Filed pursuant to Rule 424(b)(3)
Registration No. 333-254848

Prospectus

7,151,422 American Depositary Shares representing 71,514,220 Ordinary Shares

REDHILL BIOPHARMA LTD.

The selling stockholders named in this prospectus may use this prospectus to offer and resell from time to time up to 7,151,422 American Depositary Shares ("ADSs"). Each ADS represents 10 of our ordinary shares, par value NIS 0.01 per share ("Ordinary Shares"). The ADSs that may be offered under this prospectus consist of:

- 5,185,715 ADSs representing 51,857,150 Ordinary Shares issued to Cosmo Pharmaceuticals N.V. (together with Cosmo Technologies Ltd, its wholly owned subsidiary, "Cosmo");
- 1,714,286 ADSs representing 17,142,860 Ordinary Shares issued to Cosmo Technologies Ltd, a wholly owned subsidiary of Cosmo; and
- 251,421 ADSs representing 2,514,210 Ordinary Shares sold to Danbar Finance Ltd. ("Danbar").

We will not receive any of the proceeds from the sale of our ADSs by the selling stockholders. Any ADSs subject to resale hereunder will have been issued by us and acquired by the selling stockholders prior to any resale of such shares pursuant to this prospectus.

The selling stockholders named in this prospectus and any of their pledgees, assignees and successors-in-interest, may offer or resell the ADSs from time to time through public or private transactions at prevailing market prices, at prices related to prevailing market prices or at privately negotiated prices. The selling stockholders will bear all commissions and discounts, if any, attributable to the sale of ADSs. We will bear all costs, expenses and fees in connection with the registration of the Shares. For additional information on the methods of sale that may be used by the selling stockholders, see "Plan of Distribution" beginning on page 14 of this prospectus.

Our ADSs are listed on the Nasdaq Global Market under the symbol "RDHL". On March 29, 2021, the last reported sale price of our ADSs was $7.20 per ADS.

Investing in our securities involves a high degree of risk. These risks are discussed in this prospectus under "Risk Factors" beginning on page 11 and the "Risk Factors" in "Item 3: Key Information-Risk Factors" of our most recent Annual Report on Form 20-F, which is incorporated by reference in this prospectus, as well as in any other recently filed reports and, if any, in any applicable prospectus supplement.

Neither the Securities and Exchange Commission (the "SEC") nor any state securities commission has approved or disapproved of these securities or passed upon the adequacy or accuracy of this prospectus. Any representation to the contrary is a criminal offense.

The date of this prospectus is April 8, 2021.

TABLE OF CONTENTS

ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement on Form F-3 that we filed with the SEC using a "shelf" registration process. The selling stockholders named in this prospectus may resell, from time to time, in one or more offerings, the ADSs offered by this prospectus. Information about the selling stockholders may change over time. When the selling stockholders sell ADSs representing Ordinary Shares under this prospectus, we will, if necessary and required by law, provide a prospectus supplement that will contain specific information about the terms of that offering. Any prospectus supplement may also add to, update, modify or replace information contained in this prospectus. If a prospectus supplement is provided and the description of the offering in the prospectus supplement varies from the information in this prospectus, you should rely on the information in the prospectus supplement. You should carefully read this prospectus and the accompanying prospectus supplement, if any, along with all of the information incorporated by reference herein, before making an investment decision.

You should rely only on the information contained or incorporated by reference in this prospectus or any applicable prospectus supplement. We have not, and the selling stockholders have not, authorized any other person to provide you with different or additional information. If anyone provides you with different or additional information, you should not rely on it. This prospectus is not an offer to sell, nor are the selling stockholders seeking an offer to buy, the ADSs offered by this prospectus in any jurisdiction where the offer or sale is not permitted. No offers or sales of any of the ADSs are to be made in any jurisdiction in which such an offer or sale is not permitted. You should assume that the information contained in this prospectus or in any applicable prospectus supplement is accurate only as of the date on the front cover thereof or the date of the document incorporated by reference, regardless of the time of delivery of this prospectus or any applicable prospectus supplement or any sales of the ADSs offered hereby or thereby.

You should read the entire prospectus and any prospectus supplement and any related issuer free writing prospectus, as well as the documents incorporated by reference into this prospectus or any prospectus supplement or any related issuer free writing prospectus, before making an investment decision. Neither the delivery of this prospectus or any prospectus supplement or any issuer free writing prospectus nor any sale made hereunder shall under any circumstances imply that the information contained or incorporated by reference herein or in any prospectus supplement or issuer free writing prospectus is correct as of any date subsequent to the date hereof or of such prospectus supplement or issuer free writing prospectus, as applicable. You should assume that the information appearing in this prospectus, any prospectus supplement or any document incorporated by reference is accurate only as of the date of the applicable documents, regardless of the time of delivery of this prospectus or any sale of securities. Our business, financial condition, results of operations and prospects may have changed since that date.

Unless the context otherwise requires, all references to "RedHill," "we," "us," "our," the "Company" and similar designations refer to RedHill Biopharma Ltd. and its wholly-owned subsidiary, RedHill Biopharma Inc. The term "NIS" refers to New Israeli Shekels, the lawful currency of the State of Israel, the terms "dollar," "US$" or "$" refer to U.S. dollars, the lawful currency of the United States ("U.S."). Our functional and presentation currency is the U.S. dollar. Foreign currency transactions in currencies other than the U.S. dollar are translated in this prospectus into U.S. dollars using exchange rates in effect at the date of the transactions.

CAUTIONARY STATEMENT REGARDING FORWARD LOOKING STATEMENTS

This prospectus, including the information incorporated by reference herein, may include forward-looking statements. These statements involve known and unknown risks, uncertainties and other factors that may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements. In some cases, you can identify forward-looking statements by terms, including "anticipates," "believes," "could," "estimates," "expects," "intends," "may," "plans," "potential," "predicts," "projects," "should," "will," "would," and similar expressions intended to identify forward-looking statements. Forward-looking statements reflect our current views with respect to future events and are based on assumptions and are subject to risks and uncertainties. In addition, certain sections of this prospectus and the information incorporated by reference herein contain information obtained from independent industry and other sources that we have not independently verified. You should not put undue reliance on any forward-looking statements. Unless we are required to do so under U.S. federal securities laws or other applicable laws, we do not intend to update or revise any forward-looking statements.

Our ability to predict our operating results or the effects of various events on our operating results is inherently uncertain. Therefore, we caution you to consider carefully the matters described under the caption "Risk Factors" on page 11 of this prospectus, and certain other matters discussed in this prospectus and the information incorporated by reference herein, and other publicly available sources. Such factors and many other factors beyond our control could cause our actual results, performance or achievements to be materially different from any future results, performance or achievements that may be expressed or implied by the forward-looking statements.

