

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 10-K

(Mark One)

ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2022

or

TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the transition period from _____ to _____

Commission file number: 001-38634

REVIVA PHARMACEUTICALS HOLDINGS, INC.

(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction of incorporation or organization)

85-4306526

(I.R.S. Employer Identification No.)

19925 Stevens Creek Blvd., Suite 100
Cupertino, CA 95014

(Address of principal executive offices)

95014

(Zip Code)

Registrant's telephone number, including area code: (408) 501-8881

Securities registered pursuant to Section 12(b) of the Act:

Title of each class:	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, par value \$0.0001 per share	RVPH	The Nasdaq Capital Market
Warrants to purchase one share of Common Stock	RVPHW	The Nasdaq Capital Market

Securities registered pursuant to Section 12(g) of the Act: **None**

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes No

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes No

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes No

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer

Accelerated filer

Non-accelerated filer

Smaller reporting company

Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report.

If securities are registered pursuant to Section 12(b) of the Act, indicate by check mark whether the financial statements of the registrant included in the filing reflect the correction of an error to previously issued financial statements.

Indicate by check mark whether any of those error corrections are restatements that required a recovery analysis of incentive-based compensation received by any of the registrant's executive officers during the relevant recovery period pursuant to §240.10D-1(b).

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes No

The aggregate market value of the voting and non-voting common equity held by non-affiliates of the registrant, based on the closing price of a share of the registrant's common stock on June 30, 2022 as reported by the Nasdaq Capital Market on such date, was approximately \$11.2 million. This calculation does not reflect a determination that certain persons are affiliates of the registrant for any other purpose.

As of March 27, 2023 the number of outstanding shares of the registrant's common stock, par value \$0.0001 per share, was 20,452,121.

DOCUMENTS INCORPORATED BY REFERENCE

None.

REVIVA PHARMCEUTICALS HOLDINGS, INC.
ANNUAL REPORT ON FORM 10-K
FOR THE FISCAL YEAR ENDED DECEMBER 31, 2022

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CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This report on Form 10-K contains forward-looking statements made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995 under Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. Our forward-looking statements include, but are not limited to, statements regarding our or our management team's expectations, hopes, beliefs, intentions or strategies regarding the future. In addition, any statements that refer to projections, forecasts or other characterizations of future events or circumstances, including any underlying assumptions, are forward-looking statements. The words "anticipate," "believe," "contemplate," "continue," "could," "estimate," "expect," "intends," "may," "might," "plan," "possible," "potential," "predict," "project," "should," "will," "would" and similar expressions may identify forward-looking statements, but the absence of these words does not mean that a statement is not forward-looking. Forward-looking statements in this report on Form 10-K may include, for example, statements about:

- our ability to grow and manage growth economically;
- our ability to retain key executives and medical and science personnel;
- the impact and uncertain effect of COVID-19 or other future pandemics or events, and related responses of businesses and governments to COVID-19 or other future pandemics or events, on our operations and personnel, on commercial activity in the markets in which we operate and on our results of operations;
- the possibility that our products in development succeed in or fail clinical trials or are not approved by the U.S. Food and Drug Administration or other applicable authorities;
- the possibility that we could be forced to delay, reduce or eliminate our planned clinical trials or development programs;
- our ability to obtain approval from regulatory agencies in different jurisdictions for our current or future product candidates;
- changes in applicable laws or regulations;
- changes to our relationships within the pharmaceutical ecosystem;
- our current and future capital requirements to support our development and commercialization efforts and our ability to satisfy our capital needs;
- the accuracy of our estimates regarding expenses and capital requirements, including estimated costs of our clinical studies;
- our limited operating history;
- our history of operating losses in each year since inception and expectation that we will continue to incur operating losses for the foreseeable future;
- expectations regarding our ability to continue as a going concern;
- changes in the markets that we target;
- our ability to maintain the listing of the common stock and listed warrants on Nasdaq;
- our ability to maintain or protect the validity of our patents and other intellectual property;
- our exposure to any liability, protracted and costly litigation or reputational damage relating to data security;
- our ability to maintain effective internal controls; and
- the possibility that we may be adversely affected by other economic, business, and/or competitive factors.

The foregoing does not represent an exhaustive list of matters that may be covered by the forward-looking statements contained herein or risk factors that we are faced with that may cause our actual results to differ from those anticipated in such forward-looking statements. Please see "Part I—Item 1A—Risk Factors" for additional risks which could adversely impact our business and financial performance.

All forward-looking statements are expressly qualified in their entirety by this cautionary notice. You are cautioned not to place undue reliance on any forward-looking statements, which speak only as of the date of this report or the date of the document incorporated by reference into this report. We have no obligation, and expressly disclaims any obligation, to update, revise or correct any of the forward-looking statements, whether as a result of new information, future events or otherwise. We have expressed our expectations, beliefs and projections in good faith and believe they have a reasonable basis. However, we cannot assure you that our expectations, beliefs or projections will result or be achieved or accomplished.

Part I

Item 1. BUSINESS

All references in this report to “Reviva,” the “Company,” “we,” “us,” or “our” mean Reviva Pharmaceuticals Holdings, Inc. and its subsidiaries unless we state otherwise, or the context otherwise indicates.

Company Overview

We are a clinical-stage pharmaceutical company that discovers, develops, and seeks to commercialize next-generation therapeutics for diseases representing significant unmet medical needs and burdens to society, patients, and their families. Our current pipeline focuses on the central nervous system, respiratory, and metabolic diseases. We use a chemical genomics driven technology platform and proprietary chemistry to develop new medicines. Our pipeline currently has two drug candidates, brilaroxazine (RP5063) and RP1208. Both are new chemical entities discovered in-house. We have been granted composition of matter patents for both brilaroxazine and RP1208 in the United States (U.S.), Europe, and several other countries.

Our lead drug candidate, brilaroxazine, is in clinical development and is intended to treat multiple neuropsychiatric indications. These include schizophrenia, bipolar disorder (BD), major depressive disorder (MDD), attention-deficit/hyperactivity disorder (ADHD), behavioral and psychotic symptoms of dementia or Alzheimer’s disease (BPSD), and Parkinson’s disease psychosis. Furthermore, brilaroxazine is also ready for clinical development for two respiratory indications — pulmonary arterial hypertension (PAH) and idiopathic pulmonary fibrosis (IPF). The U.S. Food and Drug Administration (FDA) granted Orphan Drug designation to brilaroxazine for the treatment of PAH in November 2016 and IPF in April 2018.

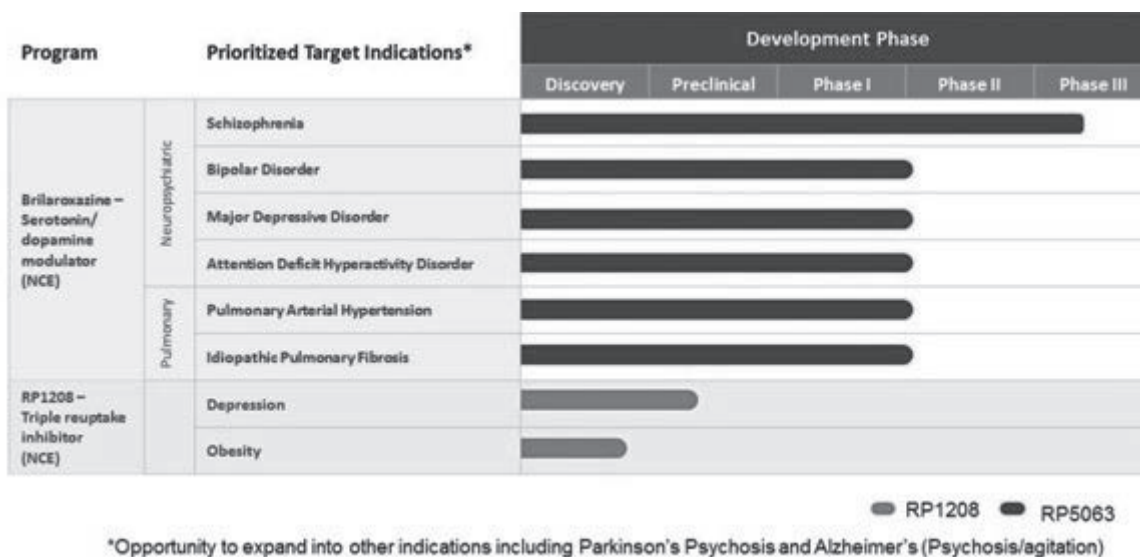
On January 10, 2022, the FDA notified us that we could proceed with our Phase 3 RECOVER trial, which is a study of brilaroxazine in patients with an acute exacerbation of schizophrenia. On February 1, 2022, we announced that the first patients in the RECOVER trial had been dosed. On July 27, 2022, we announced that we had enrolled patients in 15 geographically diverse sites across the U.S. The RECOVER trial is a global Phase 3, randomized, double-blind, placebo-controlled, multicenter study designed to assess the safety and efficacy of brilaroxazine in approximately 400 patients with acute schizophrenia compared to placebo. On October 31, 2022, we announced over 30% enrollment in our Phase 3 RECOVER trial in the United States and the initiation and ongoing enrollment across sites in Europe, and we finished 2022 with about 40% enrollment. The Company has received regulatory approval for initiating the study in Asia (India) on October 11, 2022 and multiple sites were initiated in India in November and December 2022.

Our primary focus is to complete the clinical development of brilaroxazine for the treatment of acute and maintenance schizophrenia.

We are currently developing Phase 2 trial protocols for studies of brilaroxazine in ADHD and PAH and anticipate submitting the protocols to regulatory agencies in the first half of 2023 and initiating the Phase 2 studies in the second half of 2023.

Subject to the receipt of additional financing, we may also continue the clinical development of brilaroxazine for the treatment of BD, MDD, BPSD, PDP, and IPF. Moreover, subject to the receipt of additional financing, we may also advance the development of our second drug candidate, RP1208, for the treatment of depression and obesity.

The development status of the Reviva product pipeline is presented below:



Impact of COVID-19

As a result of the COVID-19 pandemic, we may experience disruptions that could adversely impact our business. The COVID-19 pandemic may negatively affect clinical site initiation, patient recruitment and enrollment, patient dosing, distribution of drug to clinical sites and clinical trial monitoring for our clinical trials. The COVID-19 pandemic may also negatively affect the operations of the third-party contract research organizations that we intend to rely upon to assist us in conducting our clinical trials and the contract manufacturers who manufacture our drug candidates.

We are continuing to assess the potential impact of the COVID-19 pandemic on our business and operations. For additional information on the various risks posed by the COVID-19 pandemic, refer to Part I—Item 1A—Risk Factors of this Annual Report on Form 10-K.

Business Combination and Domestication

On December 14, 2020, our predecessor company, formerly known as Tenzing Acquisition Corp., a British Virgin Islands exempted company (“Tenzing”), and Reviva Pharmaceuticals, Inc., a Delaware corporation (together with its consolidated subsidiaries, “Old Reviva”), consummated the transactions (the “Business Combination”) contemplated by the Agreement and Plan of Merger, dated as of July 20, 2020 (as amended, the “Merger Agreement”), by and among Tenzing, Tenzing Merger Subsidiary Inc., a Delaware corporation and wholly-owned subsidiary of Tenzing (“Merger Sub”), Old Reviva, and the other parties thereto. Pursuant to the Merger Agreement, Merger Sub merged with and into Old Reviva, with Old Reviva surviving as our wholly owned subsidiary. We refer to this transaction as the Business Combination. In connection with and one day prior to the completion of the Business Combination, Tenzing re-domiciled out of the British Virgin Islands and continued as a company incorporated in the State of Delaware, and changed its name to Reviva Pharmaceuticals Holdings, Inc. Prior to the completion of the Business Combination, the Company was a shell company. Following the Business Combination, the business of Old Reviva is the business of the Company.

Old Reviva was incorporated in the state of Delaware on May 1, 2006 and its subsidiary, Reviva Pharmaceuticals India Pvt. Ltd., was incorporated on December 23, 2014. Tenzing was formed pursuant to the laws of the British Virgin Islands on March 20, 2018.

About Brilaroxazine (RP5063)

Our drug candidate brilaroxazine is a novel, multimodal serotonin (5HT), dopamine (DA), and nicotinic receptor modulator. Our compound displays a high affinity for 5HT_{2A/2B/7} and DA_{2/3/4} receptors and a moderate affinity for nicotinic (nACh- α 4 β 2) receptors (Rajagopal et al., 2017). The binding affinity of brilaroxazine to dopamine and serotonin sub-receptors in radioligand binding assays is the following (K_i, nM): dopamine D_{2S} (0.28), D_{2L} (0.45), D₃ (3.7), and D_{4.4} (6.0); Serotonin 5HT_{1A} (1.5), 5-HT_{2A} (2.5), 5-HT_{2B} (0.19), 5-HT_{2C} (39), 5-HT₆ (51), and 5-HT₇ (2.7). Brilaroxazine displayed moderate binding affinity to nicotine- nAChR, α 4 β 2 (K_i = 36.3 nM).

Radioactive and non-radioactive studies in rat and dog show that the gastrointestinal tract completely absorbs orally administered brilaroxazine -related material, with acceptable bioavailability in rat (22%) and dog (85%) animal models. Exposure to brilaroxazine increased in a dose-dependent manner. Once absorbed, brilaroxazine rapidly and extensively distributes into various tissues. Noteworthy is the brain with a brain:plasma ratio of ~3.5, despite high plasma protein binding (>99%) characteristics. Rat and dog hepatocytes rapidly metabolize brilaroxazine; however, human hepatocytes metabolize this compound more slowly. This finding suggests that brilaroxazine will show a low clearance in humans. We believe the risk of brilaroxazine inducing or inhibiting cytochrome P450 (CYP) at anticipated pharmacologically relevant concentrations in humans is low. Hepatic metabolism via the cytochrome P450s is the primary route of elimination with CYP3A4/5 undertaking most of the metabolism (69%), a small contribution from CYP2D6 (17%) and minor contributions by other cytochromes including extra-hepatic CYP2J2. Two metabolites in human plasma and urine display no pharmacological activity. We believe there is a low risk of inhibition and induction of human cytochromes by brilaroxazine at expected plasma concentrations clinically.

A full battery of regulatory compliant toxicology and safety pharmacology studies is complete. We believe the results from these tests support the chronic administration of brilaroxazine in clinical trials. We believe the completed safety, pharmacology and toxicology studies report several significant safety findings. These include (1) brilaroxazine is neither genotoxic nor clastogenic, (2) it does not affect the function of cardiovascular (QT interval or blood pressure) or respiratory systems, and (3) it is not phototoxic in the 3T3 *in vitro* assay.

DEVELOPMENT OF BRILAROXAZINE (RP5063) FOR NEUROPSYCHIATRIC DISEASES

Brilaroxazine Development for Schizophrenia

Schizophrenia is a complex, chronic, and debilitating psychiatric syndrome. As presented in 2020, the Schizophrenia and Related Disorders Alliance of America (“SARDAA”) estimates schizophrenia can be found in approximately 1.1% of the world’s population, regardless of racial, ethnic, or economic background, with approximately 3.5 million people diagnosed in the U.S. It is a complex disease involving a mix of positive and negative symptoms, along with mood disorder and cognitive impairment. While the pathology of schizophrenia is not yet fully understood, scientists implicate the dysregulation or disruption of both dopaminergic and serotonergic functions in the development of this condition. The dysregulation of serotonergic function in the brain also contributes to schizoaffective disorders, such as bipolar, major depression, and mania. Thus, the optimal treatment for schizophrenia may not rely solely on dopamine blockade. Hypothetically, it may also include the stabilization of both the dopaminergic and serotonergic systems in the brain.

Current pharmacologic treatment involves antipsychotic therapy. There are two types of antipsychotics, typical and atypical agents. Tolerability issues (e.g., neuroleptic side effects with typical agents; metabolic and cardiovascular problems with atypical medications) limit compliance and the effectiveness of both classes of medications. Hence, compliance is poor. We estimate, pursuant to a review of multiple peer reviewed articles published between 1998 and 2015, discontinuation rates of 30 – 50% in the short-term management of acute patients and 42 – 74% in the long-term treatment. Also, both classes of antipsychotics fail to provide a broad spectrum of efficacy across the major symptoms or comorbidities of schizophrenia. Thus, we believe the optimal treatment of schizophrenia requires new compounds with broader efficacy, and better safety, tolerability and compliance profiles.

We believe the majority of the FDA approved antipsychotics in the last two decades block dopamine (D) and serotonin (5HT) receptors, particularly D2 and 5HT2A receptors. Brilaroxazine possesses a potent binding and functional activity for both D2 and 5HT2A receptors. We believe these targets are critical for treating schizophrenia. In addition, brilaroxazine has potent activities for D4, 5HT1A, 5HT2B and 5HT7 receptors implicated as targets for conditions associated with schizophrenia such as negative symptoms, mood symptoms (e.g., depression, anxiety) and cognitive impairment. Brilaroxazine also exerts a moderate activity on nicotinic (nAChR, $\alpha 4\beta 2$) receptor, implicated as a target for comorbid conditions in schizophrenia, depression and cognitive impairment.

Preclinical studies define the activity, pharmacokinetic, and safety profiles of brilaroxazine in animals. Rodent models of pharmacologic-induced behaviors associated with schizophrenia have demonstrated that brilaroxazine attenuates both psychosis and cognitive symptoms.

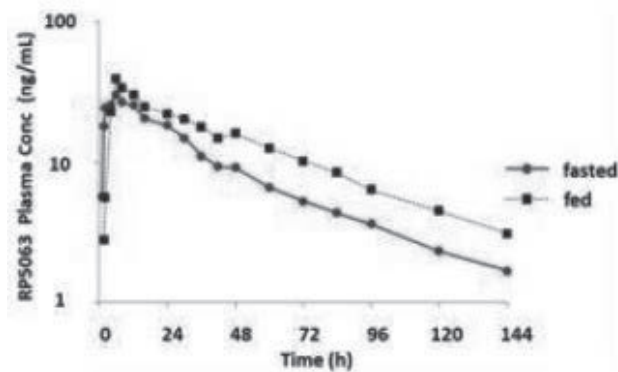
We have completed a clinical Phase 1a study in healthy subjects, a Phase 1b study in stable schizophrenia patients, and a Phase 2 study in acute schizophrenia and schizoaffective patients. We are currently focusing our efforts on our Phase 3 RECOVER trial to assess brilaroxazine for the treatment of subjects with an acute exacerbation of schizophrenia.

Brilaroxazine (RP5063) Phase 1 Clinical Study in Stable Schizophrenia

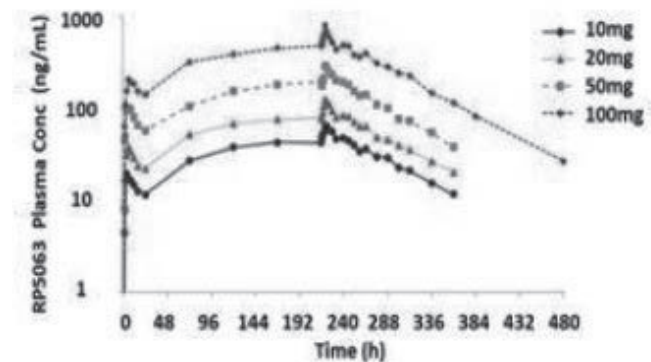
Phase 1a and 1b studies have defined the initial clinical experience with brilaroxazine. The first-in-human study Phase 1a involved a single-dose ascending study of 24 individuals. Initially, it examined patient cohorts receiving individual doses of 10 and 15 mg fasting; this was followed by a food-effect investigation (food versus fasting, crossover), with a 15 mg dose (Figure 1a). The multiple-dose Phase 1b study examined doses of 10, 20, 50, and 100 mg given with food over ten days in 32 randomized patients (Figure 1b). Collectively, these studies characterized the initial safety and pharmacokinetic profiles in normal healthy volunteers (Caucasian or Japanese men, 20 – 45 years) and stable patients with schizophrenia (18 – 65 years, chronic, all types with Total Positive and Negative Syndrome Scale (PANSS) score < 90 points). Brilaroxazine displayed a dose-dependent Cmax at 4 to 6 h, linear dose proportionality for both Cmax and AUC, and a half-life between 40 and 71 h. In the single-dose study, food slightly increased the extent of drug absorption. In the multiple-dose study, drug concentrations approached steady-state after 120 h (5 days) of daily dosing. Pooled data in the single-dose study indicate that the pharmacokinetic profile appeared to be comparable between Caucasians and Japanese. Study data have suggested a straightforward pharmacokinetic profile for brilaroxazine that we believe supports once-daily dosing as an orally administered agent for Phase 2 and Phase 3 evaluation.

Figure 1. Brilaroxazine Phase 1 Clinical Studies, Pharmacokinetics in Healthy Subjects and Stable Schizophrenia Patients

1A. Single-dose pharmacokinetics profile of brilaroxazine (15 mg) in healthy subjects



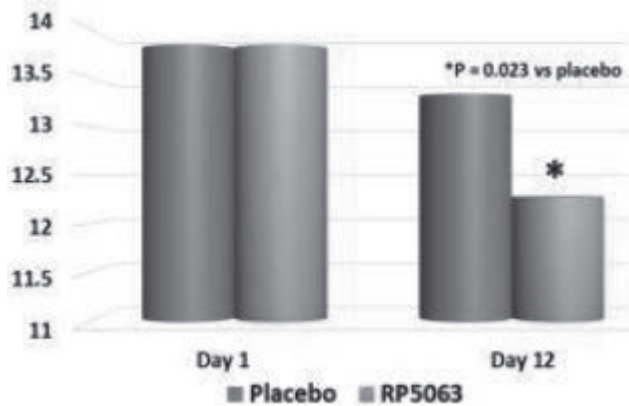
1B. Multiple-dose pharmacokinetics profile of brilaroxazine (10, 20, 50 or 100 mg/day) in stable schizophrenia patients for 10 days



As the multiple-dose study included patients with stable schizophrenia, the data from this study provided an early assessment of the pharmacodynamics behavior and activity of brilaroxazine in this population. Notable were the results of secondary analyses to explore Positive and Negative Syndrome Scale (“PANSS”) observations relevant to the effect of brilaroxazine on positive symptoms, and Trails A and B tests to assess the effect on cognition, respectively. Pooled analysis of patients with PANSS scores ≥ 50 at baseline showed a statistically significant reduction in positive symptoms subscale scores (Figure 2a). Furthermore, study analysis identified favorable trends in reducing PANSS total scores from baseline and in the General Psychopathology Score from baseline vs. placebo. Similarly, a pooled analysis of Trails A and B scores from baseline to day 16 showed favorable trends in the improvement of cognition in the brilaroxazine treatment groups vs. placebo.

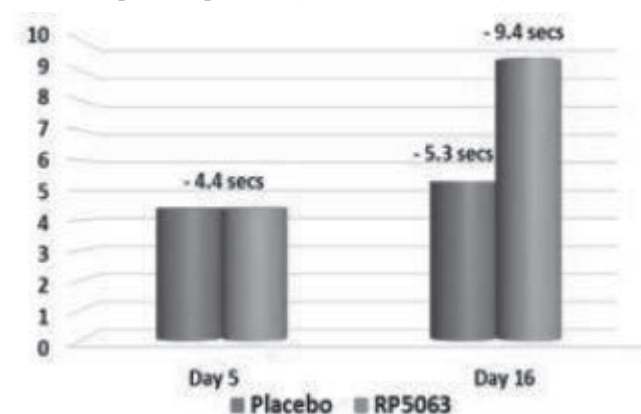
Figure 2. Brilaroxazine Efficacy in the Phase 1B Clinical Study in Stable Schizophrenia Patients

2A. A decrease in positive symptoms in stable schizophrenia patients (PANSS positive data)



- PANSS Baseline scores for sub-analysis: ≥ 50
- Pooled data of brilaroxazine (10-100mg/day), N=19

2B. An improvement in cognition in stable schizophrenia patients (Trails A and B data)



- PANSS Baseline scores: 39-69
- Pooled data of brilaroxazine (10-100mg/day), N=32

The Phase 1b study in stable schizophrenia patients found that brilaroxazine appears to be generally well-tolerated at doses ranging from 10 – 100 mg administered once daily over ten days. Most adverse events were mild and occurred at the higher doses 50mg and 100 mg. Notable was the lack of clinically significant changes in glucose or prolactin levels, lipid profiles, and weight or ECG findings. A pharmacodynamic analysis of the multiple-dose Phase 1b study data provided early insight regarding the clinical activity of brilaroxazine relevant to psychosis, along with mood and cognitive comorbidities, in patients with stable schizophrenia. Although we believe the Phase 1b study safety and efficacy findings are encouraging, it is important to recognize its power limitations due to the relatively small sample size.

Brilaroxazine (RP5063) Phase 2 Clinical Study in Acute Schizophrenia

The Phase 2 clinical study involved patients with acute exacerbations of schizophrenia or schizoaffective disorder and was designed to evaluate the efficacy, safety, tolerability, and pharmacokinetics of brilaroxazine versus placebo. The study was a double-blind, randomized, placebo-controlled 4-week trial. Aripiprazole was included in the study purely for assay sensitivity analysis and not as a comparator. A total of 234 eligible subjects were randomized into one of five treatment groups (15, 30, 50mg brilaroxazine, aripiprazole 15mg, or placebo; 3:3:3:1:2, respectively). Recruitment of male and female subjects occurred at 22 sites in the US, India, Philippines, Malaysia, and Moldova.

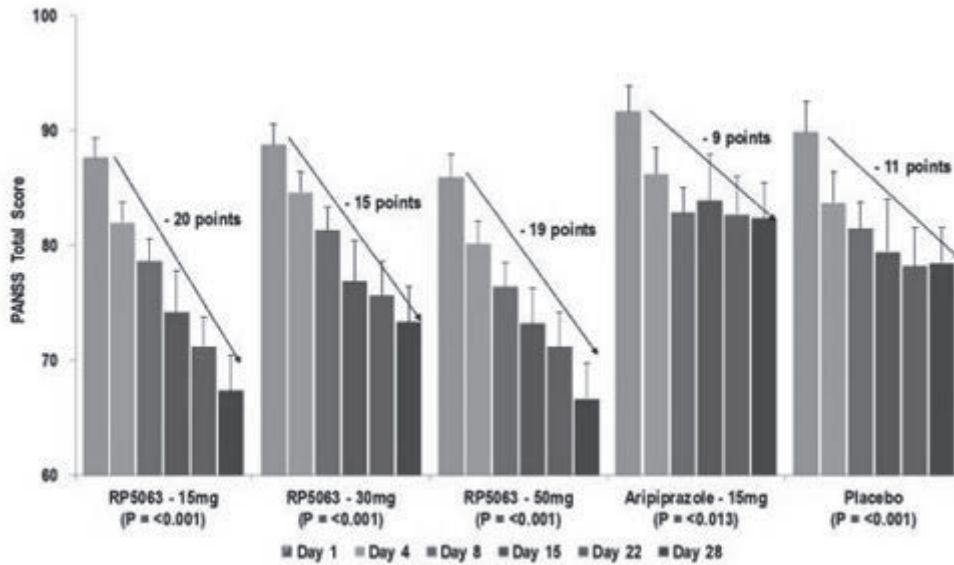
The sample size was calculated based on expected differences between the target dose of brilaroxazine and placebo of 8.3 points (standard deviation of 11.3 points, effect size = 0.735) in the primary efficacy analysis (mean change from baseline in PANSS Total Score). This plan projected a sample size of 180 completing subjects (i.e., 45 subjects in each brilaroxazine dose group; this cohort included 15 subjects in the aripiprazole group and 30 subjects in the placebo group) to achieve at least 85% power at an alpha level of 0.05% (two-sided). This level employed a t-test statistic for unequal group sizes, without controlling the alpha error in the pair-wise comparisons of the treatment groups with placebo. The statistical plan did not power the aripiprazole arm for statistical comparisons with other arms, as evaluation of this compound only assessed the study sensitivity; the study randomized 234 subjects to ensure that 180 would complete.

We conducted this study in compliance with the International Conference on Harmonization (ICH) Good Clinical Practice (GCP) Consolidated Guidelines. The FDA reviewed the protocol, as did investigational review boards/independent ethics committees, and all participating subjects provided informed consent.

The primary efficacy endpoint was the change from baseline to Day 28 or End of Treatment (EOT) on PANSS Total Score. The secondary efficacy endpoints were the change from baseline to Day 4, Day 8, Day 15, Day 22 and Day 28 on the following items: PANSS Total, PANSS Positive, and Negative subscales; 20% improvement in PANSS Total Score; Improvement by at least 1 point on the Clinical Global Impression (CGI-S); cognition by trail-making Tests A and B and the Digit Symbol Substitution Test (DSST). Safety variables included adverse events (AE), physical examinations, vital signs, body weight, laboratory measurements (hematology, serum chemistry including prolactin, urinalysis, and pregnancy tests), and electrocardiograms (ECGs). The measurement of extrapyramidal symptoms (EPS) utilized the Simpson Angus Scale (SAS), Abnormal Involuntary Movement Scale (AIMS), and the Barnes Akathisia Rating Scale (BARS). The Columbia-Suicide Severity Rating Scale (C-SSRS) assessed and classified reported suicidal behavior and depression by the Calgary Depression Scale for Schizophrenia (CDSS). Investigators collected blood samples throughout the dosing period and for 220 h beyond using a sparse sampling routine. Analysis of these samples defined the population pharmacokinetics (PK) and correlated pharmacokinetic and pharmacodynamic (PK/PD) effects.

