June 21, 2016

RedHill Biopharma Announces Positive Final Results with Primary and Secondary Endpoints Met in Phase 1 Study with YELIVA(TM) in Advanced Solid Tumors

- **Final results from the Phase I study with YELIVA(TM) (ABC294640) in patients with advanced solid tumors confirmed that the study, conducted at the Medical University of South Carolina (MUSC), successfully met its primary and secondary endpoints, demonstrating that the drug is well tolerated and can be safely administered to cancer patients at doses that provide circulating drug levels that are predicted to have therapeutic activity**

- **Twenty-one patients with advanced solid tumors were treated with YELIVA(TM) in the study, the majority of which were gastrointestinal cancer patients, including pancreatic, colorectal and cholangiocarcinoma cancers**

- **The study included the first-ever longitudinal analyses of plasma sphingosine 1-phosphate (S1P) levels as a potential pharmacodynamic biomarker for activity of a sphingolipid-targeted drug; administration of YELIVA(TM) resulted in a rapid and pronounced decrease in levels of S1P with several patients having prolonged stabilization of disease**

- **The Phase I study was supported by grants from the U.S. National Cancer Institute (NCI) awarded to MUSC Hollings Cancer Center, an NCI-Designated Cancer Center, and from the U.S. FDA Office of Orphan Products Development (OOPD) awarded to Apogee Biotechnology Corp. (Apogee)**

- **A Phase I/II study with YELIVA(TM) for refractory or relapsed multiple myeloma is planned to be initiated in the coming weeks and is supported by a $2 million NCI grant awarded to Apogee in conjunction with Duke University; a Phase II study to evaluate YELIVA(TM) as a radioprotectant to prevent mucositis in cancer patients undergoing therapeutic radiotherapy is planned to be initiated in H2/2016; a Phase II study with YELIVA(TM) for the treatment of advanced hepatocellular carcinoma is planned to be initiated in Q3/2016 and is also supported by an NCI grant awarded to MUSC**

- **YELIVA(TM) is a Phase II-stage, proprietary, first-in-class, orally-administered, sphingosine kinase-2 (SK2) selective inhibitor with anticancer and anti-inflammatory activities, targeting multiple oncology, inflammatory and gastrointestinal indications**

TEL-AVIV, Israel, June 21, 2016 (GLOBE NEWSWIRE) -- RedHill Biopharma Ltd. (NASDAQ:RDHL) (TASE:RDHL) ("RedHill" or the "Company"), a biopharmaceutical company primarily focused on development and commercialization of late clinical-stage, proprietary, orally-administered, small molecule drugs for inflammatory and gastrointestinal diseases and cancer, today announced positive final results from the Phase I study with YELIVA(TM) (ABC294640) in advanced solid tumors.

YELIVA(TM) is a Phase II-stage, proprietary, first-in-class, orally-administered sphingosine kinase-2 (SK2) selective inhibitor with anticancer and anti-inflammatory activities, targeting multiple oncology, inflammatory and gastrointestinal indications. By inhibiting the SK2 enzyme, YELIVA(TM) blocks the synthesis of sphingosine 1-phosphate (S1P), a lipid signaling molecule that promotes cancer growth and pathological inflammation.

"We are very pleased with the results of the Phase I study with YELIVA(TM) in advanced solid tumors. The study demonstrated the safety and tolerability of this novel drug candidate, as well as its potential efficacy, with several patients in the study who experienced stable disease with progression-free survival for significant terms, despite the advanced nature of their cancers," **said Terry Plasse, MD, RedHill's Medical Director.** "We are excited about the therapeutic potential of YELIVA(TM) for multiple oncology, inflammatory and gastrointestinal indications, and look forward to initiation of additional Phase II studies by the end of this year. Given YELIVA(TM)'s unique mechanism of action, we also strongly believe that it could provide an added benefit to cancer patients in combination with several of the leading oncology drugs currently

available, and we are currently exploring potential collaboration opportunities to evaluate YELIVA(TM) as an add-on therapy."

