MyoKardia Begins Dosing in Phase 2 MAVERICK-HCM Clinical Trial of Mavacamten in Symptomatic Non-obstructive Hypertrophic Cardiomyopathy Patients

Topline Data Anticipated in Second Half of 2019

SOUTH SAN FRANCISCO, Calif., April 02, 2018 (GLOBE NEWSWIRE) -- MyoKardia, Inc. (Nasdaq:MYOK), a clinical-stage biopharmaceutical company pioneering a precision medicine approach for the treatment of heritable cardiovascular diseases, today announced that the first patient has been dosed in the company's Phase 2 MAVERICK-HCM clinical trial. MAVERICK-HCM is the first clinical trial of mavacamten in non-obstructive HCM, expanding its potential use to an additional sub-type of HCM beyond the obstructed form of the disease.

The two sub-types of HCM, obstructive and non-obstructive, share the same underlying genetic defects in the sarcomere that results in hypercontractility. In nHCM, the heart contracts excessively, but no physical obstruction is present in the outflow tract of the left ventricle. As a result of the hypercontractility, the left ventricle becomes abnormally thick and fibrotic, which prevents the heart from being able to relax and fill with blood normally. Mavacamten acts by inhibiting the excessive myosin-actin crossbridge formation that underlies HCM's characteristic excessive contractility, left ventricular hypertrophy and reduced ventricular compliance.

"Patients with nHCM tend to get diagnosed once their disease is quite advanced, by which time they are already experiencing symptoms that force them to restrict their regular everyday activities. With no approved therapeutic interventions available, current treatment options are limited to off-label medications aimed at symptom relief, or heart transplant," said Dr. Stephen Heitner, cardiologist at the Oregon Health & Science University Knight Cardiovascular Institute and principal investigator for the MAVERICK-HCM clinical trial. "The prospect of a pill that could reduce the hypercontractility that underpins this disease and improve patients' ability to function could truly change the nHCM treatment paradigm. I am excited to be part of this study and look forward to evaluating mavacamten in this population."

The Phase 2 MAVERICK-HCM trial is a double-blind, placebo-controlled study designed to assess the safety and tolerability of a 16-week treatment course of mavacamten. Secondary endpoints from the trial will assess the effect of mavacamten on exercise capacity as measured by peak oxygen uptake (peak VO2), changes in NYHA functional classification, diastolic and systolic function as measured by echocardiography, symptoms and quality of life measures, NT pro-BNP levels and patient activity as measured by a wrist-worn accelerometer.

The trial is expected to enroll approximately 60 patients with nHCM and preserved left ventricular ejection fraction. Patients will be randomized evenly into three groups to receive a once-daily dose of mavacamten targeting one of two plasma concentration levels of drug or placebo. At Week 4, pharmacokinetics (PK) will be assessed in each patient and the dose will be adjusted at Week 6 in order to achieve the target drug concentration. Patients will be allowed to maintain background medications (beta

blockers or calcium channel blockers) for the duration of the MAVERICK-HCM Phase 2 trial. In addition to the 16-week treatment period, patients will participate in a screening period of up to four weeks and will be monitored for an additional eight weeks after discontinuation of mavacamten. Topline data from the MAVERICK-HCM trial are anticipated in the second half of 2019.

“We are pleased to be advancing mavacamten into a second potential indication where we have the opportunity to evaluate its potential in non-obstructive HCM. Based on the positive results from the Phase 2 PIONEER-HCM study in oHCM, we have reason to believe that its mechanism of action may also be of benefit to nHCM patients,” said Marc Semigran, M.D., Chief Medical Officer of MyoKardia. “In addition to targeting the hypercontractility characteristic of HCM, we have seen preclinical and clinical evidence that mavacamten may facilitate increased ventricular compliance. The MAVERICK study promises to provide greater insights into mavacamten’s potential effect on diastolic function.”

Mavacamten has been evaluated across six clinical trials and 175 participants to date, and has shown to be generally well-tolerated. Positive results from the Phase 2 PIONEER-HCM clinical trial in patients with oHCM demonstrated clinical improvement in symptoms (e.g., NYHA functional class) and exercise capacity (peak VO2). The Phase 3 EXPLORER-HCM pivotal trial of mavacamten in oHCM is expected to begin patient dosing in the second quarter of 2018.

About Non-Obstructive HCM

Hypertrophic cardiomyopathy is the most common genetic cause of heart disease, and approximately one-third of patients, or 220,000 people in the U.S., have non-obstructive HCM. Non-obstructive HCM is characterized by excessive contraction, or hypercontractility, of the heart. Over time, the left ventricle becomes abnormally thick and the heart is unable to fill or pump to meet the body’s needs. Non-obstructive HCM presents unique treatment challenges. Patients may progress to a more advanced state of disease than those with obstructive disease before being diagnosed, and there are no approved treatment options available. Beta blockers and calcium channel blockers may be prescribed to control heart rate and improve diastolic function, but these medications also come with side effects such as dizziness, fatigue and shortness of breath. As nHCM progresses, symptoms begin to resemble those of a congestive heart failure patient and heart transplantation may become the only viable treatment option.

