May 15, 2017

Minerva Provides Update on Phase 3 Design and Development Strategy for MIN-101

Advancing a new potential therapeutic paradigm for the treatment of negative symptoms, a key unmet need in schizophrenia and other brain diseases

Company to host conference call on May 16, 2017 at 10:30 a.m. eastern time

WALTHAM, Mass., May 15, 2017 (GLOBE NEWSWIRE) -- Minerva Neurosciences, Inc. (NASDAQ:NERV), a clinical-stage biopharmaceutical company focused on the development of therapies to treat central nervous system (CNS) disorders, today announced plans for its Phase 3 and Phase 4 clinical development of MIN-101, a drug targeting negative symptoms in schizophrenia patients. Following a recent "end-of-Phase 2" meeting with the U.S. Food and Drug Administration (FDA), the Company's next step is the planned initiation of a pivotal Phase 3 trial with MIN-101 in the second half of 2017.

"We are very excited to be taking MIN-101 into a pivotal Phase 3 trial, which has the potential to identify a new approach to the treatment of schizophrenia and improve the quality of life for millions of patients," said Dr. Remy Luthringer, president and chief executive officer of Minerva. "Our development strategy for MIN-101 is driven by the recognition that, while positive symptoms are present intermittently and are a hallmark of early schizophrenia, negative symptoms persist and worsen over the lifetimes of the majority of schizophrenic patients, severely limiting their social and vocational reintegration over the longer term. No drugs are currently approved to treat the negative symptoms of schizophrenia or negative symptoms present in other conditions, including developmental disorders, affective disorders and neurodegenerative disorders."

Data from the Company's Phase 2b trial with MIN-101 have informed the design of the Phase 3 trial. Key findings from the Phase 2b trial include observations of a direct effect on negative symptoms (rather than an indirect or pseudo effect linked to improvements in other symptoms and/or a different side effect profile). The data also support the durability of this effect through the entire 36-week duration of the trial, which included a 12-week double-blind, placebo-controlled core phase and a 24-week, open-label extension phase. The specificity of MIN-101's therapeutic effects on negative symptoms was validated by the stability of positive symptoms observed over the entire duration of treatment and a side effect profile comparable to placebo, particularly as it relates to extra-pyramidal symptoms (EPS). The Company believes that the unique pharmacological profile of MIN-101 (sigma $_2$ and serotonin $5HT_{2a}$ receptor antagonism) and the absence of direct binding to post-synaptic dopamine receptors may explain its specific effects on negative symptoms.

Key elements of the Phase 2b trial that will be incorporated into the Phase 3 trial include:

- improvement in negative symptoms as the primary endpoint;
- monotherapy administration of MIN-101 and no co-administration with atypical antipsychotics at any stage in the study;
- recruitment of patients with moderate-to-severe negative symptoms expressed as a specified minimum threshold baseline score on the Positive and Negative Syndrome Scale (PANSS) negative sub-scale; and
- a 12-week double-blind, randomized, placebo-controlled core phase followed by an open-label extension phase.

Two doses of MIN-101 or placebo will be administered during the double-blind phase of the Phase 3 trial, which will last 12 weeks, followed by an optional 36-week extension phase in which all patients will receive MIN-101. Approximately 500 patients will be enrolled at approximately 60 clinical sites across the U.S. and Europe, with a significant number of patients recruited at U.S. sites. The Company believes that the efficacy data from the Phase 3 trial, if positive, in addition to the Phase 2b data, may form the basis for the future submission of a New Drug Application (NDA) for MIN-101 to the FDA. Furthermore, at the conclusion of the extension period of the Phase 3 trial, the overall number of patients exposed to MIN-101 since the initiation of its clinical development is expected to provide sufficient long-term safety data to support an NDA.