Factors that could cause our actual results to differ materially from those expressed or implied in such forward-looking statements include, but are not limited to:

- estimates of our expenses, future revenues, capital requirements and our needs for additional financing;
- our ability to obtain additional financing;
- the commercialization and market acceptance of our commercial products;
- our ability to generate sufficient revenues from our commercial products, including obtaining commercial insurance and government reimbursement;
- our ability to advance our therapeutic candidates into clinical trials or to successfully complete our preclinical studies or clinical trials, and to complete the development of such therapeutic candidates and obtain approval for marketing by the Food and Drug Administration ("FDA") or other regulatory authorities;
- our reliance on third parties to satisfactorily conduct key portions of our commercial operations, including manufacturing and other supply chain functions, market analysis services, safety monitoring, regulatory reporting and sales data analysis and the risk that those third parties may not perform such functions satisfactorily;
- our ability to maintain an appropriate sales and marketing infrastructure;
- our ability to establish and maintain corporate collaborations;
- that our current commercial products or commercial products that we may commercialize or promote in the future may be withdrawn from the market by regulatory authorities and our need to comply with continuing laws, regulations and guidelines to maintain clearances and approvals for those products;
- our exposure to significant drug product liability claims;
- the completion of any post-marketing studies or trials;
- our ability to acquire products approved for marketing in the U.S. that achieve commercial success and to maintain our own marketing and commercialization capabilities;
- our estimates of the markets, their size, characteristics and their potential for our commercial products and therapeutic candidates and our ability to serve those markets;
- the successful commercialization of products we in-license or acquire;
- our inability to enforce claims relating to a breach of a representation and warranty by a counterparty;
- the hiring and continued employment of executives, sales personnel, and contractors;
- our receipt and timing of regulatory clarity and approvals for our commercial products and therapeutic candidates, and the timing of other regulatory filings and approvals;
- the initiation, timing, progress, and results of our research, development, manufacturing, preclinical studies, clinical trials, and other commercial efforts and therapeutic candidate development, as well as the extent and number of additional studies that we may be required to conduct;
- our reliance on third parties to conduct key portions of our clinical trials, including data management services and the risk that those third parties may not perform such functions satisfactorily;
- our reliance on third parties to manufacture and supply our therapeutic candidates and their respective active pharmaceutical ingredients with the requisite quality and manufacturing standards in sufficient quantities and within the required timeframes and at an acceptable cost;
- the research, manufacturing, clinical development, commercialization, and market acceptance of our therapeutic candidates;
- the interpretation of the properties and characteristics of our commercial products or therapeutic candidates and of the results obtained in research, preclinical studies or clinical trials;
- the implementation of our business model, strategic plans for our business, commercial products, and therapeutic candidates;
- heightened attention on the problems associated with opioids;
- the impact of other companies and technologies that compete with us within our industry;
- the scope of protection we are able to establish and maintain for intellectual property rights covering our commercial products and therapeutic candidates, including from existing or future claims of infringement, and our ability to operate our business without infringing or violating the intellectual property rights of others;
- parties from whom we license or acquire our intellectual property defaulting in their obligations toward us;
- the failure by a licensor or a partner of ours to meet their respective obligations under our acquisition, in-license or other development or

commercialization agreements or renegotiate the obligations under such agreements, or if other events occur that are not within our control, such as bankruptcy of a licensor or a partner;

- our reliance on the actions of third parties, including sublicensors and their other sublicensees, to maintain our rights under our in-licenses which are sublicenses;
- the effect of a potential occurrence of patients suffering serious adverse events using investigative drugs under our Expanded Access Program;
- our ability to implement network systems and controls that are effective at preventing cyber-attacks, malware intrusions, malicious viruses and ransomware threats;
- the effects of the economic and business environment, including unforeseeable events; and
- the impact on our business of the political and security situation in Israel, the U.S. and other places in which we operate.

We have included important factors in the cautionary statements included in this prospectus and the documents we incorporate by reference herein, particularly in the "Risk Factors" sections of these documents, that we believe could cause actual results or events to differ materially from the forward-looking statements that we make. Our forward-looking statements do not reflect the potential impact of any future acquisitions, mergers, dispositions, joint ventures or investments we may make. No forward-looking statement is a guarantee of future performance.

You should read this prospectus and the documents that we incorporate by reference herein completely and with the understanding that our actual future results may be materially different from what we expect. The forward-looking statements in this prospectus and the documents we incorporate by reference herein represent our views as of the date of this prospectus. We anticipate that subsequent events and developments will cause our views to change. However, while we may elect to update these forward-looking statements at some point in the future, we have no current intention of doing so except to the extent required by applicable law. You should, therefore, not rely on these forward-looking statements as representing our views as of any date subsequent to the date of this prospectus.

PROSPECTUS SUMMARY

This summary highlights selected information about us and information contained in greater detail elsewhere in this prospectus, and in the documents incorporated by reference herein. This summary is not complete and does not contain all of the information that you should consider before investing in the ADSs. You should carefully read and consider this entire prospectus and information incorporated by reference into this prospectus, including the financial statements and related notes and "Risk Factors" starting on page 11 of this prospectus, before making an investment decision. If you invest in our securities, you are assuming a high degree of risk.

Our Business

We are a specialty biopharmaceutical company, primarily focused on the commercialization and development of proprietary drugs for gastrointestinal ("GI") and infectious diseases. Our primary focus is to become a leading specialty biopharmaceutical company through our commercial presence in the U.S. to support current and potential future commercialization of products approved for marketing and of our therapeutic candidates.

We are currently focused primarily on the commercialization in the U.S. of the GI-related products, Movantik® (naloxegol), Talicia® (omeprazole, amoxicillin, and rifabutin) and Aemcolo® (rifamycin).

In addition, we continue to develop our pipeline of clinical-stage therapeutic candidates. Our development activities also include the study of our therapeutic candidates, opaganib (Yeliva®, ABC294640) and RHB-107 (upamostat), as potential treatments for COVID-19. We look for opportunities to leverage our commercial presence and capabilities in the U.S. to support the potential future launch of our therapeutic candidates currently under development, if approved by the FDA, or FDA-approved products which we may acquire in the future.

Depending on the specific development program, our therapeutic candidates are designed to exhibit greater efficacy and/or provide improvements over existing drugs in various ways, including by one or more of the following: by improving their safety profile, reducing side effects, lowering the number of administrations, using a more convenient administration form or providing a cost advantage. Our current pipeline consists of six therapeutic candidates, most in late-stage clinical development.

We generate our pipeline of therapeutic candidates by identifying, validating and in-licensing or acquiring products that are consistent with our product and corporate strategy and that have the potential to exhibit a favorable probability of therapeutic and commercial success. We have one product that we primarily developed internally which has been approved for marketing and, to date, none of our therapeutic candidates has generated meaningful revenues. We plan to commercialize our therapeutic candidates, upon approval, if any, through licensing and other commercialization arrangements outside the U.S. with pharmaceutical companies on a global and territorial basis or, in the case of commercialization in the U.S., independently with our dedicated commercial operations or in potential partnership with other commercial-stage companies. We also evaluate, on a case-by-case basis, co-development, co-promotion, licensing and similar arrangements.

U.S. and Global COVID-19 Studies with opaganib

Opaganib, a new chemical entity, is a proprietary, first-in-class, orally-administered, sphingosine kinase-2 (SK2) selective inhibitor with anticancer, anti-inflammatory, and antiviral activities, targeting multiple oncology, viral, inflammatory, and gastrointestinal indications.

In July 2020, we initiated a global Phase 2/3 clinical study (NCT04467840) evaluating opaganib in hospitalized patients with severe COVID-19 pneumonia. This ongoing global multi-center, randomized, double-blind, parallel-arm, placebo-controlled study continues to enroll patients with a target of up to 464 patients requiring hospitalization and treatment with supplemental oxygen. The study has been approved in Brazil, Israel, the United Kingdom, Italy, Russia, Mexico, Poland and Colombia, with further expansion ongoing, including plans to expand the study to the U.S., which were announced in February 2021. Enrollment was initiated in August 2020 and is approximately 70% complete. In January 2021, we announced that the independent Data Safety Monitoring Board (DSMB) for the study unanimously recommended that the study continue, following a pre-scheduled futility review of unblinded efficacy data from the first 135 patients treated in the study and safety data from the first 175 patients. In-line with evolving clinical practice and guidelines for treatment of hospitalized COVID-19 patients which aim to minimize patient intubation and mechanical ventilation, we have changed the primary endpoint of the global Phase 2/3 study to the proportion of patients reaching room air (no longer requiring oxygen supplementation) by Day 14, which was previously a key secondary endpoint in the protocol. Correspondingly, we implemented a resizing of the study, increasing the number of patients planned to be enrolled to from 270 up to 464 patients in total.