Brilaroxazine demonstrated a sustained decrease in the total PANSS scores from Day 1 to 28 with statistically significant improvement within the group for all doses of brilaroxazine ($p < 0.001$) and aripiprazole ($p = 0.013$) (Figure 3).

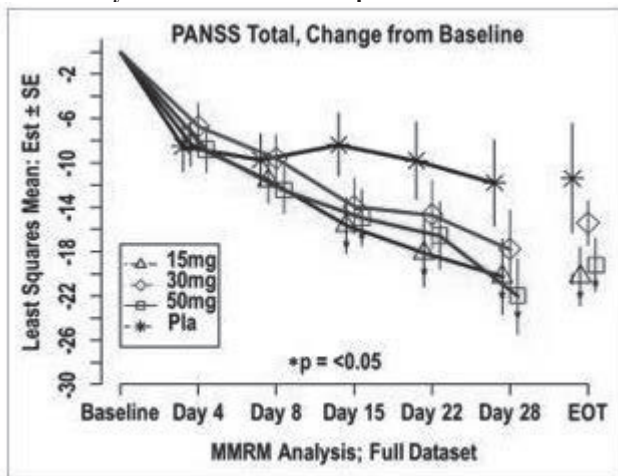
Figure 3. Brilaroxazine Efficacy in the Phase 2 Clinical Study in Acute Schizophrenia patients, Total PANSS Scores, ITT Population (4 weeks, N = 234)



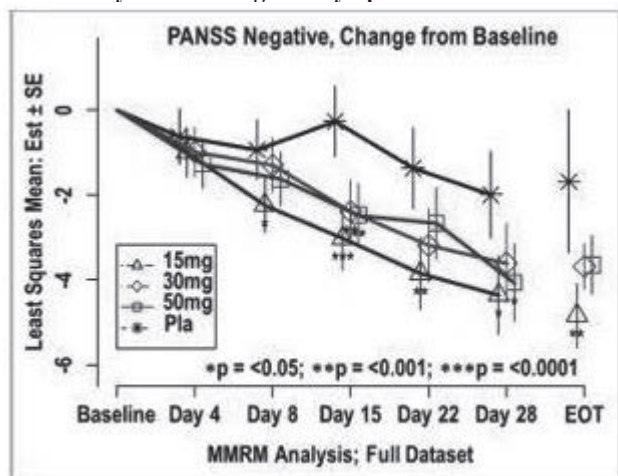
For the primary efficacy endpoint, the change in PANSS Total Score from baseline to Day 28/EOT there was a statistically significant treatment difference from placebo for the brilaroxazine 15-mg and 50-mg arms ($p = 0.0212$ and $p = 0.0167$), with a statistically significant difference versus placebo seen as early as the Day 15 assessment (mixed-effect model with repeated measures (MMRM) analyses). The 30-mg arm did not reach statistical significance ($p=0.2733$), although it was numerically superior. Investigators attributed the lack of significance of the brilaroxazine 30 mg dose to larger than normal early discontinuations (within 2-7 days) for reasons that were not related to the medication. Aripiprazole only showed efficacy in PANSS negative scores. PANSS subscale scores showed greater brilaroxazine improvement versus placebo in the PANSS Negative and Prosocial symptoms than the Positive symptoms (Figure 4). Both the brilaroxazine 15-mg and 50-mg treatment groups displayed statistical significance from placebo as early as Day 15 for the PANSS Negative and Prosocial scales. The 50-mg treatment group showed statistical significance at Day 28 for PANSS Positive. All brilaroxazine groups were numerically superior to placebo.

Figure 4. Brilaroxazine Phase 2 Clinical Efficacy for Acute Schizophrenia and Major Comorbid Symptoms

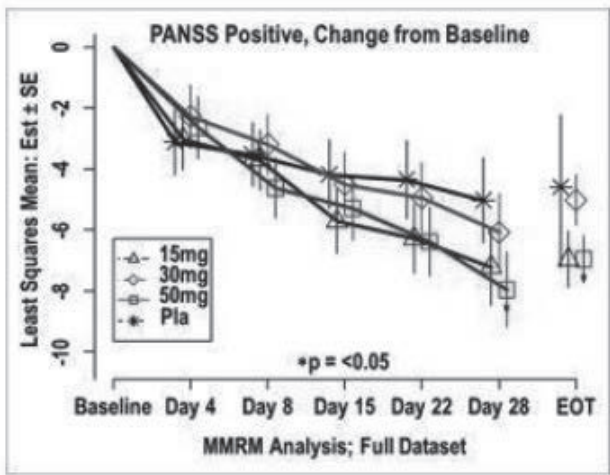
4A. Efficacy Data for Acute Schizophrenia



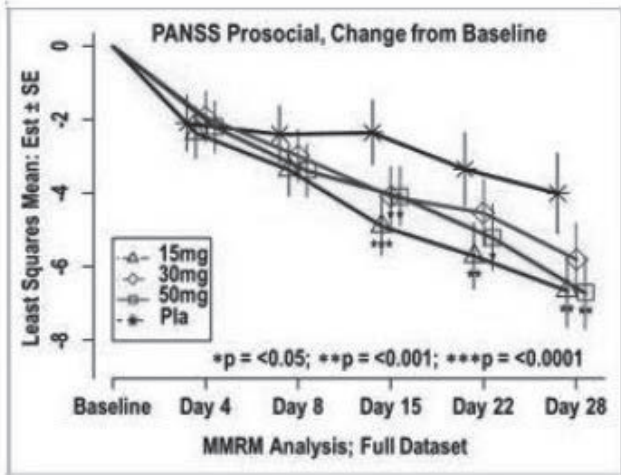
4B. Efficacy Data for Negative Symptoms



4C. Efficacy Data for Positive Symptoms

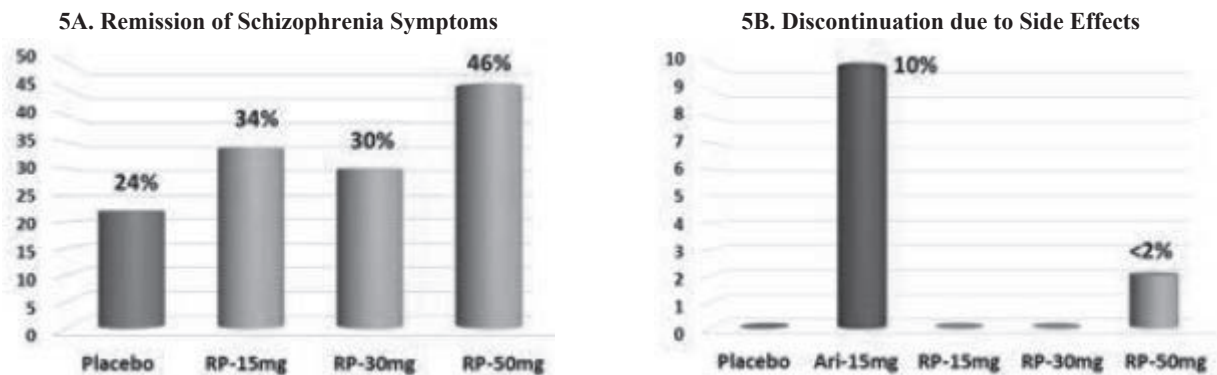


4D. Efficacy Data for Social Functioning



At Day 28/EOT, the frequency of a 30% improvement in total PANSS from baseline to EOT was 41%, 26%, and 39% for the respective brilaroxazine groups, versus 22% for the placebo cohort. Brilaroxazine subjects improved ≥ 2 points on the CGI-S by Day 28/EOT at twice the frequency of those on placebo. Brilaroxazine 15-mg, 30-mg, and 50-mg groups resulted in 46%, 37%, and 40% improvements, respectively, versus placebo showing a 19% change. Further, relative to >1 point changes, the 15-mg, 30-mg, and 50-mg brilaroxazine groups produced 73%, 58%, and 72% improvements, respectively, in the CGI-S, as compared to placebo showing 57% change. The CGI-S changes from baseline to Day 28/EOT were statistically superior to placebo for brilaroxazine 15 mg and 50 mg, while the change for 30 mg was numerically superior. Overall, brilaroxazine (15, 30, and 50mg) treated patients showed between 30-46% remission of acute schizophrenia symptoms, as compared with 22% in the placebo group (Figure 5a). As expected in a short study in patients with acute schizophrenia, there were no statistically significant differences in change from baseline for cognition scores. However, there were numerical improvements in brilaroxazine groups in the DSST, Trails A and Trails B scores for cognitive functions.

Figure 5. Brilaroxazine Phase 2 Study, Remission of Acute Schizophrenia and Discontinuation due to Side Effects



Patients tolerated doses of brilaroxazine up to 50 mg with no side effect related discontinuations in the 15 mg and 30 mg dose groups. Only <2% of patients discontinued the treatment in the 50 mg dose group compared to 10% of patients in the aripiprazole 15 mg group (Figure 5b). Treatment discontinuations for any reason with 15 mg, 30 mg, and 50 mg doses of brilaroxazine; the 15 mg dose of aripiprazole; and placebo were 14%, 25%, 12%, 35%, and 26%, respectively. Investigators attribute the higher discontinuation rate in the 30 mg group of brilaroxazine to a larger than the normal number of early discontinued patients (~10%) due to non-treatment reasons. Such early discontinuation is not uncommon in a clinical study of acute schizophrenia. The discontinuation rates with aripiprazole (35% for any reason, and 10% due to side effects) are consistent with findings in published clinical studies. Common treatment-emergent adverse events (TEAEs) were EPS (3%, 5%, and 9%) and akathisia (2%, 5%, and 10%), and as expected there seemed to be a dose-dependent increase in TEAEs in the 15, 30, and 50 mg brilaroxazine treatment groups, respectively (Figure 6).

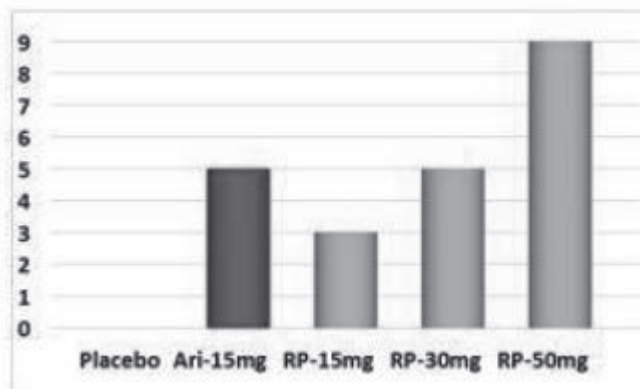
There were no clinically relevant changes from baseline in weight or body mass index (BMI); no subject had weight gain reported as a TEAE. This observation represented a clinically relevant finding because weight gain has been a common side effect of second-generation antipsychotics and identified as a key risk factor associated with increased morbidity and mortality in patients with schizophrenia with a major impact on compliance.

There were no clinically meaningful trends in laboratory parameters (including glucose, cholesterol, triglycerides or thyroid hormone T4), ECG, or vital signs. The study observed small mean decreases from baseline in prolactin levels in all treatment groups at Day 28. In addition, there were no reports of sexual side effects and no increase in suicidal ideation compared to placebo (Figure 6).

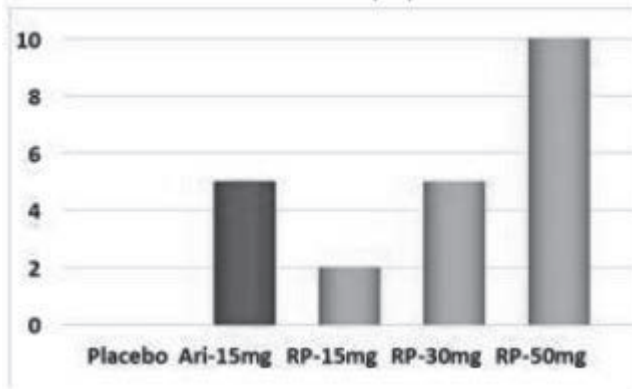
Figure 6. Brilaroxazine Side Effect Profile in the Phase 2 Clinical Study in Acute Schizophrenia (4 weeks, N=234)

6A. CNS or Neuroleptic Side effects

Extrapyramidal Side effects (%)

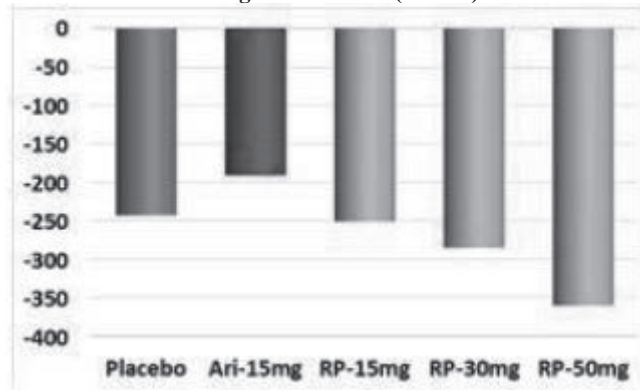


Akathisia (%)

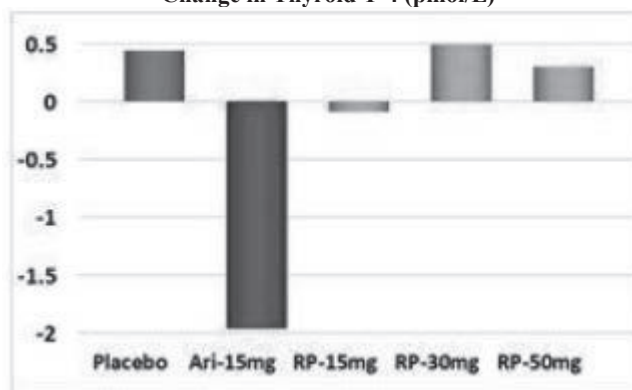


6B. Endocrine Side Effects

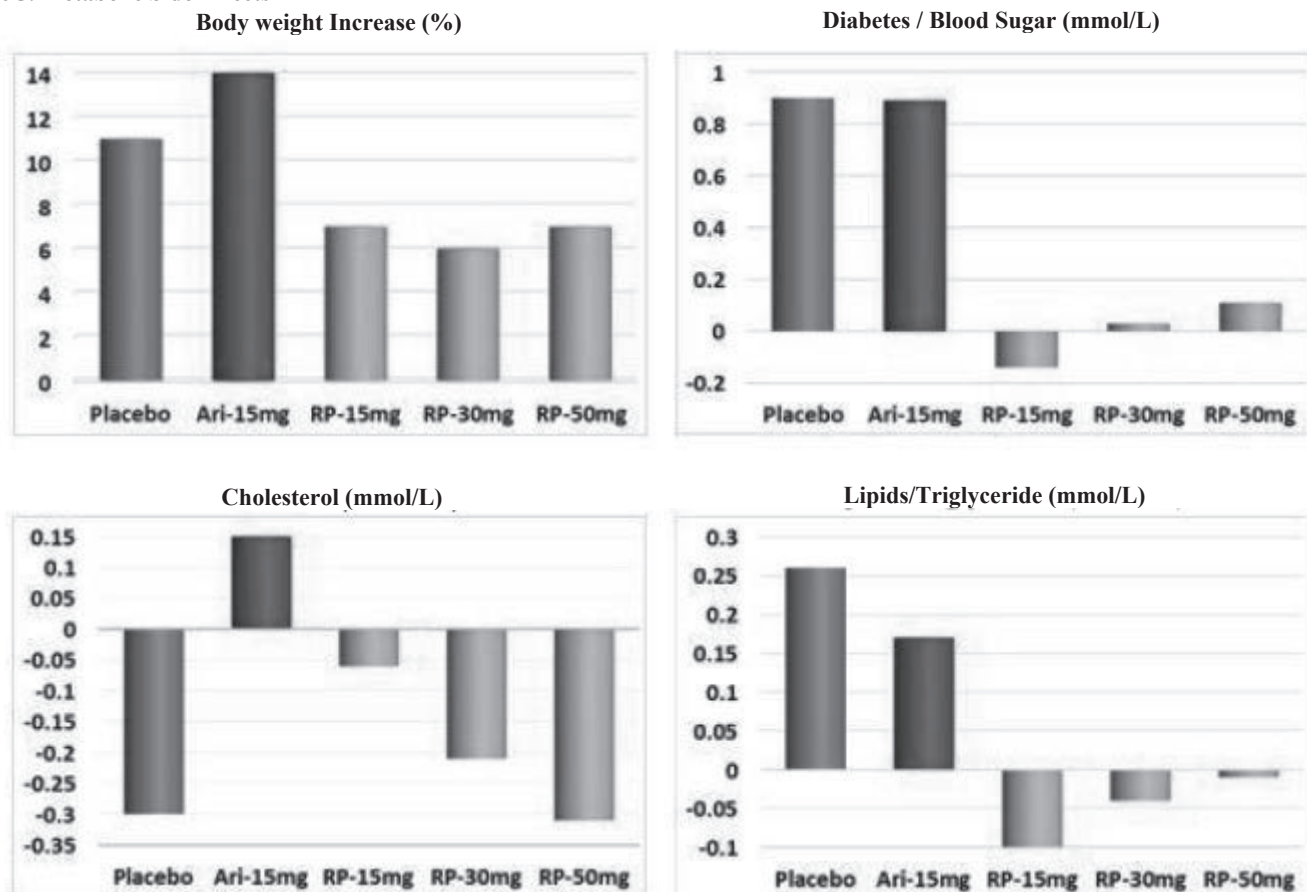
Change in Prolactin (mIU/L)



Change in Thyroid T-4 (pmol/L)



6C. Metabolic Side Effects



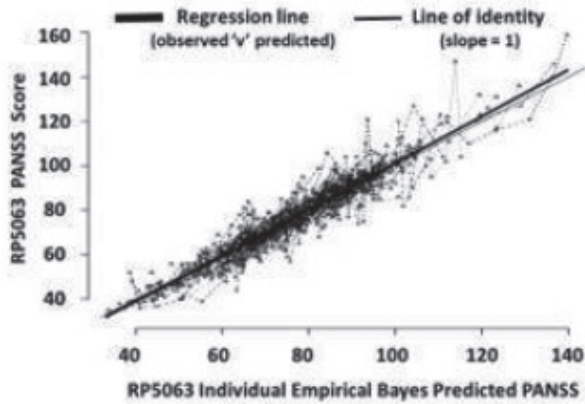
The analysis of brilaroxazine pharmacokinetic-pharmacodynamics relationship (PK-PD) reflected a linear, dose-proportional increase in exposure with dose and with no evidence of time dependency. Noteworthy was that the finding of brilaroxazine dose dependent drug exposure, reflected by C_{max} and AUC. These parameters increased in direct proportion to dose irrespective of the population studied (e.g., healthy volunteers, patients with stable schizophrenia, patients with acute exacerbations of schizophrenia or schizoaffective disorder). In Phase 1 multi-dose study, drug levels approached steady-state after 120 h (5 days) of daily dosing, with doses between 10 and 100 mg with maximum steady-state concentrations of 70.1 and 696 ng/mL and AUCs of 1361 and 12526 ng*h/mL at the 10 and 100 mg dose, respectively.

We believe these findings indicate a potential for important clinical benefits. We believe the lack of excessive drug accumulation should translate to a potential clinical benefit of not needing titration of therapy. Such might be the case with other atypical antipsychotics (e.g., aripiprazole). We believe that lack of accumulation and the long half-life (~40-50 h) of brilaroxazine should translate easily to a once-daily dosing schedule. We believe this schedule is of clinical importance for the schizophrenic patient population since medication adherence, and missing doses with shorter half-life drugs can be a clinical issue leading to destabilization of clinical control. Such can lead to poor long-term functional outcomes in the treatment of schizophrenia. With brilaroxazine, if a patient misses a single dose or two, we believe sufficient plasma concentrations remain for clinical control. Furthermore, the pharmacokinetic profile of brilaroxazine is independent of gender, age, ethnicity, glomerular filtration rate, smoking, concomitant medications, geographic location of the clinical site, and type of schizophrenia (acute or stable) patients treated. These observations mean that clinicians may not need dose adjustments based on the patient population (Figure 7b).

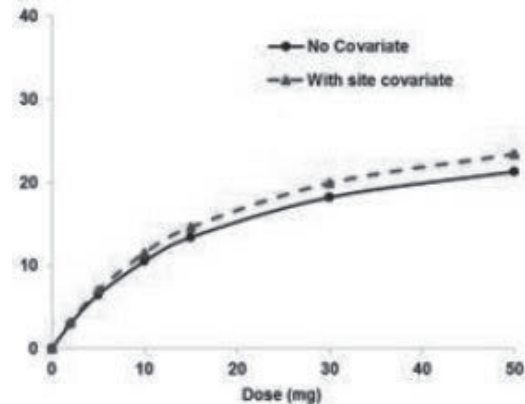
We performed the PK-PD modeling correlation with actual data using the observed and predicted PANSS demonstrating high predictability with relatively low variability. As shown in the graph below, both the regression line and line of identity are very close to each other. We believe this relationship indicates that the model is providing a very good fit (Figure 7a). The regression line is the line when one plots and regresses the observed data against the data predicted from the population model. The line of identity is when there is a perfect fit of the observed and predicted data (i.e., when each of the observed data is exactly equal to those of the corresponding predicted data, so the slope of the line is in exact unity). The dose-response curve showed that the total PANSS decrease was approaching its maximum response after a dose of approximately 15 mg. Thus, we believe brilaroxazine doses of 15 to 50 mg daily appear to be an effective clinical range of dosing (Figure 7b).

Figure 7. Brilaroxazine Phase 2 Clinical Study Pharmacokinetics and Pharmacodynamics Correlation

7A. Treatment PANSS vs. Predicted PANSS Scores



7B. Predicted Dose-Response Relationship

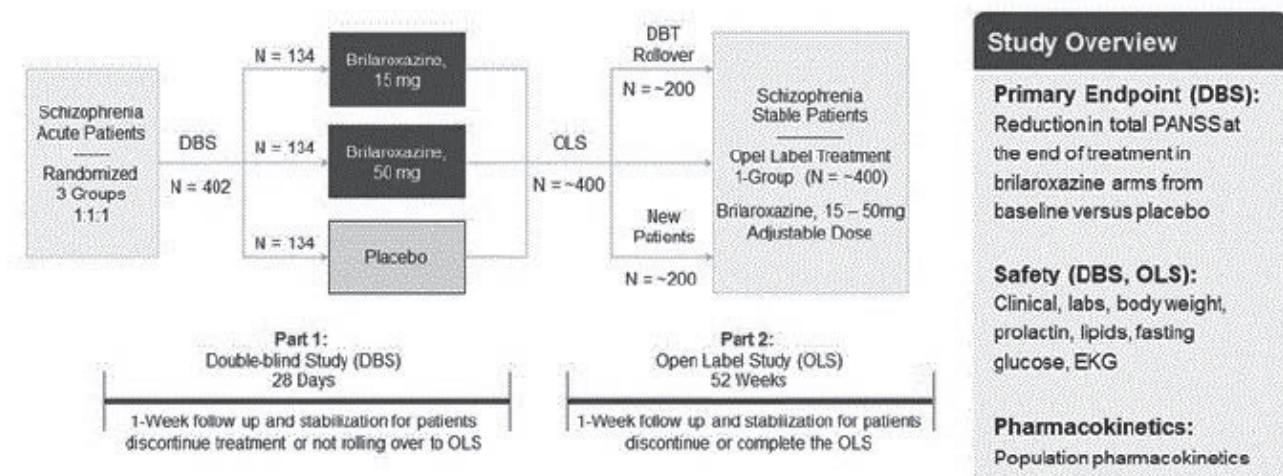


Brilaroxazine Phase 3 Studies in Schizophrenia

The Phase 1 and Phase 2 clinical experience in multiple populations (healthy volunteers, stable schizophrenia, and acute schizophrenia and schizoaffective disorder patients) reflect the promise of brilaroxazine as an addition to the treatment armamentarium of this disease. Both healthy volunteers and patients tolerated brilaroxazine well in both Phase 1 and 2 studies. The studies did not produce any cardiometabolic, cardiovascular, prolactin, or neurologic effects that would complicate current treatments. Investigators observed the early activity in Phase 1 after 10-days of dosing in stable patients and we believe that results from the Phase 2 trial may support the NDA for brilaroxazine, as brilaroxazine demonstrated significance versus placebo in Total PANSS Score at Day 28 as compared to baseline. The pharmacokinetics proved to be highly predictable and consistent between Phase 1 and 2 studies, participant type (healthy volunteer, patient), and racial characteristics (Caucasian, Black, Indian, and Japanese). Analyses showed substantive and relatively rapid oral absorption, linear, dose-proportional increases in Cmax and AUC, lack of undue accumulation, and a relatively long terminal half-life over 40 hours. We believe these findings translate to a straightforward once-daily dosing regimen with no need for titration or adjustments for the type of patient. These characteristics set the stage for further evaluation in Phase 3.

As part of the Phase 3 development plan in the end-of-Phase 2 (EOP2) meeting with the FDA in 2013, we presented the Phase 2 schizophrenia study results, discussed the Phase 3 development plans, and sought guidance from the FDA concerning the possibility of a superior safety label claim for brilaroxazine for the treatment of schizophrenia. We received a favorable response from the FDA, as the agency agreed to consider granting brilaroxazine a superior safety label claim for the treatment of schizophrenia if there is a positive outcome on a relevant endpoint in a pivotal Phase 3 study in schizophrenia. Further to support the superior safety label claim for brilaroxazine, the FDA agreed to waive the requirement to conduct a drug interaction clinical study with CYP2D6 inhibitors in Phase 3 development. We have accordingly planned Phase 3 development of brilaroxazine for acute and maintenance schizophrenia. We have completed the required regulatory compliant non-clinical studies. These include safety pharmacology studies, toxicology studies, and chemistry, manufacturing, and controls (CMC) development for initiating pivotal Phase 3 studies. Furthermore, the FDA has reviewed the results of these non-clinical studies and the Phase 3 protocols.

Figure 8. Brilaroxazine (RP503) Phase 3 RECOVER Clinical Trial for Schizophrenia



On January 10, 2022, the FDA notified us that we may proceed with our Phase 3 trial for brilaroxazine. On February 1, 2022, we announced that the first patients have been dosed in our Phase 3 RECOVER trial to assess brilaroxazine (RP5063) for the treatment of subjects with an acute exacerbation of schizophrenia. On July 27, 2022, we announced that we had enrolled patients in 15 geographically

diverse sites across the U.S. The RECOVER trial is a global Phase 3, randomized, double-blind, placebo-controlled, multicenter study designed to assess the safety and efficacy of brilaroxazine in approximately 400 patients with acute schizophrenia compared to placebo. Brilaroxazine will be administered at fixed doses of 15 mg or 50 mg once daily for 28 days. A 52-week open-label extension study will further evaluate the long-term safety and tolerability of brilaroxazine in patients with stable schizophrenia. We anticipate enrolling approximately 50% patients in USA, 25% in Europe and 25% in Asia. On October 31, 2022, we announced over 30% enrollment in our Phase 3 RECOVER trial in the United States and the initiation of and ongoing enrollment in sites in Europe. The Company has received regulatory approval for initiating the study in Asia (India) on October 11, 2022 and initiated multiple sites in India in November and December 2022. The Phase 3 trial outline is described in Figure 8 above.

Brilaroxazine Clinical Development for Bipolar Disorder (BD), Major Depressive Disorder (MDD), and Attention-Deficit/Hyperactivity Disorder (ADHD)

Like schizophrenia, BD, MDD, and ADHD are major neuropsychiatric diseases. These neuropsychiatric diseases exhibit distinct symptoms yet share varying degrees of overlapping conditions that include psychosis, depression, and cognitive impairments. BD, a medical illness with substantial morbidity and mortality, involves episodic, recurrent mania or hypomania, and major depression. An article published in 2018 in the journal *Therapeutic Advances in Psychopharmacology* estimated that the global prevalence of bipolar spectrum disorders is approximately 2.4%, with approximately 0.6% for bipolar I and approximately 0.4% for bipolar II. The same journal article indicates prevalence of bipolar I in the U.S. is 1%, slightly higher than in other countries. Similarly, MDD is a common, chronic, recurrent, and debilitating psychiatric condition, leading to significant impairments in personal functional capacities. The National Institute of Mental Health (NIMH) estimated the prevalence of MDD among U.S. adults aged 18 or older at 17.3 million in 2017. NIMH also indicated the prevalence was higher among females (8.7%) compared to males (5.3%). ADHD is a common developmental disorder in children and often continues into adulthood. The prevalence of ADHD in children is 5-12% worldwide, according to an article published in 2016 in the *Journal of Advanced Pharmaceutical Technology & Research*. ADHD has a high rate of comorbid psychiatric disorders.

