Mirum Pharmaceuticals Submits European Marketing Authorization Application for Maralixibat in Alagille Syndrome Supported by New Positive Results from Natural History Study Comparison

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- Marketing Authorization Application for treatment of cholestatic disease in Alagille syndrome submitted.

- Natural history analysis shows significant improvement in event-free survival and transplant-free survival.

- PFIC regulatory strategy in Europe to focus on results of MARCH-PFIC Phase 3 study, expected in second quarter of 2022.

FOSTER CITY, Calif.--(BUSINESS WIRE)--Sep. 13, 2021-- Mirum Pharmaceuticals, Inc. (Nasdaq: MIRM) today announced the submission of a Marketing Authorization Application (MAA) for the treatment of cholestatic liver disease in patients with Alagille syndrome (ALGS) to the European Medicines Agency (EMA). In conjunction with the ALGS submission, Mirum's MAA for progressive familial intrahepatic cholestasis type 2 (PFIC2) was withdrawn with plans to re-submit after availability of results from the ongoing MARCH-PFIC Phase 3 study in a broader set of PFIC sub-types and with higher doses of maralixibat.

The submission of the ALGS MAA presents an opportunity to deliver the first ever pharmacologic treatment option for this devastating disease for which there is significant and urgent unmet need. This submission follows discussion with the EMA on the appropriate strategy for seeking marketing approval for both ALGS and PFIC broadly as soon as possible. The MAA is comprised of the long-term ICONIC study in patients with ALGS, which showed a significant improvement on pruritus ($p<0.0001$) and improvement on other markers of cholestatic liver disease. The ICONIC data is supported by a new analysis, which includes an aggregated cohort of maralixibat-treated patients with ALGS ($n=84$) compared to a natural history control cohort, demonstrating a statistically significant improvement in six-year event-free survival ($p<0.0001$), with events defined as biliary diversion surgery, liver transplant, hepatic decompensation (ascites requiring therapy or variceal bleeding) or death.

"The six-year event-free survival data, coupled with the previously presented ICONIC data, provides a catalyst to accelerate our ALGS submission," said Chris Peetz, president and chief executive officer at Mirum. "We feel a tremendous urgency to advance maralixibat for patients as quickly as possible as its availability may provide a significant shift in treatment options for patients living with this unrelenting rare liver disease. The recent long-term analysis allows us to take this major step forward in ALGS today and we plan to submit for all PFIC types after completion of the MARCH-PFIC Phase 3 study."

In the U.S., the Food and Drug Administration has accepted Mirum's new drug application for maralixibat for the treatment of cholestatic pruritus in patients with ALGS and the company is preparing for a potential launch following the PDUFA date of September 29, 2021, if approved by the FDA.

About Maralixibat

Maralixibat is a novel, minimally absorbed, orally administered investigational drug being evaluated in several rare cholestatic liver diseases. Maralixibat inhibits the apical sodium dependent bile acid transporter (ASBT), resulting in more bile acids being excreted in the feces, leading to lower levels of bile acids systemically, thereby potentially reducing bile acid mediated effects. More than 1,600 individuals have received maralixibat, including more than 120 children who have received maralixibat as an investigational treatment for Alagille syndrome (ALGS) and progressive familial intrahepatic cholestasis (PFIC). In the ICONIC Phase 2b ALGS clinical trial, patients taking maralixibat had significant reductions in bile acids and pruritus compared to placebo. In a Phase 2 PFIC study, a genetically defined subset of BSEP deficient (PFIC2), patients responded to maralixibat with an increase in transplant-free survival. The U.S. Food and Drug Administration has granted maralixibat Breakthrough Therapy designation for the treatment of pruritus associated with ALGS in patients one year of age and older and for PFIC2. Maralixibat was shown to have a tolerable safety profile in the studies. The most frequent treatment-related adverse events were diarrhea and abdominal pain. Maralixibat has been studied extensively and its safety database represents the largest database for an ASBT inhibitor.

Until maralixibat is approved and available for prescribing, the medication is available to patients with ALGS through Mirum's expanded access program. For more information, please visit ALGSEAP.com. For further information about maralixibat's ongoing studies in pediatric liver disease, please visit the study websites: Phase 3 MARCH study for PFIC and Phase 2b EMBARK study for biliary atresia.

About Mirum Pharmaceuticals, Inc.

Mirum Pharmaceuticals, Inc. is a clinical-stage biopharmaceutical company focused on the development and commercialization of a late-stage pipeline of novel therapies for debilitating liver diseases. Mirum's lead product candidate, maralixibat, is an investigational oral drug in development for Alagille syndrome (ALGS), progressive familial intrahepatic cholestasis (PFIC), and biliary atresia. Mirum has submitted an NDA for maralixibat in the treatment of cholestatic pruritus in patients with ALGS. The NDA has been accepted for priority review by the FDA with a PDUFA action date of September 29, 2021. Additionally, Mirum's marketing authorization application for the treatment of cholestatic liver disease in patients with ALGS has been submitted to the European Medicines Agency. Mirum is also developing volixibat, also an oral ASBT-inhibitor, in primary sclerosing cholangitis, intrahepatic cholestasis of pregnancy, and primary biliary cholangitis. For more information, visit MirumPharma.com.

To augment its pipeline in cholestatic liver disease, Mirum has acquired the exclusive option to develop and commercialize gene therapy programs VTX-803 and VTX-802 for PFIC3 and PFIC2, respectively, from Vivet Therapeutics SAS, following preclinical evaluation and investigational new drug-enabling studies.

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Forward-Looking Statements

Statements contained in this press release regarding matters that are not historical facts are “forward-looking statements” within the meaning of the Private Securities Litigation Reform Act of 1995. Such forward-looking statements include statements regarding, among other things, the regulatory approval pathway for maralixibat and the safety and efficacy of maralixibat. Because such statements are subject to risks and uncertainties, actual results may differ materially from those expressed or implied by such forward-looking statements. Words such as “will,” “could,” “would,” “potential” and similar expressions are intended to identify forward-looking statements. These forward-looking statements are based upon Mirum’s current expectations and involve assumptions that may never materialize or may prove to be incorrect. Actual results could differ materially from those anticipated in such forward-looking statements as a result of various risks and uncertainties, which include, without limitation, risks and uncertainties associated with Mirum’s business in general, the impact of the COVID-19 pandemic, and the other risks described in Mirum’s filings with the Securities and Exchange Commission. All forward-looking statements contained in this press release speak only as of the date on which they were made and are based on management’s assumptions and estimates as of such date. Mirum undertakes no obligation to update such statements to reflect events that occur or circumstances that exist after the date on which they were made, except as required by law.

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