In December 2020, we announced that our randomized, double-blind, placebo-controlled U.S. Phase 2 study (NCT04414618) with opaganib in patients hospitalized with COVID-19 pneumonia demonstrated preliminary top-line positive safety and efficacy data. The study, which was not powered for statistical significance, enrolled 40 patients requiring hospitalization and supplemental oxygen.

Top-line results from the study found opaganib to be safe, with no material safety differences between the opaganib and placebo treatment arms. Overall, fewer patients suffered from serious adverse events (SAEs) in the opaganib treatment arm than in the placebo arm. In this small sample size, there were few events of intubation or fatality and these were balanced between the two arms.

The opaganib-treated arm demonstrated a consistent trend of greater improvement in reducing oxygen requirement by end of treatment on Day 14 across key primary and secondary efficacy outcomes, correlating with clinical improvement as defined by the World Health Organization (WHO) ordinal scale:

- A greater improvement in the proportion of patients reaching room air and no longer requiring oxygen support by Day 14 vs. the control arm (52.6% vs. 22.2%).
- A greater improvement in the proportion of patients with 50% reduction in supplemental oxygen by Day 14 vs. the control arm (89.5% vs. 66.7%).
- A higher proportion of patients discharged by Day 14 vs. the control arm (73.7% vs. 55.6%).
- A greater reduction from baseline of the median total oxygen requirement (AUC) over 14 days vs. the control arm (68.0% vs. 46.7%).

We will provide the data for peer review when available.

We are in discussions with U.S. government agencies around potential funding or other support for the rapid advancement of opaganib toward potential emergency use approval.

Opaganib was originally developed by U.S.-based Apogee Biotechnology Corp. (“Apogee”) and completed multiple successful preclinical studies in oncology, inflammation, GI, and radioprotection models, as well as a Phase 1 clinical study in cancer patients with advanced solid tumors and an additional Phase 1 study in multiple myeloma.

Opaganib received orphan drug designation from the FDA for the treatment of cholangiocarcinoma and is also being evaluated in a Phase 2a study in advanced cholangiocarcinoma and in a Phase 2 study in prostate cancer.

Preclinical data have demonstrated both anti-inflammatory and antiviral activities of opaganib, with the potential to reduce inflammatory lung disorders, such as pneumonia, and mitigate pulmonary fibrotic damage. Opaganib demonstrated potent antiviral activity against SARS-CoV-2, the virus that causes COVID-19, completely inhibiting viral replication in an in vitro model of human lung bronchial tissue. Additionally, preclinical in vivo studies have demonstrated that opaganib decreased fatality rates from influenza virus infection and ameliorated Pseudomonas aeruginosa-induced lung injury by reducing the levels of IL-6 and TNF-alpha in bronchoalveolar lavage fluids.

In December 2020, we announced that preliminary results from a preclinical study with opaganib, administered at 250 mg/kg, demonstrated a reduction of thrombosis (blood clotting) in an acute respiratory distress syndrome (ARDS) animal model. The preclinical study was designed to assess the efficacy of opaganib in reducing the incidence of adverse thromboembolic events in situ in the lipopolysaccharide (LPS)-induced model of pulmonary inflammation, a reliable model of ARDS that can mimic COVID-19 inflammation. The preliminary results from our study showed opaganib 250 mg/kg reduced blood clot length, weight and total thrombus score in the preclinical model of ARDS. We believe such preliminary results add to the known antiviral and anti-inflammatory activities of opaganib and provide a possibility of a unique triple-action effect on the pathophysiological processes associated with COVID-19.

We filed a family of provisional patent applications seeking to protect the use of opaganib in treating SARS-CoV-2 infection.

Under a compassionate use program, seven COVID-19 patients (as classified by the WHO ordinal scale) were treated with opaganib in a leading hospital in Israel. Analysis of treatment outcomes from the five patients included in the final published analysis suggested substantial benefit to patients treated with opaganib under compassionate use in both clinical outcomes and inflammatory markers as compared to a retrospective matched case-control group from the same hospital. All patients in the opaganib-treated group were discharged from hospital on room air without requiring intubation and mechanical ventilation, whereas 33% of the matched case-control group required intubation and mechanical ventilation. Median time to weaning from high-flow nasal cannula was reduced to 10 days in the opaganib-treated group, as compared to 15 days in the matched case-control group.

The development of opaganib has been supported by grants and contracts from U.S. federal and state government agencies awarded to Apogee, including from the NCI, BARDA, the U.S. Department of Defense and the FDA Office of Orphan Products Development. In September 2020, Apogee was awarded a grant from Pennsylvania's COVID-19 Vaccines, Treatments and Therapies Program, which supports the rapid advancement of promising novel COVID-19 therapies.

Our Approved and Commercial Products in the U.S.

We have established the headquarters of our U.S. commercial operations in Raleigh, North Carolina. Our U.S. operations promotes Movantik® for opioid-induced constipation in adults, Talicia® for the treatment of H. pylori infection in adults and Aemcolo® for the treatment of travelers' diarrhea in adults. We also expect our U.S. operations to serve as the platform for potential launch of our proprietary, late-clinical stage therapeutic candidates in the U.S., if approved by the FDA, and potential in-licensed commercial-stage products in the U.S.

During 2020, we expanded our sales force from approximately 40 sales representatives to approximately 100 sales representatives We commercially launched Talicia® in March 2020 and initiated our commercialization activities for Movantik® in April 2020.

Movantik®

In April 2020, we acquired from AstraZeneca AB ("AstraZeneca") worldwide rights (excluding Europe and Canada) to commercialize and develop Movantik® (naloxegol), pursuant to a license agreement, dated February 23, 2020 (the "AstraZeneca License Agreement"), and in October 2020 we obtained the rights to commercialize and develop Movantik® in Israel. Movantik® is a proprietary once-daily oral peripherally-acting mu-opioid receptor antagonist (PAMORA) approved by the FDA for the treatment of opioid-induced constipation (OIC) in adult patients with chronic non-cancer pain, including patients with chronic pain related to prior cancer or its treatment who do not require frequent (e.g. weekly) opioid dosage escalation. We initiated our U.S. commercialization activities for Movantik® in April 2020.

Movantik® received FDA approval on September 16, 2014, for the treatment of OIC in adult patients with chronic non-cancer pain. Its label was later updated to include patients with chronic pain related to prior cancer or its treatment who do not require frequent (e.g. weekly) opioid dosage escalation. In the AstraZeneca License Agreement, we agreed to assume responsibility for completing any postmarketing requirements or commitments that may be required to retain approval. Accordingly, we will be required to continue the postmarketing observational epidemiologic study to evaluate the major adverse cardiovascular events (MACE) of Movantik®.

In August 2020, we announced that we had replaced the 2015 Movantik® co-commercialization agreement with Daiichi Sankyo, Inc. (assigned under the agreement with AstraZeneca), with a new royalty-bearing agreement. Under the terms of the new agreement, we bear all responsibilities and costs for commercializing Movantik® in the U.S. During the term of the new agreement, we pay Daiichi Sankyo a mid-teen royalty rate on net sales of Movantik® in the U.S., in addition to three annual lump sum payments, starting in the fourth quarter of 2021 and ending in 2023.