The clinical community also uses the antipsychotic drugs (e.g., olanzapine, risperidone, quetiapine, and aripiprazole) for the treatment of BD, MDD, and/or ADHD. All these antipsychotics display pharmacological activities for dopamine (D) and serotonin (5HT) receptors. The majority are selective for D2 and 5HT2A receptors, and may also be active for one or more of D4, 5HT1A, 5HT2B, and 5HT7 receptors. Brilaroxazine exhibits potent activity for D2 and 5HT2A receptors, and each of D4, 5HT1A, 5HT2B, and 5HT7 receptors are implicated as pharmacological targets for depression and cognitive impairment conditions.

Subject to the receipt of additional financing, we may proceed with Phase 2 studies for brilaroxazine in BD, MDD, and ADHD, potentially as early as the first half of 2024.

Brilaroxazine Clinical Development for Psychosis and Behavioral Symptoms in Alzheimer's Disease (BPSD), and Parkinson's Disease Psychosis (PDP)

Patients with Alzheimer's disease (AD) manifest not only progressive memory impairment, cognitive deficits, and functional alterations but also a variety of neuropsychiatric symptoms (agitation, aggression, hallucinations, and delusions). An article published in 2002 in the journal *Archives of General Psychiatry* (now *JAMA Psychiatry*) states these symptoms ultimately affect up to 75% of individuals with dementia and, once present, sustain, or recur. Similarly, patients with Parkinson's disease also suffer from neuropsychiatric symptoms. There are very limited pharmacological treatment options for managing psychotic and behavioral symptoms in Alzheimer's and Parkinson's diseases. Without an approved drug, clinicians often manage the psychosis and behavioral symptoms in Alzheimer's disease with antipsychotics (e.g., quetiapine and olanzapine). Primavanserin (Nuplazid), a serotonin 5HT2A inverse agonist, is the only FDA approved treatment for the treatment of hallucinations and delusions associated with Parkinson's disease psychosis. However, clinicians do use some antipsychotics (e.g., quetiapine, and olanzapine) as an off-label treatment.

Subject to the receipt of additional financing, we may also continue the clinical development of brilaroxazine for the treatment of BPSD and PDP.

DEVELOPMENT OF BRILAROXAZINE FOR RESPIRATORY DISEASES

Development of brilaroxazine for Pulmonary Arterial Hypertension (PAH)

PAH is a progressive, debilitating condition characterized by pulmonary vascular resistance leading to right ventricular failure and death. According to an article published in 2016 in the journal *The Lancet Respiratory Medicine*, the global prevalence of PAH is estimated at 6.6 – 26.0 cases per million with 1.1 – 7.6 incidences per million adults per year. The same article indicates PAH is frequently diagnosed in older patients, particularly those 65 years and older. As presented in 2020, the National Organization for Rare Disorders ("NORD") estimates PAH occurs 3 – 5 times more frequently in females than in males, and it tends to affect females between the ages of 30 and 60. Pursuant to a study published in 2012, post-diagnosis of PAH, survival rates are approximately 1 year in 85%, 3 years in 68%, and 5 years in 57% of patients, respectively (Benza RL et al, *CHEST* 2012, 142(2):448-456).

PAH occurs when the pulmonary arteries have narrowed, thickened, or become blocked due to the constricting and remodeling of the pulmonary vasculature. Endothelial dysfunction occurs early in the disease pathogenesis. Such pathology leads to the proliferation of the endothelium and smooth muscle tissue, the remodeling of pulmonary arteriole walls, the impaired production of vasodilators, and the overexpression of vasoconstrictors. Remodeling can involve a variety of smooth muscle (e.g., hyperplasia, medial hypertrophy, perivascular fibrosis) and other extrinsic pathologic changes (e.g., microthrombosis, inflammatory cell infiltration, angioproliferative plexiform lesions).

Current treatment involves influencing smooth muscle tone: 1 — inhibition of phosphodiesterase 5 (PDE-5) (e.g., sildenafil) and nitric oxide; 2 — antagonizing endothelin (e.g., bosentan); and 3 — providing exogenous prostacyclins (e.g., epoprostenol, iloprost, treprostinil) to address the reduced production of prostaglandin I₂. Such treatments can reduce symptoms, improve the performance of activities of daily living, delay disease progression, and improve survival somewhat (e.g., epoprostenol). However, they fail to stem the ongoing cytoproliferative processes that significantly modify the pulmonary vascular structure and lead to progressive disease and/or the need for lung transplantation.

Serotonin (5-hydroxytryptamine; 5HT) plays a role in both the proliferative and functional components of the pathogenesis of PAH, which involve a variety of contributing factors, including inflammatory cytokines and chemokines. Pulmonary arteries express several 5HT receptors, including the 5HT_{2A}, 5HT_{2B}, and 5HT₇. The presence of 5HT in the pulmonary circulation activates vascular smooth muscle (VSM), 5HT_{2A} and 5HT_{2B} receptors, and SERT to cause constriction, the proliferation of pulmonary vascular smooth muscle cells, and fibroblast proliferation. Coupled with stimulating the transforming growth factor β pathway, the 5HT pathway facilitates cell proliferation and vascular remodeling. These changes lead to the thickening of the medial layer. These accompany the narrowing and the remodeling of the pulmonary artery. Together these define the characteristics of PAH.

Brilaroxazine is a novel candidate for the management of PAH. As a potent antagonist of the 5-HT receptor, it possesses a high binding affinity for several relevant targets associated with PAH. These include 5HT_{2A} (2.5 nM), 5HT_{2B} (0.19 nM), and 5HT₇ (2.7 nM), as well as a moderate affinity for SERT (107 nM) in preclinical models.

Brilaroxazine Preclinical Development for PAH

The FDA designated brilaroxazine as an orphan drug for the treatment of PAH in 2016. The agency based its decision on encouraging preclinical results with brilaroxazine in PAH, including disease-modifying antiproliferative effects. Two studies using the monocrotaline (MCT) and Sugen hypoxia (Su-Hx) models evaluated the effectiveness of brilaroxazine as monotherapy. Further, an additional study with the MCT model assessed this compound's effectiveness as an adjunct with several other standard treatments for PAH.

The monotherapy MCT-induced model involved a 28-day treatment on single-agent brilaroxazine. On Day 0, adult male Wistar-Kyoto rats, randomized into five groups of 10 animals, received a single intravenous 60-mg/kg MCT dose. Subsequently, on Days 0 to 27, the rats were gavaged twice daily (BID) with vehicle (MCT+Veh; 5% glucose solution), brilaroxazine (1, 3, or 10 mg/kg), or sildenafil (50 mg/kg). On Day 28, during terminal surgery, investigators obtained blood samples, hemodynamic readings, and harvested tissues.

In this study, brilaroxazine produced significant functional and structural changes, as compared with those in the MCT+Veh group. Functionally, brilaroxazine displayed healthier pulmonary hemodynamic parameters, translating to reduced right ventricle (R.V.) hypertrophy and suggesting greater pulmonary vascular elasticity. This activity led to improved respiratory resistance and hemoglobin oxygen saturation, as compared with PAH animals without treatment. Structurally, brilaroxazine appeared to prevent the remodeling of the smooth muscle cells in the pulmonary vasculature. The 10 mg dose prevented vascular intimal thickening (endothelial and smooth muscle hyperplasia, and the multiplication of vascular smooth muscle cells) in the smaller vessels, mostly non-muscular in healthy animals. In exploring the cytokine response, the study found that all doses of brilaroxazine produced lower levels of tumor necrosis factor (TNF) α and interleukin (IL) β , and facilitated a significant reduction of IL-6 ($p < 0.05$). These observations suggest an antiproliferative capacity.

In the SuHx-induced PAH study, investigators gave brilaroxazine treatment for 21 days. On Day 0, 4 groups of adult male Wistar-Kyoto rats received a subcutaneous injection of Sugen 5416 (20 mg/kg). Investigators kept them at FiO₂ of 10% (Days 0 – 21) and 21% (Days 22 – 35). During the treatment period starting at Day 14, rats were gavaged twice daily (BID) with vehicle (SuHx+Veh; 5% glucose solution), brilaroxazine (10 or 20 mg/kg; RP-10 and RP-20, respectively), or sildenafil 50 mg on Days 14 to 35. On Day 35, during terminal surgery, investigators obtained blood samples, hemodynamic readings, and harvested tissues.

Both doses of brilaroxazine and sildenafil produced a significant effect on functional and structural parameters, as compared with the induced group treated with vehicle (SuHx+Veh). Functionally, brilaroxazine improved pulmonary hemodynamics and respiratory function, resulting in higher oxygen saturation, as compared to non-treated, Sugen-induced animals. Structurally, brilaroxazine decreased small-vessel wall thickness and the percentage of muscular vessels. Most significantly, brilaroxazine limited arterial obliteration and prevented the formation of plexiform lesions. These observations suggest that the compound might exert antiproliferative effects and, potentially, a disease-modifying capacity. Concerning the cytokine effect, both brilaroxazine dose groups reflect lower levels of leukotriene-B4 at Days 21, 28, and 35.

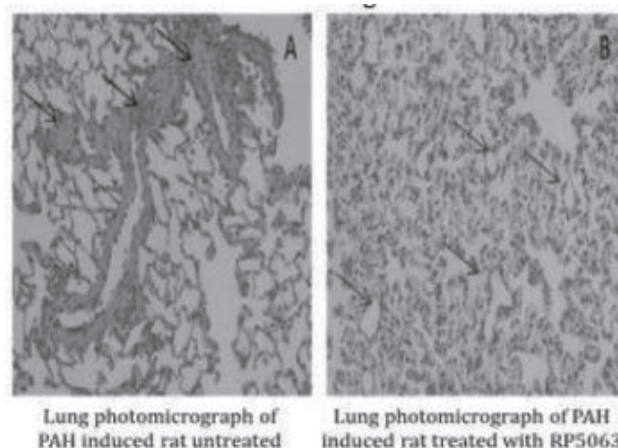
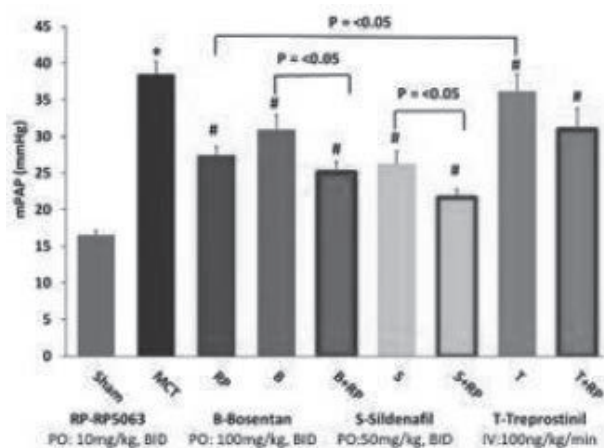
Considering the initial observations with brilaroxazine as a single-agent treatment in both the MCT and SuHx models in rats, we undertook an additional MCT study with this compound to evaluate its role as adjunctive therapy to standard PAH treatments (Bhat et al., 2018). In the same MCT model as previously described, investigators examined brilaroxazine as monotherapy and as an adjunct to current standards of PAH care (bosentan, sildenafil, treprostinil).

As a single agent, brilaroxazine produced functional and structural effects seen in the MCT+Veh group and was consistent with those seen in the initial monotherapy MCT study. Furthermore, these effects were like (and in some cases, better than) the standard treatments. As an adjunct to all treatments, brilaroxazine significantly ($p < 0.05$) lowered mean and systolic pulmonary artery pressures and R.V. systolic pressure, and improved oxygen saturation, as compared with the untreated, induced animals. The combination of brilaroxazine and sildenafil displayed the most consistent and robust effects. The most notable was on pulmonary hemodynamics, respiratory parameters, and histopathologic changes.

Figure 9. Effect of brilaroxazine Treatment in MCT (9A) and Sugen-Hypoxia (9B) Induced PAH in Rats

9A. Treatment Effects on PAH

9B. Treatment Effects on Lung Vascular Structure



Brilaroxazine Clinical Development for PAH

We had a pre-IND meeting with the FDA in August 2017, in which we presented brilaroxazine preclinical development data including efficacy results for PAH in rodent models, the data of regulatory compliant non-clinical studies (e.g., safety pharmacology studies, toxicology studies, and Chemistry, Manufacturing, and Controls (CMC) development), and the data of clinical Phase 1 studies. We discussed the Phase 2 clinical development plan with FDA and sought the agency’s guidance for our clinical development plan for a disease modifying label claim based on the positive specific clinical outcome. Pursuant to the agency’s guidance, we designed our clinical development plan to seek to obtain a disease modifying label claim.

Subject to the receipt of additional financing, we may proceed with a Phase 2 clinical trial for brilaroxazine in PAH.

Development of brilaroxazine for Idiopathic Pulmonary Fibrosis (IPF)

IPF is a chronic, progressive, and debilitating lung disease. In 2019, Medscape reported the worldwide prevalence of IPF is estimated at 20 cases per 100,000 persons for males and 13 cases per 100,000 persons for females. Medscape also reported that in the U.S., the prevalence among individuals aged 50 years or older ranges from 27.9 to 63 cases per 100,000. Medscape also reported, for patients suffering from IPF, the estimated mean survival is 2-5 years from the time of diagnosis and that mortality rates are estimated at 64.3 deaths per million in men and 58.4 deaths per million in women.

IPF involves chronic inflammation and progressive fibrosis of the alveoli. This pathology leads to destroyed lung architecture, reduced lung capacity, impaired oxygenation, and a decline in lung function.

Treatment involves early referral for lung transplantation, palliative care, and clinical trials. Limitations exist with various interventions, including commonly used agents (e.g., corticosteroids and immunosuppressants), and current guidelines do not support them. Clinical studies of two Food and Drug Administration approved treatments — Nintedanib (Ofev), and Pirfenidone (Esbriet) — have not demonstrated significant relief to functional decline and disease progression (Maher & Streck, Respiratory Research (2019)). Hence, we believe survival continues as an unmet need.

Various studies have implicated 5HT in the pathophysiology of IPF. It exerts a vasoactive effect on pulmonary arteries and stimulates lung myofibroblast actions. Pulmonary 5HT appears to mediate effects through 5-HT_{2A/2B/7} receptors.

Brilaroxazine may be a new candidate for the management of IPF. As a potent antagonist of the 5HT receptor, it possesses a high binding affinity for several relevant targets associated with IPF. These include 5HT_{2A} (2.5 nM), 5HT_{2B} (0.19 nM), and 5HT₇ (2.7 nM), as well as a moderate affinity for SERT (107 nM) in preclinical models.

Brilaroxazine Preclinical Development for IPF

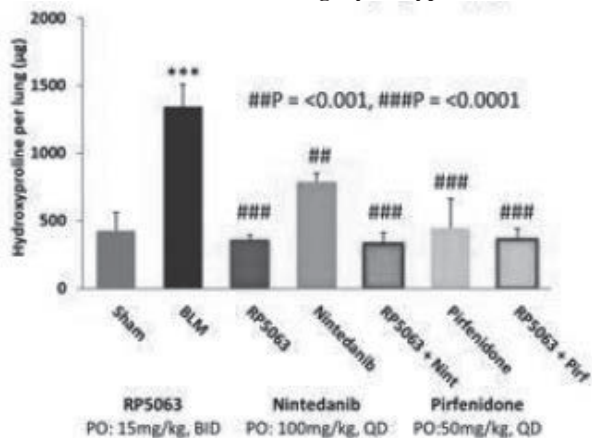
A bleomycin (BLM)-induced model involved a 21-day protocol using 34 Sprague Dawley rats divided into four groups- Group 1 (no induction, vehicle control), Group 2 (induction, vehicle control), Group 3 (induction, brilaroxazine, 15 mg/kg, intervention at Day 1), and Group 4 (induction, brilaroxazine, 15 mg/kg, intervention at Day 10). On Day 21, during terminal surgery, investigators obtained blood samples, hemodynamic readings, harvested tissues, and bronchoalveolar lavage fluid (BALF) samples. The histological analysis to evaluate effects on fibrosis involved several tests. Tissue stained with Masson's Trichrome and visualized using a scanner to determine the percentage of the fibrotic tissue, reflective of excessive collagen disposition in the lung. A colorimetric assay assessed the content of hydroxyproline, an amino acid for fibrillar collagens, from the right lung tissue sample. Finally, cytokine analysis of the BALF samples evaluated the effects on Macrophage inflammatory protein 1 (MIP1), Monocyte chemoattractant protein 1 (MCP1), Interleukin (IL)-6, Interferon gamma-induced protein 10 (IP10) and RANTES levels.

Compared with the bleomycin-induced vehicle group, the use of brilaroxazine at Day 0 and Day 10 sustained animal survival at 90.5% and 89.5%, respectively ($P < 0.05$). Furthermore, animals maintained their weight with both brilaroxazine interventions, as compared with the vehicle group ($P < 0.01$). Animals in both brilaroxazine groups restored cardiac output, with the Day 0 group displaying a significant effect as compared to those treated with vehicle ($P < 0.01$). The Day 0 brilaroxazine also normalized pulse pressure.

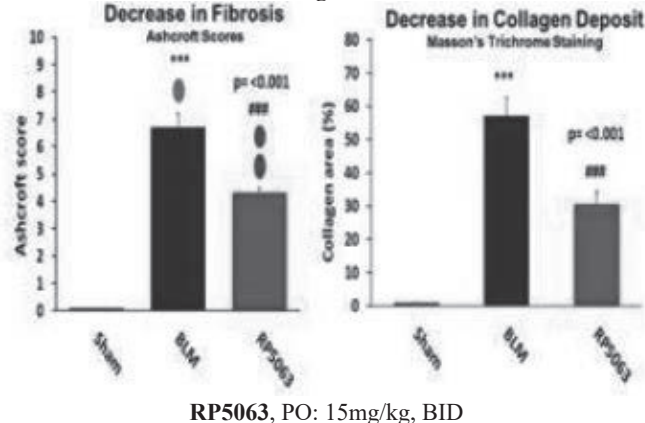
Brilaroxazine treatment influenced multiple functional, histological, and cytokine parameters reflective of pulmonary fibrosis. Animals in the brilaroxazine Day 0 group displayed a significant reduction in respiratory resistance ($P < 0.05$). Those in Day 10 group showed improvement ($P = 0.10$). Both brilaroxazine interventions produced a significant diminution in the concentration of hydroxyproline ($P < 0.05$, Day 0; $P < 0.01$, Day 10). Lung weights, which increased in the vehicle group suggesting the presence of edema, were significantly lower in the brilaroxazine Day 0 group ($P < 0.05$). From the BALF samples, total cell count (inflammation) was lower in both brilaroxazine groups ($P < 0.05$), as well as total protein content (edema) in the brilaroxazine Day 0 group ($P < 0.05$). Ashcroft Score from stained lung tissue reflected a significant reduction in the lung parenchymal fibrotic changes in the Day 0 group ($P < 0.001$). Concerning the percent of fibrosis areas measured with Masson's trichrome staining, the Day 0 brilaroxazine group significantly reduced these changes ($P < 0.001$), as compared with the vehicle group (Figure 9B). Furthermore, the Day 0 group showed significantly improved blood oxygen levels ($P < 0.05$). Both groups induced a diminution of blood lactate levels ($P < 0.01$, Day 0; $P < 0.05$, Day 5). Finally, both brilaroxazine groups reduced proinflammatory and fibrotic cytokines, with significant effects on MCP-1 ($P < 0.05$, Day 0), IP10 ($P < 0.01$, both brilaroxazine interventions), and RANTES ($P < 0.01$, both brilaroxazine interventions).

Figure 10. Effect of brilaroxazine (RP5063) as a Monotherapy and Co-administered with Standard of Care Nintedanib and Pirfenidone in Bleomycin (BLM) Induced IPF in Rats

10A. Treatment Effects on Lung Hydroxyproline

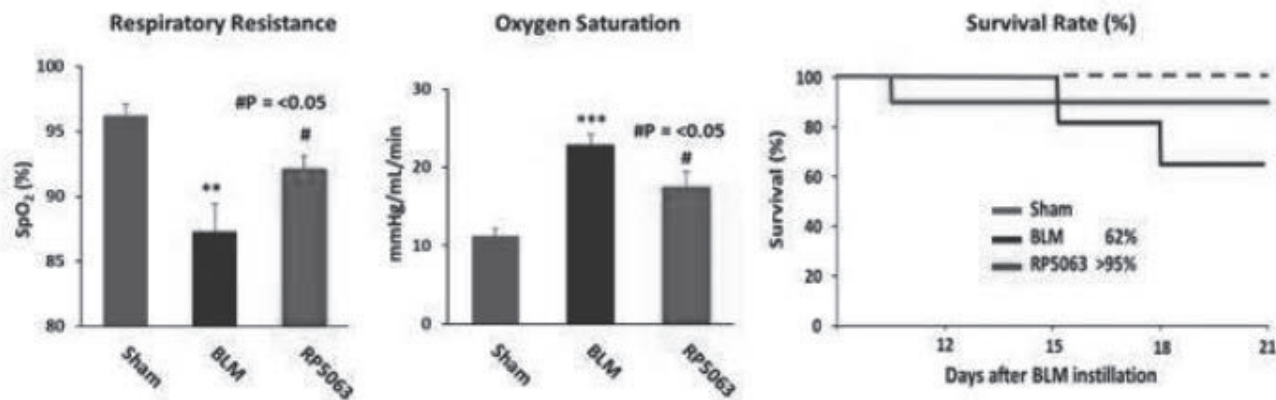


10B. Treatment Effects on Lung Alveoli Fibrosis



A follow-up preclinical study utilized the same BLM-induced model and methods. This study evaluated the effect of brilaroxazine (15 mg/kg twice daily) in combination with either nintedanib or pirfenidone (both dosed at 100 mg/kg once daily). Both nintedanib and pirfenidone are the current standard of care for patients with IPF. Single-agent treatment with nintedanib and pirfenidone (both dosed at 100 mg/kg once daily) served as controls. Treatment started on Day 7 following BLM-induction and continued until Day 20. Terminal surgery occurred on Day 21, in which harvesting of lung tissue and collecting of BALF occurred. Similar histological investigations evaluated the effects of treatment on mitigating the development of fibrosis via BLM-induction.

Figure 11. Effect of brilaroxazine Treatment in Bleomycin (BLM) Induced IPF in Rats



Brilaroxazine, as an adjunct to nintedanib and pirfenidone, significantly augmented the functional and histological effects of nintedanib and pirfenidone, two standard treatments for IPF, as evidenced by reduction in hydroxyproline level (Fig 10A) and fibrosis (Fig 10B) in the lungs. The brilaroxazine treatment demonstrated a reduction in respiratory resistance ($P < 0.05$), an increase in blood oxygenation ($P < 0.05$), and an improvement in survival rate (95%), as compared with vehicle control (62%) (Figure 11). Furthermore, brilaroxazine, as an adjunct, mitigated lung fibrosis, and collagen disposition, the hallmarks of pulmonary fibrosis, as evidenced by the significantly ($P < 0.001$) reduced concentration of hydroxyproline in the lungs produced by the treatment combinations (Figure 9A), as compared with vehicle control.

Brilaroxazine (RP5063) Clinical Development for IPF

The FDA granted orphan drug designation to brilaroxazine for the treatment of IPF in 2018. We had a pre-IND meeting with the FDA, in which we presented brilaroxazine preclinical development data including efficacy results for IPF in rodent models, the data of regulatory compliant non-clinical studies (e.g., safety pharmacology studies, toxicology studies, and Chemistry, Manufacturing, and Controls (CMC) development), and the data of clinical Phase 1 studies. We have discussed the Phase 2 clinical development plan with FDA and sought the agency's guidance for our clinical development plan for a disease modifying label claim based on the positive specific clinical outcome. Pursuant to the agency's guidance, we designed our clinical development plan to seek to obtain a disease modifying label claim.

Subject to the receipt of additional financing, we may also develop the clinical protocols and proceed with a Phase 2 clinical trial for brilaroxazine in IPF.

DEVELOPMENT OF RP1208 FOR DEPRESSION AND OBESITY

About RP1208

Our RP1208 drug candidate, a new chemical entity (NCE), is a novel triple reuptake inhibitor (TRI) which we believe is ready to be in IND enabling studies for depression and ready to be in animal efficacy studies for obesity, following the receipt of adequate additional financing. We possess a granted composition of matter patent for RP1208 in the USA, Europe, and several other countries.

Depression is a debilitating illness characterized by symptoms like anhedonia, depressed mood leading to suicidal thoughts, impaired cognitive functions, slowing of speech, and other actions. The NIMH estimated the prevalence of MDD among U.S. adults aged 18 or older at 17.3 million in 2017. NIMH also indicated the prevalence was higher among females (8.7%) compared to males (5.3%). Although there are many antidepressants in the market, an article published in 2003 indicates clinicians believe that approximately 50–60% of patients do not respond to the therapy (Fava M. *Biological Psychiatry* 2003, 53:649-659), which we believe reflects an unmet need to develop novel therapeutics to combat depression. The persistence of anhedonia originating from a depressed dopaminergic activity is one of the most treatment-resistant symptoms of depression. Currently, six major classes of antidepressant drugs, which target mainly monoamine transporters serotonin (SERT) and norepinephrine transporters (NET), are available. Therefore, though leaders have hypothesized that triple reuptake inhibitors (TRIs), with their potency to block dopamine reuptake by blocking dopamine transporter (DAT), in addition to serotonin transporter (SERT) and norepinephrine transporter (NET) should produce higher efficacy.

Triple reuptake inhibitor active compounds stimulate satiety and act as an appetite suppressant. Pharmacological studies have demonstrated that stimulated monoaminergic activity induces profound effects on feeding behaviors and, thus, energy intake. Furthermore, they have shown that agents that enhance synaptic levels of norepinephrine (NE), serotonin (5HT), or dopamine (DA) by stimulating release or reducing reuptake can decrease feeding and weight gain.

We have conducted several *in vitro* and *in vivo* studies on RP1208. In the radioligand binding assays, it has shown potent binding affinities for monoamine transporters DAT ($K_i = 1.2$ nM), SERT (0.8 nM), and NET (11 nM). Studies using *in vitro* functional assays assessed the functional activity of RP1208 for monoamine transporters. RP1208 showed potent functional inhibitory activities for monoamine transporters with IC_{50} values <1 nM for DAT, 6.6 nM for SERT, and 2 nM for NET. In the *in vivo* studies, RP1208 has shown acceptable bioavailability of 9% ($t_{1/2}=2.3$ h) in rat and 50% ($t_{1/2}=13.1$ h) in dog models. RP1208 rapidly and extensively distributes into tissues, including the brain with a brain:plasma ratio of $\sim 1:1$ (rat), despite high plasma protein binding ($>99\%$).

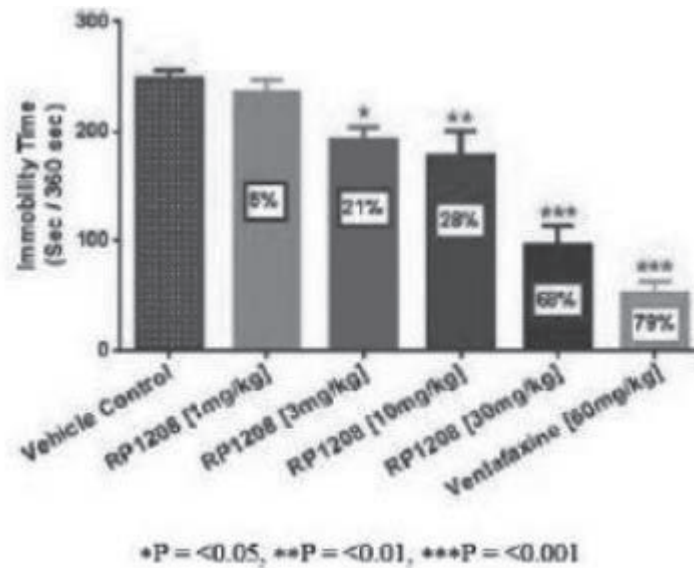
RP1208 Preclinical Studies for Depression and Obesity

We evaluated the antidepressant activity of RP1208 in the tail-suspension test in the mouse model. The tail-suspension test is a mouse behavioral test useful in the screening of potential antidepressant drugs, and assessing other manipulations that investigators expect to affect depression-related behaviors. Mice are suspended by their tails with tape, in such a position that it cannot escape or hold on to nearby surfaces. During this test, typically six minutes in duration, the resulting escape-oriented behaviors are quantified. A tail-suspension test is a valuable tool in drug discovery for high-throughput screening of prospective antidepressant compounds.