The primary Phase 3 trial endpoint of improvement in negative symptoms at 12 weeks will be measured by the PANSS negative sub-scale score using the Marder factor, a widely recognized instrument for quantifying severity of negative symptoms. The Marder negative sub-score is similar to the White negative sub-score used in the Phase 2b trial. The two factors differ from each other in that the Marder score has eliminated four items and added one on active social avoidance (G16 item). The Company is employing the Marder scale because this item has been shown to be well correlated with patients' overall functional outcome.

The Company's Phase 3 trial design is intended to replicate the experience of "real world" clinical practice in schizophrenia. Many patients are dissatisfied and not well served by continuous antipsychotic treatment as evidenced by poor compliance with medications. Recent scientific literature points toward the fact that indefinite antipsychotic maintenance treatment in schizophrenic patients (provided by post-synaptic blockade of dopamine receptors) may be responsible for poor long term functional outcomes in addition to well described side effects, including EPS, weight gain, sedation and prolactin increase. In summary, the Phase 3 trial will seek to confirm clinically meaningful effects on patients' negative symptoms and to determine whether patients can stay stable in terms of positive symptoms without experiencing the adverse effects of antipsychotics.

Treatment of the positive symptoms of schizophrenia represents a large market estimated at more than $6.2 billion in 2016. Epidemiological studies suggest that an estimated 60 percent of schizophrenia patients present with negative symptoms, which are the basis of poor functional outcome and thus represent a significant unmet medical need and burden for patients, families and society.

In Phase 4 development, the Company plans to conduct additional trials to expand the profile of MIN-101. These may potentially include a study comparing the rate of psychosis relapses in patients treated with MIN-101, standard of care with antipsychotics or placebo. In addition, the Company may conduct a trial in adolescents at high risk for schizophrenia who during the prodromal phase manifest negative symptoms.

While negative symptoms are a core component of schizophrenia and predict poor functional capacity, they are not specific to that disease but are also recognized as a hallmark of other diseases. These include neurodegenerative disorders such as Alzheimer's disease, Parkinson's disease, mood disorders, schizophrenia spectrum disorders and autism spectrum disorders. The Company plans to assess these indications as expansion options for MIN-101 in a development program beyond the planned Phase 3 study in schizophrenia.

Conference call information

The Company will host a conference call and live webcast tomorrow, May 16, 2017 at 10:30 a.m. Eastern Time to discuss its plans for Phase 3 development of MIN-101 and beyond. The topics outlined above will be addressed. To participate, please dial 800-263-8506 (domestic) or 719-457-2605 (international) and refer to conference ID # 1545954. Leading the call will be Dr. Remy Luthringer, president and chief executive officer of Minerva. Also participating will be key opinion leaders in the field of schizophrenia, including Dr. Philip Harvey, Leonard M. Miller Professor of Psychiatry and director of the Division of Psychology at the University of Miami Miller School of Medicine, and Dr. Brian Kirkpatrick, chair of the Department of Psychiatry and Behavioral Sciences at the University of Nevada School of Medicine. Both Dr. Harvey and Dr. Kirkpatrick are internationally recognized for their work in the field of schizophrenia and negative symptoms, and they participated in the recent meeting between the FDA and Minerva as consultants to the Company.

The webcast can be accessed under "Events and Presentations" in the Investors and Media section of Minerva's website beginning approximately two hours after the event for 90 days.

About schizophrenia and the impact of negative symptoms

Schizophrenia remains among the top ten disabling conditions worldwide for young adults and affects more than 21 million people worldwide. According to Datamonitor, an independent market research firm, in 2016 approximately 3.3 million people suffered from schizophrenia in the United States, Japan and the five major European Union markets of France, Germany, Italy, Spain and the United Kingdom.

Although positive psychotic symptoms are characteristic of schizophrenia, negative symptoms constitute one of the main sources of burden of illness, represent an important treatment target and are a major cause of the poor vocational and social capabilities of these patients. These symptoms, which include a-motivation, avolition, lack of initiative, and restricted personal interaction, are associated with poor psychosocial functioning.