In July 2020, we amended the AstraZeneca License Agreement, whereby the parties agreed to postpone the non-contingent payment of $15.0 million by us to December 2021 and to increase the amount due by $0.5 million.

In November 2020, we announced the completion of the transition of Movantik® from AstraZeneca.

Talicia® (omeprazole, magnesium, amoxicillin, and rifabutin) delayed-release capsules 10 mg/250 mg/12.5 mg

Talicia® is our proprietary drug approved for marketing in the U.S. for the treatment of H. pylori infection in adults. Talicia® is a combination of three approved drug products – omeprazole, which is a proton pump inhibitor (prevents the secretion of hydrogen ions necessary for the digestion of food in the stomach), amoxicillin and rifabutin, which are antibiotics. Talicia® is administered to patients orally.

Talicia® is designed to address the high resistance of H. pylori bacteria to the antibiotics commonly used in current standard-of-care therapies. Talicia®'s approval was supported, in part, by the results of two positive Phase 3 studies in the U.S. for the treatment of H. pylori-positive adult patients complaining of epigastric pain and/or discomfort. The confirmatory Phase 3 study of Talicia® demonstrated 84% eradication of H. pylori infection with Talicia® vs. 58% in the active comparator arm ($p<0.0001$). Further, in an analysis of data from this study, it was observed that subjects with measurable blood levels of drug at Day 13 had response rates of 90.3% in the Talicia® arm vs. 64.7% in the active comparator arm.

We believe that Talicia® may offer a significant benefit over other currently approved drugs in part because of the resistance profile demonstrated in our Phase 3 program, which showed no bacterial resistance to rifabutin and high resistance to clarithromycin and metronidazole.

Talicia® is the first product we developed that was approved for marketing in the U.S. Talicia® was approved by the FDA on November 1, 2019, and we launched Talicia® in the U.S. in March 2020.

In November 2014, Talicia® was granted QIDP designation by the FDA. Under its QIDP designation, Talicia® is eligible for an additional five years of U.S. market exclusivity, on top of the standard exclusivity period, for a total of eight years of market exclusivity.

In December 2020, we announced that we had further increased unrestricted national and regional commercial coverage of Talicia® in the U.S. to extend to over 70% of commercial lives and more than 167 million Americans.

Aemcolo®

Aemcolo®, containing 194 mg of rifamycin, is an orally administered, minimally absorbed antibiotic that is delivered to the colon, approved by the FDA in 2018 for the treatment of travelers' diarrhea caused by non-invasive strains of E. coli in adults ("Travelers' Diarrhea"). In October 2019, we entered into a license agreement with a wholly-owned subsidiary of Cosmo Pharmaceuticals N.V. ("Cosmo") pursuant to which we were granted exclusive rights to commercialize Aemcolo® in the U.S. In December 2019, we launched the commercialization of Aemcolo® in the U.S.

Aemcolo® received FDA approval on November 16, 2018, for the treatment of travelers' diarrhea caused by noninvasive strains of Escherichia coli in adults. Cosmo transferred the Aemcolo® New Drug Application (NDA) and the IND to RedHill Biopharma Inc., which were accepted on November 27, 2019. This acceptance also includes a commitment to complete any postmarketing requirements or commitments related to the NDA. There are two pediatric studies that are required to be completed to satisfy the PREA requirements and also with required milestone dates:

- Conduct a randomized, placebo-controlled study to evaluate the safety, tolerability, and efficacy of Aemcolo® (rifamycin) for the treatment of travelers' diarrhea in children from 6 to 11 years of age.

- Conduct a randomized, placebo-controlled study to evaluate the safety, tolerability, and efficacy of Aemcolo® (rifamycin) for the treatment of travelers' diarrhea in children from 12 to 17 years of age.

In October 2017, the FDA granted QIDP and Fast Track designations for Aemcolo®. With the QIDP designation, intended for antibacterial or antifungal drugs that treat serious or life-threatening infections, together with new chemical entity (NCE) designation, Aemcolo® enjoys marketing exclusivity until 2028. Due to the significant decrease in travel as a result of the pandemic, the travelers' diarrhea market has been significantly impacted, and we have not generated meaningful revenues from the sale of Aemcolo®. We do not expect Aemcolo® to generate meaningful revenues until U.S. international travel returns to pre-COVID-19 pandemic levels, if at all, and there can be no assurance that we will generate meaningful revenues upon return of U.S. international travel to pre-pandemic levels.

We continue to pursue the acquisition of additional commercial products, including, without limitation, through licensing or promotion transaction, asset purchase, joint venture with, acquisition of, or merger with or other business combination with, companies with rights to commercial GI and other relevant assets and are continuously working to expand U.S.-managed care access and coverage to our commercial products, where appropriate. We plan to pursue such opportunities in the U.S. and, if available, in other jurisdictions; however, we intend to focus our commercial activities in the U.S.

Recent Developments on our Therapeutic Product Candidates

RHB-204

RHB-204 is a patented fixed-dose oral capsule containing a combination of three antibiotics developed for the treatment of pulmonary nontuberculous mycobacteria (NTM) disease caused by Mycobacterium avium Complex (MAC). Each capsule contains clarithromycin, clofazimine, and rifabutin, at doses distinct from RHB-104.

In November 2020, we initiated our Phase 3 study to evaluate the efficacy and safety of RHB-204 in adults with NTM disease caused by MAC infection. This multi-center, randomized, double-blind, two-part, placebo-controlled, parallel-group Phase 3 study is planned to be conducted at up to 40 sites across the United States. Study endpoints include sputum culture conversion at month six of treatment with RHB-204, compared to placebo and patient-reported outcomes, including improvements in physical functioning, respiratory symptoms and fatigue. In January 2017, we announced that RHB-204 had been granted QIDP designation by the FDA for the treatment of pulmonary NTM disease, including eligibility for Priority Review, Accelerated Approval and an extended market exclusivity period, if approved for marketing in the U.S. In October 2020, we announced that the FDA granted RHB-204 Orphan Drug Designation which together with the QIDP designation will extend U.S. market exclusivity to a total of 12 years, if RHB-204 is approved by the FDA. In January 2021 we announced that the FDA granted RHB-204 Fast Track designation, allowing RedHill access to early and frequent communications with the FDA, to expedite the RHB-204 development program, and to a rolling review of an NDA.

RHB-107

RHB-107 (formerly Mesupron) (INN: upamostat) is a proprietary, first-in-class, orally-administered potent inhibitor of several serine proteases. We are developing this investigational new drug as a potential treatment for symptomatic COVID-19 patients that do not require hospitalization. In addition, RHB-107 has potential in targeting cancer, inflammatory lung diseases and gastrointestinal diseases. In November 2020 we announced that the FDA had cleared our IND application for a U.S. Phase 2/3

study evaluating RHB-107 in patients with symptomatic COVID-19 who do not require hospitalization. In December 2020, we submitted an amendment to the protocol for that trial, addressing FDA comments. In February 2021, we announced that the first patient had been dosed in the study. This multicenter, randomized, double-blind, placebo-controlled, parallel-group study will evaluate the safety and efficacy of RHB-107. The first part of the study is designed for dose selection and is planned to enroll 60 patients. The second part of the study is planned to enroll 250 patients and will evaluate time to sustained recovery from illness as the primary endpoint. Each patient will be tested for specific viral strain. Several secondary and exploratory endpoints will also be assessed.