The tail-suspension test in male BALB/c mice with 1, 3, 10, and 30mg/kg doses evaluated the antidepressant activity of RP1208. Venlafaxine, an approved antidepressant drug, 60 mg/kg, was the positive control in the study. RP1208 has shown statistically robust significant reduction in immobility time at 3 mg/kg ($p < 0.05$), 10 mg/kg ($p < 0.01$), and 30 mg/kg ($p < 0.001$) doses. The antidepressant activity of RP1208, as measured by reduction in immobility time at different dose levels, was dose-dependent with no adverse effects (Figure 12).

Subject to the receipt of additional financing, we may also advance the development of RP1208 for depression and obesity.

Figure 12. Effect of RP1208 in Immobility Time in Male BALB/c Mice in Tail Suspension Test

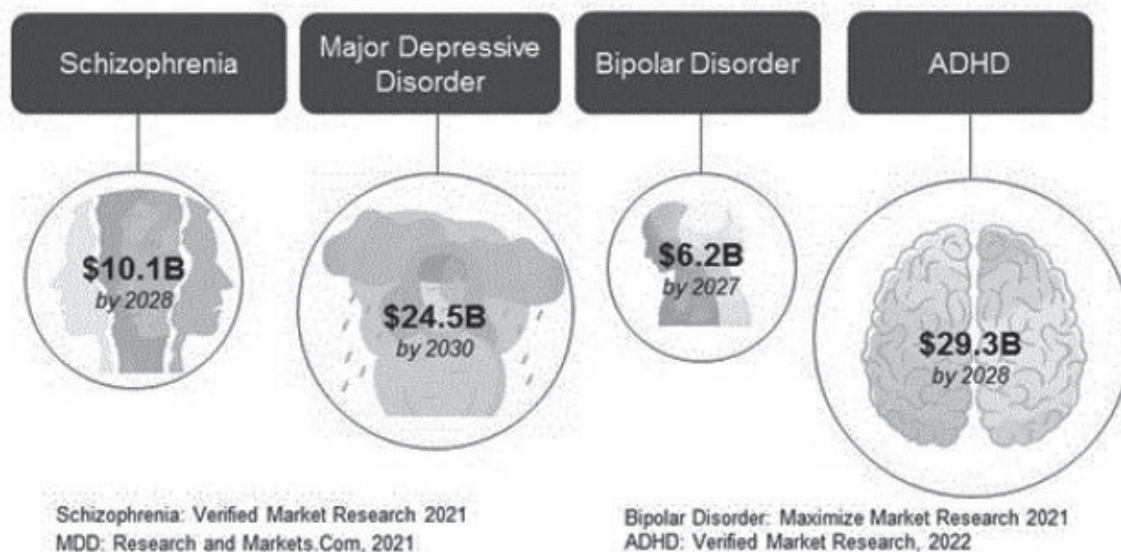


MARKET

Neuropsychiatric Diseases Schizophrenia, Bipolar Disorder (BD), Major Depressive Disorder (MDD), and Attention-Deficit/Hyperactivity Disorder (ADHD)

Schizophrenia, BD, and MDD are major neuropsychiatric diseases often chronic in nature. These neuropsychiatric diseases exhibit distinct symptoms yet share varying degrees of overlapping conditions that include psychosis, depression, and cognitive impairments. Schizophrenia is a complex debilitating psychiatric disease involving a mix of positive and negative symptoms, along with mood disorder (e.g. depression and anxiety) and cognitive impairment. As presented in 2020, SARDAA estimates schizophrenia can be found in approximately 1.1% of the world’s population, regardless of racial, ethnic or economic background, with approximately 3.5 million people diagnosed in the U.S. Schizophrenia imposes substantial burden on patients, their families and overall society. Treatment and other economic costs due to schizophrenia are enormous, estimated by SARDAA to be between \$32.5 and \$65 billion annually. Antipsychotic drugs are the first-line treatment for patients with schizophrenia. Increasing awareness among patients and physicians in the field of mental health, particularly schizophrenia is likely to increase the penetration of antipsychotic drugs in the market. Currently, second and third-generation antipsychotics capture significant market share. Pipeline drugs undergoing clinical trials intend to block specific subtypes of serotonin and dopamine receptors which would help to mitigate the symptoms and address unmet medical needs. According to a 2021 report from Verified Market Research, the total estimated drugs market size for schizophrenia is anticipated to reach approximately \$10.1 billion by 2028 (Figure 13).

Figure 13. Global Antipsychotics Market Insights for Schizophrenia, Bipolar Disorder (BD), Major Depressive Disorder (MDD), and Attention-Deficit/Hyperactivity Disorder (ADHD)



BD, a medical illness with substantial morbidity and mortality, involves episodic, recurrent mania or hypomania, and major depression. An article published in 2018 in the journal *Therapeutic Advances in Psychopharmacology* estimates that the global prevalence of bipolar spectrum disorders is approximately 2.4%, with approximately 0.6% for bipolar I and approximately 0.4% for bipolar II. The same journal article indicates prevalence of bipolar I in the U.S. has been found to be 1%, slightly higher than in other countries. In recent years, the general public awareness of the symptoms and treatment of BD is on the rise. Typically, the treatment for BD is for a lifetime. Antipsychotic drugs are the standard of care for patients with BD. According to a 2021 article from Maximize Market Research, the total estimated drugs market size for BD treatment is estimated to reach approximately \$6.2 billion by the year 2027 (Figure 13).

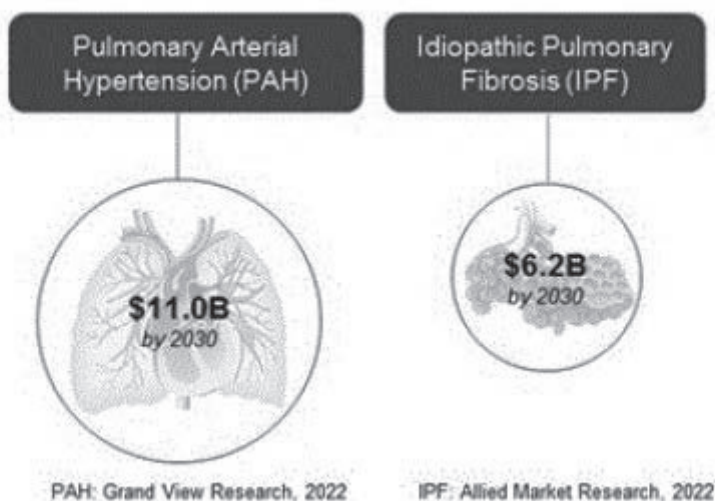
MDD is a common, chronic, recurrent, and debilitating psychiatric condition, leading to significant impairments in personal functional capacities. MDD is one of the most common mental disorders in the United States. NIMH has estimated the prevalence of MDD among U.S. adults aged 18 or older at 17.3 million in 2017. NIMH also indicated the prevalence was higher among females (8.7%) compared to males (5.3%). Antipsychotic drugs are standard of care either as a monotherapy or as an adjuvant treatment for patients with MDD. According to a 2021 report from Research and Markets.Com, the total estimated drugs market size for the treatment of depression is estimated to reach approximately \$24.5 billion by the year 2030 (Figure 13).

Attention Deficit Hyperactivity Disorder (ADHD) is a lifespan neurodevelopmental disorder, which typically manifest early in development, characterized by severe difficulties maintaining attention, coupled with impulsivity and hyperactivity (American Psychiatric Association, 2013). Other related secondary symptoms of ADHD may be social, emotional, and learning impairments, and comorbidity with psychiatric disorders such as disruptive behavioral disorders, depression and anxiety disorders is relatively high. The ADHD features are displayed in a persistent pattern that is pervasive across multiple settings and causes substantial functional impairment of personal, social, academic, or occupational functioning. An article published in *Lancet* 2020 reported worldwide estimated prevalence of ADHD is 5.29%. According to a 2022 report from Verified Market Research, the total estimated drugs market size for the treatment of ADHD is estimated to reach approximately \$29.3 billion by the year 2028.

Respiratory Diseases Pulmonary Arterial Hypertension (PAH) and Idiopathic pulmonary Fibrosis (IPF)

PAH and IPF are serious fatal lung diseases. Currently, there is no cure for PAH and IPF diseases. PAH is a progressive, debilitating condition characterized by pulmonary vascular resistance leading to right ventricular failure and death. According to an article published in 2016 in the journal *The Lancet Respiratory Medicine*, the global prevalence of PAH is estimated at 6.6 – 26.0 cases per million with 1.1 – 7.6 incidences per million adults per year. The same article indicates PAH is frequently diagnosed in older patients, particularly those 65 years and older. As presented in 2020, NORD estimates PAH occurs 3 – 5 times more frequently in females than in males, and it tends to affect females between the ages of 30 and 60. Pursuant to a study published in 2012, post-diagnosis of PAH, survival rates are approximately 1 year in 85%, 3 years in 68%, and 5 years in 57% of patients, respectively (Benza RL et al, *CHEST* 2012, 142(2):448-456). We believe the PAH treatment market may exhibit growth as drivers accountable for the potential market growth include a globally growing older population coupled with causative diseases including interstitial lung diseases (ILD), human immunodeficiency virus (HIV) infection, connective tissue disorders, chronic liver diseases, sedentary lifestyle and other idiopathic conditions. The presence of favorable government support in the U.S. such as Orphan Drug Act (ODA) 1983 and the Rare Disease Act (RDA) of 2002 to facilitate the development of orphan drugs with benefits including tax incentives (reduced taxes/tax credits equal to half of the development costs), clinical research subsidies, and improved patent protection and marketing rights. According to a 2022 report from Grand View Research, the global PAH treatment market is projected to reach USD 11.0 billion by 2030 (Figure 14).

Figure 14. Global Market Insights for Pulmonary Arterial Hypertension (PAH) and Idiopathic Pulmonary Fibrosis (IPF)



IPF is a chronic, progressive, and fatal lung disease. In 2019, Medscape reported the worldwide prevalence of IPF is estimated at 20 cases per 100,000 persons for males and 13 cases per 100,000 persons for females. Medscape also reported that in the U.S., the prevalence among individuals aged 50 years or older ranges from 27.9 to 63 cases per 100,000. Medscape also reported, for patients suffering from IPF, the estimated mean survival is 2–5 years from the time of diagnosis and that mortality rates are estimated at 64.3 deaths per million in men and 58.4 deaths per million in women. IPF involves chronic inflammation and progressive fibrosis of the alveoli. This pathology leads to destroyed lung architecture, reduced lung capacity, impaired oxygenation, and a decline in lung function.

Treatment involves the FDA approved drugs nintedanib (Ofev), and pirfenidone (Esbriet), lung transplantation and palliative care. According to a 2022 report from Allied Market Research, the total estimated drugs market size for IPF is anticipated to reach approximately \$6.2 billion by 2030 (Figure 14).

Competition

The pharmaceutical industry is highly competitive and characterized by rapidly evolving technology and intense research and development efforts. We expect to compete with companies, including major international pharmaceutical companies, that have substantially greater financial, research and development, and marketing and sales capabilities, and have substantially greater experience in undertaking preclinical and clinical testing of products, obtaining regulatory approvals, and marketing and selling pharmaceutical products. We will face competition based on, among other things, product efficacy and safety, the timing and scope of regulatory approvals, product ease of use, and price.

At the highest level, our potential competitors are any company developing treatments for schizophrenia, PAH, IPF, BD, MDD, ADHD, BPSD, and PDP.

There are numerous therapies currently used to treat schizophrenia patients, including olanzapine, risperidone, quetiapine, and aripiprazole. Such products are also often used for the treatment of comorbid neuropsychiatric disorders, including BD, MDD, ADHD, BPSD, and PDP. While these offer some clinical benefit, they are associated with adverse side effects, which include neuroleptic side effects (e.g. EPS, akathisia), metabolic side effects (e.g. weight gain, obesity, type 2 diabetes, dyslipidemia) and endocrine side effects (e.g. hypothyroidism, prolactin increase leading to sexual dysfunction). Thus, we believe there is an unmet medical need for safe and effective drugs for the treatment of schizophrenia, and related comorbid neuropsychiatric disorders, that could potentially address the totality of the disorders and help patients function and feel better, with minimal side effects.

Additionally, there are numerous therapies currently used to treat PAH and IPF patients, including sildenafil, bosentan and treprostinil for PAH and nintedanib and pirfenidone for IPF. While these offer some clinical benefit, they are associated with treating the symptoms of such diseases, and not the underlying structural modification that causes the disease. Thus, we believe there is an unmet medical need for safe and effective drugs for the treatment of PAH and IPF that could potentially address the underlying cause for the disease while also treating known comorbid mental illness to potentially improve quality of life.

Sales and Marketing

We currently have no sales and marketing personnel. As a clinical stage pharmaceutical company, we currently have no customers. We intend to develop domestic and international marketing, commercial operation, distribution, market access and reimbursement capabilities, or collaborate with third parties that have such infrastructure, in connection with the potential for FDA approval for brilaroxazine (RP5063) and RP1208.

Manufacturing and Supply

We have developed and validated a good manufacturing practice (“GMP”), process to manufacture the active pharmaceutical ingredient (“API”) for our brilaroxazine (RP5063) drug candidate through contract manufacturers. We have an API contract manufacturer to produce bulk batches under GMP for our anticipated clinical studies and anticipate entering into agreements to produce sufficient API required prior to submitting a New Drug Application (“NDA”) filing with the FDA. We do not own or operate manufacturing facilities for the production of brilaroxazine. We expect to depend on third-party suppliers and manufacturing organizations for all of our clinical trial quantities of raw materials and drug substance. We believe there are readily available supplies of all raw materials necessary for the manufacture of brilaroxazine and RP1208.

Employees

We have ten full-time employees, and utilize consultants, clinical research organizations and third parties to perform our pre-clinical studies, clinical studies, manufacturing, regulatory, administrative, and financial functions. We believe our relations with our employees are good. We anticipate that the number of people we employ may grow significantly as we continue to develop our current products or if we develop new product candidates in the future.

Intellectual Property

We strive to protect our intellectual property through a combination of patent, copyright, trademark and trade secrets laws, as well as through confidentiality provisions in our contracts.

We strive to protect our intellectual property that we believe is important to our business, including our proprietary technology platform, our product candidates, and our processes. We seek patent protection in the U.S. and internationally for our products, their methods of use and processes of manufacture, and any other technology to which we have rights, where available and when appropriate. We also rely on trade secrets that may be important to the development of our business.

We also plan to seek trademark protection in the U.S. and outside of the U.S. where available and when appropriate. We intend to use these registered marks in connection with our pharmaceutical research and development as well as our product candidates.

We are the sole owner of a patent portfolio that includes issued patents and pending patent applications covering compositions of matter and methods of use of our product candidates RP5063 (brilaroxazine) and RP1208, as well as related compounds. As of March 14, 2023 our portfolio of intellectual property consists of 63 granted patents and 11 pending patent applications in the United States and in 23 foreign countries.

Brilaroxazine is our first intended commercial product. The original brilaroxazine patents include composition of matter, and methods of use in treating acute mania, autism, BD, depression, psychosis, and schizophrenia. One brilaroxazine original patent (U.S. Patent No. 8,188,076) and its 7 divisional/continuation patents have been granted in US. The original brilaroxazine patents have also been granted in the following foreign countries: Australia, Brazil, Canada, Germany, Spain, France, Great Britain, Hong Kong, Israel, India, Italy, Japan, S. Korea, Liechtenstein, Mexico, Russia, Slovakia, and Thailand; and pending in China, Columbia, and Hong Kong. We believe that our patent portfolio provides good protection of brilaroxazine. All of the US and foreign original brilaroxazine granted patents and pending patent applications will expire or are expected to expire in 2030, if a patent term extension is not obtained. If and when brilaroxazine receives regulatory approval, we intend to apply for patent term extensions on patents covering brilaroxazine in any jurisdiction where patent term extension is available. For example, the expiration date of the first US original brilaroxazine may be extendable up to 2035.

We also own additional brilaroxazine granted patents and pending patent applications for additional indications such as attention hyperactivity disorder (U.S. Patent No. 9,907,803, which will expire in 2036), pulmonary arterial hypertension (U.S. Patent No. 10,441,590, Japanese Patent No. 6787926, Chinese Patent No. CN107206007B, Hong Kong Patent No. 1244448) and a pending application in Europe; all of which will expire or are expected to expire in 2036), and pulmonary fibrosis (pending applications in Brazil, China, Europe, Hong Kong, Japan, and US, which are expected to expire in 2038).

We further own three US patents (U.S. Patent Nos. 8,207,163; 8,247,420; 8,575,185; all of which will expire in 2030) directed to composition and use of compounds related to brilaroxazine.

We intend to continue to file patent applications to cover additional patentable aspects of brilaroxazine including new indications and to endeavor to exclude competitors from entering the field.

RP1208 may be our second intended commercial product. The RP1208 patents include composition of matter, and methods of use in treating depression and obesity. Three RP1208 patents have been granted in the US. RP1208 patents have also been granted in the following foreign countries: Australia, Canada, China, Columbia, Germany, Spain, France, Great Britain, Hong Kong, India, Italy, Mexico, Malaysia, Philippines, Russia, Singapore, and South Africa; and are pending in Thailand. We believe that our patent portfolio provides good protection of RP1208. The first RP1208 US patents will expire in 2033 and may be extendable up to 2038. The other two RP1208 continuation US patents will expire in 2032. All foreign RP1208 granted patents and pending patent applications will expire or are expected to expire in 2032. If and when RP1208 receives regulatory approval, we intend to apply for patent term extensions on patents covering RP1208 in any jurisdiction where patent term extension is available.

We also own two families of US patents directed to related compounds of RP1208 covering composition and use. The first family consists of US Patent No. 7,989,500 and its 5 granted continuation patents, which will expire in 2027 or 2028. The second family consists of US Patent No. 8,604,244 and its 2 granted continuation patents, which will expire in 2031.

In addition to patents, we also rely upon proprietary know-how (including trade secrets) to protect our technology and maintain and develop our competitive position. In some situations, maintaining information such as a trade secret may be more appropriate to protect the type of technology than filing a patent application. We seek to protect our confidential and proprietary information in part by confidentiality agreements, and it is our policy generally to have our employees, consultants, scientific advisors, outside scientific collaborators, sponsored researchers, investors, prospective investors and contractors execute such agreements upon the commencement of a relationship with us.

Our success will depend on 1) the ability to obtain and maintain patent and other proprietary rights in commercially important technology, inventions and know-how related to our business, 2) the validity and enforceability of our patents, 3) the continued confidentiality of our trade secrets, and 4) our ability to operate without infringing the valid and enforceable patents and proprietary rights of third parties. We also rely on continuing technological innovation and potential in-licensing opportunities to develop and maintain our proprietary position.

We cannot be certain that patents will be granted with respect to any of our pending patent applications, nor can we be certain that any of our existing patents will be successful in protecting our technology. For this and more comprehensive risks related to our intellectual property, please see “Risk Factors — Risks Related to our Intellectual Property.”

Regulatory Matters

The FDA and other federal, state, local and foreign regulatory agencies impose substantial requirements upon the clinical development, approval, labeling, manufacture, marketing and distribution of drug products. These agencies regulate, among other things, research and development activities and the testing, approval, manufacture, quality control, safety, effectiveness, labeling, storage, record keeping, advertising and promotion of our product candidates. The regulatory approval process is generally lengthy and expensive, with no guarantee of a positive result. Moreover, failure to comply with applicable requirements by the FDA or other requirements may result in civil or criminal penalties, recall or seizure of products, injunctive relief including partial or total suspension of production, or withdrawal of a product from the market.

The FDA regulates, among other things, the research, manufacture, promotion and distribution of drugs in the U.S. under the Federal Food, Drug, and Cosmetic Act (“FDCA”) and other statutes and implementing regulations. The process required by the FDA before prescription drug product candidates may be marketed in the U.S. generally involves the following:

- completion of extensive nonclinical laboratory tests, animal studies and formulation studies, all performed in accordance with the FDA’s Good Laboratory Practice regulations;
- submission to the FDA of an Investigational New Drug application (“IND”), which must become effective before human clinical trials may begin;
- performance of adequate and well-controlled human clinical trials in accordance with the FDA’s regulations, including Good Clinical Practices, to establish the safety and efficacy of the product candidate for each proposed indication;
- showing that a contemplated drug product can be formulated, tested and manufactured in compliance with quality control rules;
- submission to the FDA of an NDA for drug products, or a Biologics License Application (“BLA”), for biologic products;
- satisfactory completion of a preapproval inspection by the FDA of the manufacturing facilities at which the product is produced to assess compliance with current GMP (“cGMP”) regulations; and
- the FDA’s review and approval of the NDA or BLA prior to any commercial marketing, sale or shipment of the drug.

The testing and approval process requires substantial time, effort and financial resources, and we cannot be certain that any approvals for our product candidates will be granted on a timely basis, if at all.

Nonclinical tests include laboratory evaluations of product chemistry, formulation and stability, as well as studies to evaluate toxicity in animals and other animal studies. The results of nonclinical tests, together with manufacturing information and analytical data, are submitted as part of an IND to the FDA. Some nonclinical testing may continue even after an IND is submitted. The IND also includes one or more protocols for the initial clinical trial or trials and an investigator's brochure. An IND automatically becomes effective 30 days after receipt by the FDA, unless the FDA, within the 30-day time period, raises concerns or questions relating to the proposed clinical trials as outlined in the IND and places the clinical trial on a clinical hold. In such cases, the IND sponsor and the FDA must resolve any outstanding concerns or questions before any clinical trials can begin. Clinical trial holds also may be imposed at any time before or during studies due to safety concerns or non-compliance with regulatory requirements. An independent Institutional Review Board ("IRB"), at each of the clinical centers proposing to conduct the clinical trial must review and approve the plan for any clinical trial before it commences at that center. An IRB considers, among other things, whether the risks to individuals participating in the trials are minimized and are reasonable in relation to anticipated benefits. The IRB also approves the consent form signed by the trial participants and must monitor the study until completed.

Clinical Trials

Clinical trials involve the administration of the product candidate to human subjects under the supervision of qualified medical investigators according to approved protocols that detail the objectives of the study, dosing procedures, subject selection and exclusion criteria, and the parameters to be used to monitor participant safety. Each protocol for a U.S. study is submitted to the FDA as part of the IND.

Human clinical trials are typically conducted in three sequential phases, but the phases may overlap, or be combined.

- Phase 1 clinical trials typically involve the initial introduction of the product candidate into healthy human volunteers. In Phase 1 clinical trials, the product candidate is typically tested for safety, dosage tolerance, absorption, metabolism, distribution, excretion and pharmacodynamics.
- Phase 2 clinical trials are generally conducted in a limited patient population to gather evidence about the efficacy of the product candidate for specific, targeted indications; to determine dosage tolerance and optimal dosage; and to identify possible adverse effects and safety risks. Phase 2 clinical trials, in particular Phase 2b trials, can be undertaken to evaluate clinical efficacy and to test for safety in an expanded patient population at geographically dispersed clinical trial sites.
- Phase 3 clinical trials are undertaken to evaluate clinical efficacy and to test for safety in an expanded patient population at geographically dispersed clinical trial sites. The size of Phase 3 clinical trials depends upon clinical and statistical considerations for the product candidate and disease. Phase 3 clinical trials are intended to establish the overall risk-benefit ratio of the product candidate and provide an adequate basis for product labeling.

Post-approval clinical trials, sometimes referred to as Phase 4 clinical trials, may be conducted after initial approval. These clinical trials are used to gain additional experience from the treatment of patients in the intended therapeutic indication, particularly for long-term safety follow-up.

Clinical testing must satisfy the extensive regulations of the FDA. Reports detailing the results of the clinical trials must be submitted at least annually to the FDA and safety reports must be submitted for serious and unexpected adverse events. Success in early-stage clinical trials does not assure success in later-stage clinical trials. We, or the FDA or an IRB, may suspend a clinical trial at any time on various grounds, including a finding that the research subjects or patients are being exposed to an unacceptable health risk.

New Drug Applications

Assuming successful completion of the required clinical trials, the results of product development, nonclinical studies and clinical trials are submitted to the FDA as part of an NDA (or BLA, in the case of a biologic product). An NDA or BLA also must contain extensive manufacturing information, as well as proposed labeling for the finished product. An NDA or BLA applicant must develop information about the chemistry and physical characteristics of the drug and finalize a process for manufacturing the product in accordance with cGMP. The manufacturing process must be capable of consistently producing quality product within specifications approved by the FDA. The manufacturer must develop methods for testing the quality, purity and potency of the final product. In addition, appropriate packaging must be selected and tested, and stability studies must be conducted to demonstrate that the product does not undergo unacceptable deterioration over its shelf life. Prior to approval, the FDA will conduct an inspection of the manufacturing facilities to assess compliance with cGMP.

The FDA reviews all NDAs and BLAs submitted before it accepts them for filing. The FDA may request additional information rather than accept an NDA for filing. In this event, the NDA or BLA must be resubmitted with the additional information and is subject to review before the FDA accepts it for filing. After an application is filed, the FDA may refer the NDA or BLA to an advisory committee for review, evaluation and recommendation as to whether the application should be approved and under what conditions. The FDA is not bound by the recommendations of an advisory committee, but it considers them carefully when making decisions. The FDA may deny approval of an NDA or BLA if the applicable regulatory criteria are not satisfied. Data obtained from clinical trials are not always conclusive and the FDA may interpret data differently than we interpret the same data. The FDA may issue a complete response letter, which may require additional clinical or other data or impose other conditions that must be met in order to secure final approval of the NDA or BLA. If a product receives regulatory approval, the approval may be significantly limited to specific diseases and dosages or the indications for use may otherwise be limited, which could restrict the commercial value of the product. In addition, the FDA may require us to conduct Phase 4 testing which involves clinical trials designed to further assess a drug's safety and effectiveness after NDA or BLA approval, and may require surveillance programs to monitor the safety of approved products which have been commercialized. Once issued, the FDA may withdraw product approval if ongoing regulatory requirements are not met or if safety or efficacy questions are raised after the product reaches the market.

Section 505(b) NDAs

There are two types of NDAs: the Section 505(b)(1) NDA, or full NDA, and the Section 505(b)(2) NDA. Our current plans call for us to pursue only full NDAs. A full NDA is submitted under Section 505(b)(1) of the FDCA, and must contain full reports of investigations conducted by the applicant to demonstrate the safety and effectiveness of the drug.

Marketing Exclusivity

The FDCA provides five-year marketing exclusivity to the first applicant to gain approval of an NDA for a new chemical entity ("NCE"), meaning that the FDA has not previously approved any other drug containing the same active moiety. This exclusivity prohibits the submission of a Section 505(b)(2) NDA or an ANDA for any drug product containing the active ingredient during the five-year exclusivity period. However, submission of a Section 505(b)(2) NDA or an ANDA that certifies that a listed patent is invalid, unenforceable, or will not be infringed, as discussed above, is permitted after four years, but if a patent infringement lawsuit is brought within 45 days after such certification, FDA approval of a Section 505(b)(2) NDA or ANDA may automatically be stayed for as long as 7½ years after the NCE approval date. The FDCA also provides three years of marketing exclusivity for the approval of new and supplemental NDAs for product changes, including, among other things, new indications, dosage forms, routes of administration or strengths of an existing drug, or for a new use, if new clinical investigations, other than bioavailability studies, that were conducted or sponsored by the applicant are deemed by FDA to be essential to the approval of the application. Five-year and three-year exclusivity will not delay the submission or approval of another full NDA; however, as discussed above, an applicant submitting an ANDA or full NDA under Section 505(b)(1) would be required to conduct or obtain a right of reference to all of the nonclinical and adequate and well-controlled clinical trials necessary to demonstrate safety and effectiveness.

Other types of exclusivity in the United States include orphan drug exclusivity and pediatric exclusivity. The FDA may grant orphan drug designation to a drug intended to treat a rare disease or condition, which is generally a disease or condition that affects fewer than 200,000 individuals in the United States, or more than 200,000 individuals in the United States and for which there is no reasonable expectation that the cost of developing and making available in the United States a drug for this type of disease or condition will be recovered from sales in the United States for that drug. Seven-year orphan drug exclusivity is available to a product that has orphan drug designation and that receives the first FDA approval for the indication for which the drug has such designation. Orphan drug exclusivity prevents approval of another application for the same drug for the same orphan indication, for a period of seven years, regardless of whether the application is a full NDA or a Section 505(b)(2) NDA, except in limited circumstances, such as a showing of clinical superiority to the product with orphan exclusivity. Pediatric exclusivity, if granted, provides an additional six months to an existing exclusivity or statutory delay in approval resulting from a patent certification. This six-month exclusivity, which runs from the end of other exclusivity protection or patent delay, may be granted based on the voluntary completion of a pediatric study in accordance with an FDA-issued “Written Request” for such a study.

