PROSPECTUS

Filed Pursuant to 424(b)(3)
Registration No. 333-252309

CELLECTAR BIOSCIENCES, INC.

15,185,180 Shares of Common Stock Issuable upon Conversion of Series D Preferred Stock

Cellectar Biosciences, Inc. ("we," "us" or the "Company") are not selling any shares of our common stock under this prospectus and will not receive any proceeds from the sale of shares by the selling stockholders identified herein (the "Selling Stockholders"). This prospectus relates to the resale of up to 15,185,180 shares of our Common Stock issuable upon conversion of 1,518.5180 shares of our Series D Preferred Stock (the "Series D Preferred Shares"). The Series D Preferred Shares are convertible into a number of shares of common stock equal to $13,500 divided by $1.35 (or 10,000 shares of common stock for each share of Series D Preferred Stock converted). The Series D Preferred Shares will only be convertible into common stock upon receipt of stockholder approval of the issuance of the underlying shares of common stock ("Stockholder Approval") as required by Nasdaq Marketplace Rule 5635(d) at a special stockholder meeting to be held on February 25, 2021 (the "Special Meeting"). If our stockholders do not approve the Stockholder Proposal, then the Series D Preferred Shares will not be convertible into shares of Common Stock and we will be required to seek stockholder approval every three months following the date of the Special Meeting.

The Selling Stockholders will bear all commissions and discounts, if any, attributable to the sale of the shares. We will bear all costs, expenses and fees in connection with the registration of the shares.

The Selling Stockholders may sell the shares of our Common Stock offered by this prospectus from time to time on terms to be determined at the time of sale through ordinary brokerage transactions or through any other means described in this prospectus under "Plan of Distribution." The prices at which the Selling Stockholder may sell the shares will be determined by the prevailing market price for the shares or in negotiated transactions.

Our common stock is listed on the Nasdaq Capital Market under the symbol "CLRB". On January 20, 2021, the last reported sale price of our common stock on the Nasdaq Capital Market was $1.94 per share.

Investing in our securities involves a high degree of risk. See "Risk Factors" beginning on page 13 of this prospectus for more information.

NEITHER THE SECURITIES AND EXCHANGE COMMISSION 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 February 1, 2021.

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ABOUT THIS PROSPECTUS

You should rely only on the information we have provided or incorporated by reference into this prospectus and any related free writing prospectus. We have not authorized anyone to provide you with information different from that contained in this prospectus or any related free writing prospectus. No dealer, salesperson or other person is authorized to give any information or to represent anything not contained in this prospectus or any related free writing prospectus. You must not rely on any unauthorized information or representation. This prospectus is an offer to sell only the common stock offered hereby, but only under circumstances and in jurisdictions where it is lawful to do so. You should assume that the information in this prospectus or any related free writing prospectus is accurate only as of the date on the front of the document and that any information we have incorporated by reference is accurate only as of the date of the document incorporated by reference, regardless of the time of delivery of this prospectus or any sale of a security.

We may authorize one or more free writing prospectuses to be provided to you that may contain material information relating to that offering. We may also use any related free writing prospectus to add, update or change any of the information contained in this prospectus or in documents we have incorporated by reference. This prospectus, together with any related free writing prospectuses and the documents incorporated by reference into this prospectus, includes all material information relating to this offering. Please carefully read both this prospectus together with the additional information described below under "Incorporation of Documents by Reference".

Unless otherwise stated or unless the context otherwise requires, all references to "we", "us", "our", "our company" or "the Company" in this prospectus refer collectively to Cellectar Biosciences, Inc., a Delaware corporation.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus, including the documents that we incorporate by reference, contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended (the "Securities Act"), and Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"). Examples of our forward-looking statements include:

- our current views with respect to our business strategy, business plan and research and development activities;
- the future impacts of the COVID-19 pandemic on our business, employees, operating results, ability to obtain additional funding, product development programs, research and development programs, suppliers and third-party manufacturers;
- the progress of our product development programs, including clinical testing and the timing of commencement and results thereof;
- our projected operating results, including research and development expenses;
- our ability to continue development plans for CLR 131, CLR 1900 series, CLR 2000 series and CLR 12120;
- our ability to continue development plans for our Phospholipid Drug Conjugates (PDC)™;
- our ability to maintain orphan drug designation in the U.S. for CLR 131 as a therapeutic for the treatment of multiple myeloma, neuroblastoma, osteosarcoma, rhabdomyosarcoma, Ewing's sarcoma and lymphoplasmacytic lymphoma, and the expected benefits of orphan drug status;
- any disruptions at our sole supplier of CLR 131;
- our ability to pursue strategic alternatives;
- our ability to advance our technologies into product candidates;
- our enhancement and consumption of current resources along with ability to obtain additional funding;
- our current view regarding general economic and market conditions, including our competitive strengths;
- uncertainty and economic instability resulting from conflicts, military actions, terrorist attacks, natural disasters, public health crises, including the occurrence of a contagious disease or illness, including the COVID-19 pandemic, cyber-attacks and general instability;
- assumptions underlying any of the foregoing; and
- any other statements that address events or developments that we intend or believe will or may occur in the future.

SUMMARY

This summary highlights information contained elsewhere in this prospectus and does not contain all of the information that you should consider in making your investment decision. Before investing in our securities, you should carefully read this entire prospectus, including the documents to which we have referred you under the headings "Where You Can Find More Information" and "Incorporation of Documents by Reference" and the information set forth under the headings "Risk Factors" and "Management's Discussion and Analysis of Financial Condition and Results of Operations," in each case, included elsewhere in this prospectus or incorporated herein by reference.

Overview

We are a late-stage clinical biopharmaceutical company focused on the discovery, development and commercialization of drugs for the treatment of cancer. Our core objective is to leverage our proprietary phospholipid drug conjugate™ (PDC™) delivery platform to develop PDCs that are designed to specifically target cancer cells and deliver improved efficacy and better safety as a result of fewer off-target effects. Our PDC platform possesses the potential for the discovery and development of the next generation of cancer-targeting treatments, and we plan to develop PDCs both independently and through research and development collaborations.

The COVID-19 pandemic has created uncertainties in the expected timelines for clinical stage biopharmaceutical companies such as us, and because of such uncertainties, it is difficult for us to accurately predict expected outcomes. We have not yet experienced any significant impacts as a result of the pandemic. However, COVID-19 may impact our future ability to recruit patients for clinical studies, obtain adequate supply of CLR 131 and obtain additional financing.

Our lead PDC therapeutic, CLR 131 is a small-molecule PDC designed to provide targeted delivery of iodine-131 directly to cancer cells, while limiting exposure to healthy cells. We believe this profile differentiates CLR 131 from many traditional on-market treatments. CLR 131 is currently being evaluated in the multi cohort CLOVER 1 Phase 2 study in adult B-cell malignancies and the CLOVER-2 Phase 1 study for a variety of pediatric cancers.

The CLOVER-1 Phase 2 study met the primary efficacy endpoints from the Part A dose-finding portion, conducted in relapsed/refractory (r/r) B-cell malignancies. The CLOVER-1 Phase 2 Part B expansion cohort is a pivotal registration study currently evaluating CLR 131 in Bruton tyrosine kinase (BTK) inhibitor failed or suboptimal response Waldenstrom's macroglobulinemia (WM). The CLOVER-1 Phase 2 Part A study is ongoing and CLR 131 remains under further evaluation in highly refractory multiple myeloma (MM) patients in an expansion cohort.