Licensing and Manufacturing Terms with Cosmo Pharmaceuticals

On August 12, 2020, we entered into a binding term sheet with Cosmo for an exclusive licensing and manufacturing agreement for multiple products. Since then, we and Cosmo have renegotiated the scope and terms of the collaboration, and in lieu of the terms of the term-sheet we have entered into three manufacturing agreements with respect to Movantik®, RHB-204 and opaganib.

On January 11, 2021 Cosmo announced that it had successfully completed a Phase 2 Proof of Concept ("POC") clinical trial of Rifamycin-MMX 600mg in patients with diarrhea-predominant irritable bowel syndrome ("IBS-D"). As part of our Exclusive License Agreement of October 2019 with Cosmo for the U.S. rights to Aemcolo® (rifamycin), we maintain certain rights, including a right of first refusal, in relation to Rifamycin-MMX 600mg in the U.S. Cosmo reported that results of the Phase 2 POC study show the achievement of statistical significance in all the study populations (intent-to-treat, full analysis study, modified full analysis study and per protocol) for the composite primary endpoint (substantial pain and diarrhea decrease) [OR 3.26 (1.39 – 7.67); p-value 0.0066] and for most secondary endpoints such as adequate relief of IBS-related symptoms [OR 2.18 (1.12 – 4.26); p-value 0.0227] and IBS-related bloating at the end of treatment period [OR 2.13 (1.11 – 4.07); p-value 0.0223].

COVID-19 Impact on our Business

In an effort to contain and mitigate the spread of COVID-19, many countries around the world, including the U.S. and Israel, have imposed quarantines and restrictions on travel and mass gatherings to slow the spread of the virus and closed non-essential businesses and offices, and as of the date of this prospectus, many local jurisdictions continue to have such restrictions in place. As many local jurisdictions continue to have such restrictions in place, our ability to continue to operate our business may also be limited. Such events may result in a period of office closures, business, supply and drug product manufacturing disruption, and in reduced operations, any of which could materially affect our business, financial condition and results of operations. Moreover, the COVID-19 pandemic may further divert the attention and efforts of the medical community to coping with COVID-19 and disrupt the marketplace in which we operate and may have a material adverse effect on our operations. In addition, SARS-CoV-2 infections of our employees may cause disruption to our operations.

To date, the financial impact on our business has been moderate, and we have put in place a comprehensive alternative commercial strategy to support our growth initiatives while adhering to government and health regulatory guidelines. Additionally, to date, there have been no significant disruptions to our supply chain, and we currently have sufficient supply of commercial products on hand to meet U.S. commercial demand. However, we have experienced decreased commercial activities which have affected the sales of some of our commercial products due to slower initiation of certain promotional activities associated with a significant decrease in in-clinic patient visits, tests and treatments and the impact on our sales force's ability to engage with healthcare providers in an in-person setting, cancellation of events such as industry conferences and limited local and international travel. The ability to successfully commercialize Talicia® depends on in-clinic patient visits and the availability of diagnostics, both of which has have been negatively affected by the pandemic. In addition, the COVID-19 pandemic has adversely affected and may continue to adversely affect our clinical and pre-clinical trials, including our ability to initiate and complete our clinical and pre-clinical trials within the anticipated timelines, and delays or difficulties in enrolling patients in our clinical trials and recruiting clinical site investigators and clinical site staff. For example, initiation of our Phase 3 study with RHB-204 in pulmonary NTM infections was deferred by two quarters to the fourth quarter of 2020. In addition, we may be unable to meet the timelines and milestones established for the contemplated postmarketing studies we are required to conduct for Aemcolo®, in which case we could be subject to FDA enforcement actions and civil monetary penalties, among others, unless the FDA agrees to an extension of the timelines and milestones. Moreover, the significant decrease in travel has significantly reduced the demand and sales of Aemcolo® for travelers' diarrhea.

Assessment of the complete extent of the impact of COVID-19 on our results will depend on future developments, which are highly uncertain and cannot be predicted, including new information that may emerge concerning the severity of COVID-19 and the actions to contain COVID-19 or treat its impact, among others. The continuation of the COVID-19 pandemic could materially disrupt our business and operations and have an adverse effect on the global markets and global economy generally, including on the availability and cost of employees, resources, materials, manufacturing and delivery efforts, and other aspects of the economy.

Expanded Access Program (EAP)

We have adopted an Expanded Access Program ("EAP"), allowing patients with life-threatening diseases potential access to our investigational new drugs that have not yet received regulatory marketing approval. Expanded access (sometimes referred to as "compassionate use") is possible outside of our clinical trials, under certain eligibility criteria, when a certain investigational new drug is needed to treat a life-threatening condition and when there is some clinical evidence suggesting that the drug might be effective for that condition. Patients who qualify for our EAP do not meet the eligibility criteria or are incapable of participating in our clinical trials for such therapeutic candidate or there is no clinical trial accessible to such patients. Following the adoption of the program, we continue to receive patient requests to obtain access to our investigational drugs. Subject to the evaluation of eligibility and all other necessary regulatory, reporting and other conditions and approvals required in all relevant jurisdictions, we provide certain patients with an investigational new drug under the EAP.

January 2021 Underwritten Offering

On January 14, 2021, we closed an underwritten offering of 3,188,776 ADSs at a public offering price of $7.84 per share, for total net proceeds of $23.1 million, after deducting underwriting discounts and commissions and estimated offering expenses payable by us in connection with the offering.

March 2021 Underwritten Offering

On March 4, 2021, we closed an underwritten offering of 4,375,000 ADSs at a public offering price of $8.00 per ADS, for total net proceeds of approximately $32.8 million, after deducting underwriting discounts and commissions and estimated offering expenses payable by us in connection with the offering. On March 11, 2021 and on March 16, 2021, the underwriter exercised

its overallotment option and accordingly we issued an additional 272,433 ADSs for total net proceeds of approximately $2.0 million, after deducting underwriting discounts and commissions.

Recent Developments

On February 22, 2021, Aether Therapeutics Inc., filed a complaint against us in the United States District Court for the District of Delaware. We refer to this matter as the Aether Litigation. The complaint asserts that our marketing of the Movantik® product infringes U.S. Patent Nos. 6,713,488, 8,748,448, 8,883,817 and 9,061,024 held by Aether Therapeutics Inc., or the Aether Patents. Aether has asserted the Aether Patents against other entities previously involved in the marketing of the Movantik® product. The complaint requests customary remedies for patent infringement, including (i) a judgment that we have infringed, contributed to and induced infringement of the Aether patents, (ii) damages, (iii) attorneys' fees and (iv) costs and expenses. We intend to vigorously defend ourselves against these claims. Given the early stage of the Aether litigation, we are unable to predict the likelihood of success of the claims of Aether Therapeutics Inc. against us or to quantify any risk of loss. The Aether Litigation could last for an extended period of time and require us to dedicate significant financial resources and management resources to our defense. An adverse ruling against us could materially and adversely affect our business, financial position, results of operations or cash flows and could also result in reputational harm. Even if we are successful in defending against these claims, the Aether Litigation could result in delays in future product developments, reputational harm or other collateral consequences.

In March 2021 we announced that RedHill Biopharma Inc., AztraZeneca AB and AstraZenca Pharmaceuticals LP and Nektar Therapeutics have entered into a settlement and license agreement with MSN Pharmaceuticals, Inc. and MSN Laboratories PVT. LTD. ("MSN") resolving their patent litigation in the U.S. in response to MSN's Abbreviated New Drug Application ("ANDA") seeking approval by the US. FDA to market a generic version of Movantik®. Under the terms of the settlement agreement, MSN may not sell a generic version of Movantik® in the U.S. until October 1, 2030 (subject to U.S. FDA approval) or earlier under certain circumstances. The parties to the settlement agreement have also agreed to file a stipulation and order of dismissal with the U.S. District Court for the District of Delaware which will conclude this litigation with respect to MSN. As required by law, the parties will submit the settlement agreement to the U.S. Federal Trade Commission and the U.S. Department of Justice for review. The settlement with MSN does not end RedHill's ongoing litigation against the other two ANDA filers.