Breakthrough Therapy Designation

On July 9, 2012, the Food and Drug Administration Safety and Innovation Act (“FDASIA”), was signed. FDASIA Section 902 provides for a new drug designation, Breakthrough Therapy. A Breakthrough Therapy is a drug:

- intended alone or in combination with one or more other drugs to treat a serious or life-threatening disease or condition; and
- preliminary clinical evidence indicates that the drug may demonstrate substantial improvement over existing therapies on one or more clinically significant endpoints, such as substantial treatment effects observed early in clinical development.

Fast Track Designation

A Fast Track is a designation by the FDA of an investigational drug which:

- intended alone or in combination with one or more other drugs to treat a serious or life-threatening disease or condition; and
- non-clinical or clinical data demonstrate the potential to address an unmet medical need.

Fast Track is a process designed to facilitate the development and expedite the review of drugs to treat serious conditions and fill an unmet medical need. The benefits of a Fast Track designation include rolling submission of portions of the NDA for the drug candidate and eligibility for priority review of the NDA. Additionally, more frequent meetings and written communication with the FDA regarding the development plan and trial design for the drug candidate are encouraged throughout the entire drug development and review process, with the goal of having earlier drug approval and access for patients.

Other Regulatory Requirements

Maintaining substantial compliance with appropriate federal, state and local statutes and regulations requires the expenditure of substantial time and financial resources. Drug manufacturers are required to register their establishments with the FDA and certain state agencies, and after approval, the FDA and these state agencies conduct periodic unannounced inspections to ensure continued compliance with ongoing regulatory requirements, including current good manufacturing practice regulations (cGMPs). In addition, after approval, some types of changes to the approved product, such as adding new indications, manufacturing changes and additional labeling claims, are subject to further FDA review and approval. The FDA may require post-approval testing and surveillance programs to monitor safety and the effectiveness of approved products that have been commercialized. Any drug products manufactured or distributed by us pursuant to FDA approvals are subject to continuing regulation by the FDA, including:

- compliance with cGMPs;
- record-keeping requirements;
- reporting of adverse experiences with the drug;

- providing the FDA with updated safety and efficacy information;
- reporting on advertisements and promotional labeling;
- drug sampling and distribution requirements; and
- complying with electronic record and signature requirements.

In addition, the FDA strictly regulates labeling, advertising, promotion and other types of information on products that are placed on the market. There are numerous regulations and policies that govern various means for disseminating information to health-care professionals as well as consumers, including to industry sponsored scientific and educational activities, information provided to the media and information provided over the Internet. Drugs may be promoted only for the approved indications and in accordance with the provisions of the approved label.

The FDA has very broad enforcement authority and the failure to comply with applicable regulatory requirements can result in administrative or judicial sanctions being imposed on us or on the manufacturers and distributors of our approved products, including warning letters, refusals of government contracts, clinical holds, civil penalties, injunctions, restitution and disgorgement of profits, recall or seizure of products, total or partial suspension of production or distribution, withdrawal of approvals, refusal to approve pending applications, and criminal prosecution resulting in fines and incarceration. The FDA and other agencies actively enforce the laws and regulations prohibiting the promotion of off-label uses, and a company that is found to have improperly promoted off-label uses may be subject to significant liability. In addition, even after regulatory approval is obtained, later discovery of previously unknown problems with a product may result in restrictions on the product or even complete withdrawal of the product from the market.

Coverage and Reimbursement

Sales of our product candidates, if approved, will depend, in part, on the extent to which such products will be covered by third-party payors, such as government health care programs, commercial insurance and managed healthcare organizations. These third-party payors are increasingly limiting coverage or reducing reimbursements for medical products and services. In addition, the U.S. government, state legislatures and foreign governments have continued implementing cost-containment programs, including price controls, restrictions on reimbursement and requirements for substitution of generic products. Third-party payors decide which therapies they will pay for and establish reimbursement levels. Third-party payors often rely upon Medicare coverage policy and payment limitations in setting their own coverage and reimbursement policies. However, decisions regarding the extent of coverage and amount of reimbursement to be provided for any drug candidates that we develop will be made on a payor-by-payor basis. Each payor determines whether or not it will provide coverage for a therapy, what amount it will pay the manufacturer for the therapy, and on what tier of its formulary it will be placed. The position on a payor's list of covered drugs, or formulary, generally determines the co-payment that a patient will need to make to obtain the therapy and can strongly influence the adoption of such therapy by patients and physicians. Adoption of price controls and cost-containment measures, and adoption of more restrictive policies in jurisdictions with existing controls and measures, could further limit our net revenue and results. Decreases in third-party reimbursement for our product candidates or a decision by a third-party payor to not cover our product candidates could reduce physician usage of our product candidates, once approved, and have a material adverse effect on our sales, results of operations and financial condition.

Other Healthcare Laws

Because of our current and future arrangements with healthcare professionals, principal investigators, consultants, customers and third-party payors, we will also be subject to healthcare regulation and enforcement by the federal government and the states and foreign governments in which we will conduct our business, including our clinical research, proposed sales, marketing and educational programs. Failure to comply with these laws, where applicable, can result in the imposition of significant civil penalties, criminal penalties, or both. The U.S. laws that may affect our ability to operate, among others, include: the federal Health Insurance Portability and Accountability Act of 1996 ("HIPAA"), as amended by the Health Information Technology for Economic and Clinical Health Act, which governs the conduct of certain electronic healthcare transactions and protects the security and privacy of protected health information; certain state laws governing the privacy and security of health information in certain circumstances, some of which are more stringent than HIPAA and many of which differ from each other in significant ways and may not have the same effect, thus complicating compliance efforts; the federal healthcare programs' Anti-Kickback Statute, which prohibits, among other things, persons from knowingly and willfully soliciting, receiving, offering or paying remuneration, directly or indirectly, in exchange for or to induce either the referral of an individual for, or the purchase, order or recommendation of, any good or service for which payment may be made under federal healthcare programs such as the Medicare and Medicaid programs; federal false claims laws which prohibit, among other things, individuals or entities from knowingly presenting, or causing to be presented, claims for payment from Medicare, Medicaid, or other third-party payors that are false or fraudulent; federal criminal laws that prohibit executing a scheme to defraud any healthcare benefit program or making false statements relating to healthcare matters; the Physician Payments Sunshine Act, which requires manufacturers of drugs, devices, biologics, and medical supplies to report annually to the U.S. Department of Health and Human Services information related to payments and other transfers of value to physicians (defined to include doctors, dentists, optometrists, podiatrists and chiropractors) and teaching hospitals, and ownership and investment interests held by physicians and their immediate family members; and state law equivalents of each of the above federal laws, such as anti-kickback and false claims laws which may apply to items or services reimbursed by any third-party payor, including commercial insurers.

In addition, many states have similar laws and regulations, such as anti-kickback and false claims laws that may be broader in scope and may apply regardless of payor, in addition to items and services reimbursed under Medicaid and other state programs. Additionally, to the extent that our products are sold in a foreign country, we may be subject to similar foreign laws.

The Impact of New Legislation and Amendments to Existing Laws

The FDCA is subject to routine legislative amendments with a broad range of downstream effects. In addition to new legislation, such as the FDA Reauthorization Act of 2017 or the FDASIA in 2012, Congress introduces amendments to reauthorize drug user fees and address emerging concerns every five years. We cannot predict the impact of these new legislative acts and their implementing regulations on our business. The programs established or to be established under the legislation may have adverse effects upon us, including increased regulation of our industry. Compliance with such regulation may increase our costs and limit our ability to pursue business opportunities. In addition, the FDA's regulations, policies and guidance are often revised or reinterpreted by the agency or the courts in ways that may significantly affect our business and products.

We expect that additional federal and state, as well as foreign, healthcare reform measures will be adopted in the future, any of which could result in reduced demand for our products or additional pricing pressure.

Where You Can Find More Information

We file annual, quarterly and current reports, proxy statements and other information with the Securities and Exchange Commission, or the SEC. Our SEC filings are available to the public over the internet at the SEC's website at <http://www.sec.gov>. Our website is located at <https://revivapharma.com/>. On our website, investors can obtain, free of charge, a copy of our Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, our Code of Business Conduct and Ethics, including disclosure related to any amendments or waivers thereto, other reports and any amendments thereto filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act of 1934, as amended, as soon as reasonably practicable after we file such material electronically with, or furnish it to, the SEC. Our website and the information contained on or connected to that site are not incorporated into this Annual Report on Form 10-K. We will provide, without charge, to each person upon written request of such person, a copy of this Annual Report on Form 10-K, including the financial statements and financial statement schedules included herein. You should direct requests for those documents to:

Reviva Pharmaceuticals Holdings, Inc.
19925 Stevens Creek Blvd., Suite 100
Cupertino, CA 95014
Attn: Investor Relations
Email: info.rp@revivapharma.com

Item 1A. RISK FACTORS

An investment in our common stock is speculative and illiquid and involves a high degree of risk including the risk of a loss of your entire investment. You should carefully consider the risks and uncertainties described below and the other information contained in this report and our other reports filed with the Securities and Exchange Commission. The risks set forth below are not the only ones facing us. Additional risks and uncertainties may exist that could also adversely affect our business, operations and financial condition. If any of the following risks actually materialize, our business, financial condition and/or operations could suffer. In such event, the value of our common stock could decline, and you could lose all or a substantial portion of the money that you pay for our common stock.

Summary Risk Factors

Our business is subject to numerous risks and uncertainties. The following summarizes key risks and uncertainties that could materially adversely affect us. You should read this summary together with the more detailed risk factors contained below.

- we have never generated any product revenues;
- we expect to incur significant losses for the foreseeable future and may never achieve or maintain profitability;
- our recurring losses from operations have raised substantiated doubt regarding our ability to continue as a going concern;
- we are heavily dependent on the success of brilaroxazine, our only advanced product candidate, which is still under clinical development, and if brilaroxazine does not receive regulatory approval or is not successfully commercialized, our business will be harmed;
- the COVID-19 outbreak and global pandemic or other future health crises, pandemics or other events could adversely impact our business, including our clinical trials;
- we will require additional capital to fund our operations, and if we fail to obtain necessary financing, we may not be able to complete the development and commercialization of brilaroxazine or RP1208;
- if the interpretations, estimates or judgments we use to prepare our financial statements prove to be incorrect, we may be required to restate our financial results, which could have a number of material adverse effects on us;
- clinical trials are very expensive, time-consuming, difficult to design and implement and involve an uncertain outcome;
- we face significant competition from other biotechnology and pharmaceutical companies, and our operating results will suffer if we fail to compete effectively;
- we do not have our own manufacturing capabilities and will rely on third parties to produce clinical and commercial supplies of brilaroxazine, RP1208 and any future product candidate;
- we rely on third parties to conduct, supervise and monitor our clinical trials, and if those third parties perform in an unsatisfactory manner, it may harm our business;
- if we are unable to obtain and maintain patent protection for our technology and products or if the scope of the patent protection obtained is not sufficiently broad, we may not be able to compete effectively in our markets;
- if we fail to maintain compliance with the requirements of The Nasdaq Capital Market for continued listing, our common stock may be delisted and the price of our common stock and our ability to access the capital markets could be negatively impacted;
- certain of our warrants are accounted for as liabilities and the changes in value of such warrants could have a material effect on our financial results;
- we are an emerging growth company within the meaning of the Securities Act of 1933, as amended (the “Securities Act”) and have taken advantage of certain exemptions from disclosure requirements available to emerging growth companies; this could make our securities less attractive to investors and may make it more difficult to compare our performance with other public companies;
- we do not currently intend to pay dividends on our common stock in the foreseeable future, and consequently, any gains from an investment in our common stock will likely depend on appreciation in the price of our common stock; and
- our officers, directors, and principal stockholders exercise significant control over our Company, and will control our Company for the foreseeable future, including the outcome of matters requiring stockholder approval.

Risks Related to Our Business, Financial Position and Capital Requirements

We have never generated any product revenues.

We are a clinical-stage biopharmaceutical company. Although we were formed in May 2006, to date, we have not generated any product revenues from our product candidates currently in development. We have not yet demonstrated an ability to successfully complete a large-scale, pivotal clinical trial, obtain marketing approval, manufacture a commercial scale product, or arrange for a third-party to do so on our behalf, or conduct sales and marketing activities necessary for successful product commercialization.

Consequently, we have no meaningful operations upon which to evaluate our business and predictions about our future success or viability may not be as accurate as they could be if we had a history of successfully developing and commercializing pharmaceutical products.

Our ability to generate revenue and become profitable depends upon our ability to successfully complete the development of our product candidates, brilaroxazine for the treatment of schizophrenia, respiratory/pulmonary diseases such as Pulmonary Arterial Hypertension, or PAH, and Idiopathic Pulmonary Fibrosis, or IPF, and for other neuropsychiatric diseases, such as bipolar disorder, or BD, major depressive disorder, or MDD, Alzheimer's psychosis/agitation, or AD, Parkinson's psychosis, or PD, and attention deficit hyperactivity disorder, or ADHD/ADD, and RP1208 for the treatment of depression and obesity, and obtain the necessary regulatory approvals for their commercialization. We have never been profitable, have no products approved for commercial sale and to date have not generated any revenue from product sales.

Even if we receive regulatory approval for the commercialization of brilaroxazine, we do not know when this product candidate will generate revenue, if at all. RP1208 is in pre-clinical development. Our ability to generate product revenue depends on a number of factors, including our ability to:

- successfully develop, complete pre-clinical and clinical trials and obtain regulatory approval for the marketing of our product candidates;
- set an acceptable price for our product candidates and obtain coverage and adequate reimbursement from third-party payors;
- establish sales, marketing and distribution systems for our product candidates;
- add operational, financial and management information systems and personnel, including personnel to support our clinical, manufacturing and planned future commercialization efforts and operations;
- initiate and continue relationships with third-party manufacturers and have commercial quantities of our product candidates manufactured at acceptable cost levels;
- attract and retain an experienced management and advisory team;
- achieve broad market acceptance of our products in the medical community and with third party payors and consumers;
- launch commercial sales of our products, whether alone or in collaboration with others; and
- maintain, expand and protect our intellectual property portfolio.

Because of the numerous risks and uncertainties associated with product development, we are unable to predict the timing or amount of increased expenses, or when, or if, we will be able to achieve or maintain profitability. Our expenses could increase beyond expectations if we are required by the FDA, and comparable non-U.S. regulatory authorities, to perform studies or clinical trials in addition to those that we currently anticipate. Even if our product candidates are approved for commercial sale, we anticipate incurring significant costs associated with the commercial launch of these products. If we cannot successfully execute any one of the foregoing, our business, prospects and results of operations may be adversely affected.

We expect to incur significant losses for the foreseeable future and may never achieve or maintain profitability.

Investment in pharmaceutical product development is highly speculative because it entails substantial upfront capital expenditures and significant risk that a product candidate will fail to gain regulatory approval or become commercially viable. We have never generated any revenues and cannot estimate with precision the extent of our future losses. We do not currently have any products that are available for commercial sale and we may never generate revenue from selling products or achieve profitability. We expect to continue to incur substantial and increasing losses through the projected commercialization of brilaroxazine and RP1208. For the year ended December 31, 2022, we reported a loss of \$24.3 million and a negative cash flow from operations of \$19.0 million. We had an accumulated deficit of \$91.2 million and had cash and cash equivalents of \$18.5 million as of December 31, 2022.

Brilaroxazine has not been approved for marketing in the United States and may never receive such approval. Although RP1208 may be in IND enabling studies for depression and may be in animal efficacy studies for obesity within a short time frame following the receipt of adequate additional financing, it is not currently in an IND-enabling study or animal efficacy study, respectively, and may never meet the requirements for filing an IND. As a result, we are uncertain when or if we will achieve profitability and, if so, whether we will be able to sustain it. Our ability to produce revenue and achieve profitability is dependent on our ability to complete the development of our product candidates, obtain necessary regulatory approvals, and have our product candidates manufactured and successfully marketed. We cannot assure you that we will be profitable even if we successfully commercializes our product candidates. If we do not successfully obtain regulatory approval to market our product candidates, our revenues will be dependent, in part, upon, among other things, the size of the markets in the territories for which we gain regulatory approval, the number of competitors in such markets, the accepted price for our product candidates and whether we own the commercial rights for that territory. If the indication approved by regulatory authorities is narrower than we expects, or the treatment population is narrowed by competition, physician choice or treatment guidelines, we may not generate significant revenue from sales of our product candidates, even if approved. Even if we do achieve profitability, we may not be able to sustain or increase profitability on a quarterly or annual basis. Failure to become and remain profitable may adversely affect the timing of our clinical results and our ability to raise capital and continue operations.

We expect our research and development expenses to be significant in connection with the following ongoing and planned research:

- Phase 3 studies for brilaroxazine for the treatment of schizophrenia;
- Phase 2 studies for the treatment of PAH, IPF, BD, MDD, AD, PD, ADHD/ADD;
- pre-clinical studies and clinical studies for RP1208 for the treatment of depression and obesity.

Further, we will require additional capital to proceed with the planned research described above. See “Risks Related to Our Business, Financial Position and Capital Requirements — We will require additional capital to fund our operations, and if we fail to obtain necessary financing, we may not be able to complete the development and commercialization of brilaroxazine and RP1208.”

In addition, if we obtain regulatory approval for brilaroxazine, we expect to incur increased sales and marketing expenses. As a result, we expect to continue to incur significant and increasing operating losses and negative cash flows for the foreseeable future. These losses have had and will continue to have an adverse effect on our financial position and working capital.

Our recurring losses from operations have raised substantial doubt regarding our ability to continue as a going concern.

We have recognized recurring losses, and as of December 31, 2022, had an accumulated deficit of \$91.2 million. We anticipate operating losses to continue for the foreseeable future due to, among other things expenses related to ongoing activities to research, develop and commercialize our product candidates. We expect the cash and cash equivalents of \$18.5 million at December 31, 2022 to be insufficient to meet our operating and capital requirements at least 12 months from the filing of this Annual Report on Form 10-K. Our forecast of the period of time through which our current financial resources will be adequate to support our operations and the costs to support our general and administrative and research and development activities are forward-looking statements and involve risks and uncertainties. The financial statements do not include any adjustments that might be necessary should we be unable to continue as a going concern.

As further described below, our ability to continue as a going concern is dependent on our ability to raise additional working capital through public or private equity or debt financings or other sources, which may include collaborations with third parties as well as disciplined cash spending. Should we be unable to raise sufficient additional capital, we may be required to undertake cost-cutting measures including delaying or discontinuing certain clinical activities. The sale of equity and convertible debt securities may result in dilution to our stockholders and certain of those securities may have rights senior to those of our common stock. If we raise additional funds through the issuance of preferred stock, convertible debt securities or other debt financing, these securities or other debt could contain covenants that would restrict our operations. Any other third-party funding arrangement could require us to relinquish valuable rights.

The source, timing and availability of any future financing will depend principally upon market conditions, and, more specifically, on the progress of our clinical development programs. Funding may not be available when needed, at all, or on terms acceptable to us. Lack of necessary funds may require us, among other things, to delay, scale back or eliminate some or all of our planned clinical trials. These factors among others create a substantial doubt about our ability to continue as a going concern.

We are heavily dependent on the success of brilaroxazine, our only advanced product candidate, which is still under clinical development, and if brilaroxazine does not receive regulatory approval or is not successfully commercialized, our business will be harmed.

We currently have no products that are approved for commercial sale and may never be able to develop marketable drug products. We expect that a substantial portion of our efforts and expenditures in the foreseeable future will be devoted to brilaroxazine. Our only other product candidate is RP1208, which is in the pre-clinical phase. We do not expect to allocate a significant portion of our efforts or resources to the clinical trials or development of this product candidate in the foreseeable future. Accordingly, our business currently depends heavily on the successful development, regulatory approval and commercialization of brilaroxazine. We cannot be certain that brilaroxazine will receive regulatory approval or be successfully commercialized even if we receive regulatory approval. The research, testing, manufacturing, labeling, approval, sale, marketing and distribution of drug products are and will remain subject to extensive regulation by the FDA and other regulatory authorities in the United States and other countries that each have differing regulations. We are not permitted to market brilaroxazine in the United States until we receive approval of a new drug application, or NDA, from the FDA, or in any foreign countries until we receives the requisite approval from such countries. We have not submitted an NDA to the FDA or comparable applications to other regulatory authorities and do not expect to be in a position to do so for the foreseeable future. Obtaining approval of an NDA is an extensive, lengthy, expensive and inherently uncertain process, and the FDA may delay, limit or deny approval of brilaroxazine and our other product candidates for many reasons, including:

- We may not be able to demonstrate that brilaroxazine is safe and effective as a treatment for our targeted indications to the FDA's satisfaction;
- the FDA may require additional Phase 3 trials of brilaroxazine in schizophrenia, which would increase our costs and prolong its development;
- the results of our clinical trials may not meet the level of statistical or clinical significance required by the FDA for marketing approval;
- the FDA may disagree with the number, design, size, conduct or implementation of our clinical trials;
- the contract research organizations, or CROs, that we retain to conduct clinical trials may take actions outside of our control that materially adversely impact our clinical trials;
- the FDA may not find the data from preclinical studies and clinical trials sufficient to demonstrate that the clinical and other benefits of brilaroxazine outweigh its safety risks;
- the FDA may disagree with our interpretation of data from our preclinical studies and clinical trials or may require that we conduct additional studies;
- the FDA may not accept data generated at our clinical trial sites;
- if our NDA is reviewed by an advisory committee, the FDA may have difficulties scheduling an advisory committee meeting in a timely manner or the advisory committee may recommend against approval of our application or may recommend that the FDA require, as a condition of approval, additional preclinical studies or clinical trials, limitations on approved labeling or distribution and use restrictions;

- the FDA may require development of a risk evaluation and mitigation strategy, or REMS, as a condition of approval;
- the FDA may identify deficiencies in the manufacturing processes or facilities of our third party manufacturers; or
- the FDA may change its approval policies or adopt new regulations.

The COVID-19 outbreak and global pandemic or other future health crises, pandemics or other events could adversely impact our business, including our clinical trials.

Public health crises such as pandemics or similar outbreaks could adversely impact our business. In December 2019, a novel strain of coronavirus, or COVID-19, surfaced in Wuhan, China. Since then, COVID-19 has spread globally. As a result of the COVID-19 outbreak, or similar pandemics or other events, and government response to pandemics or other such events, we have and may in the future experience disruptions that could severely impact our business and clinical trials, including:

- delays or difficulties in enrolling patients in our clinical trials;
- interruption of key clinical trial activities, such as clinical trial site data monitoring and efficacy, safety and translational data collection, processing and analyses, due to limitations on travel imposed or recommended by federal, state or local governments, employers and others or interruption of clinical trial subject visits, which may impact the collection and integrity of subject data and clinical study endpoints;
- delays or difficulties in initiating or expanding clinical trials, including delays or difficulties with clinical site initiation and recruiting clinical site investigators and clinical site staff;
- increased rates of patients withdrawing from our clinical trials following enrollment as a result of contracting COVID-19 or being forced to quarantine;
- diversion of healthcare resources away from the conduct of clinical trials, including the diversion of hospitals serving as our clinical trial sites and hospital staff supporting the conduct of our clinical trials;
- delays or disruptions in preclinical experiments and investigational new drug application-enabling studies due to restrictions of on-site staff and unforeseen circumstances at contract research organizations and vendors;
- interruption or delays in the operations of the FDA and comparable foreign regulatory agencies; and
- interruption of, or delays in receiving, supplies of our product candidates from our contract manufacturing organizations due to staffing shortages, production slowdowns or stoppages and disruptions in delivery systems.

The COVID-19 outbreak continues to rapidly evolve. The extent to which the outbreak may impact our business and clinical trials will depend on future developments, which are highly uncertain and cannot be predicted with confidence, such as the ultimate geographic spread of the disease, the duration of the outbreak, travel restrictions and actions to contain the outbreak or treat its impact, such as social distancing and quarantines or lock-downs in the United States and other countries, business closures or business disruptions and the effectiveness of actions taken in the United States and other countries to contain and treat the disease.

We will require additional capital to fund our operations, and if we fail to obtain necessary financing, we may not be able to complete the development and commercialization of brilaroxazine or RP1208.

We expect to spend substantial amounts to complete the development of, seek regulatory approvals for, and commercialize brilaroxazine and RP1208. We will require additional capital to complete the development and potential commercialization of brilaroxazine for the treatment of schizophrenia and to continue the development of brilaroxazine for PAH, IPF, BD, MDD, AD, PD, ADHD/ADD and other potential indications, and to continue the development of RP1208 for the treatment of depression and obesity. No assurance can be given that such additional capital will be available on terms acceptable to us, if at all. If we are unable to raise capital when needed or on acceptable terms, we could be forced to delay, reduce or eliminate our planned development programs or any future commercialization efforts. In addition, attempting to secure additional financing may divert the time and attention of our management from day-to-day activities and harm our product candidate development efforts. Because the length of time and activities associated with successful development of brilaroxazine and RP1208 is highly uncertain, we are unable to estimate the actual funds we will require for development and any approved marketing and commercialization activities. Our future funding requirements, both near and long-term, will depend on many factors, including, but not limited to:

- the initiation, progress, timing, costs and results of our planned clinical trials for brilaroxazine and pre-clinical research for RP1208;
- the outcome, timing and cost of meeting regulatory requirements established by the FDA, the European Medicines Agency, or EMA, and other comparable foreign regulatory authorities;
- the cost of filing, prosecuting, defending and enforcing our patent claims and other intellectual property rights;
- the cost of defending potential intellectual property disputes, including patent infringement actions brought by third parties against us with respect to brilaroxazine, RP1208 or any future product candidates;
- the effect of competing technological and market developments;
- the cost and timing of completion of commercial-scale manufacturing activities;
- the cost of establishing sales, marketing and distribution capabilities for brilaroxazine, RP1208 or any future product candidates, in regions where we choose to commercialize our products on our own; and
- the initiation, progress, timing and results of our commercialization of brilaroxazine, RP1208 or any future product candidates, if approved for commercial sale.

We cannot be certain that such funding will be available on acceptable terms, or at all. If we are unable to raise additional capital in sufficient amounts or on terms acceptable to us, we may have to significantly delay, scale back or discontinue the development or commercialization of brilaroxazine or RP1208 or potentially discontinue operations.

Raising additional funds by issuing securities may cause dilution to existing stockholders, and raising funds through lending and licensing arrangements may restrict our operations or require us to relinquish proprietary rights.

We expect that significant additional capital will be needed in the future to continue our planned operations. Until such time, if ever, as we can generate substantial product revenues, we expect to finance our cash needs through a combination of equity offerings, debt financings, strategic alliances and license and development agreements in connection with any collaborations. We do not have any committed external source of funds. To the extent that we raise additional capital by issuing equity securities, our existing stockholders' ownership may experience substantial dilution, and the terms of these securities may include liquidation or other preferences that adversely affect then-existing stockholders' interests. Debt financing and equity financing, if available, may involve agreements that include covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, making capital expenditures or declaring dividends.

If we raise additional funds through collaborations, strategic alliances or marketing, distribution or licensing arrangements with third parties, we may have to relinquish valuable rights to our technologies, future revenue streams, research programs or product candidates or grant licenses on terms that may not be favorable to us. Any debt financing we enter into may involve covenants that restrict our operations. These restrictive covenants may include limitations on additional borrowing and specific restrictions on the use of our assets as well as prohibitions on our ability to create liens, pay dividends, redeem our shares or make investments. If we are unable to raise additional funds through equity or debt financings when needed, we may be required to delay, limit, reduce or terminate our product development or future commercialization efforts or grant rights to develop and market product candidates that we would otherwise develop and market ourselves.

We will need to expand our organization, and we may experience difficulties in managing this growth, which could disrupt our operations.

As of December 31, 2022, we had ten employees, and we are highly dependent on our management personnel, especially Laxminarayan Bhat, our Chief Executive Officer and Narayan Prabhu, our Chief Financial Officer. We expect to hire a significant number of additional employees for our managerial, clinical, scientific, operational, sales and marketing teams. We may have operational difficulties in connection with identifying, hiring and integrating new personnel. Future growth would impose significant additional responsibilities on our management, including the need to identify, recruit, maintain, motivate and integrate additional employees, consultants and contractors. Also, our management has no prior experience in managing these growth activities and may need to divert a disproportionate amount of our attention away from our day-to-day activities and devote a substantial amount of time to such activities. We may not be able to effectively manage the expansion of our operations, which may result in weaknesses in our infrastructure, give rise to operational mistakes, loss of business opportunities, loss of employees and reduced productivity among remaining employees. Our expected growth could require significant capital expenditures and may divert financial resources from other projects, such as the development of product candidates. If our management is unable to effectively manage our growth, our expenses may increase more than expected, our ability to generate and/or grow revenues could be reduced, and we may not be able to implement our business strategy. Our future financial performance and our ability to commercialize brilaroxazine and RP1208 and compete effectively will depend, in part, on our ability to effectively manage any future growth.

