several vulnerability states, and long-lasting effects with only brief treatment.

The publication noted that the clinical potential of CBD when administered orally is constrained to some extent by low bioavailability and potential for conversion into psychoactive cannabinoids in gastric fluid. The authors identified the transdermal route of administration as an effective delivery method that eliminates both of these limitations and produces stable and sustained plasma CBD levels. The researchers utilized a rat model of drug addiction (alcohol, cocaine) and addiction-like behavior to test ZYN002 administered once daily for one week. In this study, ZYN002 reduced relapse provoked by stress and drug cues, and reduced anxiety and impulsivity in the drug-experienced rats without sedative and nonspecific effects on motivation. Five months after therapy ended, treated animals still showed reduced relapse induced by stress or drug cues. According to the authors of the publication, the mechanisms by which CBD impacts these behaviors is not yet understood, but may be related to its ability to modulate the endocannabinoid system or its proneurogenic activity, both of which may explain the long-lasting attenuation of drug seeking and relapse and experimental anxiety.

About ZYN002
Zynerba's ZYN002 CBD gel is the first and only pharmaceutically-produced CBD formulated as a patent-protected permeation-enhanced transdermal gel and is being studied in children and adolescents with Fragile X syndrome and developmental and epileptic encephalopathies, and in adult epilepsy patients with focal seizures. ZYN002 is a clear, permeation-enhanced gel that is designed to provide controlled drug delivery transdermally with once- or twice-daily dosing.

About Zynerba Pharmaceuticals, Inc.
Zynerba Pharmaceuticals (NASDAQ:ZYNE) is a clinical-stage specialty pharmaceutical company dedicated to developing and commercializing innovative pharmaceutically-produced transdermal cannabinoid treatments for rare or near-rare neuropsychiatric diseases with high unmet medical needs. We are dedicated to improving the lives of people with severe health conditions by developing cannabinoid medicines designed to meet the rigorous efficacy and safety standards established by global regulatory agencies. Through the discovery and development of these potentially life-changing medicines, Zynerba seeks to improve the lives of patients battling severe, chronic health conditions including Fragile X syndrome, refractory epilepsies, Tourette Syndrome, and other neuropsychiatric disorders. Learn more at www.zynerba.com and follow the Company on Twitter at @ZynerbaPharma.

Cautionary Note on Forward-Looking Statements

This press release contains forward-looking statements within the meaning of The Private Securities Litigation Reform Act of 1995. We may, in some cases, use terms such as "predicts," "believes," "potential," "proposed," "continue," "estimates," "anticipates," "expects," "plans," "intends," "may," "could," "might," "will," "should" or other words that convey uncertainty of future events or outcomes to identify these forward-looking statements. Such statements are subject to numerous important factors, risks and uncertainties that may cause actual events or results to differ materially from the Company's current expectations. For example, there can be no guarantee that the Company will obtain approval for ZYN002 from the U.S. Food and Drug Administration (FDA) or foreign regulatory authorities; even if ZYN002 are approved, the Company may not be able to obtain the label claims that it is seeking from the FDA. In addition, the Company's cash and cash equivalents may not be sufficient to support its operating plan for as long as anticipated. Management's expectations and, therefore, any forward-looking statements in this press release could also be affected by risks and uncertainties relating to a number of other factors, including the following: the success, cost and timing of the Company's product development activities, studies and clinical trials; the success of competing products that are or become available; the Company's ability to commercialize its product candidates; the size and growth potential of the markets for the Company's product candidates, and the Company's ability to service those

markets; the Company's ability to develop sales and marketing capabilities, whether alone or with potential future collaborators; the rate and degree of market acceptance of the Company's product candidates; and the Company's expectations regarding its ability to obtain and adequately maintain sufficient intellectual property protection for its product candidates. This list is not exhaustive and these and other risks are described in the Company's periodic reports, including the annual report on Form 10-K, quarterly reports on Form 10-Q and current reports on Form 8-K, filed with or furnished to the Securities and Exchange Commission and available at www.sec.gov. Any forward-looking statements that the Company makes in this press release speak only as of the date of this press release. The Company assumes no obligation to update forward-looking statements whether as a result of new information, future events or otherwise, after the date of this press release.

Investor Contact

Will Roberts, VP Investor Relations and Corporate Communications
Zynerba Pharmaceuticals
484.581.7489
robertsw@zynerba.com

Primary Logo

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