The CLOVER-2 Phase 1 pediatric study is an open-label, sequential-group, dose-escalation study to evaluate the safety and tolerability of CLR 131 in children and adolescents with relapsed or refractory cancers, including malignant brain tumors, neuroblastoma, sarcomas, and lymphomas (including Hodgkin's lymphoma). The study is being conducted internationally at seven leading pediatric cancer centers.

The U.S. Food and Drug Administration ("FDA") granted CLR 131 Fast Track Designation for WM patients having received two or more prior treatment regimens, as well as r/r MM and r/r diffuse large B-cell lymphoma (DLBCL). Orphan Drug Designations (ODD's) have been granted for WM, MM, neuroblastoma, rhabdomyosarcoma, Ewing's sarcoma and osteosarcoma. CLR 131 was also granted Rare Pediatric Disease Designation (RPDD) for the treatment of neuroblastoma, rhabdomyosarcoma, Ewing's sarcoma and osteosarcoma. The European Commission granted an ODD for r/r MM.

Our product pipeline also includes one preclinical PDC chemotherapeutic program (CLR 1900) and several partnered PDC assets. The CLR 1900 Series is being targeted for solid tumors with a payload that inhibits mitosis (cell division) a validated pathway for treating cancers.

We have leveraged our PDC platform to establish three ongoing collaborations featuring four unique payloads and mechanisms of action. Through research and development collaborations, our strategy is to generate near-term capital, supplement internal resources, gain access to novel molecules or payloads, accelerate product candidate development and broaden our proprietary and partnered product pipelines.

Our PDC platform provides selective delivery of a diverse range of oncologic payloads to cancerous cells, whether a hematologic cancer or solid tumor, a primary tumor, or a metastatic tumor and cancer stem cells. The PDC platform's mechanism of entry does not rely upon specific cell surface epitopes or antigens as are required by other targeted delivery platforms. Our PDC platform takes advantage of a metabolic pathway utilized by all tumor cell types in all stages of the tumor cycle. Tumor cells modify specific regions on the cell surface as a result of the utilization of this metabolic pathway. Our PDCs bind to these regions and directly enter the intracellular compartment. This mechanism allows the PDC molecules to accumulate over time, which enhances drug efficacy, and to avoid the specialized highly acidic cellular compartment known as lysosomes, which allows a PDC to deliver molecules that previously could not be delivered. Additionally, molecules targeting specific cell surface epitopes face challenges in completely eliminating a tumor because the targeted antigens are limited in the total number on the cell surface, have longer cycling time from internalization to being present on the cell surface again and available for binding and are not present on all of the tumor cells in any cancer. This means a subpopulation of tumor cells always exist that cannot be targeted by therapies targeting specific surface epitopes. In addition to the benefits provided by the mechanism of entry, PDCs offer the ability to conjugate payload molecules in numerous ways, thereby increasing the types of molecules selectively delivered via the PDC.

The PDC platform features include the capacity to link with almost any molecule, provide a significant increase in targeted oncologic payload delivery and the ability to target all types of tumor cells. As a result, we believe that we can generate PDCs to treat a broad range of cancers with the potential to improve the therapeutic index of oncologic drug payloads, enhance or maintain efficacy while also reducing adverse events by minimizing drug delivery to healthy cells, and increasing delivery to cancerous cells and cancer stem cells.

We employ a drug discovery and development approach that allows us to efficiently design, research and advance drug candidates. Our iterative process allows us to rapidly and systematically produce multiple generations of incrementally improved targeted drug candidates.

In June 2020, the European Medicines Agency (EMA) granted us Small and Medium-Sized Enterprise status by the EMA's Micro, Small and Medium-sized Enterprise office. SME status allows us to participate in significant financial incentives that include a 90% to 100% EMA fee reduction for scientific advice, clinical study protocol design, endpoints and statistical considerations, quality inspections of facilities and fee waivers for selective EMA pre and post-authorization regulatory filings, including orphan drug and PRIME designations. We are also eligible to obtain EMA certification of quality and manufacturing data prior to review of clinical data. Other financial incentives include EMA-provided translational services of all regulatory documents required for market authorization, further reducing the financial burden of the market authorization process.

A description of our PDC product candidates follows:

Clinical Pipeline

Our lead PDC therapeutic, CLR 131 is a small-molecule, PDC designed to provide targeted delivery of iodine-131 directly to cancer cells, while limiting exposure to healthy cells. We believe this profile differentiates CLR 131 from many traditional on-market treatments and treatments in development. CLR 131 is currently being evaluated in two clinical studies: the multi-cohort CLOVER-1 Phase 2 adult B-cell malignancy study and the CLOVER-2 Phase 1 pediatric safety study.

The CLOVER-1 Phase 2 study met the primary efficacy endpoints from the Part A dose-finding portion, conducted in r/r B-cell malignancies, and is now enrolling in two expansion cohorts. The first is expansion cohort is the Pivotal study in Waldenstrom's macroglobulinemia patients that have received first line standard of care and failed BTK inhibitor treatment. The second expansion cohort will evaluate quad class refractory MM. The dosing regimen in both cohorts is designed to provide the optimal dose of $\geq$60mCi total body dose (TBD) identified in Part A. The initial Investigational New Drug (IND) application was accepted by the FDA in March 2014 with multiple INDs submitted since that time. Initiated in March 2017, the primary goal of the Phase 2A study was to assess the compound's efficacy in a broad range of hematologic cancers. In the expansion portion of the study the goal is to confirm the efficacy of the $\geq$60mCi TBD in triple class refractory MM and BTK inhibitor failed WM patients. The Phase 1 study was designed to assess the compound's safety and tolerability in patients with r/r MM (to determine maximum tolerated dose (MTD)) and was initiated in April 2015. The study completed enrollment and the final clinical study report is expected in the first half of 2021.

The CLOVER-2 Phase 1 pediatric study is being conducted internationally at seven leading pediatric cancer centers. The study is an open-label, sequential-group, dose-escalation study to evaluate the safety and tolerability of CLR 131 in children and adolescents with relapsed or refractory cancers, including malignant brain tumors, neuroblastoma, sarcomas, and lymphomas (including Hodgkin's lymphoma). The FDA previously accepted our IND application for a Phase 1 open-label, dose escalating study to evaluate the safety and tolerability of a single intravenous administration of CLR 131 in up to 30 children and adolescents with cancers including neuroblastoma, sarcomas, lymphomas (including Hodgkin's lymphoma) and malignant brain tumors. This study was initiated during the first quarter of 2019. These cancer types were selected for clinical, regulatory and commercial rationales, including the radiosensitive nature and continued unmet medical need in the r/r setting, and the rare disease determinations made by the FDA based upon the current definition within the Orphan Drug Act.

In December 2014, the FDA granted ODD for CLR 131 for the treatment of MM. In 2018, the FDA granted ODD and RPDD for CLR 131 for the treatment of neuroblastoma, rhabdomyosarcoma, Ewing's sarcoma and osteosarcoma. In May 2019, the FDA granted Fast Track designation for CLR 131 for the treatment of MM and in July 2019 for the treatment of DLBCL, in September 2019 CLR 131 received Orphan Drug Designation from the European Union for Multiple Myeloma, and in January 2020, the FDA granted Orphan Drug Designation for CLR 131 Waldenstrom's macroglobulinemia. The FDA granted Fast Track designation for CLR 131 for the treatment of WM in May 2020.