The Phase I Clinical Study Report (CSR) confirms the positive top-line results previously announced by the Company. The final results demonstrated that YELIVA(TM) can be safely administered to cancer patients at doses that provide circulating drug levels that are predicted to have therapeutic activity, based on levels required in preclinical models. The study included the first-ever longitudinal analyses of plasma S1P levels as a potential pharmacodynamic biomarker for activity of a sphingolipid-targeted drug. Administration of YELIVA(TM) resulted in a rapid and pronounced decrease in S1P levels over the first 12 hours, with return to baseline at 24 hours, which is consistent with clearance of the drug. In addition, one patient had a prolonged partial remission and several patients had prolonged stabilization of disease.

The primary objectives of the study were to identify the maximum tolerated dose (MTD), the dose limiting toxicities (DLTs) and to evaluate the safety of YELIVA(TM). The primary objectives were all met and the drug was found to be safe and well tolerated, with grade 1-2 fatigue and nausea being the most common side effects. Several patients experienced mild neuropsychiatric symptoms, such as anxiety and mood changes. These were resolved quickly upon discontinuation of study medication. All treatment-related adverse events were rapidly reversible upon dose reduction or study drug removal.

The secondary objectives of the study, to determine the pharmacokinetic (PK) and pharmacodynamic (PD) properties of YELIVA(TM) and to assess its antitumor activity, were also met.

Among the 16 subjects that were assessable for response by RECIST 1.1 criteria (Response Evaluation Criteria in Solid Tumors), one subject had a partial response with a progression-free survival of 16.9 months, and six subjects had stable disease with a progression-free survival of between 3.5 and 17.6 months. Of the three patients with cholangiocarcinoma, one had a partial response and the other two had stable disease, one for over a year. YELIVA(TM) was well tolerated over a prolonged period at doses inducing the expected pharmacodynamic effects.

An important differentiating point between YELIVA(TM) and the other two compounds which act on the S1P receptor (GILENYA ® (fingolimod hydrochloride), approved for the treatment of multiple sclerosis, and ozanimod hydrochloride, currently under development for ulcerative colitis, Crohn's disease and multiple sclerosis), is that YELIVA(TM) causes only modest decreases in lymphocyte count. A decrease in lymphocytes may make patients susceptible to certain infections.

Preliminary positive data from the Phase I study was presented by Apogee Biotechnology Corp. (Apogee) at the November 2013 Molecular Targets and Cancer Therapeutics meeting.

The Phase I study was conducted at the Medical University of South Carolina (MUSC) Hollings Cancer Center, an NCI-Designated Cancer Center, and was supported by grants from the U.S. National Cancer Institute (NCI) awarded to MUSC, and from the U.S. FDA Office of Orphan Products Development (OOPD) awarded to Apogee. The study was led by Principal Investigators Melanie Thomas, MD and Carolyn Britten, MD. The open-label, dose-escalation, PK and PD first-in-human Phase I study with YELIVA(TM) treated 21 patients with advanced solid tumors, the majority of whom were gastrointestinal cancer patients, including pancreatic, colorectal, cholangiocarcinoma cancers. The patients were continuously treated in cycles of 28 days with the study drug, in the absence of disease progression, and tumors were reimaged every two cycles. Patients were evaluated for an additional period of up to one year after discontinuing treatment with YELIVA(TM).

A Phase I/II clinical study was initiated at the Louisiana State University Health Sciences Center (LSUHSC) in New Orleans in June 2015 evaluating YELIVA(TM) in patients with refractory/relapsed diffuse large B-cell lymphoma (DLBCL), including in patients with HIV-related DLBCL. Pending consideration of protocol amendment aimed at improving recruitment prospects, the study is currently on administrative hold. The study is supported by a grant awarded to Apogee from the NCI Small Business Technology Transfer (STTR) program, as well as additional support from RedHill.