Many of the other pharmaceutical companies that we compete against for qualified personnel and consultants have greater financial and other resources, different risk profiles and a longer history in the industry than we do. They also may provide more diverse opportunities and better chances for career advancement. Some of these characteristics may be more appealing to high-quality candidates and consultants than what we have to offer. If we are unable to continue to attract and retain high-quality personnel and consultants, the rate and success at which we can discover and develop product candidates and our business will be limited.

We are subject to state laws in California that require gender and diversity quotas for boards of directors of public companies headquartered in California.

In September 2018, California enacted SB 826, requiring public companies headquartered in California to maintain minimum female representation on their boards of directors as follows: by December 31, 2019, public company boards must have a minimum of one female director; by December 31, 2021, public company boards with five members will be required to have at least two female directors, and public company boards with six or more members will be required to have at least three female directors. On May 13, 2022, the Los Angeles Superior Court declared SB 826 unconstitutional and, although the California Secretary of State has directed counsel to file an appeal of the decision, the State of California is currently precluded from enforcing SB 826.

Additionally, on September 30, 2020, California enacted AB 979, requiring public companies with principal executive offices in California to each have at least one director from an underrepresented community based on ethnicity and sexual orientation by December 31, 2021. By December 31, 2022, each of these companies will be required to have at least two directors from such underrepresented communities if such company has more than four but fewer than nine directors, or at least three directors from underrepresented communities if the company has nine or more directors. On April 1, 2022, the Los Angeles Superior Court declared AB 979 unconstitutional and, although the California Secretary of State has filed a notice of appeal in the case, the State of California is currently precluded from enforcing AB 979.

The current composition of our board of directors does not include a female director and if the State of California successfully appeals the court decisions regarding SB 826 or AB 979, failure to achieve designated minimum levels in a timely manner will expose us to financial penalties and reputational harm. If the State of California successfully appeals the court decisions regarding SB 826 or AB 979, we cannot assure that we can recruit, attract and/or retain qualified members of the board and meet gender and diversity quotas as required by California law (provided that such laws are not repealed before the compliance deadlines), which may cause certain investors to divert their holdings in our securities and expose us to financial penalties and/or reputational harm.

Our employees, independent contractors, principal investigators, consultants, commercial collaborators, service providers and other vendors may engage in misconduct or other improper activities, including noncompliance with regulatory standards and requirements, which could have an adverse effect on our results of operations.

We are exposed to the risk that our employees and contractors, including principal investigators, consultants, commercial collaborators, service providers and other vendors may engage in fraudulent or other illegal activity. Misconduct by these parties could include intentional, reckless and/or negligent conduct or other unauthorized activities that violate the laws and regulations of the FDA and other similar regulatory bodies, including those laws that require the reporting of true, complete and accurate information to such regulatory bodies; manufacturing standards; federal and state healthcare fraud and abuse and health regulatory laws and other similar foreign fraudulent misconduct laws; or laws that require the true, complete and accurate reporting of financial information or data. Activities subject to these laws also involve the improper use or misrepresentation of information obtained in the course of clinical trials, which could result in regulatory sanctions and serious harm to our reputation. It is not always possible to identify and deter third-party misconduct, and the precautions we take to detect and prevent this activity may not be effective in controlling unknown or unmanaged risks or losses or in protecting us from governmental investigations or other actions or lawsuits stemming from a failure to be in compliance with such laws or regulations. If any such actions are instituted against us, and we are not successful in defending ourselves or asserting our rights, those actions could have a significant impact on our business and financial results, including the imposition of significant civil, criminal and administrative penalties, damages, monetary fines, possible exclusion from participation in Medicare, Medicaid and other federal healthcare programs, reputational harm, diminished profits and future earnings, and curtailment of our operations, any of which could adversely affect our ability to operate our business and our results of operations.

If we seek to enter into strategic alliances for the development of brilaroxazine or RP1208 but fail to enter into and maintain successful strategic alliances, our development costs may increase and our ability to develop brilaroxazine or RP1208 may be significantly delayed.

We may seek to enter into strategic alliances or collaborative arrangements with pharmaceutical companies or other industry participants in order to advance our development of brilaroxazine or, in the future, RP1208 or other product candidates, and to reduce our costs of development. If we seek such alliances or collaborative arrangements, we may not be able to negotiate such alliances or collaborative arrangements on acceptable terms, if at all. We face significant competition from other biopharmaceutical companies for appropriate partners in such alliances or arrangements. Furthermore, if we are successful in entering strategic alliances or collaborative arrangements, we may not be able to maintain such alliances or arrangements for a sufficient amount of time to commercialize brilaroxazine, RP1208 or other product candidates, or such alliances or arrangements may not result in successful development of our products. If we seek suitable alliances or arrangements but then fail to create or to maintain these, we may have to limit the size or scope of, or delay, our development of brilaroxazine, RP1208 or other future product candidates. If we elect to fund our development or research programs on our own, we will have to increase our expenditures and will need to obtain additional funding, which may be unavailable or available only on unfavorable terms. See “*Risks Related to Our Business, Financial Position and Capital Requirements — We will require additional capital to fund our operations, and if we fail to obtain necessary financing, we may not be able to complete the development and commercialization of brilaroxazine and RP1208.*”

To the extent we are able to enter into collaborative arrangements or strategic alliances, we will be exposed to risks related to those collaborations and alliances.

Biotechnology companies at our stage of development may become dependent upon collaborative arrangements or strategic alliances to complete the development and commercialization of drug candidates, particularly after the Phase 2 stage of clinical testing. If we elect to enter into collaborative arrangements or strategic alliances, these arrangements may place the development of brilaroxazine, RP1208 or other future product candidates outside our control, may require that we relinquish important rights or may otherwise be entered on terms unfavorable to us.

Dependence on collaborative arrangements or strategic alliances will subject us to a number of risks, including the risk that:

- We may not be able to control the amount and timing of resources that our collaborators may devote to brilaroxazine and RP1208;
- our collaborators may experience financial difficulties;
- we may be required to relinquish important rights, such as marketing and distribution rights;
- business combinations or significant changes in a collaborator’s business strategy may also adversely affect a collaborator’s willingness or ability to complete our obligations under any arrangement;
- a collaborator could independently move forward with a competing drug candidate developed either independently or in collaboration with others, including our competitors; and
- collaborative arrangements are often terminated or allowed to expire, which would delay the development and may increase the cost of developing our drug candidates.

Our business and operations would suffer in the event our computer systems and networks fail.

Our business depends on the proper functioning and availability of our computer systems and networks. Our computer systems, as well as those of our CROs and other contractors and consultants, are vulnerable to damage from computer viruses, unauthorized access, natural disasters, terrorism, war and telecommunication and electrical failures. If such an event were to occur and cause interruptions in our operations, it could result in a material disruption of our drug development programs. For example, the loss of preclinical or clinical trial data from completed, ongoing or planned trials could result in delays in our regulatory approval efforts and significantly increase our costs to recover or reproduce the data. To the extent that any disruption or security breach were to result in a loss of or damage to our data or applications, or inappropriate disclosure of personal, confidential or proprietary information, we could incur liability and the further development of brilaroxazine, RP1208 or any future product candidate could be delayed. Any successful cyber security attack or other unauthorized attempt to access our systems also could result in negative publicity which could damage our reputation or brand with our patients, referral sources, payors or other third parties and could subject us to substantial penalties under HIPAA and other federal and state privacy laws, in addition to private litigation with those affected.

Potential product liability lawsuits against us could cause us to incur substantial liabilities and limit commercialization of any products that we may develop.

The use of brilaroxazine and RP1208 in clinical trials and the sale of any products for which we obtain marketing approval exposes us to the risk of product liability claims. Product liability claims might be brought against us by consumers, health care providers, pharmaceutical companies or others selling or otherwise coming into contact with our products. On occasion, large judgments have been awarded in class action lawsuits based on drugs that had unanticipated adverse effects. If we cannot successfully defend against product liability claims, we could incur substantial liability and costs. In addition, regardless of merit or eventual outcome, product liability claims may result in:

- impairment of our business reputation and significant negative media attention;
- withdrawal of participants from our clinical trials;
- significant costs to defend the related litigation;
- distraction of management's attention from our primary business;
- substantial monetary awards to patients or other claimants;
- inability to commercialize brilaroxazine, RP1208 or any future product candidate;
- product recalls, withdrawals or labeling, marketing or promotional restrictions;
- decreased demand for brilaroxazine, RP1208 or any future product candidate, if approved for commercial sale; and
- loss of revenue.

Any product liability insurance coverage we acquire in the future may not be sufficient to reimburse us for any expenses or losses we may suffer. Moreover, insurance coverage is becoming increasingly expensive and in the future we may not be able to maintain insurance coverage at a reasonable cost or in sufficient amounts to protect us against losses due to liability. If we obtain marketing approval for brilaroxazine or RP1208, we intend to acquire insurance coverage to include the sale of commercial products; however, we may be unable to obtain product liability insurance on commercially reasonable terms or in adequate amounts. A successful product liability claim or series of claims brought against us could cause our share price to decline and, if judgments exceed our insurance coverage, could adversely affect our results of operations and business, including preventing or limiting the commercialization of any product candidates we develop.

If we fail to maintain an effective system of internal control over financial reporting our ability to produce accurate and timely financial statements could be impaired, investors may lose confidence in our financial reporting and the trading price of our common stock and warrants could be adversely affected. In addition, because of our status as an emerging growth company and a non-accelerated filer, our independent registered public accountants are not required to provide an attestation report as to our internal control over financial reporting for the foreseeable future.

As a public company, we are required to maintain internal control over financial reporting and to report any material weaknesses in such internal controls. A material weakness is a deficiency, or a combination of deficiencies, in internal control, such that there is a reasonable possibility that a material misstatement of the entity's financial statements will not be prevented, or detected in a timely manner. We are also required to disclose changes made in our internal control and procedures on a quarterly basis. Section 404 of the Sarbanes-Oxley Act ("Section 404"), requires that we evaluate and determine the effectiveness of internal controls over financial reporting and provide a management report on internal control over financial reporting.

We have limited operating history and limited personnel in our finance and accounting functions, which may result in a lack of segregation of duties and we are at the relatively very early stages of establishing our systems of internal controls, and we may be unable to effectively maintain such systems, especially in light of the fact that we now have to operate as a publicly reporting company. This would leave us without the ability to reliably assimilate and compile financial information and significantly impair our ability to prevent error and detect fraud, all of which would have a negative impact on our internal controls over financial reporting. We may not be able to complete our evaluation, testing and any required remediation in a timely fashion. During the evaluation and testing process, if we identify one or more material weaknesses in our internal control over financial reporting, we will be unable to assert that our internal controls are effective.

If we identify material weaknesses in our internal control over financial reporting in the future or if we are unable to successfully remediate the identified material weaknesses, or if we are otherwise unable to maintain an effective system of internal control over financial reporting, the reliability of our financial reporting, investor confidence in our Company and the value of our common stock and warrants could be materially and adversely affected. Effective internal control over financial reporting is necessary for us to provide reliable and timely financial reports and, together with adequate disclosure controls and procedures, are designed to reasonably detect and prevent fraud. Any failure to implement required new or improved controls, or difficulties encountered in their implementation could cause us to fail to meet our reporting obligations. For as long as we are an “emerging growth company” and/or a non-accelerated filer under the U.S. securities laws, our independent registered public accounting firm will not be required to attest to the effectiveness of our internal control over financial reporting pursuant to Section 404. We expect that our eligibility to qualify as an emerging growth company will end on December 31, 2023, the last day of the fiscal year following the fifth anniversary of Tenzing’s initial public offering. An independent assessment of the effectiveness of internal control over financial reporting could detect problems that management’s assessment might not. Undetected material weaknesses in our internal control over financial reporting could lead to financial statement restatements and require us to incur the expense of remediation.

Moreover, we do not expect that disclosure controls or internal control over financial reporting will prevent all error and all fraud. A control system, no matter how well designed and operated, can provide only reasonable, not absolute, assurance that the control system’s objectives will be met. Further, the design of a control system must reflect the fact that there are resource constraints and the benefits of controls must be considered relative to their costs. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, have been detected. Failure of our control systems to prevent error or fraud could materially adversely impact our Company.

If the interpretations, estimates or judgments we use to prepare our financial statements prove to be incorrect, we may be required to restate our financial results, which could have a number of material adverse effects on us.

We are subject to complex securities laws and regulations and accounting principles and interpretations. The preparation of our financial statements requires us to interpret accounting principles and guidance and to make estimates and judgments that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements, as well as the reported expenses incurred during the reporting periods. We base our interpretations, estimates and judgments on our historical experience and on various other factors that we believe are reasonable under the circumstances, the results of which form the basis for the preparation of our financial statements. Generally accepted accounting principles presentation is subject to interpretation by the SEC, the Financial Accounting Standards Board and various other bodies formed to interpret and create appropriate accounting principles and guidance. If one of these bodies disagrees with our accounting recognition, measurement or disclosure or any of our accounting interpretations, estimates or assumptions, it may have a significant effect on our reported results and may retroactively affect previously reported results.

Specifically, prior to and in connection with the closing of our Business Combination, our predecessor company, Tenzing, issued public warrants to purchase 6,325,000 shares (the “Public Warrants”) and private placement warrants to purchase 556,313 shares (the “Private Warrants”). For a full description of the Public Warrants and the Private Warrants, refer to (i) the registration statement on Form S-4 (File No. 333-245057), filed in connection with the Business Combination, declared effective by the SEC on November 10, 2020 and (ii) our “Description of Securities” included as Exhibit 4.1 to this Annual Report on Form 10-K. Each of the Public Warrants and Private Warrants entitles the holder to purchase one share of our common stock at a price of \$11.50 per share, subject to adjustment. We originally classified the Public Warrants and the Private Warrants as equity in our previously issued audited consolidated balance sheet as of December 31, 2020, and the related consolidated statements of operations, stockholders’ equity (deficit), and cash flows for the year then ended, and the related notes (collectively, referred to as the “Financial Statements”) included in our Annual Report on Form 10-K filed on March 22, 2021.

On April 12, 2021, the Staff of the Securities and Exchange Commission (“SEC Staff”) released the Staff Statement on Accounting and Reporting Considerations for Warrants Issued by Special Purpose Acquisition Companies (the “Statement”). In the Statement, SEC Staff made the observation that certain contractual provisions included in many Special Purpose Acquisition Company warrant agreements may result in such warrants needing to be classified as a liability rather than as equity.

We have reviewed the Statement and the terms of our Public Warrants and Private Warrants with our third-party technical accounting advisor and our independent auditors and management has concluded that the Private Warrants should be reclassified as liabilities measured at fair value, which will result in non-cash gains or losses from changes in fair value reported each period in earnings.

However, no assurance can be given that additional guidance or new regulations or accounting principles and interpretations will not be released that would require us to reclassify the Public Warrants as liabilities measured at fair value, with changes in fair value reported each period in earnings and/or require a restatement of our Financial Statements with respect to treatment of the Public Warrants.

Any restatement of our financial results could, among other potential adverse effects:

- result in us incurring substantial costs;
- affect our ability to timely file our periodic reports until the restatement is completed;
- divert the attention of our management and employees from managing our business;
- result in material changes to our historical and future financial results;
- result in investors losing confidence in our operating results;
- subject us to securities class action litigation; and
- cause our stock price to decline.

Unfavorable global economic conditions and adverse developments with respect to financial institutions and associated liquidity risk could adversely affect our business, financial condition and stock price.

The global credit and financial markets are currently, and have from time to time experienced extreme volatility and disruptions, including severely diminished liquidity and credit availability, rising interest and inflation rates, declines in consumer confidence, declines in economic growth, increases in unemployment rates and uncertainty about economic stability. The financial markets and the global economy may also be adversely affected by the current or anticipated impact of military conflict, including the ongoing conflict between Russia and Ukraine, terrorism or other geopolitical events. Sanctions imposed by the United States and other countries in response to such conflicts, including the one in Ukraine, may also adversely impact the financial markets and the global economy, and any economic countermeasures by the affected countries or others could exacerbate market and economic instability.

More recently, the closures of Silicon Valley Bank (“SVB”) and Signature Bank and their placement into receivership with the Federal Deposit Insurance Corporation (the “FDIC”) created bank-specific and broader financial institution liquidity risk and concerns. As of December 31, 2022, we maintained all of our cash with two financial institutions, including SVB, and certain of our cash balance with these financial institutions were in excess of the FDIC insurance limit. On March 12, 2023, federal regulators announced that the FDIC would complete its resolution of SVB in a manner that fully protects all depositors. As of March 30, 2023, the filing date of this annual report, we have transferred the majority of our cash to a different financial institution. Since the March 2023 failure and FDIC takeover of SVB and the inability of its customers to readily access their cash deposits, there has been a heightened risk and greater focus on the potential failures of other banks in the future. If these banks fail in the future, we may not be able to immediately (or ever) recover our cash in excess of the FDIC insured limits which would adversely impact our operating liquidity and could negatively impact our operations, results of operations and financial performance.

Although as described above federal regulators announced that the FDIC would complete its resolution of SVB in a manner that protects all depositors under a systemic risk exception, future adverse developments with respect to specific financial institutions or the broader financial services industry may lead to market-wide liquidity shortages, impair the ability of companies to access near-term working capital needs, and create additional market and economic uncertainty. There can be no assurance that future credit and financial market instability and a deterioration in confidence in economic conditions will not occur. Our general business strategy may be adversely affected by any such economic downturn, liquidity shortages, volatile business environment or continued unpredictable and unstable market conditions. If the equity and credit markets deteriorate, or if adverse developments are experienced by financial institutions, it may cause short-term liquidity risk and also make any necessary debt or equity financing more difficult, more costly, more onerous with respect to financial and operating covenants and more dilutive. Failure to secure any necessary financing in a timely manner and on favorable terms could have a material adverse effect on our growth strategy, financial performance and stock price and could require us to delay or abandon clinical development plans. In addition, there is a risk that one or more of our current service providers, financial institutions, manufacturers and other partners may be adversely affected by the foregoing risks, which could directly affect our ability to attain our operating goals on schedule and on budget.

Risks Related to Development, Regulatory Approval and Commercialization

Drug development is a very expensive, lengthy and uncertain process.

The process of taking a drug from discovery to approval generally takes many years, costs tens of millions of dollars or more and has a low probability of success. It also requires the efforts and coordination of people of diverse expertise and experience. Failure may occur at any stage and for multiple reasons, including unsuccessful preclinical and clinical development, inability to create a successful product formulation, and lack of a reproducible and controlled manufacturing process.

Clinical trials are very expensive, time-consuming, difficult to design and implement and involve an uncertain outcome.

Our only advanced product candidate, brilaroxazine, is still in development and will require extensive clinical testing before we are prepared to submit an NDA for regulatory approval. We cannot predict with any certainty if or when we might submit an NDA for regulatory approval for brilaroxazine or whether any such NDA will be approved by the FDA. Human clinical trials are very expensive

and difficult to design and implement, in part because they are subject to rigorous regulatory requirements. The clinical trial process is also time-consuming. We estimate that the Phase 3 clinical trials of brilaroxazine for schizophrenia indication will take at least three years to complete. Furthermore, failure can occur at any stage of the trials, and we could encounter problems that cause us to abandon or repeat clinical trials. Product candidates in later stages of clinical trials may fail to show the desired safety and efficacy traits despite having progressed through preclinical studies and initial clinical trials, and the results of early clinical trials of brilaroxazine therefore may not be predictive of the results of our planned clinical studies.

The commencement and completion of clinical trials may be delayed by one or more factors, including:

- failure to obtain regulatory approval to commence a trial, including in other countries in the global portion of our planned clinical studies;
- unforeseen safety issues;
- determination of dosing issues;
- lack of effectiveness during clinical trials;
- inability to reach agreement on acceptable terms with prospective CROs and clinical trial sites;
- slower than expected rates of patient recruitment or failure to recruit suitable patients to participate in a trial;
- failure to manufacture sufficient quantities of a drug candidate for use in clinical trials;
- inability to monitor patients adequately during or after treatment; and
- inability or unwillingness of medical investigators to follow our clinical protocols.

In addition, our management has limited prior experience in managing and completing late-stage clinical trials, and may not be able to successfully design and implement these trials or respond to adverse factors that may arise in the course of conducting these trials.

Further, we, the FDA or an institutional review board, or IRB, at a clinical trial site may suspend our clinical trials at any time if it appears that we or our collaborators are failing to conduct a trial in accordance with regulatory requirements, including the FDA's current Good Clinical Practice, or GCP, regulations, that we are exposing participants to unacceptable health risks, or if the FDA finds deficiencies in our investigational new drug, or IND, submissions or the conduct of these trials.

Therefore, we cannot predict with any certainty the schedule for commencement and completion of future clinical trials. If we experience delays in the commencement or completion of our clinical trials, or if we terminate a clinical trial prior to completion, the commercial prospects of brilaroxazine could be harmed, and our ability to generate revenues from brilaroxazine may be delayed. In addition, any delays in our clinical trials could increase our costs, slow down the approval process and jeopardize our ability to commence product sales and generate revenues. Any of these occurrences may harm our business, financial condition and results of operations.

Moreover, while we are not currently intending to engage any principal investigators as advisors or consultants, it is conceivable that principal investigators for our clinical trials may serve as scientific advisors or consultants from time to time and receive compensation in connection with such services. Under certain circumstances, we may be required to report some of these relationships to the FDA. The FDA may conclude that a financial relationship between us and a principal investigator has created a conflict of interest or otherwise affected interpretation of the study. FDA may therefore question the integrity of the data generated at the applicable clinical trial site and the utility of the clinical trial itself may be jeopardized. This could result in a delay in approval, or rejection, of our marketing applications by the FDA and may ultimately lead to the denial of marketing approval of one or more of our product candidates.

The results of our clinical trials may not support our brilaroxazine, RP1208 and any future product candidate claims.

Even if our clinical trials are completed as planned, we cannot be certain that our results will support the safety and effectiveness of brilaroxazine for the treatment of schizophrenia or any other potential indication, including but not limited to PAH, IPF, BD, MDD, AD, PD, ADHD/ADD, or any of other product candidates, including RP1208. Success in preclinical testing and early clinical trials does not ensure that later clinical trials will be successful, and we cannot be sure that the results of later clinical trials will replicate the results of prior clinical trials and preclinical testing. A failure of a clinical trial to meet its predetermined endpoints would likely cause us to abandon a product candidate and may delay development of any other product candidates. Any delay in, or termination of, our clinical trials will delay the submission of our NDAs with the FDA and, ultimately, our ability to commercialize brilaroxazine, RP1208 or any future product candidate, and generate product revenues.

Enrollment and retention of patients in clinical trials is an expensive and time-consuming process and could be made more difficult or rendered impossible by multiple factors outside of our control.

We may encounter delays in enrolling, or be unable to enroll, a sufficient number of patients to complete any of our clinical trials, and even once enrolled we may be unable to retain a sufficient number of patients to complete any of our trials. Patient enrollment and

retention in clinical trials depends on many factors, including the size of the patient population, the nature of the trial protocol, the existing body of safety and efficacy data with respect to the study drug, the number and nature of competing treatments and ongoing clinical trials of competing drugs for the same indication, the proximity of patients to clinical sites and the eligibility criteria for the study. Furthermore, any negative results we may report in clinical trials of our product candidate may make it difficult or impossible to recruit and retain patients in other clinical trials of that same product candidate. Delays or failures in planned patient enrollment or retention may result in increased costs, program delays or both, which could have a harmful effect on our ability to develop brilaroxazine, RP1208 or any future product candidate, or could render further development impossible. In addition, we expect to rely on CROs and clinical trial sites to ensure proper and timely conduct of our future clinical trials and, while we intend to enter into agreements governing their services, we will be limited in our ability to compel their actual performance.

The continued spread of COVID-19 globally could adversely impact our clinical trial operations, including our ability to recruit and retain patients and principal investigators and site staff who, as healthcare providers, may have heightened exposure to COVID-19 if an outbreak occurs in their geography. Disruptions or restrictions on the ability of patients enrolled in our clinical studies to travel, or the ability of staff at study sites to travel, as well as temporary closures of our facilities or the facilities of our clinical trials partners and their contract manufacturers, would negatively impact our clinical trial activities.

We face significant competition from other biotechnology and pharmaceutical companies, and our operating results will suffer if we fail to compete effectively.

Drug development is highly competitive and subject to rapid and significant technological advancements. As a significant unmet medical need exists for the treatment of schizophrenia, there are several large and small pharmaceutical companies focused on delivering therapeutics for the treatment of schizophrenia. Further, it is likely that additional drugs will become available in the future for the treatment of schizophrenia.

We are aware of other companies that are working to develop drugs that would compete against brilaroxazine for schizophrenia treatment. Many of our existing or potential competitors have substantially greater financial, technical and human resources than we do and significantly greater experience in the discovery and development of product candidates, as well as in obtaining regulatory approvals of those product candidates in the United States and in foreign countries. Our current and potential future competitors also have significantly more experience commercializing drugs that have been approved for marketing.

Mergers and acquisitions in the pharmaceutical and biotechnology industries could result in even more resources being concentrated among a small number of our competitors.

Competition may increase further as a result of advances in the commercial applicability of technologies and greater availability of capital for investment in these industries. Our competitors may succeed in developing, acquiring or licensing, on an exclusive basis, drugs that are more effective or less costly than any product candidate that we may develop.

We will face competition from other drugs currently approved or that will be approved in the future for the treatment of schizophrenia. Therefore, our ability to compete successfully will depend largely on our ability to:

- develop and commercialize medicines that are superior to other products in the market;
- demonstrate through our clinical trials that brilaroxazine is differentiated from existing and future therapies;
- attract qualified scientific, product development and commercial personnel;
- obtain patent or other proprietary protection for our medicines;
- obtain required regulatory approvals;
- obtain coverage and adequate reimbursement from, and negotiate competitive pricing with, third-party payors; and
- successfully collaborate with pharmaceutical companies in the discovery, development and commercialization of new medicines.

The availability of our competitors' products could limit the demand, and the price we are able to charge, for any product candidate it develops. The inability to compete with existing or subsequently introduced drugs would have an adverse impact on our business, financial condition and prospects.

Established pharmaceutical companies may invest heavily to accelerate discovery and development of novel compounds or to in-license novel compounds that could make brilaroxazine less competitive. In addition, any new product that competes with an approved product must demonstrate compelling advantages in efficacy, convenience, tolerability and safety in order to overcome price competition and to be commercially successful. Accordingly, our competitors may succeed in obtaining patent protection, receiving FDA approval for or commercializing medicines before we do, which would have an adverse impact on our business and results of operations.

If we are not able to obtain required regulatory approvals, we will not be able to commercialize brilaroxazine, RP1208 or any other product candidates, and our ability to generate revenue will be materially impaired.

Brilaroxazine and the activities associated with its development and commercialization, including its design, research, testing, manufacture, safety, efficacy, recordkeeping, labeling, packaging, storage, approval, advertising, promotion, sale and distribution, are subject to comprehensive regulation by the FDA and other regulatory agencies in the United States and by the EMA and similar regulatory authorities outside the United States. Failure to obtain marketing approval for brilaroxazine will prevent us from commercializing it.

We have not received approval from regulatory authorities to market any product candidate in any jurisdiction, and it is possible that none of brilaroxazine, RP1208 nor any other product candidates we may seek to develop in the future will ever obtain the appropriate regulatory approvals necessary for us to commence product sales.

Prior to submitting an NDA to the FDA, a marketing authorization application, or MAA, to the EMA, or an equivalent application to other foreign regulatory authorities for approval of brilaroxazine, we will need to complete our Phase 3 RECOVER trial.

We expect to rely on third-party CROs and consultants to assist us in filing and supporting the applications necessary to gain marketing approvals. Securing marketing approval requires the submission of extensive preclinical and clinical data and supporting information to regulatory authorities for each therapeutic indication to establish brilaroxazine's safety and efficacy for that indication. Securing marketing approval also requires the submission of information about the product manufacturing process to, and inspection of manufacturing facilities by, the regulatory authorities.

We may not be able to obtain or maintain orphan drug designation or exclusivity for our product candidates.

We have been granted orphan drug designation in the United States for brilaroxazine for the treatment of IPF and PAH. Upon receipt of regulatory approval, orphan drug status will provide us with seven years of market exclusivity in the United States under the Orphan Drug Act. However, there is no guarantee that the FDA will grant orphan drug designation for any of our drug candidates for any future indication, which would make us ineligible for the additional exclusivity and other benefits of orphan drug designation. Moreover, there can be no assurance that another company also holding orphan drug designation for the same indication or which may receive orphan drug designation in the future will not receive approval prior to when we do, in which case our competitor would have the benefit of the seven years of market exclusivity, and we would be unable to commercialize our product candidate for the same indication until the expiration of such seven-year period. Even if we are the first to obtain approval for the orphan drug indication, there are circumstances under which a competing product may be approved for the same indication during our seven-year period of exclusivity.