The FDA may award priority review vouchers to sponsors of a RPDD that meet its specified criteria. The key criteria to receiving a priority review voucher (PRV) is that the disease being treated is life-threatening and that it primarily effects individuals under the age of 18. Under this program, a sponsor who receives an approval for a drug or biologic for a rare pediatric disease can receive a PRV that can be redeemed to receive a priority review of a subsequent marketing application for a different product. Additionally, the PRV's can be exchanged or sold to other companies so that the receiving company may use the voucher.

Phase 2 Study Pivotal Cohort: Patients with r/r Waldenstrom's Macroglobulinemia

In January 2021, we announced that a Type C guidance meeting with the FDA was conducted in September of 2020. The results of that guidance meeting provided Cellectar with an agreed upon path for conducting a single arm, pivotal Phase 2 expansion cohort in Waldenstrom's macroglobulinemia patients that have received standard of care first line therapy and had a suboptimal response or failed BTKi therapy. The FDA agreed with the dose to be tested, our proposal for a safety and futility assessment to be conduct on the first 10 patients, the endpoint to be assessed, the statistical analysis plan and study size of 50 patients. Based upon this agreement the pivotal study was initiated.

Phase 2 Study Cohort A: Patients with r/r Waldenstrom's Macroglobulinemia

Current data from our Phase 2 CLOVER-1 clinical study show that six WM patients demonstrated 100% overall response rate (ORR) and an 83.3% major response rate with one patient achieving a CR which continues at nearly 27 months post- last treatment. All patients met the definition of having received first line standard of care and failed treatment with BTK inhibitors. While median treatment free survival and duration of response has not been reached, the average treatment free survival is currently at 330 days. This may represent an important improvement in the treatment of relapsed/refractory WM as we believe no approved or late-stage development treatments for second- and third-line patients have reported a CR. WM is a rare, indolent and incurable form of non-Hodgkin's lymphoma (NHL) that is composed of a patient population in need of new and better treatment options.

Phase 2 Study Cohort B: Patients with r/r Multiple Myeloma

In September 2020, we announced that a clinically meaningful 40% ORR was observed in the subset of refractory multiple myeloma patients deemed triple class refractory who received 60 mCi or greater TBD. Triple class refractory is defined as patients that are refractory to immunomodulatory, proteasome inhibitors and anti-CD38 antibody drug classes. The 40% ORR (6/15 patients) represents triple class refractory patients enrolled in Part A of Cellectar's CLOVER-1 study and additional patients enrolled in Part B from March through May 2020 and received ≥60mCi TBD. All MM patients enrolled in the expansion cohort are required to be triple class refractory. The additional six patients were heavily pre-treated with an average of nine prior multi-drug regimens. Three patients received a total body dose of ≥ 60 mCi and three received less than 60 mCi. Consistent with the data released in February 2020, patients receiving ≥ 60 mCi typically exhibit greater responses. Based on study results to date, patients continue to tolerate CLR 131 well, with the most common and almost exclusive treatment emergent adverse events being cytopenias. This cohort will continue to enroll and evaluate patients that are even more refractory (quad-class refractory (proteasome inhibitor, immunomodulatory drug, anti-CD-38 antibodies, nuclear export inhibitors, or BCMA antibody drug conjugates) or hepta-drug refractory) to determine if CLR 131 at the dose of ≥60mCi TBD can be effective in patients that likely have no alternative therapies.

Previously in February 2020, we had announced that patients in the r/r multiple myeloma cohort received one of three different doses of CLR 131 (<50mCi, ~50mCi and ≥60mCi total body dose (TBD)). CLR 131 achieved the primary endpoint for the study. Patients with r/r MM who received the ≥60mCi TBD of CLR 131 showed a 42.8% overall response rate (ORR). Those who received ~50mCi TBD had a 26.3% ORR with a combined rate of 34.5% ORR (n=33) while maintaining a well-tolerated safety profile. Patients in the studies were elderly with a median age of 70, and heavily pre-treated, with a median of five prior lines of treatment (range: 3 to 17), which included immunomodulatory drugs, proteasome inhibitors and CD38 antibodies for the majority of patients. Additionally, a majority of the patients (53%) were quad refractory or greater and 44% of all treated multiple myeloma patients were triple class refractory. 100% of all evaluable patients (n=43) achieved clinical benefit (primary outcome measure) as defined by having stable disease or better. 85.7% of multiple myeloma patients receiving the higher total body dose levels of CLR 131 experienced tumor reduction. The ≥60mCi TBD demonstrated positive activity in both high-risk patients and triple class refractory patients with a 50% and 33% ORR, respectively.

Phase 2 Study Cohort C: Patients with r/r non-Hodgkin's lymphoma

In February 2020, we announced positive data from our Phase 2 CLOVER-1 study in patients with relapsed/refractory non-Hodgkin lymphoma (NHL) patients were treated with three different doses (<50mCi, ~50mCi and ≥60mCi total body dose (TBD). The <50mCi total body dose was a deliberately planned sub-therapeutic dose. Patients with r/r NHL who received <60mCi TBD and the ≥60mCi TBD had a 42% and 43% ORR, respectively and a combined rate of 42%. These patients were also heavily pre-treated, having a median of three prior lines of treatment (range, 1 to 9) with the majority of patients being refractory to rituximab and/or ibrutinib. The patients had a median age of 70 with a range of 51 to 86. All patients had bone marrow involvement with an average of 23%. In addition to these findings, subtype assessments were completed in the r/r B-cell NHL patients. Patients with DLBCL demonstrated a 30% ORR with one patient achieving a complete response (CR), which continues at nearly 24 months post-treatment. The ORR for CLL/SLL/MZL patients was 33%.

Based upon the dose response observed in Part A patients receiving total body doses of 60mCi or greater, we determined that patient dosing of CLR 131 would be ≥60mCi TBD. Therefore, patients are now grouped as receiving <60mCi or≥60mCi TBD.

The most frequently reported adverse events in all patients were cytopenias, which followed a predictable course and timeline. The frequency of adverse events have not increased as doses were increased and the profile of cytopenias remains consistent. Importantly, these cytopenias have had a predictable pattern to initiation, nadir and recovery and are treatable. The most common grade ≥3 events at the highest dose (75mCi TBD) were hematologic toxicities including thrombocytopenia (65%), neutropenia (41%), leukopenia (30%), anemia (24%) and lymphopenia (35%). No patients experienced cardiotoxicities, neurological toxicities, infusion site reactions, peripheral neuropathy, allergic reactions, cytokine release syndrome, keratopathy, renal toxicities, or changes in liver enzymes. The safety and tolerability profile in patients with r/r NHL was similar to r/r MM patients except for fewer cytopenias of any grade. Based upon CLR 131 being well tolerated across all dose groups and the observed response rate, especially in difficult to treat patients such as high risk and triple class refractory or penta-refractory, and corroborating data showing the potential to further improve upon current ORRs and durability of those responses, the study has been expanded to test a two-cycle dosing optimization regimen with a target total body dose ≥60 mCi/m^2 of CLR 131.

In July 2016, we were awarded a $2,000,000 National Cancer Institute (NCI) Fast-Track Small Business Innovation Research grant to further advance the clinical development of CLR 131. The funds are supporting the Phase 2 study initiated in March 2017 to define the clinical benefits of CLR 131 in r/r MM and other niche hematologic malignancies with unmet clinical need. These niche hematologic malignancies include Chronic Lymphocytic Leukemia, Small Lymphocytic Lymphoma, Marginal Zone Lymphoma, Lymphoplasmacytic Lymphoma/WM and DLBCL. The study is being conducted in approximately 10 U.S. cancer centers in patients with orphan-designated relapse or refractory hematologic cancers. The study's primary endpoint is clinical benefit response (CBR), with secondary endpoints of ORR, progression free survival (PFS,) median Overall Survival (mOS) and other markers of efficacy following patients receiving one of three TBDs of CLR 131 (<50mCi, ~50mCi and ≥60mCi), with the option for a second cycle approximately 75-180 days later. Dosages were provided either as single bolus or fractionated (the assigned dose level split into two doses) given day 1 and day 15.