About Mavacamten (MYK-461)

Mavacamten is a novel, oral, allosteric modulator of cardiac myosin being developed for the potential treatment of hypertrophic cardiomyopathy (HCM). MyoKardia is currently advancing mavacamten into a pivotal Phase 3 clinical trial, known as EXPLORER-HCM study, in patients with symptomatic, obstructive HCM and a Phase 2 clinical trial, the MAVERICK-HCM study, in patients with non-obstructive HCM. Mavacamten is intended to reduce cardiac muscle contractility by inhibiting the excessive myosin-actin crossbridge formation that underlies the excessive contractility, left ventricular hypertrophy and reduced compliance characteristic of HCM. In MyoKardia’s Phase 2 PIONEER-HCM clinical trial of patients with symptomatic oHCM, primary and secondary

endpoints were achieved across key signs and symptoms of disease, such as elimination of LVOT gradient post-exercise and at rest, increased exercise capacity as measured by peak VO2, improved New York Heart Association (NYHA) classification and reduced dyspnea over time. Mavacamten has been generally well tolerated in multiple clinical trials. In April 2016, the U.S. FDA granted Orphan Drug Designation for mavacamten for the treatment of symptomatic oHCM, a subset of HCM. Mavacamten is being developed in an ongoing collaboration between MyoKardia and Sanofi.

About MyoKardia

MyoKardia is a clinical-stage biopharmaceutical company pioneering a precision medicine approach to discover, develop and commercialize targeted therapies for the treatment of serious and rare cardiovascular diseases. MyoKardia's initial focus is on the treatment of heritable cardiomyopathies, a group of rare, genetically driven forms of heart failure that result from biomechanical defects in cardiac muscle contraction. MyoKardia has used its precision medicine platform to generate a pipeline of therapeutic programs for the chronic treatment of two of the most prevalent forms of heritable cardiomyopathy – hypertrophic cardiomyopathy (HCM), and dilated cardiomyopathy (DCM). MyoKardia's most advanced product candidate is mavacamten (formerly MYK-461), a novel, oral, allosteric modulator of cardiac myosin intended to reduce hypercontractility. Mavacamten is advancing into a pivotal Phase 3 clinical trial, known as EXPLORER-HCM in patients with symptomatic, obstructive HCM. MyoKardia is also developing mavacamten in a second indication, non-obstructive HCM, in the Phase 2 MAVERICK clinical trial. MYK-491, MyoKardia's second product candidate, is designed to increase cardiac output in DCM patients by increasing the overall extent of the heart's contraction cardiac contractility. MyoKardia is currently evaluating MYK-491 in a Phase 1b study in DCM patients. A cornerstone of the MyoKardiaplatform is the Sarcomeric Human Cardiomyopathy Registry (SHaRe), a multi-center, international repository of clinical and laboratory data on individuals and families with genetic heart disease, which MyoKardia helped form in 2014. MyoKardia's mission is to change the world for patients with serious cardiovascular disease through bold and innovative science.

Forward-Looking Statements

Statements we make in this press release may include statements which are not historical facts and are considered forward-looking within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended, which are usually identified by the use of words such as "anticipates," "believes," "estimates," "expects," "intends," "may," "plans," "projects," "seeks," "should," "will," and variations of such words or similar expressions. We intend these forward-looking statements to be covered by the safe harbor provisions for forward-looking statements contained in Section 27A of the Securities Act and Section 21E of the Securities Exchange Act and are making this statement for purposes of complying with those safe harbor provisions. These forward-looking statements, including statements regarding the clinical and therapeutic potential of mavacamten (formerly MYK-461), the Company's expectations with respect to the timing of data from the MAVERICK-HCM study, as well as its ability to initiate its EXPLORER-HCM trial in symptomatic oHCM and the timing of such initiation, reflect our current views about our

plans, intentions, expectations, strategies and prospects, which are based on the information currently available to us and on assumptions we have made. Although we believe that our plans, intentions, expectations, strategies and prospects as reflected in or suggested by those forward-looking statements are reasonable, we can give no assurance that the plans, intentions, expectations or strategies will be attained or achieved. Furthermore, actual results may differ materially from those described in the forward-looking statements and will be affected by a variety of risks and factors that are beyond our control including, without limitation, risks associated with the development and regulation of our product candidates, as well as those set forth in our Annual Report on Form 10-K for the year ended December 31, 2017, and our other filings with the SEC. Except as required by law, we assume no obligation to update publicly any forward-looking statements, whether as a result of new information, future events or otherwise.

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