Under the Orphan Drug Act, the FDA may grant orphan drug designation to a drug intended to treat a rare disease or condition, which is generally a disease or condition that affects fewer than 200,000 individuals in the United States and for which there is no reasonable expectation that the cost of developing and making a drug available in the United States for this type of disease or condition will be recovered from sales of the product. Orphan drug designation must be requested before submitting an NDA. After the FDA grants orphan drug designation, the identity of the therapeutic agent and its potential orphan use are disclosed publicly by the FDA. Orphan designation does not convey any advantage in or shorten the duration of regulatory review and approval process. In addition to the potential period of exclusivity, orphan designation makes a company eligible for grant funding to defray costs of clinical trial expenses, tax credits for clinical research expenses and potential exemption from the FDA application user fee.

If a product that has orphan designation subsequently receives the first FDA approval for the disease or condition for which it has such designation, the product is entitled to orphan drug exclusivity, which means the FDA may not approve any other applications to market the same drug for the same indication for seven years, except in limited circumstances, such as (i) the drug's orphan designation is revoked; (ii) its marketing approval is withdrawn; (iii) the orphan exclusivity holder consents to the approval of another applicant's product; (iv) the orphan exclusivity holder is unable to assure the availability of a sufficient quantity of drug; or (v) a showing of clinical superiority to the product with orphan exclusivity by a competitor product. If a drug designated as an orphan product receives marketing approval for an indication broader than what is designated, it may not be entitled to orphan drug exclusivity. There can be no assurance that we will receive orphan drug designation for brilaroxazine for any additional indications or for RP1208, if we elect to seek such designation.

Brilaroxazine, RP1208 and any future product candidate may cause adverse effects or have other properties that could delay or prevent its regulatory approval or limit the scope of any approved label or market acceptance.

Adverse events caused by brilaroxazine, RP1208 and any future product candidate could cause us, other reviewing entities, clinical trial sites or regulatory authorities to interrupt, delay or halt clinical trials and could result in the denial of regulatory approval. If an unacceptable frequency or severity of adverse events are reported in our clinical trials for brilaroxazine, RP1208 or any future product candidates, our ability to obtain regulatory approval for such product candidates may be negatively impacted.

Furthermore, if any of our product candidates are approved and then cause serious or unexpected side effects, a number of potentially significant negative consequences could result, including:

- regulatory authorities may withdraw their approval of the product or require a REMS to impose restrictions on its distribution or other risk management measures;
- regulatory authorities may require the addition of labeling statements, such as warnings or contraindications;
- we may be required to change the way the product is administered or to conduct additional clinical trials;
- we could be sued and held liable for harm caused to patients;
- we could elect to discontinue the sale of our products; and
- our reputation may suffer.

Any of these events could prevent us from achieving or maintaining market acceptance of the affected product candidate and could substantially increase the costs of commercializing brilaroxazine, RP1208 and any future product candidate.

The results of pre-clinical testing are not necessarily predictive of future results, and RP1208 and other product candidates may not have favorable results in our planned clinical trials.

Any positive results from our pre-clinical testing of RP1208 and any future product candidates may not necessarily be predictive of the results from our planned clinical trials. Many companies in the pharmaceutical industry have suffered significant setbacks in clinical trials after achieving positive results in pre-clinical development, and we cannot be certain that we will not face similar setbacks. The pre-clinical data we have obtained for RP1208 may not predict results from studies in larger numbers of subjects drawn from more diverse populations or in a commercial setting, and also may not predict the ability of RP1208 to achieve its intended goals, or to do so safely.

Moreover, pre-clinical and clinical data are often susceptible to varying interpretations and analyses, and many companies that believed their product candidates performed satisfactorily in pre-clinical studies and clinical trials nonetheless failed to obtain FDA or EMA approval. If we fail to produce positive results in our clinical trials, the development timeline and regulatory approval and commercialization prospects for our products and, correspondingly, our business and financial prospects, would be materially adversely affected.

Changes in product candidate manufacturing or formulation may result in additional costs, delay or non-approval.

As product candidates are developed through preclinical studies to late-stage clinical trials towards approval and commercialization, it is common that various aspects of the development program, such as manufacturing methods and formulation, are altered along the way in an effort to optimize processes and results. During the course of a development program, sponsors may also change the contract manufacturers used to produce the product candidates. Such changes carry the risk that they will not achieve these intended objectives. Any of these changes could cause our product candidates to perform differently and affect the results of clinical trials. Such changes may also require additional testing, notification or approval by the FDA, EMA or other regulatory authorities. This could delay completion of clinical trials; require the conduct of bridging clinical trials or studies, or the repetition of one or more clinical trials; increase clinical trial costs; delay or prevent approval of our product candidates and jeopardize our ability to commence product sales and generate revenue.

We may not be able to obtain or maintain orphan drug designation or exclusivity for our product candidates.

We have orphan drug designation for some of our product candidates in the United States and may seek such designation for other candidates. Regulatory authorities in some jurisdictions, including the United States and Europe, may designate drugs for relatively small patient populations as orphan drugs. Under the Orphan Drug Act, the FDA may designate a product as an orphan drug if it is a drug intended to treat a rare disease or condition, which is generally defined as a patient population of fewer than 200,000 individuals in the United States.

Generally, if a product with an orphan drug designation subsequently receives the first marketing approval for the indication for which it has such designation, the product is entitled to a period of marketing exclusivity, which precludes the FDA or the EMA from approving another marketing application for the same indication for that drug during that time period. The applicable period is seven years in the United States and ten years in Europe. The European exclusivity period can be reduced to six years if a drug no longer meets the criteria for orphan drug designation or if the drug is sufficiently profitable so that market exclusivity is no longer justified. Orphan drug exclusivity may be lost if the FDA or the EMA determines that the request for designation was materially defective or if the manufacturer is unable to assure sufficient quantity of the drug to meet the needs of patients with the rare disease or condition.

We cannot assure you that any future application for orphan drug designation with respect to any product candidate will be granted. If we are unable to obtain orphan drug designation in the United States, we will not be eligible to obtain the period of market exclusivity that could result from orphan drug designation or be afforded the financial incentives associated with orphan drug designation. Even if we obtain orphan drug exclusivity for a product, that exclusivity may not effectively protect the product from competition because different drugs can be approved for the same condition. Even after an orphan drug is approved, the FDA can subsequently approve the same drug for the same condition if the FDA concludes that the later drug is clinically superior in that it is shown to be safer, more effective or makes a major contribution to patient care.

Any fast track designation or grant of priority review status by the FDA may not actually lead to a faster development or regulatory review or approval process, nor will it assure FDA approval of our product candidates. Additionally, our product candidates may treat indications that do not qualify for priority review vouchers.

We may seek fast track designation or priority review of applications for approval of our product candidates. If a drug is intended for the treatment of a serious or life-threatening condition and the drug demonstrates the potential to address unmet medical needs for this condition, the drug sponsor may apply for FDA fast track designation. If a product candidate offers major advances in treatment, the FDA may designate it eligible for priority review. The FDA has broad discretion whether or not to grant these designations, so even if we believe a particular product candidate is eligible for these designations, we cannot assure you that the FDA would decide to grant them. Even if we do receive fast track designation or priority review, we may not experience a faster development process, review or approval compared to conventional FDA procedures. The FDA may withdraw fast track designation if it believes that the designation is no longer supported by data from our clinical development program.

Any breakthrough therapy designation granted by the FDA for our product candidate may not lead to a faster development or regulatory review or approval process, and it does not increase the likelihood that our product candidate will receive marketing approval.

We may apply for a breakthrough therapy designation for one or more of our product candidates. A breakthrough therapy is defined as a drug that is intended, alone or in combination with one or more other drugs, to treat a serious or life-threatening disease or condition, and preliminary clinical evidence indicates that the drug may demonstrate substantial improvement over existing therapies on one or more clinically significant endpoints, such as substantial treatment effects observed early in clinical development. For drugs and biologics that have been designated as breakthrough therapies, interaction and communication between the FDA and the sponsor of the trial can help to identify the most efficient path for clinical development while minimizing the number of patients placed in ineffective control regimens. Drugs designated as breakthrough therapies by the FDA may also be eligible for accelerated approval if the relevant criteria are met.

Designation as a breakthrough therapy is within the discretion of the FDA. Accordingly, even if we believe our product candidate meets the criteria for designation as a breakthrough therapy, the FDA may disagree and instead determine not to make such designation. In any event, the receipt of a breakthrough therapy designation for a product candidate may not result in a faster development process, review or approval compared to drugs considered for approval under conventional FDA procedures and does not assure ultimate approval by the FDA. In addition, even if one or more of our product candidates qualify as breakthrough therapies, the FDA may later decide that the products no longer meet the conditions for qualification or decide that the time period for FDA review or approval will not be shortened.

Even if we obtain FDA approval for brilaroxazine, RP1208 or any future product candidate in the United States, we may never obtain approval for or commercialize it in any other jurisdiction, which would limit our ability to realize our full market potential.

In order to market any products in any particular jurisdiction, we must establish and comply with numerous and varying regulatory requirements on a country-by-country basis regarding safety and efficacy. Approval by FDA in the United States does not ensure approval by regulatory authorities in other countries or jurisdictions. In addition, clinical trials conducted in one country may not be accepted by regulatory authorities in other countries, and regulatory approval in one country does not guarantee regulatory approval in any other country. Approval processes vary among countries and can involve additional product testing and validation and additional administrative review periods. Seeking foreign regulatory approval could result in difficulties and costs for us and require additional preclinical studies or clinical trials which could be costly and time consuming. Regulatory requirements can vary widely from country to country and could delay or prevent the introduction of our products in those countries. We do not have any product candidates approved for sale in any jurisdiction, including in international markets, and we do not have experience in obtaining regulatory approval in international markets. If we fail to comply with regulatory requirements in international markets or to obtain and maintain required approvals, or if regulatory approvals in international markets are delayed, our target market will be reduced and our ability to realize the full market potential of any product we develop will be unrealized.

Even if we obtain regulatory approval for brilaroxazine, RP1208 or any future product candidate, we will still face extensive regulatory requirements and our products may face future development and regulatory difficulties.

Any product candidate for which we obtain marketing approval, along with the manufacturing processes, post-approval clinical data, labeling, packaging, distribution, adverse event reporting, storage, recordkeeping, export, import, advertising and promotional activities for such product, among other things, will be subject to extensive and ongoing requirements of and review by the FDA and other regulatory authorities. These requirements include submissions of safety and other post-marketing information and reports, establishment registration and drug listing requirements, continued compliance with current Good Manufacturing Practice, or cGMP, requirements relating to manufacturing, quality control, quality assurance and corresponding maintenance of records and documents, requirements regarding the distribution of samples to physicians and recordkeeping and current GCP requirements for any clinical trials that we conduct post-approval. Even if marketing approval of a product candidate is granted, the approval may be subject to limitations on the indicated uses for which the product may be marketed or to the conditions of approval, including any requirement to implement a REMS. If brilaroxazine, RP1208 or any future product candidate receives marketing approval, the accompanying label may limit the approved use of our drug candidate, which could limit sales of the product.

The FDA may also impose requirements for costly post-marketing studies or clinical trials and surveillance to monitor the safety or efficacy of the product. The FDA closely regulates the post-approval marketing and promotion of drugs to ensure drugs are marketed only for the approved indications and in accordance with the provisions of the approved labeling. The FDA imposes stringent restrictions on manufacturers' communications regarding off-label use and if we do not market our products for their approved indications, we may be subject to enforcement action for off-label marketing. Violations of the Federal Food, Drug, and Cosmetic Act relating to the promotion of prescription drugs may lead to FDA enforcement actions and investigations alleging violations of federal and state health care fraud and abuse laws, as well as state consumer protection laws.

In addition, later discovery of previously unknown adverse events or other problems with our products, manufacturers or manufacturing processes, or failure to comply with regulatory requirements, may yield various results, including:

- restrictions on manufacturing such products;
- restrictions on the labeling or marketing of a product;
- restrictions on product distribution or use;
- requirements to conduct post-marketing studies or clinical trials;
- warning letters;
- withdrawal of the products from the market;
- refusal to approve pending applications or supplements to approved applications that we submit;
- recall of products;
- fines, restitution or disgorgement of profits or revenues;
- suspension or withdrawal of marketing approvals;

- refusal to permit the import or export of our products;
- product seizure; or
- injunctions or the imposition of civil or criminal penalties.

The FDA's policies may change and additional government regulations may be enacted that could prevent, limit or delay regulatory approval of brilaroxazine, RP1208 or any future product candidate. If we are slow or unable to adapt to changes in existing requirements or the adoption of new requirements or policies, or if we are not able to maintain regulatory compliance, we may lose any marketing approval that we may have obtained.

Even if brilaroxazine, RP1208 or any future product candidate receives marketing approval, it may fail to achieve market acceptance by physicians, patients, third-party payors or others in the medical community necessary for commercial success.

If brilaroxazine, RP1208 or any future product candidate receives marketing approval, it may nonetheless fail to gain sufficient market acceptance by physicians, patients, third-party payors and others in the medical community. If it does not achieve an adequate level of acceptance, we may not generate significant product revenues and become profitable. The degree of market acceptance of brilaroxazine, RP1208 or any future product candidate, if approved for commercial sale, will depend on a number of factors, including, but not limited to:

- the efficacy and potential advantages compared to alternative treatments;
- effectiveness of sales and marketing efforts;
- the cost of treatment in relation to alternative treatments, including any similar generic treatments;
- our ability to offer our products for sale at competitive prices;
- the convenience and ease of administration compared to alternative treatments;
- the willingness of the target patient population to try new therapies and of physicians to prescribe these therapies;
- the strength of marketing and distribution support;
- the availability of third-party coverage and adequate reimbursement;
- the prevalence and severity of any side effects; and
- any restrictions on the use of our product together with other medications.

Because we expect sales of brilaroxazine, RP1208 or any future product candidate, if approved, to generate substantially all of our product revenues for the foreseeable future, the failure of this product to find market acceptance would harm our business and require us to seek additional financing.

If we are unable to establish sales, marketing and distribution capabilities either on our own or in collaboration with third-parties, we may not be successful in commercializing brilaroxazine, RP1208 or any future product candidate, if approved.

We do not have any infrastructure for the sales, marketing or distribution of our products, and the cost of establishing and maintaining such an organization may exceed the cost-effectiveness of doing so. In order to market any product that may be approved, we must build our sales, distribution, marketing, managerial and other non-technical capabilities or make arrangements with third parties to perform these services. To achieve commercial success for any product for which we have obtained marketing approval, we will need a sales and marketing organization.

We expect to build a focused sales, distribution and marketing infrastructure to market brilaroxazine, RP1208 or any future product candidate in the United States, if approved. There are significant expenses and risks involved with establishing our own sales, marketing and distribution capabilities, including our ability to hire, retain and appropriately incentivize qualified individuals, generate sufficient sales leads, provide adequate training to sales and marketing personnel, and effectively manage a geographically dispersed sales and marketing team. Any failure or delay in the development of our internal sales, marketing and distribution capabilities could delay any product launch, which would adversely impact the commercialization of brilaroxazine, RP1208 or any future product candidate. For example, if the commercial launch of brilaroxazine, RP1208 or any future product candidate for which we recruit a sales force and establish marketing capabilities is delayed or does not occur for any reason, we would have prematurely or unnecessarily incurred these commercialization expenses. This may be costly, and our investment would be lost if we cannot retain or reposition our sales and marketing personnel.

Factors that may inhibit our efforts to commercialize our products on our own include:

- our inability to recruit, train and retain adequate numbers of effective sales and marketing personnel;
- the inability of sales personnel to obtain access to physicians or attain adequate numbers of physicians to prescribe any drugs; and
- unforeseen costs and expenses associated with creating an independent sales and marketing organization.

We do not anticipate having the resources in the foreseeable future to allocate to the sales and marketing of brilaroxazine in markets outside of the United States. Therefore, our future success will depend, in part, on our ability to enter into and maintain collaborative relationships for such capabilities, the collaborator's strategic interest in the product and such collaborator's ability to successfully market and sell the product. We intend to pursue collaborative arrangements regarding the sale and marketing of brilaroxazine, RP1208 or any future product candidate, if approved, for markets outside of the United States; however, we cannot assure you that we will be able to establish or maintain such collaborative arrangements, or if able to do so, that they will have effective sales forces. To the extent that we depend on third parties for marketing and distribution, any revenues we receive will depend upon the efforts of such third parties, and there can be no assurance that such efforts will be successful.

If we are unable to build our own sales force or negotiate a collaborative relationship for the commercialization of brilaroxazine, RP1208 or any future product candidate we may be forced to delay the potential commercialization of brilaroxazine, RP1208 or any future product candidate or reduce the scope of our sales or marketing activities for brilaroxazine, RP1208 or any future product candidate. If we elect to increase our expenditures to fund commercialization activities itself, we will need to obtain additional capital, which may not be available to us on acceptable terms, or at all. If we do not have sufficient funds, we will not be able to bring brilaroxazine, RP1208 or any future product candidate to market or generate product revenue. We could enter into arrangements with collaborative partners or otherwise at an earlier stage than otherwise would be ideal and we may be required to relinquish rights to brilaroxazine, RP1208 or any future product candidate or otherwise agree to terms unfavorable to it, any of which may have an adverse effect on our business, operating results and prospects.

If we are unable to establish adequate sales, marketing and distribution capabilities, either on our own or in collaboration with third parties, we will not be successful in commercializing brilaroxazine, RP1208 or any future product candidate and may not become profitable. We will be competing with many companies that currently have extensive and well-funded marketing and sales operations. Without an internal team or the support of a third party to perform marketing and sales functions, we may be unable to compete successfully against these more established companies.

If we obtain approval to commercialize any products outside of the United States, a variety of risks associated with international operations could materially adversely affect our business.

If brilaroxazine, RP1208 or any future product candidate is approved for commercialization, we intend to enter into agreements with third parties to market it in certain jurisdictions outside the United States. We expect that it will be subject to additional risks related to international operations or entering into international business relationships, including:

- different regulatory requirements for drug approvals and rules governing drug commercialization in foreign countries;
- reduced protection for intellectual property rights;
- unexpected changes in tariffs, trade barriers and regulatory requirements;
- economic weakness, including inflation, or political instability in particular foreign economies and markets;
- compliance with tax, employment, immigration and labor laws for employees living or traveling abroad;
- foreign reimbursement, pricing and insurance regimes;
- foreign taxes;

- foreign currency fluctuations, which could result in increased operating expenses and reduced revenues, and other obligations incident to doing business in another country;
- workforce uncertainty in countries where labor unrest is more common than in the United States;
- potential noncompliance with the U.S. Foreign Corrupt Practices Act, the U.K. Bribery Act 2010 and similar anti-bribery and anticorruption laws in other jurisdictions;
- production shortages resulting from any events affecting raw material supply or manufacturing capabilities abroad; and
- business interruptions resulting from geopolitical actions, including war and terrorism, or natural disasters including earthquakes, typhoons, floods and fires.

We have no prior experience in these areas. In addition, there are complex regulatory, tax, labor and other legal requirements imposed by both the European Union and many of the individual countries in Europe with which we will need to comply.

Our subsidiary may not be in compliance with the laws of foreign countries, and it may face penalties and fines imposed by the Indian government.

We have not retained local counsel to assess whether our subsidiary, Reviva Pharmaceuticals India Private Limited, is in compliance with applicable local law. There can be no assurance that we will be able to initially meet such requirements or maintain compliance with the laws and regulations of each foreign country in which our subsidiary operates. As a result, we, Reviva Pharmaceuticals India Private Limited and our other subsidiary may be subject to adverse legal consequences, including but not limited to penalties and fines, which could adversely affect our business, financial condition or results of operations.

We are subject to U.S. foreign investment regulations, which may impose additional burdens on or may limit certain investors' ability to purchase shares of our common stock in amounts deemed by the U.S. government to confer control, potentially making our common stock less attractive to investors, and may also impact our ability to generate revenues outside of the U.S.

In 2018, Congress passed the Foreign Investment Risk Review Modernization Act of 2018 (“FIRRMA”), which expanded the jurisdiction of the Committee on Foreign Investment in the United States (“CFIUS”) to review direct or indirect foreign investments in U.S. companies. Among other things, FIRRMA empowers CFIUS to require certain foreign investors to make mandatory filings, permits CFIUS, to charge filing fees related to such filings, and empowers CFIUS to self-initiate national security reviews of foreign direct and indirect investments in U.S. companies. In the case that CFIUS determines an investment to be a threat to national security, CFIUS has the power to unwind or place restrictions on the investment. Any such restrictions on the ability to purchase shares of our common stock may have the effect of delaying or deterring any particular investment and could also affect the price that some investors are willing to pay for our common stock. In addition, such restrictions could also limit the opportunity for our stockholders to receive a premium for their shares of our common stock in relation to any potential change in control.

Our current and future relationships with foreign actors such as, health care and administrative professionals at foreign state owned hospitals or foreign government healthcare regulators will be subject to applicable anti-corruption laws regulatory laws, which could expose us to penalties.

Our business operations and current and future arrangements with investigators, healthcare professionals, consultants, third-party payors and customers, may expose us to broadly applicable anti-corruption and anti-bribery laws and regulations. These laws may constrain the business or financial arrangements and relationships through which we conduct our operations, including how we market, sell and distribute our products. Such laws include the Foreign Corrupt Practices Act of 1977, as amended (the “FCPA”) prohibits any offer, payment, promise to pay or authorization to pay any money, gift or thing of value to any Foreign Official, political party, or candidate for office for the purpose of influencing any act or failure to act by the recipient, in his or her official capacity, in order to obtain or retain business, or inducing the recipient to use influence to affect a decision of a foreign government or agency in order to obtain or retain business for anyone. The FCPA also imposes recordkeeping requirements and internal controls provisions, which, among other things, require the issuer to keep accurate books, records, and accounts.

Our current and future relationships with investigators, health care professionals, consultants, third-party payors, and customers will be subject to applicable healthcare regulatory laws, which could expose us to penalties.

Our business operations and current and future arrangements with investigators, healthcare professionals, consultants, third-party payors and customers, may expose us to broadly applicable fraud and abuse and other healthcare laws and regulations. These laws may constrain the business or financial arrangements and relationships through which we conduct our operations, including how we research, market, sell and distribute our products for which we obtain marketing approval. Such laws include:

- the federal Anti-Kickback Statute prohibits, among other things, persons and entities from knowingly and willfully soliciting, offering, receiving or providing remuneration, directly or indirectly, in cash or in kind, to induce or reward, or in return for, either the referral of an individual for, or the purchase, order or recommendation of, any good or service, for which payment may be made under a federal healthcare program, such as Medicare and Medicaid. A person or entity does not need to have actual knowledge of the federal Anti-Kickback Statute or specific intent to violate it to have committed a violation; in addition, the government may assert that a claim including items or services resulting from a violation of the federal Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the civil False Claims Act;
- the federal false claims laws, including the civil False Claims Act, impose criminal and civil penalties, including civil whistleblower or qui tam actions, against individuals or entities for knowingly presenting, or causing to be presented, to the federal government, claims for payment that are false or fraudulent or making a false statement to avoid, decrease or conceal an obligation to pay money to the federal government;
- HIPAA imposes criminal and civil liability for, among other things, executing a scheme to defraud any healthcare benefit program or making false statements relating to healthcare matters. Similar to the federal Anti-Kickback Statute, a person or entity does not need to have actual knowledge of the statute or specific intent to violate it to have committed a violation;
- HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act and its implementing regulations, also imposes obligations, including mandatory contractual terms, with respect to safeguarding the privacy, security and transmission of individually identifiable health information;
- the federal Physician Payment Sunshine Act, which requires certain manufacturers of drugs, devices, biologics and medical supplies for which payment is available under Medicare, Medicaid or the Children’s Health Insurance Program (with certain exceptions) to report annually to the government information related to payments or other “transfers of value” made to physicians (defined to include doctors, dentists, optometrists, podiatrists and chiropractors) and teaching hospitals, and requires applicable manufacturers and group purchasing organizations to report annually to the government ownership and investment interests held by the physicians described above and their immediate family members and payments or other “transfers of value” to such physician owners (covered manufacturers are required to submit reports to the government by the 90th day of each calendar year); and
- analogous state and foreign laws and regulations, such as state anti-kickback and false claims laws, may apply to sales or marketing arrangements and claims involving healthcare items or services reimbursed by non-governmental third party payors, including private insurers; state laws that require pharmaceutical companies to comply with the pharmaceutical industry’s voluntary compliance guidelines and the relevant compliance guidance promulgated by the federal government; state laws that require drug manufacturers to report information related to payments and other transfers of value to physicians and other healthcare providers or marketing expenditures; and state and foreign laws governing the privacy and security of health information in some circumstances, many of which differ from each other in significant ways and often are not preempted by HIPAA, thus complicating compliance efforts.

Efforts to ensure that our current and future business arrangements with third parties will comply with applicable healthcare laws and regulations will involve substantial costs. It is possible that governmental authorities will conclude that our business practices do not comply with current or future statutes, regulations, agency guidance or case law involving applicable healthcare laws. If our operations are found to be in violation of any of these or any other health regulatory laws that may apply to it, we may be subject to significant penalties, including the imposition of significant civil, criminal and administrative penalties, damages, monetary fines, disgorgement, individual imprisonment, possible exclusion from participation in Medicare, Medicaid and other federal healthcare programs, contractual damages, reputational harm, diminished profits and future earnings, and curtailment of our operations, any of which could adversely affect our ability to operate our business and our results of operations. Defending against any such actions can be costly, time-consuming and may require significant financial and personnel resources. Therefore, even if we are successful in defending against any such actions that may be brought against us, our business may be impaired.

Current and future legislation may increase the difficulty and cost for us to obtain marketing approval of and commercialize brilaroxazine, RP1208 or any future product candidate and affect the prices we may obtain.

In the United States and some foreign jurisdictions, there have been a number of legislative and regulatory changes and proposed changes regarding the healthcare system and efforts to control health care costs, including drug prices, that could have a significant negative impact on our business, including preventing, limiting or delaying regulatory approval of our drug candidates and reducing the sales and profits derived from our products once they are approved.

For example, in the United States, the Patient Protection and Affordable Care Act of 2010 (“ACA”) substantially changed the way health care is financed by both governmental and private insurers and significantly affects the pharmaceutical industry. Many provisions of ACA impact the biopharmaceutical industry, including that in order for a biopharmaceutical product to receive federal reimbursement under the Medicare Part B and Medicaid programs or to be sold directly to U.S. government agencies, the manufacturer must extend discounts to entities eligible to participate in the drug pricing program under the Public Health Services Act, or PHS.

We cannot be sure whether additional legislative changes will be enacted, or whether government regulations, guidance or interpretations will be changed, or what the impact of such changes would be on the marketing approvals, sales, pricing, or reimbursement of our drug candidates or products, if any, may be.

Coverage and adequate reimbursement may not be available for brilaroxazine, RP1208 or any future product candidate, which could make it difficult for us to sell our products profitably.

Market acceptance and sales of any product candidates that we develop, will depend in part on the extent to which reimbursement for these products and related treatments will be available from third-party payors, including government health administration authorities and private health insurers. Third-party payors decide which drugs they will pay for and establish reimbursement levels. Third-party payors often rely upon Medicare coverage policy and payment limitations in setting their own coverage and reimbursement policies. However, decisions regarding the extent of coverage and amount of reimbursement to be provided for any product candidates that we develop will be made on a plan-by-plan basis. One payer’s determination to provide coverage for a product does not assure that other payors will also provide coverage, and adequate reimbursement, for the product. Additionally, a third-party payor’s decision to provide coverage for a drug does not imply that an adequate reimbursement rate will be approved. Each plan determines whether or not it will provide coverage for a drug, what amount it will pay the manufacturer for the drug, and on what tier of its formulary the drug will be placed. The position of a drug on a formulary generally determines the co-payment that a patient will need to make to obtain the drug and can strongly influence the adoption of a drug by patients and physicians. Patients who are prescribed treatments for their conditions and providers prescribing such services generally rely on third-party payors to reimburse all or part of the associated healthcare costs. Patients are unlikely to use our products unless coverage is provided and reimbursement is adequate to cover a significant portion of the cost of our products.

A primary trend in the U.S. healthcare industry and elsewhere is cost containment. Third-party payors have attempted to control costs by limiting coverage and the amount of reimbursement for particular medications. We cannot be sure that coverage and reimbursement will be available for any product that we commercialize and, if reimbursement is available, what the level of reimbursement will be. Inadequate coverage and reimbursement may impact the demand for, or the price of, any product for which we obtain marketing approval. If coverage and adequate reimbursement are not available, or are available only to limited levels, we may not be able to successfully commercialize any product candidates that we develop.