In May 2020, we announced that the FDA granted Fast Track Designation for CLR 131 in WM in patients having received two prior treatment regimens or more.

Phase 1 Study in Patients with r/r Multiple Myeloma

In February 2020, we announced the successful completion of our Phase 1 dose escalation study. Data from the study demonstrated that CLR 131 was safe and tolerated at total body dose of approximately 95mCi in r/r MM. The Phase 1 multicenter, open-label, dose-escalation study was designed to evaluate the safety and tolerability of CLR 131 administered in an up to 30-minute I.V. infusion, either as a single bolus dose or as fractionated doses. The r/r multiple myeloma patients in this study received single cycle doses ranging from approximately 20mCi to 95mCi total body dose. An independent Data Monitoring Committee determined that all doses have been safe and well-tolerated by patients.

CLR 131 in combination with dexamethasone was under investigation in adult patients with r/r MM. Patients had to be refractory to or relapsed from at least one proteasome inhibitor and at least one immunomodulatory agent. The clinical study was a standard three-plus-three dose escalation safety study to determine the maximum tolerable dose. Multiple myeloma is an incurable cancer of the plasma cells and is the second most common form of hematologic cancers. Secondary objectives included the evaluation of therapeutic activity by assessing surrogate efficacy markers, which include M protein, free light chain (FLC), PFS and OS. All patients were heavily pretreated with an average of five prior lines of therapy. CLR 131 was deemed by an Independent Data Monitoring Committee (IDMC) to be safe and tolerable up to its planned maximum single, bolus dose of 31.25 mCi/m^2 or a total body dose of ~63 mCi. The four single dose cohorts examined were: 12.5 mCi/m^2 (~25mCi TBD), 18.75 mCi/m^2 (~37.5mCi TBD), 25 mCi/m^2(~50mCi TBD), and 31.25 mCi/m^2(~62.5mCi TBD), all in combination with low dose dexamethasone (40 mg weekly). Of the five patients in the first cohort, four achieved stable disease and one patient progressed at Day 15 after administration and was taken off the study. Of the five patients admitted to the second cohort, all five achieved stable disease however one patient progressed at Day 41 after administration and was taken off the study. Four patients were enrolled to the third cohort and all achieved stable disease. In September 2017, we announced results for cohort 4, showing that a single infusion up to 30-minutes of 31.25mCi/m^2 of CLR 131 was safe and tolerated by the three patients in the cohort. Additionally, all three patients experienced CBR with one patient achieving a partial response (PR). We use the International Myeloma Working Group (IMWG) definitions of response, which involve monitoring the surrogate markers of efficacy, M protein and FLC. The IMWG defines a PR as a greater than or equal to 50% decrease in FLC levels (for patients in whom M protein is unmeasurable) or 50% or greater decrease in M protein. The patient experiencing a PR had an 82% reduction in FLC. This patient did not produce M protein, had received seven prior lines of treatment including radiation, stem cell transplantation and multiple triple combination treatments including one with daratumumab that was not tolerated. One patient experiencing stable disease attained a 44% reduction in M protein. In January 2019, we announced that the pooled mOS data from the first four cohorts was 22.0 months. In late 2018, we modified this study to evaluate a fractionated dosing strategy to potentially increase efficacy and decrease adverse events.

Cohort 5 and 6 were fractionated cohorts of 31.25 mCi/m^2(~62.5mCi TBD) and 37.5 mCi/m^2(~75mCi TBD), each administered on day 1 and on day 8. Following the determination that all prior dosing cohorts were safe and tolerated, we initiated a cohort 7 utilizing a 40mCi/m2 (~95mCi TBD) fractionated dose administered 20mCi/m2 (~40mCi TBD) on days 1 and day 8. Cohort 7 was the highest pre-planned dose cohort and subjects have completed the evaluation period. The study completed enrollment and the final clinical study report is expected in the first half of 2021.

In May 2019, we announced that the FDA granted Fast Track Designation for CLR 131 in fourth line or later r/r MM. CLR 131 is our small molecule radiotherapeutic PDC designed to deliver cytotoxic radiation directly and selectively to cancer cells and cancer stem cells. It is currently being evaluated in our ongoing CLOVER-1 Phase 2 clinical study in patients with relapsed or refractory multiple myeloma and other select B-cell lymphomas.

Phase 1 Study in r/r Pediatric Patients with select Solid tumors, Lymphomas and Malignant Brain Tumors

In December 2017 the Division of Oncology at the FDA accepted our IND and study design for the Phase 1 study of CLR 131 in children and adolescents with select rare and orphan designated cancers. This study was initiated during the first quarter of 2019. In December 2017, we filed an IND application for r/r pediatric patients with select solid tumors, lymphomas and malignant brain tumors. The Phase 1 clinical study of CLR 131 is an open-label, sequential-group, dose-escalation study evaluating the safety and tolerability of intravenous administration of CLR 131 in children and adolescents with cancers including neuroblastoma, sarcomas, lymphomas (including Hodgkin's lymphoma) and malignant brain tumors. Secondary objectives of the study are to identify the recommended efficacious dose of CLR 131 and to determine preliminary antitumor activity (treatment response) of CLR 131 in children and adolescents. In August 2020, it was announced that four dose levels 15mCi/m^2 up to 60mCi/m^2 were deemed safe and tolerable by an independent Data Monitoring Committee and evaluation of the next higher dose cohort, 75mCi/m^2 was initiated. In 2018, the FDA granted ODD and RPDD for CLR 131 for the treatment of neuroblastoma, rhabdomyosarcoma, Ewing's sarcoma and osteosarcoma. Should any of these indications be a first approval for CLR 131, the RPDD would enable us to receive a priority review voucher. Priority review vouchers can be used by the sponsor to receive priority review for a future New Drug Application ("NDA") or Biologic License Application ("BLA") submission, which would reduce the FDA review time from 12 months to six months. Currently, these vouchers can also be transferred or sold to another entity. This Priority Review Voucher Program is currently under evaluation for renewal.

Phase 1 Study in r/r Head and Neck Cancer

In August 2016, the University of Wisconsin Carbone Cancer Center ("UWCCC") was awarded a five-year Specialized Programs of Research Excellence ("SPORE") grant of $12,000,000 from the National Cancer Institute and the National Institute of Dental and Craniofacial Research to improve treatments and outcomes for head and neck cancer, HNC, patients. HNC is the sixth most common cancer across the world with approximately 56,000 new patients diagnosed every year in the U.S. As a key component of this grant, the UWCCC researchers completed testing of CLR 131 in various animal HNC models and initiated the first human clinical study enrolling up to 30 patients combining CLR 131 and external beam radiation with recurrent HNC in Q4 2019. This clinical study was suspended due to the COVID-19 pandemic over the first three quarters of 2020, but is now open and actively enrolling patients.

Preclinical Pipeline

We believe our PDC platform has potential to provide targeted delivery of a diverse range of oncologic payloads, as exemplified by the product candidates listed below, that may result in improvements upon current standard of care ("SOC") for the treatment of a broad range of human cancers:

- CLR 1900 Series is an internally developed proprietary PDC program leveraging a novel small molecule cytotoxic compound as the payload. The payload inhibits mitosis (cell division) and targets a key pathway required to inhibit rapidly dividing cells that results in apoptosis. We believe that this program could produce a product candidate targeted to select solid tumors. Currently, the program is in early preclinical development and if we elect to progress any molecules further, we will select preferred candidates.

