Axsome Therapeutics Collaborates with World-Leading Nicotine Addiction Research Center for Phase 2 Trial of AXS-05 in Smoking Cessation

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Builds on preclinical research conducted at Duke University and clinical research conducted by Axsome

Smoking cessation is the third indication for AXS-05

Phase 2 trial initiation anticipated in the first quarter of 2018

NEW YORK, Dec. 14, 2017 (GLOBE NEWSWIRE) -- Axsome Therapeutics, Inc. (NASDAQ:AXSM), a clinical-stage biopharmaceutical company developing novel therapies for the management of central nervous system (CNS) disorders, entered into a research collaboration with Duke University to evaluate AXS-05 in a Phase 2 clinical trial in smokers attempting to quit. AXS-05 is a novel, oral, fixed-dose combination of dextromethorphan and bupropion. This collaboration builds upon preclinical research conducted at Duke demonstrating positive effects of the dextromethorphan component of AXS-05 on nicotine self-administration, clinical work conducted by Axsome demonstrating increased dextromethorphan plasma concentrations with AXS-05, and the established efficacy of the bupropion component of AXS-05 in smoking cessation. Duke University is recognized as one of the world's leading centers for smoking cessation research, and its investigators have been at the forefront of developing medications to help smokers quit.

"Smoking is the leading cause of preventable death in the United States, and unfortunately current treatment options are limited," said James M. Davis, M.D., Medical Director of the Duke Center for Smoking Cessation, and principal investigator of the planned trial. "AXS-05 represents a potentially new medication class for the treatment of tobacco dependence that may have some advantages as compared to current treatments. If the Phase 2 and 3 clinical trial programs eventually demonstrate it to be a safe and effective treatment option, it could have the potential to enhance the treatment for smoking cessation. Preclinical and clinical evidence on the constituents of AXS-05 provide a promising rationale for evaluating its use as a treatment for smokers; we look forward to learning more about its activity in this upcoming trial."

The planned study is a randomized, double-blind, controlled trial evaluating the impact of AXS-05 on smoking behavior, and will be conducted at the Duke Center for Smoking Cessation. Initiation of the trial is anticipated in the first quarter of 2018.

"Existing smoking cessation methods have had limited success, with quit rates often falling below 25 percent after six months," said Jed Rose, Ph.D., Director of the Duke Center for Smoking Cessation, Research Professor of biological psychiatry, and co-creator of the nicotine patch. "There is an urgent need for more effective treatments. This collaboration with Axsome is an example of the type of translational research which can contribute to progress in solving the problem of tobacco addiction."

Results of preclinical studies conducted at Duke University demonstrated that the dextromethorphan component of AXS-05 significantly reduced nicotine self-administration in nicotine-dependent rats in a dose-dependent manner ($p<0.0005$ versus control) [1]. Results of pharmacokinetic clinical trials conducted by Axsome have demonstrated that, in human subjects, AXS-05 results in a significant increase in dextromethorphan plasma concentrations ($p<0.0001$ versus administration of dextromethorphan as a single agent). Furthermore, bupropion, a component of AXS-05, has been found to be effective for smoking cessation in clinical trials. The preclinical and clinical efficacy of the individual components of AXS-05 combined with their positive pharmacokinetic interaction supports the potential for AXS-05 to be effective in the treatment of tobacco dependence in humans.

"We are delighted that the researchers at the Duke Center for Smoking Cessation have identified AXS-05 for evaluation as a new potential treatment for the millions of smokers who want to quit," said Cedric O'Gorman, M.D., Senior Vice President of Clinical Development and Medical Affairs of Axsome. "This new indication reflects the potential applicability of AXS-05's pharmacology to multiple CNS conditions."

Smoking cessation is now the third indication for AXS-05, which is also being developed in late-stage clinical trials for treatment resistant depression and Alzheimer's agitation.

About Smoking

Nearly 40 million American adults smoke and around 70% report that they want to quit. Tobacco use results in approximately 500,000 premature deaths each year in the U.S., according to the Centers for Disease Control and Prevention. Smoking is the single largest cause of premature deaths worldwide accounting for an estimated almost 20% of all deaths in developed countries [2]. Direct health care and lost productivity costs as a result of smoking total nearly $300 billion a year in the U.S. alone. It is estimated that only 3 to 5% of cigarette smokers who attempt to quit without assistance are successful for 6 to 12 months, and that relapse rates remain above 80% even with current treatments [3].

About The Duke Center for Smoking Cessation

The Duke Center for Smoking Cessation (also known as DCSC) is a multidisciplinary center working to elucidate the biological mechanisms underlying tobacco addiction and to promote the development of more effective smoking cessation treatments. The DCSC is committed to researching

novel treatments to help smokers break the addiction of nicotine. The Center's director, Dr. Jed E. Rose, is a co-inventor of the nicotine patch and has been a pioneer in the field of nicotine and cessation research.

About AXS-05

AXS-05 is a novel, oral, investigational drug product under development for the treatment of central nervous system (CNS) disorders. AXS-05 utilizes Axsome's technology of combining bupropion and dextromethorphan. Dextromethorphan is an NMDA receptor antagonist, sigma-1 receptor agonist, and inhibitor of the serotonin and norepinephrine transporters. Bupropion serves to increase the bioavailability of dextromethorphan, and is a norepinephrine and dopamine reuptake inhibitor, and a nicotinic acetylcholine receptor antagonist. AXS-05 is an investigational drug product not approved by the FDA.

About Axsome Therapeutics, Inc.

Axsome Therapeutics, Inc. is a clinical-stage biopharmaceutical company developing novel therapies for the management of central nervous system (CNS) disorders for which there are limited treatment options. Axsome's product candidate portfolio includes four clinical-stage candidates, AXS-02, AXS-05, AXS-06, and AXS-07. AXS-05 is currently in a Phase 3 trial in treatment resistant depression (TRD) and a Phase 2/3 trial in agitation in patients with Alzheimer's disease (AD). AXS-02 is currently in Phase 3 trials in complex regional pain syndrome (CRPS) and knee osteoarthritis (OA) associated with bone marrow lesions (BMLs) with an additional Phase 3 trial planned in chronic low back pain (CLBP) associated with Modic changes (MCs). AXS-02, AXS-05, AXS-06, and AXS-07 are investigational drug products not approved by the FDA. For more information, please visit the company website at www.axsome.com. The company may occasionally disseminate material, nonpublic information on the company website.

Forward Looking Statements

Certain matters discussed in this press release are "forward-looking statements". We may, in some cases, use terms such as "predicts," "believes," "potential," "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. In particular, the Company's statements regarding trends and potential future results are examples of such forward-looking statements. The forward-looking statements include risks and uncertainties, including, but not limited to, the success, timing and cost of our ongoing clinical trials and anticipated clinical trials for our current product candidates, including statements regarding the timing of initiation and completion of the trials, futility analyses and receipt of interim results; the timing of and our ability to obtain and maintain U.S. Food and Drug Administration or other regulatory authority approval of, or other action with respect to, our product candidates; the Company's ability to successfully defend its intellectual property or obtain the 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 success of the Company's license agreements; the acceptance by the market of the Company's product candidates, if approved; and other factors, including general economic conditions and regulatory developments, not within the Company's control. The factors discussed herein could cause actual results and developments to be materially different from those expressed in or implied by such statements. The forward-looking statements are made only as of the date of this press release and the Company undertakes no obligation to publicly update such forward-looking statements to reflect subsequent events or circumstance.

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Source: Axsome Therapeutics, Inc.