A Phase I/II study with YELIVA(TM) for the treatment of refractory or relapsed multiple myeloma is to be initiated in the coming weeks. The study will be conducted at Duke University Medical Center. The study is supported by a $2 million grant from the NCI Small Business Innovation Research Program (SBIR) awarded to Apogee in conjunction with Duke University, with additional support from RedHill.

A Phase II clinical study to evaluate YELIVA(TM) as a radioprotectant to prevent mucositis in cancer patients undergoing therapeutic radiotherapy is planned to be initiated in the U.S. during the second half of 2016, subject to regulatory and other conditions.

A Phase II study with YELIVA(TM) for the treatment of advanced hepatocellular carcinoma is planned to be initiated in the third quarter of 2016. The study will be conducted at the MUSC Hollings Cancer Center and additional clinical centers in the U.S. The study is supported by a $1.8 million grant from the NCI awarded to MUSC, intended to support a broad range of studies on the feasibility of targeting sphingolipid metabolism for the treatment of a variety of solid tumor cancers, including the Phase II study with YELIVA(TM), and will be further supported by additional funding from RedHill.

The Phase I/II clinical studies, as well as the completed Phase I clinical study in cancer patients with advanced solid tumors, are registered on www.ClinicalTrials.gov, a web-based service by the U.S. National Institute of Health, which provides public access to information on publicly and privately supported clinical studies.

About YELIVA(TM) (ABC294640):

YELIVA(TM) (ABC294640) is a Phase II-stage, proprietary, first-in-class, orally-administered, sphingosine kinase-2 (SK2) selective inhibitor with anticancer and anti-inflammatory activities, targeting multiple oncology, inflammatory and gastrointestinal indications. By inhibiting the SK2 enzyme, YELIVA(TM) blocks the synthesis of sphingosine 1-phosphate (S1P), a lipid signaling molecule that promotes cancer growth and pathological inflammation. SK2 is an innovative molecular target for anticancer therapy because of its critical role in catalyzing the formation of S1P, which is known to regulate cell proliferation and activation of inflammatory pathways. YELIVA(TM) was originally developed by U.S.-based Apogee Biotechnology Corp. and completed multiple successful pre-clinical studies in oncology, inflammation, GI and radioprotection models, as well as the ABC-101 Phase I clinical study in cancer patients with advanced solid tumors. The development of YELIVA(TM) was funded to date primarily by grants and contracts from U.S. federal and state government agencies awarded to Apogee Biotechnology Corp., including the U.S. National Cancer Institute, the U.S. Department of Health and Human Services' Biomedical Advanced Research and Development Authority (BARDA), the U.S. Department of Defense and the FDA Office of Orphan Products Development.

About RedHill Biopharma Ltd.:

RedHill Biopharma Ltd. (NASDAQ:RDHL) (TASE:RDHL) is a biopharmaceutical company headquartered in Israel, primarily focused on the development and commercialization of late clinical-stage, proprietary, orally-administered, small molecule drugs for the treatment of inflammatory and gastrointestinal diseases and cancer. RedHill's current pipeline of proprietary products includes: (i) **RHB-105 -** an oral combination therapy for the treatment of *Helicobacter pylori* infection with successful results from a first Phase III study; (ii) **RHB-104 -** an oral combination therapy for the treatment of Crohn's disease with an ongoing first Phase III study and an ongoing proof-of-concept Phase IIa study for multiple sclerosis; (iii) **BEKINDA(TM) (RHB-102) -** a once-daily oral pill formulation of ondansetron with an ongoing Phase III study in the U.S. for acute gastroenteritis and gastritis and an ongoing Phase II study for IBS-D; (iv) **RHB-106 -** an encapsulated bowel preparation licensed to Salix Pharmaceuticals, Ltd.; (v) **YELIVA(TM) (ABC294640) -** a Phase II-stage, orally-administered, first-in-class SK2 selective inhibitor targeting multiple oncology, inflammatory and gastrointestinal indications; (vi) **MESUPRON® -** a Phase II-stage first-in-class uPA inhibitor, administered by oral capsule, targeting gastrointestinal and other solid tumors; (vii) **RP101 -** currently subject to an option-to-acquire by RedHill, RP101 is a Phase II-stage first-in-class Hsp27 inhibitor, administered by oral tablet, targeting pancreatic and other gastrointestinal cancers; (viii) **RIZAPORT (TM) (RHB-103) -** an oral thin film formulation of rizatriptan for acute migraines, with a U.S. NDA currently under discussion with the FDA and marketing authorization received in Germany in October 2015; and (ix) **RHB-101 -** a once-daily oral pill formulation of the cardio drug carvedilol.

