MYOKARDIA

News Release

MyoKardia Doses First Patient in Pivotal Phase 3 EXPLORER Trial of Mavacamten in Symptomatic Obstructive Hypertrophic Cardiomyopathy

Topline Data Anticipated in Second Half 2020

SOUTH SAN FRANCISCO, Calif., June 26, 2018 – 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 3 EXPLORER-HCM clinical trial. The pivotal study is intended to evaluate the efficacy and safety of mavacamten for the treatment of symptomatic obstructive hypertrophic cardiomyopathy (oHCM). MyoKardia expects to report data from the Phase 3 trial in the second half of 2020.

"The dosing of the first patient in our Phase 3 EXPLORER-HCM clinical trial is a significant step towards achieving our mission of bringing innovative medicines to patients with serious cardiovascular diseases," said Tassos Gianakakos, MyoKardia's Chief Executive Officer. "Based on the data generated to date, and our thoughtfully designed study measuring improvements in *both* symptoms and function, we are hopeful EXPLORER will demonstrate mavacamten's potential to dramatically alter the course of oHCM and transform the lives of people affected by this condition."

EXPLORER-HCM is a multi-national randomized double-blind study that will enroll approximately 220 patients with symptomatic oHCM. Patients will be randomized on a 1:1 basis to receive either mavacamten or placebo for a 30-week treatment period. The EXPLORER-HCM trial design incorporates individualized dosing, including two dose adjustments during the 30-week treatment period based on measurements of provoked left ventricular outflow tract (LVOT) gradient. All assessments and dose adjustments will be conducted in a double-blinded fashion. Patients will be allowed to maintain their HCM-related background medications for the duration of the EXPLORER-HCM Phase 3 trial, including beta blockers or calcium channel blockers. An independent data monitoring committee (IDMC) has been established to monitor safety throughout the study.

The primary endpoint is clinical response, defined as either 1) an improvement of at least 1.5 mL/kg/min in peak oxygen consumption (VO_2) accompanied by an improvement from baseline of at least one New York Heart Association (NYHA) functional class or 2) an improvement from baseline of 3.0 mL/kg/min or greater in peak VO_2 without worsening in NYHA functional class. Secondary endpoints in the Phase 3 EXPLORER-HCM trial will include the average changes from baseline in post-exercise peak LVOT gradient, NYHA functional class, and peak VO_2. Exploratory endpoints will include changes in echocardiographic indices of cardiac structure and function, N-terminal pro b-type natriuretic peptide (NT-proBNP) concentrations, quality of life questionnaire scores and daily physical activity assessed using a wearable accelerometer. Following the 30-week treatment period and eight-week post-treatment wash-out period, patients will be able to participate in a long-term extension study of mavacamten.

About Obstructive HCM

Hypertrophic cardiomyopathy is the most common genetic cause of heart disease in which the walls of the heart thicken and prevent the left ventricle from expanding, resulting in a reduced pumping capacity. HCM is a chronic disease and for the majority of patients, the disease progresses slowly and can be extremely disabling. In approximately two-thirds of HCM patients, or an estimated 410,000 people in the U.S., the path followed by blood exiting the heart, known as the left ventricular outflow tract (LVOT), becomes obstructed by the enlarged and diseased muscle, restricting the flow of blood from the heart to the rest of the body. Mild exertion can quickly result in fatigue or shortness of breath, and a patient's ability to participate in normal work, family or recreational activities can be substantially curtailed. Patients with oHCM are at an increased risk of severe heart failure and death. HCM can also cause stroke or sudden cardiac death.

About Mavacamten (MYK-461)
Mavacamten is a novel, oral, allosteric modulator of cardiac myosin being developed for the treatment of hypertrophic cardiomyopathy (HCM). MyoKardia is currently advancing mavacamten into a pivotal Phase 3 clinical trial, known as the EXPLORER-HCM study, in patients with symptomatic, obstructive HCM and is currently dosing patients in a Phase 2 clinical trial, the MAVERICK-HCM study, in patients with symptomatic 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 VO_2, improved 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 being studied in 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-HCM clinical trial. MYK-491, MyoKardia's second product candidate, is designed to increase the overall extent of the heart's contraction in DCM patients by increasing cardiac contractility. MyoKardia is currently evaluating MYK-491 in a Phase 1b study in DCM patients. A cornerstone of the MyoKardia platform 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, the initiation of patient dosing in the Phase 3 EXPLORER-HCM trial, mavacamten's ability to achieve applicable endpoints in the Phase 3 EXPLORER-HCM trial, the ability for patients who participate in the Phase 3 EXPLORER-HCM trial to participate in a long-term extension study, the availability of data from the Phase 3 EXPLORER-HCM trial, the potential for data from the Company's clinical trials of mavacamten to support a marketing application, as well as the timing of these events, 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 Quarterly Report on Form 10-Q for the quarter ended March 31, 2018, 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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