Corporate Information

We were incorporated as a limited liability company under the laws of the State of Israel on August 3, 2009. Our principal offices are located at 21 Ha'arba'a Street, Tel-Aviv, Israel and our telephone number is +972 (3) 541-3131. Our web site address is http://www.redhillbio.com. The information on, or that can be accessed through, our website does not constitute part of this prospectus. Our registered agent in the U.S. is RedHill Biopharma Inc. The address of RedHill Biopharma Inc. is 8045 Arco Corporate Drive, Raleigh, NC 27617, U.S.A.

THE OFFERING

Securities offered by the selling stockholders	Up to 7,151,422 American Depositary Shares ("ADSs") representing 71,514,220 Ordinary Shares (defined below).
The ADSs	Each ADS represents 10 of our ordinary shares, par value NIS 0.01 per share ("Ordinary Shares"). The ADSs will be delivered by The Bank of New York Mellon, as depositary (the "Depositary"). The Depositary, as depositary, or its nominee, will be the holder of the Ordinary Shares underlying your ADSs and you will have rights as provided in the Deposit Agreement, dated as of December 26, 2012, among us, the Depositary and all owners and holders from time to time of ADSs issued thereunder (the "Deposit Agreement"), a form of which has been filed as Exhibit 1 to the Registration Statement on Form F-6 filed by the Depositary with the SEC on December 6, 2012. Subject to the terms of the Deposit Agreement and in compliance with the relevant requirements set out in the prospectus, you may turn in your ADSs to the Depositary for cancellation and withdrawal of the Ordinary Shares underlying your ADSs. The Depositary will charge you fees for such cancellations pursuant to the Deposit Agreement. You should carefully read the Deposit Agreement to better understand the terms of the ADSs.
Selling stockholders	All of the ADSs are being offered by the selling stockholders named herein. See "Selling Stockholders" on page 11 of this prospectus for more information on the selling stockholders.
Use of proceeds	We will not receive any proceeds from the sale of the ADSs offered by the selling stockholders.
Plan of Distribution	The selling stockholders, and any of their pledgees, and successors-in-interest, may offer or sell the ADSs from time to time through public or private transactions at prevailing market prices, at prices related to prevailing market prices or at privately negotiated prices. The selling stockholders may also resell the ADSs to or through underwriters, broker-dealers or agents, who may receive compensation in the form of discounts, concessions or commissions. See "Plan of Distribution" beginning on page 14 of this prospectus for additional information on the methods of sale that may be used by the selling stockholders.
Risk factors	See "Risk Factors" beginning on page 11 and the other information included elsewhere in this prospectus for a discussion of factors you should carefully consider before deciding to invest in our ADSs.
NASDAQ trading symbol for ADSs	Our ADSs are listed on the Nasdaq Global Market under the symbol "RDHL."

RISK FACTORS

Investing in our securities involves a high degree of risk. In addition to the other information contained in this prospectus and in the documents we incorporate by reference herein, you should carefully consider the risks under the heading "Risk Factors" in the Annual Report on Form 20-F for the year ended December 31, 2020, before making a decision about investing in our securities. The risks and uncertainties discussed in the Annual Report on Form 20-F are not the only ones facing us. Additional risks and uncertainties not presently known to us, or that we currently see as immaterial, may also harm our business. If any of these risks occur, our business, financial condition and operating results could be harmed, the trading price of our ADSs could decline, and you could lose part or all of your investment.

Please also read carefully the section above entitled "Cautionary Statement Regarding Forward-Looking Statements."

USE OF PROCEEDS

All ADSs offered by this prospectus are being registered for the accounts of the selling stockholders and we will not receive any proceeds from the sale of these shares.

SELLING STOCKHOLDERS

Cosmo ADSs

On October 17, 2019, we entered into a strategic collaboration with Cosmo Pharmaceuticals N.V. ("Cosmo"), which includes an exclusive license agreement for the U.S. rights to Aemcolo® and a simultaneous private investment by Cosmo of $36.3 million in the Company at $7.00 per ADS. Under the terms of the license agreement, Cosmo granted us the exclusive rights to commercialize Aemcolo® in the U.S. for travelers' diarrhea and agreed to act as the exclusive supplier of Aemcolo®. The license agreement also grants us certain rights related to the potential development of additional indications for Aemcolo®, as well as arrangements related to other pipeline therapeutic candidates of Cosmo. On October 22, 2019, in connection with the strategic collaboration with Cosmo, we sold 5,185,715 ADSs in a private placement to Cosmo for gross proceeds of $36.3 million.

Concurrently with the private investment by Cosmo, as part of the license agreement we issued to a wholly-owned subsidiary of Cosmo 1,714,286 ADSs at a total agreed value of $12.0 million, as an upfront payment for the rights granted under the license, corresponding to a price per ADS of $7.00. These ADSs are in addition to the ADSs issued to Cosmo as part of the $36.3 million investment discussed above.

The issuance of the ADSs to Cosmo was exempt from the registration requirements of the Securities Act pursuant to an exemption provided by Section 4(a)(2) thereof and Rule 506(b) promulgated thereunder as a transaction by an issuer not involving a public offering. Pursuant to the subscription agreement with Cosmo, executed in connection with the private investment by Cosmo, we are obligated, among other things, to file a registration statement with SEC for purposes of registering the resale of the ADSs.

Danbar ADSs

On February 3, 2021, Danbar Finance Ltd. ("Danbar") purchased an aggregate of 251,421 ADSs of the Company from the following officers of the Company: Dror Ben-Asher, Adi Frish, Gilead Raday and Reza Fathi (collectively, the "Sellers"), pursuant to a Share Transfer Agreement, dated February 3, 2021. The Sellers previously acquired the ADSs in connection with the exercise of certain stock options owned by the Sellers with the ADSs issuable upon the exercise of such stock options being registered on a Form S-8. The private sale of the ADSs to Danbar was exempt from the registration requirements of the Securities Act pursuant to an exemption provided by Section 4(a)(1 ½) thereof.

Relationships with the Selling Stockholders

On October 17, 2019, Cosmo granted us the exclusive rights to commercialize Aemcolo® in the U.S. for travelers' diarrhea and agreed to act as the exclusive supplier of Aemcolo®. We entered into a strategic collaboration with Cosmo, which includes an exclusive license agreement for the U.S. rights to Aemcolo® and a private investment by Cosmo of $36.3 million in the Company. In connection with private investment by Cosmo, we entered into a subscription agreement whereby, among other things, Cosmo was granted the right to nominate for appointment one member to our board of directors. The term of office of such director is three years, however may automatically expire earlier unless certain beneficial ownership conditions are met pursuant to the subscription agreement. The current member that Cosmo nominated to our board of directors is Alessandro Della Chà.

On August 12, 2020, we entered into a binding term sheet with Cosmo for an exclusive licensing and manufacturing agreement for multiple products. Since then, we and Cosmo have renegotiated the scope and terms of the collaboration, and in lieu of the terms of the term-sheet we have entered into three manufacturing agreements with respect to Movantik®, RHB-204 and opaganib.