- CLR 2000 Series is a collaborative PDC program with Avicenna Oncology, or Avicenna, that we entered into in July 2017. Avicenna is a developer of antibody drug conjugates ("ADCs"). The objective of the research collaboration is to design and develop a series of PDCs utilizing Avicenna's proprietary cytotoxic payload. Although Avicenna is a developer of ADCs, this collaboration was sought as a means to overcome many of the challenges associated with ADCs, including those associated with the targeting of specific cell surface epitopes. The CLR 2000 Series has demonstrated improved safety, efficacy and tissue distribution with the cytotoxic payload in animal models. A candidate molecule and a back-up have been selected for further advancement at a future time.

- CLR 12120 Series is a collaborative PDC program with Orano Med for the development of novel PDCs utilizing Orano Med's unique alpha emitter, lead 212 conjugated to our phospholipid ether; the companies intend to evaluate the new PDCs in up to three oncology indications. Currently this series has shown efficacy in the first two animal models tested.

Key Risks and Uncertainties

We are subject to numerous risks and uncertainties, including the following:

- Our operations and financial condition may be adversely impacted by the COVID-19 pandemic.

- We will require additional capital in order to continue our operations and may have difficulty raising additional capital.

- We are a clinical-stage company with a going concern qualification to our financial statements and a history of losses, and we can provide no assurance as to our future operating results.

- We rely on a collaborative outsourced business model, and disruptions with these third-party collaborators may impede our ability to gain FDA approval and delay or impair commercialization of any products.

- We will require additional capital in order to continue our operations and may have difficulty raising additional capital.

- We rely on a small number of key personnel who may terminate their employment with us at any time, and our success will depend on our ability to hire additional qualified personnel.

- We cannot assure the successful development and commercialization of our compounds in development.

- Our proposed products and their potential applications are in an early stage of clinical and manufacturing/process development and face a variety of risks and uncertainties.

- Failure to complete the development of our technologies, to obtain government approvals, including required FDA approvals, or comply with ongoing governmental regulations could prevent, delay or limit introduction or sale of proposed products and result in failure to achieve revenues or maintain our ongoing business.

- Clinical studies involve a lengthy and expensive process with an uncertain outcome, and results of earlier studies and trials may not be predictive of future trial results.

- We may be required to suspend or discontinue clinical studies due to unexpected side effects or other safety risks that could preclude approval of our product candidates.

- Controls we or our third-party collaborators have in place to ensure compliance with all applicable laws and regulations may not be effective.

- We expect to rely on our patents as well as specialized regulatory designations such as orphan drug classification for our product candidates, but regulatory drug designations may not confer marketing exclusivity or other expected commercial benefits.

- The FDA has granted rare pediatric disease designation, RPDD, to CLR 131 for treatment of neuroblastoma and rhabdomyosarcoma; however, we may not be able to realize any value from such designation.

- We are exposed to product, clinical and preclinical liability risks that could create a substantial financial burden should we be sued.

- Acceptance of our products in the marketplace is uncertain and failure to achieve market acceptance will prevent or delay our ability to generate revenues.

- The market for our proposed products is rapidly changing and competitive, and new therapeutics, drugs and treatments that may be developed by others could impair our ability to develop our business or become competitive.

- We may face litigation from third parties claiming that our products infringe on their intellectual property rights, particularly because there is often substantial uncertainty about the validity and breadth of medical patents.

- If we are unable to adequately protect or enforce our rights to intellectual property or to secure rights to third-party patents, we may lose valuable rights, experience reduced market share, assuming any, or incur costly litigation to protect our intellectual property rights.

- Conflicts, military actions, terrorist attacks, natural disasters. public health crises, including the occurrence of a contagious disease or illness, such as the COVID-19 coronavirus, cyber-attacks and general instability could adversely affect our business.
- Confidentiality agreements with employees and others may not adequately prevent disclosure of our trade secrets and other proprietary information and may not adequately protect our intellectual property, which could limit our ability to compete.
- We may be subject to claims that our employees have wrongfully used or disclosed alleged trade secrets of their former employers.
- Due to continued changes in marketing, sales and distribution, we may be unsuccessful in our efforts to sell our proposed products, develop a direct sales organization, or enter into relationships with third parties.
- If we are unable to convince physicians of the benefits of our intended products, we may incur delays or additional expense in our attempt to establish market acceptance.
- If users of our products are unable to obtain adequate reimbursement from third-party payors, or if additional healthcare reform measures are adopted, it could hinder or prevent the commercial success of our product candidates.
- Our business and operations may be materially, adversely affected in the event of computer system failures or security breaches.
- Failure to maintain effective internal controls could adversely affect our ability to meet our reporting requirements.
- We have in the past received notices from Nasdaq of noncompliance with its listing rules, and delisting with Nasdaq could impact the price of our common stock and our ability to raise funds.
- Our stock price has experienced price fluctuations.
- Our common stock could be further diluted as the result of the issuance of additional shares of common stock, convertible securities, warrants or options.
- Provisions of our certificate of incorporation, by-laws, and Delaware law may make an acquisition of us or a change in our management more difficult.

- We have not paid dividends in the past and do not expect to pay dividends for the foreseeable future. Any return on investment may be limited to the value of our common stock.
- You will experience immediate and substantial dilution as a result of this offering and may experience additional dilution in the future.
- You may experience future dilution as a result of future equity offerings.

Corporate Information

Our principal executive offices are located at 100 Campus Drive, Florham Park, New Jersey 07932 and the telephone number of our principal executive offices is (608) 441-8120. We maintain a website at www.cellectar.com. The information included or referred to on, or accessible through, our website does not constitute part of, and is not incorporated by reference into, this prospectus.

Description of the December 2020 Financing

On December 23, 2020, we entered into an underwriting agreement (the "Underwriting Agreement") with Oppenheimer & Co. Inc. as representative of the several underwriters named therein (the "Representative"). Pursuant to the Underwriting Agreement, the Company agreed to sell to the Representative 18,148,136 shares of common stock (the "Common Shares"), par value $0.00001 per share, of the Company ("Common Stock") at a public offering price of $1.35 per share of common stock, prior to deducting underwriting discounts and commissions and estimated offering expenses (the "Public Offering"). The Common Shares in the Public Offering were offered pursuant to a registration statement on Form S-3 (File No. 333-244362), which was declared effective by the Securities and Exchange Commission on August 20, 2020.

On December 23, 2020, in a separate concurrent private placement, the Company entered into a Securities Purchase Agreement (the "Purchase Agreement") with certain purchasers named therein (the "Purchasers"), pursuant to which the Company agreed to issue and sell, 1,518.5180 Series D Preferred Shares. The Series D Preferred Shares are convertible into a number of shares of common stock equal to $13,500 divided by $1.35 (or 10,000 shares of common stock for each share of Series D Preferred Stock converted), at a price of $13,500 per share of Series D Preferred Stock (the "PIPE" and together with the Public Offering, the "Offerings"). The Series D Preferred Shares will only be convertible into common stock upon receipt of stockholder approval of the issuance of the underlying shares of common stock as required by Nasdaq Marketplace Rule 5635(d) at a special stockholder meeting to be called for that purpose. Pursuant to the Purchase Agreement, the Company agreed to hold a special meeting of stockholders on February 25, 2021 for the purpose of obtaining Stockholder Approval.

