Ra Pharmaceuticals Announces Completion of End-of-Phase 2 Interactions with FDA and Design of Pivotal Phase 3 gMG Study

April 9, 2019

Alignment with FDA on a single, pivotal, 12-week, placebo-controlled, Phase 3 clinical trial to initiate in the second half of 2019

CAMBRIDGE, Mass.--(BUSINESS WIRE)--Apr. 9, 2019-- Ra Pharmaceuticals, Inc. (Nasdaq:RARX) today announced the successful completion of End-of-Phase 2 interactions with the U.S. Food and Drug Administration (FDA) for its Phase 3 clinical trial of zilucoplan for the treatment of generalized myasthenia gravis (gMG).

Based on feedback provided by the FDA, Ra Pharma plans to initiate a single, pivotal, Phase 3, randomized, double-blind, placebo-controlled trial evaluating the efficacy of a once-daily, subcutaneously (SC) self-administered dose of 0.3 mg/kg of zilucoplan versus placebo. The trial is expected to enroll approximately 130 patients with gMG who are acetylcholine receptor (AChR)-antibody-positive, regardless of their prior therapies. The primary endpoint will be the change in the MG Activities of Daily Living (MG-ADL) score from baseline to week 12. Following completion of the Phase 3 clinical trial, patients will have the option to enroll into an open-label, long-term extension study. Ra Pharma anticipates initiating the Phase 3 clinical trial in the second half of 2019.

With alignment reached on a single, 12-week, pivotal Phase 3 trial, Ra Pharma has decided to prioritize gMG as the lead indication for zilucoplan as part of its goal to build a leading complement-focused neurology franchise. Leveraging the unique properties of a small peptide C5 inhibitor, the Company plans to expand development into other tissue-based, complement-mediated disorders with high unmet medical need. This effort includes the initiation of a Phase 2 study in an undisclosed neuromuscular indication in the second half of 2019. As a result, the Company has decided to postpone further clinical development of zilucoplan in paroxysmal nocturnal hemoglobinuria (PNH). Dosing will continue in the Company's long-term extension of the Phase 2 PNH program. In addition, the Company continues to advance development of zilucoplan extended release (XR) and its first-in-class oral small molecule C5 inhibitor.

"We're delighted by the feedback we received from the FDA regarding our Phase 3 clinical trial design for zilucoplan in gMG, which is a major step forward in our efforts to expand patient access to convenient complement inhibition in this disease. We look forward to working closely with regulators as we advance zilucoplan through Phase 3 clinical development in gMG, with initiation planned for the second half of this year," said Doug Treco, Ph.D., President and Chief Executive Officer of Ra Pharma. "With a Phase 3 design that includes a 12-week trial duration and a primary efficacy endpoint that zilucoplan previously met in our completed Phase 2 study, we are well-positioned to rapidly advance this registrational program. We plan to focus our resources on accelerating this program as we aim to build a leading complement-focused neurology franchise."

The End-of-Phase 2 interactions with the FDA follow the successful completion of a Phase 2, multi-center, randomized, double-blind, placebo-controlled clinical trial evaluating zilucoplan for the treatment of gMG. Rapid, clinically meaningful, and statistically significant improvements in the pre-specified primary and key secondary endpoints were observed for both zilucoplan dose groups tested versus placebo at 12 weeks. Zilucoplan dosed at 0.3 mg/kg SC daily achieved a mean reduction from baseline of 6.0 points in the Quantitative Myasthenia Gravis (QMG) score (placebo-corrected change = -2.8; p=0.05) and a mean reduction from baseline of 3.4 points in the MG-ADL score (placebo-corrected change = -2.3; p=0.04). No patients treated with the 0.3 mg/kg dose of zilucoplan required rescue therapy compared with 20% in the placebo arm. Treatment with zilucoplan had a favorable safety and tolerability profile in the study, consistent with previously-completed Phase 1 and Phase 2 studies. The majority of adverse events (AEs) reported were mild and were not considered by the investigators to be related to study drug. There were no serious AEs observed related to treatment with zilucoplan.

About Zilucoplan

Ra Pharma is developing zilucoplan for generalized myasthenia gravis (gMG) and other tissue-based, complement-mediated disorders with high unmet medical need. The product candidate is designed for convenient, once-daily, subcutaneous (SC) self-administration. Zilucoplan is a synthetic, macrocyclic peptide discovered using Ra Pharma's powerful proprietary drug discovery technology. The peptide binds complement component 5 (C5) with sub-nanomolar affinity and allosterically inhibits its cleavage into C5a and C5b upon activation of the classical, alternative, or lectin pathways.

About Ra Pharmaceuticals

Ra Pharmaceuticals is a clinical-stage biopharmaceutical company focused on leading the field of complement biology to bring innovative and accessible therapies to patients with rare diseases. The Company discovers and develops peptides and small molecules to target key components of the complement cascade. For more information, please visit: www.rapharma.com.

Forward-Looking Statements

This press release contains "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995, including, but not limited to, statements regarding the design and timing of initiation of the Phase 3 clinical trial of zilucoplan for the treatment of gMG, anticipated interactions with regulators, plans regarding the development of zilucoplan for the treatment of other indications, our intent to postpone development of zilucoplan for the treatment of PNH, building a leading complement-focused neurology franchise, and bringing innovative and accessible therapies to patients with rare diseases. All such forward-looking statements are based on management's current expectations of future events and are subject to a number of risks and uncertainties that could cause actual results to differ materially and adversely from those set forth in or implied by such forward-looking statements. These risks and uncertainties include the risks that Ra Pharma's product candidates, including zilucoplan, will not successfully be developed or commercialized, in the timeframe we expect or at all; as well as the other factors discussed in the "Risk Factors" section in Ra Pharma's

most recently filed Annual Report on Form 10-K, as well as other risks detailed in Ra Pharma's subsequent filings with the Securities and Exchange Commission. There can be no assurance that the actual results or developments anticipated by Ra Pharma will be realized or, even if substantially realized, that they will have the expected consequences to, or effects on, Ra Pharma. All information in this press release is as of the date of the release, and Ra Pharma undertakes no duty to update this information unless required by law.

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Source: Ra Pharmaceuticals, Inc.

Investors:
Ra Pharmaceuticals, Inc.
Natalie Wildenradt, 617-674-9874
nwildenradt@rapharma.com

Media:
Argot Partners
David Rosen, 212-600-1902
david.rosen@argotpartners.com