About MUSC Hollings Cancer Center

The Hollings Cancer Center at the Medical University of South Carolina is a National Cancer Institute-designated cancer center and the largest academic-based cancer research program in South Carolina. The cancer center is comprised of more than 120 faculty cancer scientists with a research funding portfolio of $44 million and a dedication to reducing the cancer burden in South Carolina. Hollings offers state-of-the-art diagnostic capabilities, therapies and surgical techniques within multidisciplinary clinics that include surgeons, medical oncologists, radiation therapists, radiologists, pathologists, psychologists and other specialists equipped for the full range of cancer care, including more than 200 clinical trials. For more information, please visit www.hcc.musc.edu.

This press release contains "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995. Such statements may be preceded by the words "intends," "may," "will," "plans," "expects," "anticipates," "projects," "predicts," "estimates," "aims," "believes," "hopes," "potential" or similar words. Forward-looking statements are based on certain assumptions and are subject to various known and unknown risks and uncertainties, many of which are beyond the Company's control, and cannot be predicted or quantified and consequently, actual results may differ materially from those expressed or implied by such forward-looking statements. Such risks and uncertainties include, without limitation, risks and uncertainties associated with (i) the initiation, timing, progress and results of the Company's research, manufacturing, preclinical studies, clinical trials, and other therapeutic candidate development efforts; (ii) the Company's ability to advance its therapeutic candidates into clinical trials or to successfully complete its preclinical studies or clinical trials; (iii) the extent and number of additional studies that the Company may be required to conduct and the Company's receipt of regulatory approvals for its therapeutic candidates, and the timing of other regulatory filings, approvals and feedback; (iv) the manufacturing, clinical development, commercialization, and market acceptance of the Company's therapeutic candidates; (v) the Company's ability to establish and maintain corporate collaborations; (vi) the Company's ability to acquire products approved for marketing in the U.S. that achieve commercial success and build its own marketing and commercialization capabilities; (vii) the interpretation of the properties and characteristics of the Company's therapeutic candidates and of the results obtained with its therapeutic candidates in research, preclinical studies or clinical trials; (viii) the implementation of

the Company's business model, strategic plans for its business and therapeutic candidates; (ix) the scope of protection the Company is able to establish and maintain for intellectual property rights covering its therapeutic candidates and its ability to operate its business without infringing the intellectual property rights of others; (x) parties from whom the Company licenses its intellectual property defaulting in their obligations to the Company; (xi) estimates of the Company's expenses, future revenues capital requirements and the Company's needs for additional financing; (xii) competitive companies and technologies within the Company's industry; and (xiii) the impact of the political and security situation in Israel on the Company's business. More detailed information about the Company and the risk factors that may affect the realization of forward-looking statements is set forth in the Company's filings with the Securities and Exchange Commission (SEC), including the Company's Annual Report on Form 20-F filed with the SEC on February 25, 2016. All forward-looking statements included in this Press Release are made only as of the date of this Press Release. We assume no obligation to update any written or oral forward-looking statement unless required by law.

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