The net proceeds of the Offerings to the Company, after deducting the underwriting discounts and commissions, placement agency fees and estimated offering expenses payable by the Company were approximately $41.4 million.

In connection with the entry into the Purchase Agreement, the Company and the Purchasers entered into a registration rights agreement (the "Registration Rights Agreement"), pursuant to which the Company is required to file a registration statement on Form S-1 or Form S-3 within 30 calendar days of the closing of the PIPE to provide for the resale of the shares of Common Stock issuable upon the exercise of the Series D Preferred Shares. We filed the registration statement on Form S-3, of which this prospectus is a part to fulfill our contractual obligations under the Purchase Agreement to provide for the resale by the Purchasers of up to

15,185,180 shares of Common Stock issuable upon conversion of the Series D Preferred Shares. The Company will be obligated to use its reasonable best efforts to keep any registration statement effective until the earlier of (a) the date on which the shares of Common Stock issuable upon the exercise of the Series D Preferred Shares subject to the registration statement may be sold without registration pursuant to Rule 144 under the Securities Act, or (b) the date on which all of the shares of Common Stock subject to the registration statement have been sold under the registration statement or without volume or manner-of-sale restrictions pursuant to Rule 144 under the Securities Act or any other rule of similar effect.

The Offering

Shares of common stock offered by us:	None
Shares of common stock offered by the Selling Stockholders:	15,185,180 shares of Common Stock
Shares of common stock outstanding before this offering:	45,447,729
Shares of common stock outstanding after completion of this offering, assuming full conversion of the Series D Preferred Shares	60,632,909 shares
Use of Proceeds:	We will not receive any proceeds from the resale of the shares of common stock by the Selling Stockholders.
Risk Factors:	See “Risk Factors” on page 14 and the other information included in this prospectus for a discussion of factors you should carefully consider before deciding whether to purchase our securities.
Nasdaq symbol for our common stock:	CLRB

The number of shares of our common stock outstanding before and after this offering is based on 45,447,729 shares of common stock outstanding as of January 15, 2021 and excludes, as of that date:

- an aggregate of 1,215,464 shares of common stock issuable upon the exercise of outstanding stock options issued to employees, directors and consultants;
- an aggregate of 537,500 shares of common stock issuable upon the conversion of outstanding shares of Series C preferred stock; and
- an aggregate of 17,451,266 additional shares of common stock reserved for issuance under outstanding warrants having expiration dates between April 1, 2021, and June 5, 2025, and exercise prices ranging from $1.21 to $30.40 per share.

Unless otherwise noted, the information in this prospectus reflects and assumes no exercise of outstanding options and warrants or conversion of shares of preferred stock.

RISK FACTORS

An investment in our securities involves a high degree of risk. Prior to making a decision about investing in our securities, prospective investors should consider carefully all of the information included and incorporated by reference or deemed to be incorporated by reference in this prospectus, including the risk factors incorporated by reference herein from our Annual Report on Form 10-K for the fiscal year ended December 31, 2019 as updated by annual, quarterly and other reports and documents we file with the SEC after the date of this prospectus and that are incorporated by reference herein. Each of these risk factors could have a material adverse effect on our business, results of operations, financial position or cash flows, which may result in the loss of all or part of your investment. For more information, see “Where You Can Find Additional Information” and “Incorporation of Certain Information by Reference.”

In addition, you should carefully consider the following risks related to this offering, together with the other information about these risks contained in this prospectus, as well as the other information contained in this prospectus generally, before deciding to buy our securities. Any of the risks we describe below could adversely affect our business, financial condition, operating results, or prospects. The market price for our securities could decline if one or more of these risks and uncertainties develop into actual events and you could lose all or part of your investment. Additional risks and uncertainties that we do not yet know of, or that we currently think are immaterial, may also impair our business operations.

USE OF PROCEEDS

All proceeds from the resale of the shares of common stock underlying the Series D Preferred Shares offered by this prospectus will belong to the Selling Stockholders. We will not receive any proceeds from the sale or other disposition by the Selling Stockholders of the shares of our common stock covered by this prospectus.

SELLING STOCKHOLDERS

The Common Stock being offered by the Selling Stockholders are those issuable to the Selling Stockholders upon conversion of the Series D Preferred Shares. We are registering the shares of common stock in order to permit the Selling Stockholders to offer the shares for resale from time to time upon obtaining the Stockholder Approval. For additional information regarding the issuance of Series D Preferred Shares, see "Description of the December 2020 Financing" above. Except for the ownership of the Series D

Preferred Shares and the purchase of securities in prior financings in the case of some Selling Stockholders, the Selling Stockholders have not had any material relationship with us within the past three years.

The table below lists the Selling Stockholders and other information regarding the beneficial ownership of the shares of common stock by each of the Selling Stockholders. The second column lists the number of shares of common stock beneficially owned by each Selling Stockholder, based on its ownership of the Series D Preferred Shares, assuming conversion of the Series D Preferred Shares held by the Selling Stockholders.

The third column lists the shares of common stock being offered by this prospectus by the Selling Stockholders.

In accordance with the terms of the Registration Rights Agreement with the Selling Stockholders, this prospectus generally covers the resale of the maximum number of shares of common stock issuable upon conversion of the Series D Preferred Shares, determined as if the outstanding Series D Preferred Shares were converted in full as of the trading day immediately preceding the date this registration statement was initially filed with the SEC, each as of the trading day immediately preceding the applicable date of determination and all subject to adjustment as provided in the Registration Rights Agreement.

The fourth column assumes the sale of all of the shares offered by the Selling Stockholders pursuant to this prospectus.

Under the terms of the Series D Preferred Shares, a Selling Stockholder may not convert the Series D Preferred Shares to the extent such conversion would cause such Selling Stockholder, together with its affiliates and attribution parties, to beneficially own a number of shares of common stock which would exceed 4.99% (or at the election of the Selling Stockholder, 9.99%) of our then outstanding common stock following such conversion, excluding for purposes of such determination shares of common stock issuable upon conversion of the Series D Preferred Shares that have not been converted. The number of shares in the second and fourth columns do not reflect this limitation. The Selling Stockholders may sell all, some or none of their shares in this offering. See "Plan of Distribution." The percentage of beneficial ownership after this offering is based on 60,632,909 shares outstanding as of January 15, 2021 assuming all Series D Preferred Shares have been sold in this offer.

Name of Selling Stockholder [1]	Number of Shares of Common Stock Owned Prior to Offering	Maximum Number of Shares of Common Stock to be Sold Pursuant to this Prospectus	Number of Shares of Common Stock Owned After Offering	Percentage of Common Stock Owned After Offering
Consonance Capital Management LP	11,111,111 [2]	7,037,037	4,074,074	6.72%
SilverArc Capital Alpha Fund I, L.P.	150,681 [3]	103,222	47,459	*
SilverArc Capital Alpha Fund II, L.P.	1,325,103 [4]	936,111	388,992	*
2B LLC	101,605 [5]	71,778	29,827	*
Laurence Lytton	5,305,355 [6]	1,296,296	4,009,059	7.26%
CVI Investments, Inc.	2,440,517 [7]	925,925	1,514,592	2.50%
Investor Company ITF Rosalind Master Fund L.P.	2,068,511 [8]	1,111,111	957,400	1.58%
683 Capital Partners, LP	1,851,850 [9]	925,925	925,925	1.53%
Altium Growth Fund, LP	1,992,592 [10]	740,740	1,251,852	2.06%
AIGH Investment Partners L.P.	1,448,573 [11]	553,036	895,537	1.48%
WVP Emerging Manager Onshore Fund, LLC – AIGH Series	296,311 [12]	143,704	152,607	*
WVP Emerging Manager Onshore Fund, LLC – Optimized Equity Series	90,956 [13]	44,000	46,956	*
Lincoln Park Capital Fund, LLC	2,302,378 [14]	555,555	1,746,823	2.88%
Maven Investment Partners US Limited	1,111,110 [15]	370,370	740,740	1.22%
Granite Point Capital Panacea Global Healthcare Fund	888,888 [16]	370,370	518,518	*

* Less than one percent.