For more information regarding our relationship with Cosmo, see "Aemcolo®" and "Ongoing Negotiation of Licensing and Manufacturing Terms with Cosmo Pharmaceuticals" in the "Prospectus Summary."

Except with respect to the foregoing, none of the selling stockholders has, or within the past three years has had, any position, office or other material relationship with us.

Information About Selling Stockholder Offering

The ADSs being offered by the selling stockholders are those currently owned by certain selling stockholders. We are registering the ADSs in order to permit the selling stockholders to offer the ADSs for resale, if ever, as may be determined by the selling stockholders from time to time. Each ADS represents ten (10) ordinary shares.

The selling stockholders may from time to time offer and sell pursuant to this prospectus and any applicable prospectus supplement up to 7,151,422 ADSs representing 71,514,220 ordinary shares. As of March 29, 2021, Cosmo and its wholly owned subsidiary, beneficially owned 69,000,010 ordinary shares represented by 6,900,001 ADSs, which is equal to 14.79% of the total outstanding number of the ordinary shares of the Company. Such shares were obtained by Cosmo pursuant to the exclusive license agreement and simultaneous private investment by Cosmo of $36.3 million in the Company. See “Cosmo ADSs.” Based on its current ownership, if Cosmo were to offer and sell all of the shares being registered, then Cosmo would not beneficially own any of the Company’s ordinary shares. The selling stockholder’s address is Riverside II, Sir John Rogerson’s Quay, Dublin, Ireland.

Based on its ownership of the ADSs as of March 29, 2021, Danbar beneficially owned 2,608,350 ordinary shares represented by 260,835 ADSs, which is less than 1% of the Company’s total outstanding number of ordinary shares. Such shares were sold to Danbar pursuant to the Share Transfer Agreement with certain officers of the Company. See “Danbar ADSs.” Assuming Danbar sold all of its ADSs being registered, Danbar would beneficially own 94,140 remaining ordinary shares, which is less than 1% of the Company’s total outstanding number of ordinary shares. Danbar is controlled by Mr. Nir Rotenberg and Mr. Matan Wulkan. The selling stockholder’s address is 94 Yigal Alon, Tel Aviv, 6789139 Israel.

As noted above, the selling stockholders may sell all, some or none of their registered ADSs in this offering. See “Plan of Distribution.”

PLAN OF DISTRIBUTION

Each selling stockholder of the securities and any of their pledgees, assignees and successors-in-interest may, from time to time, sell any or all of their securities covered hereby on the principal trading market or any other stock exchange, market or trading facility on which the securities are traded or in private transactions. These sales may be at fixed or negotiated prices. A selling stockholder may use any one or more of the following methods when selling securities:

- ordinary brokerage transactions and transactions in which the broker-dealer solicits purchasers;
- block trades in which the broker-dealer will attempt to sell the securities as agent but may position and resell a portion of the block as principal to facilitate the transaction;
- purchases by a broker-dealer as principal and resale by the broker-dealer for its account;
- an exchange distribution in accordance with the rules of the applicable exchange;
- privately negotiated transactions;
- settlement of short sales made after the effective date of the registration statement;
- in transactions through broker-dealers that agree with the selling stockholders to sell a specified number of such securities at a stipulated price per security;
- through the writing or settlement of options or other hedging transactions, whether through an options exchange or otherwise;
- a combination of any such methods of sale; or
- any other method permitted pursuant to applicable law.

The selling stockholders may also sell securities under Rule 144 or any other exemption from registration under the Securities Act, if available, rather than under this prospectus.

Broker-dealers engaged by the selling stockholders may arrange for other brokers-dealers to participate in sales. Broker-dealers may receive commissions or discounts from the selling stockholders (or, if any broker-dealer acts as agent for the purchaser of securities, from the purchaser) in amounts to be negotiated, but, except as set forth in a supplement to this Prospectus, in the case of an agency transaction not in excess of a customary brokerage commission in compliance with FINRA Rule 2121; and in the case of a principal transaction a markup or markdown in compliance with FINRA Rule 2121.

In connection with the sale of the securities or interests therein, the selling stockholders may enter into hedging transactions with broker-dealers or other financial institutions, which may in turn engage in short sales of the securities in the course of hedging the positions they assume. The selling stockholders may also sell securities short and deliver these securities to close out their short positions, or loan or pledge the securities to broker-dealers that in turn may sell these securities. The selling stockholders may also enter into option or other transactions with broker-dealers or other financial institutions or create one or more derivative securities which require the delivery to such broker-dealer or other financial institution of securities offered by this prospectus, which securities such broker-dealer or other financial institution may resell pursuant to this prospectus (as supplemented or amended to reflect such transaction).

The selling stockholders and any broker-dealers or agents that are involved in selling the securities may be deemed to be "underwriters" within the meaning of the Securities Act in connection with such sales. In such event, any commissions received by such broker-dealers or agents and any profit on the resale of the securities purchased by them may be deemed to be underwriting commissions or discounts under the Securities Act. Each selling stockholder has informed the Company that it does not have any written or oral agreement or understanding, directly or indirectly, with any person to distribute the securities.

The Company is required to pay certain fees and expenses incurred by the Company incident to the registration of the securities. The Company has agreed to indemnify certain of the selling stockholders against certain losses, claims, damages and liabilities, including liabilities under the Securities Act.

We agreed to keep this prospectus effective until the earlier of (i) twelve months after the effective date of the registration statement to which this prospectus forms a part or (ii) such time as all ADSs covered by the registration statement may be sold without volume limitations pursuant to Rule 144. The resale securities will be sold only through registered or licensed brokers or dealers if required under applicable state securities laws. In addition, in certain states, the resale securities covered hereby may not be sold unless they have been registered or qualified for sale in the applicable state or an exemption from the registration or qualification requirement is available and is complied with.

Under applicable rules and regulations under the Exchange Act, any person engaged in the distribution of the resale securities may not simultaneously engage in market making activities with respect to the ADSs for the applicable restricted period, as defined in Regulation M, prior to the commencement of the distribution. In addition, the selling stockholders will be subject to applicable provisions of the Exchange Act and the rules and regulations thereunder, including Regulation M, which may limit the timing of purchases and sales of the ADSs by the selling stockholders or any other person. We will make copies of this prospectus available to the selling stockholders and have informed them of the need to deliver a copy of this prospectus to each purchaser at or prior to the time of the sale (including by compliance with Rule 172 under the Securities Act).

EXPENSES

The following table sets forth the estimated costs and expenses payable by the registrant expected to be incurred in connection with the issuance and distribution of the ADSs being registered hereby. All of such expenses are estimates, except for the SEC registration fee.

	Amount to be Paid
SEC registration fee	$ 5,492.75
Legal fees and expenses	10,000.00
Accountants' fees and expenses	5,000.00
Miscellaneous	5,000.00
Total	$ 25,492.75

Each of the amounts set forth above, other than the registration fee, is an estimate.

LEGAL MATTERS

Certain legal matters with respect to Israeli law and with respect to the validity of the offered securities under Israeli law will be passed upon for us by Gross & Co. Certain legal matters with respect to U.S. federal securities law and New York law will be passed upon for us by Haynes and Boone, LLP.

EXPERTS

The financial statements and management's assessment of the effectiveness of internal control over financial reporting (which is included in Management's Annual Report on Internal Control over Financial Reporting) incorporated in this prospectus by reference to the Company's Annual Report on Form 20-F for the year ended December 31, 2020 have been so incorporated in reliance on the report of Kesselman & Kesselman, Certified Public Accountants (Isr.), a member firm of PricewaterhouseCoopers International Limited, an independent registered public accounting firm, given on the authority of said firm as experts in auditing and accounting.