In the majority of schizophrenia patients, acute positive symptoms remit due to treatment with antipsychotics (dopamine-blocking drugs) or spontaneously. Antipsychotic drugs also reduce the risk for recurrence of psychosis. However, many patients maintain remission of psychosis without antipsychotic dopamine blocking drugs. Nevertheless, they continue to suffer negative symptoms, for which no FDA-approved treatments are specifically indicated.

About MIN-101

MIN-101 is a drug candidate with equipotent affinities for sigma$_2$ and 5-hydroxytryptamine-2A (5-HT$_{2A}$) and lower affinity at α1-adrenergic receptors. MIN-101 has no direct dopaminergic post-synaptic blocking effects, known to be involved in some side effects like extrapyramidal symptoms, sedation, prolactin increases and weight gain.

The Phase 2b trial with MIN-101, announced in 2016 and presented at the annual meeting of the American College of Neuropsychopharmacology, met its primary endpoint of statistically significant improvement in negative symptoms as measured by the PANSS pentagonal structure model and in the higher dose showed statistically significant benefit in multiple secondary endpoints that included general psychopathology.

About Minerva Neurosciences

Minerva Neurosciences, Inc. is a clinical-stage biopharmaceutical company focused on the development and commercialization of a portfolio of products to treat CNS diseases. Minerva's proprietary compounds include: MIN-101, in clinical development for schizophrenia; MIN-117, in clinical development for major depressive disorder (MDD); MIN-202 (JNJ-42847922), in clinical development for insomnia and MDD; and MIN-301, in pre-clinical development for Parkinson's disease. Minerva's common stock is listed on the NASDAQ Global Market under the symbol "NERV." For more information, please visit www.minervaneurosciences.com.

Forward-Looking Safe Harbor Statement

This press release contains forward-looking statements which are subject to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995, as amended. Forward-looking statements are statements that are not historical facts, reflect management's expectations as of the date of this press release, and involve certain risks and uncertainties. Forward-looking statements include statements herein with respect to the timing and results of future clinical milestones with MIN-101, including the planned Phase 3 trial of MIN-101, the timing and scope of future clinical trials and results of clinical trials with this compound; the potential for a single Phase 3 trial with supportive Phase 2b results to support the basis for an NDA; the timing and outcomes of future interactions with U.S. and foreign regulatory bodies; our ability to successfully develop and commercialize MIN-101; the sufficiency of our current cash position to fund our operations; and management's ability to successfully achieve its goals. These forward-looking statements are based on our current expectations and may differ materially from actual results due to a variety of factors including, without limitation, whether MIN-101 will advance further in the clinical trials process and whether and when, if at all, it will receive final approval from the U.S. Food and Drug Administration or equivalent foreign regulatory agencies and for which indications; whether the results of future clinical trials of MIN-101, if any, will be consistent with the results of past clinical trials; whether MIN-101 will be successfully marketed if approved; whether any of our therapeutic product discovery and development efforts will be successful; our ability to achieve the results contemplated by our co-development agreements; management's ability to successfully achieve its goals; our ability to raise additional capital to fund our operations on terms acceptable to us; and general economic conditions. These and other potential risks and uncertainties that could cause actual results to differ from the results predicted are more fully detailed under the caption "Risk Factors" in our filings with the Securities and Exchange Commission, including our Quarterly Report on Form 10-Q for the quarter ended March 31, 2017, filed with the Securities and Exchange Commission on May 4, 2017. Copies of reports filed with the SEC are posted on our website at www.minervaneurosciences.com. The forward-looking statements in this press release are based on information available to us as of the date hereof, and we disclaim any obligation to update any forward-looking statements, except as required by law.

Contact:

William B. Boni

VP, Investor Relations/

Corp. Communications

Minerva Neurosciences, Inc.

(617) 600-7376

Source: Minerva Neurosciences, Inc.

News Provided by Acquire Media