(1) This table and the information in the notes below are based upon information supplied by the selling stockholders as of January 15, 2021.

(2) Consonance Capital Opportunity Master Fund, LP (“Consonance Opportunity Master”) directly holds 3,031,111 shares of Common Stock and 5,235,556 shares of Common Stock issuable upon conversion of Series D Preferred Shares (the “Opportunity Master Account Shares”). An account (the “Managed Account”) managed by Consonance Capital Management LP (the “Adviser”) directly holds 1,042,963 shares of Common Stock and 1,801,481 shares of Common Stock issuable upon conversion of Series D Preferred Shares (the “Managed Account Shares”). The Adviser is the investment adviser of Consonance Opportunity Master and the Managed Account, and pursuant to investment advisory agreements, the Adviser exercises voting and investment power over the Opportunity Master Account Shares directly held by Consonance Opportunity Master and the Managed Account Shares directly held by the Managed Account. Consonance Capman GP LLC (“Capman”) is the general partner of the Adviser and Mitchell Blutt, as the Manager & Member of Capman and Chief Executive Officer of the Adviser, may be deemed to control Capman and the Adviser. Each of the Adviser, Capman and Mr. Blutt may be deemed to beneficially own the Opportunity Master Account Shares and the Managed Account Shares. The address for the Adviser, Capman and Mr. Blutt is 1370 Avenue of the Americas, Floor 33, New York, NY 10019.

(3) Consists of 47,459 shares of Common Stock and 103,222 shares of Common Stock issuable upon conversion of Series D Preferred Shares. SilverArc Capital Management, LLC is the investment adviser to SilverArc Capital Alpha Fund I, L.P. The address for SilverArc Capital Management, LLC is 20 Park Plaza, 4th Floor, Boston, Massachusetts 02116.

(4) Consists of 388,992 shares of Common Stock and 936,111 shares of Common Stock issuable upon conversion of Series D Preferred Shares. SilverArc Capital Management, LLC is the investment adviser to SilverArc Capital Alpha Fund II, L.P. The address for SilverArc Capital Management, LLC is 20 Park Plaza, 4th Floor, Boston, Massachusetts 02116.

(5) Consists of 29,827 shares of Common Stock and 71,778 shares of Common Stock issuable upon conversion of Series D Preferred Shares. SilverArc Capital Management, LLC is the investment adviser to 2B LLC. The address for SilverArc Capital Management, LLC is 20 Park Plaza, 4th Floor, Boston, Massachusetts 02116.

(6) Consists of 2,270,059 shares of Common Stock, 1,739,000 shares of Common Stock issuable upon exercise of outstanding warrants and 1,296,296 shares of Common Stock issuable upon conversion of Series D Preferred Shares. The address of Mr. Lytton is 467 Central Park West, New York, New York 10025.

(7) Consists of 1,514,592 shares of Common Stock issuable upon exercise of outstanding warrants and 925,925 shares of Common Stock issuable upon conversion of Series D Preferred Shares. Heights Capital Management, Inc., the authorized agent of CVI Investments, Inc. ("CVI"), has discretionary authority to vote and dispose of the shares held by CVI and may be deemed to be the beneficial owner of these shares. Martin Kobinger, in his capacity as Investment Manager of Heights Capital Management, Inc., may also be deemed to have investment discretion and voting power over the shares held by CVI. Mr. Kobinger disclaims any such beneficial ownership of the shares. CVI is affiliated with one or more FINRA member, none of whom are currently expected to participate in the ale pursuant to the prospectus contained in the Registration Statement of shares purchased by the investor in this offering. The principal address of Heights Capital Management, Inc. is 101 California Street, Suite 3250, San Francisco, CA 94111.

(8) Consists of 544,300 shares of Common Stock, 413,060 shares of Common Stock issuable upon exercise of outstanding warrants and 1,111,111 shares of Common Stock issuable upon conversion of Series D Preferred Shares. Rosalind Advisors, Inc. is the investment advisor to Rosalind Master Fund L.P. and may be deemed the beneficial owner of shares held by Rosalind Master Fund L.P. Steven Salamon is the portfolio manager of Rosalind Advisors, Inc. and may be deemed to beneficially own the securities held by Rosalind Master Fund L.P. The address of each of Investor Company ITF Rosalind Master Fund L.P., Rosalind Advisors, Inc. and Mr. Salamon is c/o TD Waterhouse, 77 Bloor Street West, 3rd Floor, Toronto, ON M5S 1M2, Canada.

(9) Consists of 925,925 shares of Common Stock and 925,925 shares of Common Stock issuable upon conversion of Series D Preferred Shares. 683 Capital Management, LLC is the investment manager of 683 Capital Partners, LP and may be deemed to have beneficial ownership over the securities held by 683 Capital Partners, LP. Ari Zweiman, as the managing member of 683 Capital Management, LLC, may be deemed to beneficially own the securities held by 683 Capital Partners, LP. The address of 683 Capital Partners, L.P., 683 Capital Management LLC and Avi Zweiman is 3 Columbus Circle, Suite 2205, New York, NY 10019.

(10) Consists of 851,852 shares of Common Stock, 400,000 shares of Common Stock issuable upon exercise of outstanding warrants and 740,740 shares of Common Stock issuable upon conversion of Series D Preferred Shares. Altium Capital Management, LP, the investment manager of Altium Growth Fund, LP, has voting and investment power over these securities. Jacob Gottlieb is the managing member of Altium Capital Growth GP, LLC, which is the general partner of Altium Growth Fund, LP. Each of Altium Growth Fund, LP and Jacob Gottlieb disclaims beneficial ownership over these securities. The principal address of Altium Capital Management, LP is 152 West 57 Street, 20th Floor New York, New York 10019.

(11) Consists of 895,537 shares of Common Stock issuable upon exercise of outstanding warrants and 553,036 shares of Common Stock issuable upon conversion of Series D Preferred Shares. AIGH Capital Management (“AIGH CM”) is the Investment Advisor or Sub-Advisor to AIGH Investment Partners LP (“AIGH LP”) and may be deemed to have beneficial ownership over the securities held by AIGH LP. Orin Hirschman is the Manager of AIGH CM and may be deemed to have beneficial ownership over the securities held by AIGH CM. The address for Orin Hirschman, AIGH CM and AIGH L.P. is 6006 Berkeley Avenue, Baltimore, Maryland, 21209.

(12) Consists of 152,607 shares of Common Stock issuable upon exercise of outstanding warrants and 143,704 shares of Common Stock issuable upon conversion of Series D Preferred Shares. AIGH Capital Management (“AIGH CM”) is the Investment Advisor or Sub-Advisor to WVP Emerging Manager Onshore Fund, LLC – AIGH Series (“WVP AIGH”) and may be deemed to have beneficial ownership over the securities held by WVP AIGH. Orin Hirschman is the Manager of AIGH CM and may be deemed to have beneficial ownership over the securities held by AIGH CM. The address for Orin Hirschman, AIGH CM, and WVP AIGH is 6006 Berkeley Avenue, Baltimore, Maryland, 21209.