WHERE YOU CAN FIND ADDITIONAL INFORMATION

We are subject to the informational requirements of the Securities Exchange Act of 1934, as amended, and in accordance therewith file annual and special reports with, and furnish other information to, the SEC. The SEC maintains a website that contains reports, information statements and other information regarding registrants that file electronically with the SEC. The address of the SEC's website is www.sec.gov.

We make available free of charge on or through our website at *www.redhillbio.com*, our Annual Reports on Form 20-F, Reports on Form 6-K and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act, as soon as reasonably practicable after we electronically file such material with or otherwise furnish it to the SEC.

We have filed with the SEC a registration statement under the Securities Act of 1933, as amended, relating to the offering of these securities. The registration statement, including the attached exhibits, contains additional relevant information about us and the securities. This prospectus does not contain all of the information set forth in the registration statement. You can obtain a copy of the registration statement for free at www.sec.gov. The registration statement and the documents referred to below under "Incorporation of Documents By Reference" are also available on our website, *www.redhillbio.com*. We will provide you without charge, upon your written or oral request, a copy of any of the documents incorporated by reference in this prospectus, other than exhibits to such documents which are not specifically incorporated by reference into such documents. Please direct your written or telephone requests to RedHill Biopharma Ltd., 21 Ha'arba'a Street, Tel Aviv 6473921, Israel, Attn: Micha Ben Chorin, telephone number +972 (3) 541-3131.

We have not incorporated by reference into this prospectus the information on our website, and you should not consider it to be a part of this prospectus.

INCORPORATION OF DOCUMENTS BY REFERENCE

The SEC allows us to "incorporate by reference" the information we have filed with it, which means that we can disclose important information to you by referring you to those documents. The information we incorporate by reference is an important part of this prospectus, and later information that we file with the SEC will automatically update and supersede this information. We specifically are incorporating by reference the following documents filed with the SEC:

- our Annual Report on Form 20-F for the year ended December 31, 2020, filed with the SEC on March 18, 2021;
- the description of our Ordinary Shares contained in our Registration Statement on Form 20-F filed with the SEC on December 26, 2012; and
- our Reports on Form 6-K furnished with the SEC on January 6, 2021, January 11, 2021, January 11, 2021, January 14, 2021, January 14, 2021, January 28, 2021, January 29, 2021, February 2, 2021, and February 17, 2021, February 18, 2021, February 23, 2021, March 4, 2021, March 22, 2021 and March 25, 2021.

In addition, any reports on Form 6-K submitted to the SEC by the registrant pursuant to the Exchange Act after the date of the initial registration statement and prior to effectiveness of the registration statement that we specifically identify in such forms as being incorporated by reference into the registration statement of which this prospectus forms a part and all subsequent annual reports on Form 20-F filed after the effective date of this registration statement and prior to the termination of this offering and any reports on Form 6-K subsequently submitted to the SEC or portions thereof that we specifically identify in such forms as being incorporated by reference into the registration statement of which this prospectus forms a part, shall be considered to be incorporated into this prospectus by reference and shall be considered a part of this prospectus from the date of filing or submission of such documents.

Any statement contained herein or in any document incorporated or deemed to be incorporated by reference shall be deemed to be modified or superseded for purposes of the registration statement of which this prospectus forms a part to the extent that a statement contained in any other subsequently filed document which also is or is deemed to be incorporated by reference modifies or supersedes such statement. Any such statement so modified or superseded shall not be deemed to constitute a part of the registration statement of which this prospectus forms a part, except as so modified or superseded.

You should rely only on the information incorporated by reference or provided in this prospectus. We have not authorized anyone else to provide you with different information. You should not assume that the information in this prospectus is accurate as of any date other than the date of this prospectus or the date of the documents incorporated by reference in this prospectus.

We will provide you without charge, upon your written or oral request, a copy of any of the documents incorporated by reference in this prospectus, other than exhibits to such documents which are not specifically incorporated by reference into such documents. Please direct your written or telephone requests to RedHill Biopharma Ltd., 21 Ha'arba'a Street, Tel Aviv 6473921, Israel, Attn: Micha Ben Chorin, telephone number +972 (3) 541-3131. You may also obtain information about us by visiting our website at *www.redhillbio.com*. Except for the specific incorporated documents listed above, no information available on or through our website shall be deemed to be incorporated in this prospectus or the registration statement of which it forms a part.

ENFORCEABILITY OF CIVIL LIABILITIES

We are incorporated under the laws of the State of Israel. Service of process upon us and upon our directors and officers and the Israeli experts named in this prospectus, substantially all of whom reside outside the United States, may be difficult to obtain within the United States. Furthermore, because substantially all of our assets and substantially all of our directors and officers are located outside the United States, any judgment obtained in the United States against us or any of our directors and officers may not be collectible within the United States.

It may be difficult to assert U.S. securities law claims in original actions instituted in Israel. Israeli courts may refuse to hear a claim based on a violation of U.S. securities laws because Israel is not the most appropriate forum to bring such a claim. In addition, even if an Israeli court agrees to hear a claim, it may determine that Israeli law and not U.S. law is applicable to the claim. If U.S. law is found to be applicable, the content of applicable U.S. law must be proved as a fact which can be a time-consuming and costly process. Certain matters of procedure will also be governed by Israeli law.

Subject to specified time limitations and legal procedures, Israeli courts may enforce a United States judgment in a civil matter which, subject to certain exceptions, is non-appealable, including judgments based upon the civil liability provisions of the Securities Act and the Exchange Act and including a monetary or compensatory judgment in a non-civil matter, provided that:

- the judgments are obtained after due process before a court of competent jurisdiction, according to the laws of the state in which the judgment is given and the rules of private international law currently prevailing in Israel;
- the prevailing law of the foreign state in which the judgments were rendered allows the enforcement of judgments of Israeli courts (however, the Israeli courts may waive this requirement following a request by the attorney general);
- adequate service of process has been effected and the defendant has had a reasonable opportunity to be heard and to present his or her evidence;
- the judgments are not contrary to public policy, and the enforcement of the civil liabilities set forth in the judgment does not impair the security or sovereignty of the State of Israel;
- the judgments were not obtained by fraud and do not conflict with any other valid judgment in the same matter between the same parties;
- an action between the same parties in the same matter is not pending in any Israeli court at the time the lawsuit is instituted in the foreign court; and
- the obligations under the judgment are enforceable according to the laws of the State of Israel and according to the law of the foreign state in which the relief was granted.
- We have irrevocably appointed RedHill Biopharma Inc. as our agent to receive service of process in any action against us in any United States federal or state court arising out of this offering or any purchase or sale of securities in connection with this offering.
- If a foreign judgment is enforced by an Israeli court, it generally will be payable in Israeli currency, which can then be converted into non-Israeli currency and transferred out of Israel. The usual practice in an action before an Israeli court to recover an amount in a non-Israeli currency is for the Israeli court to issue a judgment for the equivalent amount in Israeli currency at the rate of exchange in force on the date of the judgment, but the judgment debtor may make payment in foreign currency. Pending collection, the amount of the judgment of an Israeli court stated in Israeli currency ordinarily will be linked to the Israeli consumer price index plus interest at the annual statutory rate set by Israeli regulations prevailing at the time. Judgment creditors must bear the risk of unfavorable exchange rates.

7,151,422 American Depositary Shares representing 71,514,220 Ordinary Shares

REDHILL BIOPHARMA LTD.

PROSPECTUS

April 8, 2021