(13) Consists of 46,956 shares of Common Stock issuable upon exercise of outstanding warrants and 44,000 shares of Common Stock issuable upon conversion of Series D Preferred Shares. AIGH Capital Management (“AIGH CM”) is the Investment Advisor or Sub-Advisor to WVP Emerging Manager Onshore Fund, LLC – Optimized Equity Series (“WVP OE”) and may be deemed to have beneficial ownership over the securities held by WVP OE. Orin Hirschman is the Manager of AIGH CM and may be deemed to have beneficial ownership over the securities held by AIGH CM. The address for Orin Hirschman, AIGH CM, and WVP OE is 6006 Berkeley Avenue, Baltimore, Maryland, 21209.

(14) Consists of 1,746,823 shares of Common Stock issuable upon exercise of outstanding warrants and 555,555 shares of Common Stock issuable upon conversion of Series D Preferred Shares. Lincoln Park Capital, LLC is the managing member of Lincoln Park Capital Fund, LLC. Rockledge Capital Corporation and Alex Noah Investors, Inc. are the managing members of Lincoln Park Capital, LLC. Joshua Scheinfeld is the president and sole shareholder of Rockledge Capital Corporation, as well as a principal of Lincoln Park Capital, LLC. Jonathan Cope is the president and sole shareholder of Alex Noah Investors, Inc., as well as a principal of Lincoln Park Capital, LLC. As a result of the foregoing, Mr. Scheinfeld and Mr. Cope have shared voting and shared investment power over the securities held directly by Lincoln Park Capital Fund, LLC. The principal address of Lincoln Park Capital Fund, LLC is 440 N. Wells St., Suite 410, Chicago, IL 60654.

(15) Consists of 740,740 shares of Common Stock and 370,370 shares of Common Stock issuable upon conversion of Series D Preferred Shares Anand K. Sharma may be deemed to have investment discretion and voting power over the shares held by Maven Investment Partners US Ltd. The address of Maven is 675 3rd Ave., 15th Floor, New York, New York 10017.

(16) Consists of 518,518 shares of Common Stock and 370,370 shares of Common Stock issuable upon conversion of Series D Preferred Shares.The address for Granite Point Capital Panacea Global Healthcare Fund is 109 State Street, 5th Floor, Boston, MA 02109.

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 Nasdaq Stock 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;

- 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 broker-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 2440; and in the case of a principal transaction a markup or markdown in compliance with FINRA IM-2440.

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 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) the date on which the securities may be resold by the Selling Stockholders without registration and without regard to any volume or manner-of-sale limitations by reason of Rule 144, without the requirement for the Company to be in compliance with the current public information under Rule 144 under the Securities Act or any other rule of similar effect, or (ii) all of the securities have been sold pursuant to this prospectus or Rule 144 under the Securities Act or any other rule of similar effect. 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 common stock 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 common stock 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).

LEGAL MATTERS

The validity of the securities being offered by this prospectus has been passed upon for us by Michael Best & Friedrich LLP, Madison, Wisconsin.

EXPERTS

The audited financial statements incorporated by reference in this prospectus and elsewhere in the registration statement have been so incorporated by reference in reliance upon the report of Baker Tilly US, LLP, independent registered public accountants, upon the authority of said firm as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We are a reporting company and file annual, quarterly and special reports, and other information with the SEC. Copies of the reports and other information may be read and copied at the SEC's Public Reference Room at 100 F Street NE, Washington, D.C. 20549. You can request copies of such documents by writing to the SEC and paying a fee for the copying cost. You may obtain information on the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330. The SEC maintains a web site at http://www.sec.gov that contains reports, proxy and information statements and other information regarding registrants that file electronically with the SEC.

This prospectus is part of a registration statement on Form S-3 that we filed with the SEC. Certain information in the registration statement has been omitted from this prospectus in accordance with the rules and regulations of the SEC. We have also filed exhibits and schedules with the registration statement that are excluded from this prospectus. For further information you may:

- read a copy of the registration statement, including the exhibits and schedules, without charge at the SEC's Public Reference Room; or
- obtain a copy from the SEC upon payment of the fees prescribed by the SEC.

We are subject to the information and reporting requirements of the Exchange Act and, in accordance with this law, are required to file periodic reports, proxy statements and other information with the SEC. We make available free of charge, on or through the investor relations section of our website, annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-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 furnish it to, the SEC. The information found on our website, other than as specifically incorporated by

reference in this prospectus, is not part of this prospectus.

INCORPORATION OF DOCUMENTS BY REFERENCE

The SEC allows us to "incorporate by reference" information into this prospectus. This means that we can disclose important information to you by referring you to another document filed separately with the SEC. The information incorporated by reference is considered to be a part of this prospectus, except for any information that is superseded by other information that is included in this prospectus.

We incorporate by reference into this prospectus the following document, which we have previously filed with the SEC:

- our Annual Report on Form 10-K for the fiscal year ended December 31, 2019, filed with the SEC on March 9, 2020;
- our Quarterly Report on Form 10-Q for the quarter year ended March 31, 2020, filed with the SEC on May 7, 2020;
- our Quarterly Report on Form 10-Q for the quarter year ended June 30, 2020, filed with the SEC on August 10, 2020;
- our Quarterly Report on Form 10-Q for the quarter year ended September 30, 2020, filed with the SEC on November 9, 2020;
- our Definitive Proxy Statement on Schedule 14A for the annual meeting of stockholders, filed with the SEC on April 28, 2020;
- our Current Report on Form 8-K, filed with the SEC on January 7, 2020;
- our Current Report on Form 8-K, filed with the SEC on May 26, 2020;
- our Current Report on Form 8-K, filed with the SEC on June 1, 2020;
- our Current Report on Form 8-K, filed with the SEC on June 5, 2020;
- our Current Report on Form 8-K, filed with the SEC on June 25, 2020;
- our Current Report on Form 8-K, filed with the SEC on July 1, 2020;
- our Current Report on Form 8-K, filed with the SEC on August 11, 2020;
- our Current Report on Form 8-K, filed with the SEC on December 23, 2020;
- our Current Report on Form 8-K, filed with the SEC on December 28, 2020; and
- the description of our securities contained in our Registration Statement on Form 8-A filed on April 18, 2016, including any amendment or report filed for the purpose of updating such description.

In addition, all documents subsequently filed by us pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act prior to the termination of the offering will be deemed to be incorporated by reference into this prospectus.

You should rely only on the information contained in this prospectus, as updated and supplemented by any prospectus, or that information to which this prospectus or any prospectus has referred you by reference. We have not authorized anyone to provide you with any additional information.

Any statement contained in a document incorporated or deemed to be incorporated by reference herein will be deemed to be modified or superseded for purposes of this prospectus to the extent that a statement contained herein modifies or supersedes such statement. Any statement so modified or superseded will not be deemed, except as so modified or superseded, to constitute a part of this prospectus.

You may request and obtain a copy of any of the filings incorporated herein by reference, at no cost, by writing or telephoning us at the following address or phone number:

Cellectar Biosciences, Inc.
100 Campus Drive
Florham Park, New Jersey 07932
Attention: Chief Financial Officer (608) 441-8120

CELLECTAR BIOSCIENCES, INC.

15,185,180 Shares of Common Stock Issuable upon Conversion of Series D Preferred Stock

PROSPECTUS

February 1, 2021