Additionally, there have been a number of legislative and regulatory proposals to change the healthcare system in the United States and in some foreign jurisdictions that could affect our ability to sell any future drugs profitably. These legislative and regulatory changes may negatively impact the reimbursement for any future drugs, following approval.

Risks Related to Our Dependence on Third Parties

We do not have our own manufacturing capabilities and will rely on third parties to produce clinical and commercial supplies of brilaroxazine, RP1208 and any future product candidate.

We do not have experience in drug formulation or manufacturing and do not own or operate, and do not expect to own or operate, facilities for product manufacturing, storage and distribution, or testing. We also will rely on third-party manufacturers to supply us with sufficient quantities of brilaroxazine to be used, if approved, for the commercialization of brilaroxazine. If we are unable to initiate or continue our relationship with one or more of these third-party contractors, we could experience delays in our development efforts as we locate and qualify new manufacturers.

Further, our reliance on third-party manufacturers entails risks to which we would not be subject if we manufactured our product candidates, including:

- inability to meet our product specifications and quality requirements consistently;
- delay or inability to procure or expand sufficient manufacturing capacity;
- manufacturing and product quality issues related to scale-up of manufacturing;
- costs and validation of new equipment and facilities required for scale-up;
- failure to comply with cGMP and similar foreign standards;
- inability to negotiate manufacturing agreements with third parties under commercially reasonable terms;
- termination or nonrenewal of manufacturing agreements with third parties in a manner or at a time that is costly or damaging to us;
- reliance on a limited number of sources, and in some cases, single sources for product components, such that if we are unable to secure a sufficient supply of these product components, we will be unable to manufacture and sell brilaroxazine, RP1208 or any future product candidate in a timely fashion, in sufficient quantities or under acceptable terms;
- lack of qualified backup suppliers for those components that are currently purchased from a sole or single source supplier;
- operations of our third-party manufacturers or suppliers could be disrupted by conditions unrelated to our business or operations, including the bankruptcy of the manufacturer or supplier;
- carrier disruptions or increased costs that are beyond our control; and
- failure to deliver our products under specified storage conditions and in a timely manner.

Any of these events could lead to clinical trial delays, failure to obtain regulatory approval or impact our ability to successfully commercialize our products. Some of these events could be the basis for FDA action, including injunction, recall, seizure, or total or partial suspension of production.

We rely on third parties to conduct, supervise and monitor our clinical trials, and if those third parties perform in an unsatisfactory manner, it may harm our business.

We rely on CROs and clinical trial sites to ensure the proper and timely conduct of our clinical trials, and we expect to have limited influence over their actual performance.

We rely upon CROs to monitor and manage data for our clinical programs, as well as the execution of future nonclinical studies. We expect to control only certain aspects of our CROs' activities. Nevertheless, we will be responsible for ensuring that each of our studies is conducted in accordance with the applicable protocol, legal, regulatory and scientific standards and our reliance on the CROs does not relieve us of our regulatory responsibilities.

We and our CROs will be required to comply with the Good Laboratory Practices and GCPs, which are regulations and guidelines enforced by the FDA and are also required by the Competent Authorities of the Member States of the European Economic Area and comparable foreign regulatory authorities in the form of International Conference on Harmonization guidelines for any of our product candidates that are in preclinical and clinical development. The Regulatory authorities enforce GCPs through periodic inspections of trial sponsors, principal investigators and clinical trial sites. If we or our CROs fail to comply with GCPs, the clinical data generated in our clinical trials may be deemed unreliable and the FDA or comparable foreign regulatory authorities may require us to perform additional clinical trials before approving our marketing applications. Accordingly, if our CROs fail to comply with these regulations or fail to recruit a sufficient number of subjects, we may be required to repeat clinical trials, which would delay the regulatory approval process.

Our CROs will be independent contractors and not our employees, and we will not control whether or not they devote sufficient time and resources to our future clinical and nonclinical programs. These CROs may also have relationships with other commercial entities, including our competitors, for whom they may also be conducting clinical trials, or other drug development activities which could harm our competitive position. We face the risk of potential unauthorized disclosure or misappropriation of our intellectual property by CROs, which may reduce our trade secret protection and allow our potential competitors to access and exploit our proprietary technology. If our CROs do not successfully carry out their contractual duties or obligations, fail to meet expected deadlines, or if the quality or accuracy of the clinical data they obtain is compromised due to the failure to adhere to our clinical protocols or regulatory requirements or for any other reasons, our clinical trials may be extended, delayed or terminated, and we may not be able to obtain regulatory approval for, or successfully commercialize any product candidate that we develop. As a result, our financial results and the commercial prospects for any product candidate that we develop would be harmed, our costs could increase, and our ability to generate revenues could be delayed.

If our relationship with any one or more of these CROs terminates, we may not be able to enter into arrangements with alternative CROs or do so on commercially reasonable terms. Switching or adding additional CROs involves substantial cost and requires management time and focus. In addition, there is a natural transition period when a new CRO commences work. As a result, delays occur, which can materially impact our ability to meet our desired clinical development timelines. Though we intend to carefully manage our relationships with our CROs, there can be no assurance that we will not encounter challenges or delays in the future or that these delays or challenges will not have an adverse impact on our business, financial condition and prospects.

Risks Related to Our Intellectual Property

If we are unable to obtain and maintain patent protection for our technology and products or if the scope of the patent protection obtained is not sufficiently broad, we may not be able to compete effectively in our markets.

We rely upon a combination of patents, trade secret protection and confidentiality agreements to protect the intellectual property related to our drug development programs and product candidates. Our success depends in large part on our ability to obtain and maintain patent protection in the United States and other countries with respect to brilaroxazine, RP1208 and any future product candidates. We seek to protect our proprietary position by filing patent applications in the United States and abroad related to our development programs and product candidates. The patent prosecution process is expensive and time-consuming, and we may not be able to file and prosecute all necessary or desirable patent applications at a reasonable cost or in a timely manner.

It is also possible that we will fail to identify patentable aspects of our research and development output before it is too late to obtain patent protection. The patent applications that we own may fail to result in issued patents with claims that cover brilaroxazine, RP1208 or any future product candidate in the United States or in other foreign countries. There is no assurance that all of the potentially relevant prior art relating to our patents and patent applications has been found, which can invalidate a patent or prevent a patent from issuing from a pending patent application. Even if patents do successfully issue and even if such patents cover brilaroxazine, RP1208 or any future product candidate, third parties may challenge their validity, enforceability or scope, which may result in such patents being narrowed, invalidated, or held unenforceable. Any successful opposition to these patents or any other patents that we own could deprive us of rights necessary for the successful commercialization of any product candidates that we may develop. Further, if we encounter delays in regulatory approvals, the period of time during which we could market a product candidate under patent protection could be reduced.

If the patent applications we hold with respect to our development programs and product candidates fail to issue, if their breadth or strength of protection is threatened, or if they fail to provide meaningful exclusivity for brilaroxazine, RP1208 or any future product candidate, it could dissuade companies from collaborating with us to develop product candidates, and threaten our ability to commercialize future drugs. Any such outcome could have a material adverse effect on our business.

The patent position of biotechnology and pharmaceutical companies generally is highly uncertain, involves complex legal and factual questions and has in recent years been the subject of much litigation. In addition, the laws of foreign countries may not protect our rights to the same extent as the laws of the United States. For example, European patent law restricts the patentability of methods of treatment of the human body more than United States law does. Publications of discoveries in scientific literature often lag behind the actual discoveries, and patent applications in the United States and other jurisdictions are typically not published until 18 months after filing, or in some cases not at all. Therefore, we cannot know with certainty whether we were the first to make the inventions claimed in our owned patents or pending patent applications, or that we were the first to file for patent protection of such inventions. As a result, the issuance, scope, validity, enforceability and commercial value of our patent rights are highly uncertain. Our pending and future patent applications may not result in patents being issued which protect our technology or products, in whole or in part, or which effectively prevent others from commercializing competitive technologies and products. Changes in either the patent laws or interpretation of the patent laws in the United States and other countries may diminish the value of our patents or narrow the scope of our patent protection. Moreover, we may be subject to a third party pre-issuance submission of prior art to the U.S. Patent and Trademark Office, or USPTO, or become involved in opposition, derivation, reexamination, inter partes review, post-grant review or interference proceedings challenging our patent rights or the patent rights of others. An adverse determination in any such submission, proceeding or litigation could reduce the scope of, or invalidate, our patent rights, allow third parties to commercialize our technology or products and compete directly with us, without payment to us, or result in our inability to manufacture or commercialize products without infringing third party patent rights. In addition, if the breadth or strength of protection provided by our patents and patent applications is threatened, it could dissuade companies from collaborating with us to license, develop or commercialize current or future product candidates.

Various extensions may be available; however the life of a patent, and the protection it affords, is limited. Without patent protection for our current or future product candidates, we may be open to competition from generic versions of such products. Given the amount of time required for the development, testing and regulatory review of new product candidates, patents protecting such candidates might expire before or shortly after such candidates are commercialized. As a result, our owned patent portfolio may not provide us with sufficient rights to exclude others from commercializing products similar or identical to ours.

Obtaining and maintaining our patent protection depends on compliance with various procedural, document submission, fee payment and other requirements imposed by governmental patent agencies, and our patent protection could be reduced or eliminated for non-compliance with these requirements.

Periodic maintenance fees on any issued patent are due to be paid to the USPTO and other foreign patent agencies in several stages over the lifetime of the patent. The USPTO and various foreign national or international patent agencies require compliance with a number of procedural, documentary, fee payment and other similar provisions during the patent application process. While an inadvertent lapse may in many cases be cured by payment of a late fee or by other means in accordance with the applicable rules, there are situations in which noncompliance can result in abandonment or lapse of the patent or patent application, resulting in partial or complete loss of patent rights in the relevant jurisdiction. Non-compliance events that could result in abandonment or lapse of patent rights include, but are not limited to, failure to timely file national and regional stage patent applications based on our international patent application, failure to respond to official actions within prescribed time limits, non-payment of fees and failure to properly legalize and submit formal documents. If we fail to maintain the patents and patent applications covering brilaroxazine, RP1208 or any future product candidate. Our competitors might be able to enter the market, which would have an adverse effect on our business.

Third party claims or litigation alleging infringement of patents or other proprietary rights or seeking to invalidate patents or other proprietary rights, may delay or prevent the development and commercialization of brilaroxazine, RP1208 and any future product candidate.

Our commercial success depends in part on avoiding infringement and other violations of the patents and proprietary rights of third parties. There is a substantial amount of litigation, both within and outside the United States, involving patent and other intellectual property rights in the biotechnology and pharmaceutical industries, including patent infringement lawsuits, interferences, derivation and administrative law proceedings, inter party review, and post-grant review before the USPTO, as well as oppositions and similar processes in foreign jurisdictions. Numerous U.S. and foreign issued patents and pending patent applications, which are owned by third parties, exist in the fields in which we and our collaborators are developing product candidates. As the biotechnology and pharmaceutical industries expand and more patents are issued, and as we gain greater visibility and market exposure, the risk increases that our product candidates or other business activities may be subject to claims of infringement of the patent and other proprietary rights of third parties. Third parties may assert that we are infringing their patents or employing their proprietary technology without authorization. Based on our general knowledge in this field of technology and based on the patent prosecution of brilaroxazine conducted in the United States and in foreign countries, we do not believe that there are valid patents which contain granted claims that could be asserted with respect to brilaroxazine, however, we may be incorrect.

There may be third-party patents or patent applications with claims to materials, formulations, methods of manufacture or methods for treatment related to the use or manufacture of our product candidates.

Because patent applications can take many years to issue, there may be currently pending patent applications which may later result in issued patents that our product candidates may infringe. In addition, third parties may obtain patents in the future and claim that use of our technologies infringes upon these patents. If any third-party patents were held by a court of competent jurisdiction to cover the manufacturing process of any of our product candidates, any molecules formed during the manufacturing process or any final product itself, the holders of any such patents may be able to block our ability to commercialize such product candidate unless we obtained a license under the applicable patents, or until such patents expire. Similarly, if any third-party patent were held by a court of competent jurisdiction to cover aspects of our formulations, processes for manufacture or methods of use, including combination therapy, the holders of any such patent may be able to block our ability to develop and commercialize the applicable product candidate unless we obtained a license or until such patent expires. In either case, such a license may not be available on commercially reasonable terms or at all. In addition, we may be subject to claims that we are infringing other intellectual property rights, such as trademarks or copyrights, or misappropriating the trade secrets of others, and to the extent that our employees, consultants or contractors use intellectual property or proprietary information owned by others in their work for us, disputes may arise as to the rights in related or resulting know-how and inventions.

Parties making claims against us may obtain injunctive or other equitable relief, which could effectively block our ability to further develop and commercialize one or more of our product candidates. Defense of these claims, regardless of their merit, would involve substantial litigation expense and would be a substantial diversion of employee resources from our business. In the event of a successful infringement or other intellectual property claim against us, we may have to pay substantial damages, including treble damages and attorneys' fees for willful infringement, obtain one or more licenses from third parties, pay royalties or redesign our affected products, which may be impossible or require substantial time and monetary expenditure. We cannot predict whether any such license would be available at all or whether it would be available on commercially reasonable terms. Furthermore, even in the absence of litigation, we may need to obtain licenses from third parties to advance our research or allow commercialization of our product candidates, and we have done so from time to time. We may fail to obtain any of these licenses at a reasonable cost or on reasonable terms, if at all. In that event, we would be unable to further develop and commercialize one or more of our product candidates, which could harm our business significantly. We cannot provide any assurances that third-party patents do not exist which might be enforced against our future drugs or product candidates, resulting in either an injunction prohibiting our sales, or, with respect to our sales, an obligation on our part to pay royalties and/or other forms of compensation to third parties.

We may be involved in lawsuits to protect or enforce our patents, the patents of our licensors or our other intellectual property rights, which could be expensive, time consuming and unsuccessful.

Competitors may infringe or otherwise violate our patents or our other intellectual property rights. To counter infringement or unauthorized use, we may be required to file legal claims, which can be expensive and time-consuming. In addition, in an infringement proceeding, a court may decide that one of our patents is not valid or is unenforceable, or may refuse to stop the other party from using the technology at issue on the grounds that our patents do not cover the technology in question. An adverse result in any litigation or defense proceedings could put one or more of our patents at risk of being invalidated or interpreted narrowly and could put our patent applications at risk of not issuing. The initiation of a claim against a third party may also cause the third party to bring counter claims against us, such as claims asserting that our patents are invalid or unenforceable. In patent litigation in the United States, defendant counterclaims alleging invalidity or unenforceability are commonplace.

Grounds for a patent invalidity challenge could be an alleged failure to meet any of several statutory requirements, including lack of novelty, obviousness, non-enablement or lack of statutory subject matter. Grounds for an unenforceability assertion could be an allegation that someone connected with prosecution of the patent withheld relevant material information from the USPTO, or made a materially misleading statement, during prosecution. Third parties may also raise similar validity claims before the USPTO in post-grant proceedings such as ex parte reexaminations, inter partes review, or post-grant review, or oppositions or similar proceedings outside the United States, in parallel with litigation or even outside the context of litigation. The outcome following legal assertions of invalidity and unenforceability is unpredictable. We cannot be certain that there is no invalidating prior art, of which we and the patent examiner were unaware during prosecution. If a defendant were to prevail on a legal assertion of invalidity or unenforceability, we would lose at least part, and perhaps all, of any future patent protection on our current or future product candidates. Such a loss of patent protection could harm our business.

We may not be able to prevent misappropriation of our intellectual property rights, particularly in countries where the laws may not protect those rights as fully as in the United States. Our business could be harmed if in litigation the prevailing party does not offer us a license on commercially reasonable terms. Any litigation or other proceedings to enforce our intellectual property rights may fail, and even if successful, may result in substantial costs and distract our management and other employees.

Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation, there is a risk that some of our confidential information could be compromised by disclosure during this type of litigation. There could also be public announcements of the results of hearings, motions or other interim proceedings or developments. If securities analysts or investors perceive these results to be negative, it could have an adverse effect on the price of securities that may be issued by us.

We may not be able to protect our intellectual property rights throughout the world, which could impair our business.

Filing, prosecuting and defending patents covering brilaroxazine, RP1208 and any future product candidate throughout the world would be prohibitively expensive. Competitors may use our technologies in jurisdictions where we have not obtained patent protection to develop their own products and, further, may export otherwise infringing products to territories where we may obtain patent protection, but where patent enforcement is not as strong as that in the United States. These products may compete with our products in jurisdictions where we do not have any issued patents and any future patent claims or other intellectual property rights may not be effective or sufficient to prevent them from so competing.

Our reliance on third parties requires us to share our trade secrets, which increases the possibility that a competitor will discover them or that our trade secrets will be misappropriated or disclosed.

Because we expect to rely on third parties to manufacture brilaroxazine, RP1208 and any future product candidates, and we expect to collaborate with third parties on the development of brilaroxazine, RP1208 and any future product candidates, we must, at times, share trade secrets with them. We also conduct joint research and development programs that may require us to share trade secrets under the terms of our research and development partnerships or similar agreements. We seek to protect our proprietary technology in part by entering into confidentiality agreements and, if applicable, material transfer agreements, consulting agreements or other similar agreements with our advisors, employees, third-party contractors and consultants prior to beginning research or disclosing proprietary information. These agreements typically limit the rights of the third parties to use or disclose our confidential information, including our trade secrets. Despite the contractual provisions employed when working with third parties, the need to share trade secrets and other confidential information increases the risk that such trade secrets become known by our competitors, are inadvertently incorporated into the technology of others, or are disclosed or used in violation of these agreements. Given that our proprietary position is based, in part, on our know-how and trade secrets, a competitor's discovery of our trade secrets or other unauthorized use or disclosure would impair our competitive position and may have an adverse effect on our business and results of operations.

In addition, these agreements typically restrict the ability of our advisors, employees, third-party contractors and consultants to publish data potentially relating to our trade secrets, although our agreements may contain certain limited publication rights. Despite our efforts to protect our trade secrets, our competitors may discover our trade secrets, either through breach of our agreements with third parties, independent development or publication of information by any of our third-party collaborators. A competitor's discovery of our trade secrets would impair our competitive position and have an adverse impact on our business.

Risks Related to Our Securities

Our officers, directors, and principal stockholders exercise significant control over our Company, and will control our Company for the foreseeable future, including the outcome of matters requiring stockholder approval.

Our officers, directors and principal stockholders who beneficially own more than 5% of our common stock, in the aggregate, beneficially own shares representing approximately 41.87% of our outstanding capital stock as of March 14, 2023. As a result, such entities and individuals have the ability, acting together, to control the election of our directors and the outcome of corporate actions requiring stockholder approval, such as: (i) a merger or a sale of our Company, (ii) a sale of all or substantially all of our assets, and (iii) amendments to our certificate of incorporation and bylaws. This concentration of voting power and control could have a significant effect in delaying, deferring or preventing an action that might otherwise be beneficial to our other stockholders and be disadvantageous to our stockholders with interests different from those entities and individuals. These individuals also have significant control over our business, policies and affairs as officers and directors of our Company.

An active trading market for our common stock or warrants may not be sustained.

An active trading market for our common stock or warrants may not develop or continue or, if developed, may not be sustained. The lack of an active market for our common stock or warrants may impair investors' ability to sell their common stock or warrants at the time they wish to sell them or at a price that they consider reasonable, may reduce the fair market value of their shares of common stock or warrants and may impair our ability to raise capital to continue to fund operations by selling securities and may impair our ability to acquire additional intellectual property assets by using our securities as consideration

A sale of a substantial number of shares of our common stock or warrants in the public market could cause the market price of our common stock or warrants to drop significantly, even if our business is doing well.

The price of our common stock or warrants could decline as a result of sales of a large number of shares of our common stock or warrants or the perception that these sales could occur. These sales, or the possibility that these sales may occur, also might make it more difficult for us to sell equity securities in the future at a time and at a price that we deem appropriate.

In addition, in the future, we may issue additional shares of common stock, warrants or other equity or debt securities convertible into common stock in connection with a financing, acquisition, litigation settlement, employee arrangements or otherwise. Any such issuance could result in substantial dilution to our existing stockholders and could cause the price of our common stock or warrants to decline.

If equity research analysts do not publish research or reports about our business or if they issue unfavorable commentary or downgrade our common stock or warrants, the price of our common stock or warrants could decline.

The trading market for our common stock and warrants relies in part on the research and reports that equity research analysts publish about us and our business. We do not control these analysts. The price of our common stock could decline if one or more equity analysts downgrade our common stock or warrants or if analysts issue other unfavorable commentary or cease publishing reports about us or our business.

The price of our common stock or warrants may be volatile, which could subject us to securities class action litigation and our stockholders could incur substantial losses.

The market price for our common stock or warrants may be volatile and subject to wide fluctuations in response to factors including the following:

- actual or anticipated fluctuations in our quarterly or annual operating results;
- actual or anticipated changes in our growth rate relative to our competitors;
- failure to meet or exceed financial estimates and projections of the investment community or that we provide to the public;
- issuance of new or updated research or reports by securities analysts;
- share price and volume fluctuations attributable to inconsistent trading volume levels of our securities;
- additions or departures of key management or other personnel;
- disputes or other developments related to proprietary rights, including patents, litigation matters, and our ability to obtain patent protection for our products;
- announcement or expectation of additional debt or equity financing efforts;
- sales of our securities by us, our insiders or our other stockholders; and
- general economic, market or political conditions in the United States or elsewhere.

In particular, the market prices of pharmaceutical companies like ours have been highly volatile due to factors, including, but not limited to:

- any delay or failure to conduct a clinical trial for a company's product or to receive approval from the FDA and other regulatory agencies;
- developments or disputes concerning a company's intellectual property rights;
- technological innovations of such companies or their competitors;
- changes in market valuations of similar companies;
- announcements by such companies or their competitors of significant contracts, acquisitions, strategic partnerships, joint ventures, capital commitments, new technologies, or patents;

- failure to complete significant transactions or collaborate with vendors in manufacturing a product; and
- proposals for legislation that would place restrictions on the price of pharmaceutical products.

These and other market and industry factors may cause the market price and demand for our common stock and warrants to fluctuate substantially, regardless of our actual operating performance, which may limit or prevent investors from readily selling their shares of common stock or warrants and may otherwise negatively affect the liquidity of our common stock or warrants. In addition, the stock market in general, and Nasdaq and emerging growth companies in particular, have experienced extreme price and volume fluctuations that have often been unrelated or disproportionate to the operating performance of these companies. In the past, when the market price of a stock has been volatile, holders of that stock have instituted securities class action litigation against the company that issued the stock. If any of our stockholders brought a lawsuit against us, we could incur substantial costs defending the lawsuit. Such a lawsuit could also divert the time and attention of our management.

If we fail to maintain compliance with the requirements of The Nasdaq Capital Market for continued listing, our common stock may be delisted and the price of our common stock and our ability to access the capital markets could be negatively impacted.

Our common stock is listed for trading on The Nasdaq Capital Market. There can be no assurance that we will be able to continue to maintain compliance with the Nasdaq continued listing requirements, and if we are unable to maintain compliance with the continued listing requirements, including the \$1.00 Minimum Bid Price Requirement set forth in Nasdaq Listing Rule 5550(a)(2), our securities may be delisted from Nasdaq, which could reduce the liquidity of our common stock materially and result in a corresponding material reduction in the price of our common stock. In addition, delisting could harm our ability to raise capital through alternative financing sources on terms acceptable to us, or at all, and may result in the potential loss of confidence by investors, employees and business development opportunities. Such a delisting likely would impair your ability to sell or purchase our common stock when you wish to do so. Further, if we were to be delisted from Nasdaq, our common stock may no longer be recognized as a “covered security” and we would be subject to regulation in each state in which we offer our securities. Thus, delisting from Nasdaq could adversely affect our ability to raise additional financing through the public or private sale of equity securities, would significantly impact the ability of investors to trade our securities and would negatively impact the value and liquidity of our common stock.

Certain of our warrants are accounted for as liabilities and the changes in value of such warrants could have a material effect on our financial results.

On April 12, 2021, the SEC Staff released the Staff Statement on Accounting and Reporting Considerations for Warrants Issued by Special Purpose Acquisition Companies (the “Statement”). In the Statement, SEC Staff made the observation that certain contractual provisions included in many Special Purpose Acquisition Company warrant agreements may result in such warrants needing to be classified as a liability rather than as equity. As a result of the SEC Statement, we reevaluated the accounting treatment of our Private Warrants and Public Warrants, and determined to classify the Private Warrants as derivative liabilities measured at fair value, with changes in fair value each period reported in earnings.

As a result, included on our restated consolidated balance sheet as of December 31, 2021 contained elsewhere in this Annual Report on Form 10-K, are derivative liabilities related to embedded features contained within our Private Warrants. Accounting Standards Codification 815, Derivatives and Hedging (“ASC 815”), provides for the remeasurement of the fair value of such derivatives at each balance sheet date, with a resulting non-cash gain or loss related to the change in the fair value being recognized in earnings in the statement of operations. As a result of the recurring fair value measurement, our consolidated financial statements and results of operations may fluctuate quarterly, based on factors, which are outside of our control. Due to the recurring fair value measurement, we expect that we will recognize non-cash gains or losses on our Private Warrants each reporting period and that the amount of such gains or losses could be material.

We are an emerging growth company within the meaning of the Securities Act and have taken advantage of certain exemptions from disclosure requirements available to emerging growth companies; this could make our securities less attractive to investors and may make it more difficult to compare our performance with other public companies.

We are an “emerging growth company” within the meaning of the Securities Act, as modified by the Jumpstart Our Business Startups Act of 2012 (the “JOBS Act”), and have taken advantage of certain exemptions from various reporting requirements that are applicable to other public companies that are not emerging growth companies including, but not limited to, not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act, reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements and exemptions from the requirements of holding a nonbinding advisory vote on certain executive compensation matters. As a result, our stockholders may not have access to certain information they may deem important. We expect that our eligibility to qualify as an emerging growth company will end on December 31, 2023, the last day of the fiscal year following the fifth anniversary of Tenzing’s initial public offering. We cannot predict whether investors will find our securities less attractive because we rely on these exemptions. If some investors find the securities less attractive as a result of reliance on these exemptions, the trading prices of our securities may be lower than they otherwise would be, there may be a less active trading market for our securities and the trading prices of the securities may be more volatile.

Further, Section 102(b)(1) of the JOBS Act exempts emerging growth companies from being required to comply with new or revised financial accounting standards until private companies (that is, those that have not had a Securities Act registration statement declared effective or do not have a class of securities registered under the Securities Exchange Act of 1934, as amended, (the “Exchange Act”)) are required to comply with the new or revised financial accounting standards. The JOBS Act provides that an emerging growth company can elect to opt out of the extended transition period and comply with the requirements that apply to non-emerging growth companies but any such an election to opt out is irrevocable. We have elected not to opt out of such extended transition period. Accordingly, when a standard is issued or revised and it has different application dates for public or private companies, we, as an emerging growth company, will adopt the new or revised standard at the time private companies adopt the new or revised standard, unless early adoption is permitted by the standard, and we elect early adoption. This may make comparison of our financial statements with another public company which is neither an emerging growth company nor an emerging growth company which has opted out of using the extended transition period difficult or impossible because of the potential differences in accounting standards used.

We will incur significantly increased costs and devote substantial management time as a result of operating as a public company particularly after we are no longer an “emerging growth company.”

As a relatively new public company, we now incur significant legal, accounting and other expenses that we did not incur when we were a private company. For example, we are required to comply with certain of the requirements of the Sarbanes-Oxley Act and the Dodd-Frank Wall Street Reform and Consumer Protection Act, as amended, as well as rules and regulations subsequently implemented by the SEC, including the ongoing maintenance of effective disclosure and financial controls and compliant corporate governance practices. We expect that compliance with these requirements will increase our legal and financial compliance costs and will make some activities more time consuming and costly. In addition, we expect that our management and other personnel will need to divert attention from operational and other business matters to devote substantial time to these public company requirements. In particular, we expect to incur significant expenses and devote substantial management effort toward ensuring compliance with the requirements of Section 404 of the Sarbanes-Oxley Act. In addition, after we no longer qualify as an emerging growth company (our eligibility to qualify as an emerging growth company will end on December 31, 2023, the last day of the fiscal year following the fifth anniversary of Tenzing’s initial public offering), we expect to incur additional management time and cost to comply with the more stringent reporting requirements applicable to companies that are not emerging growth companies. In addition, if we become subject to the requirements applicable to accelerated filers or large accelerated filers, including complying with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act, our compliance burdens and expenses will further increase. We have not yet completed the process of compiling the system and processing documentation needed to comply with such requirements. We may not be able to complete our evaluation, testing and any required remediation in a timely fashion. In that regard, we currently do not have an internal audit function, and although we have contracted for certain accounting staff, we may need to hire or contract for additional accounting and financial staff with appropriate public company experience and technical accounting knowledge, particularly as the Company grows.

We cannot predict or estimate the amount of additional costs we may incur as a result of becoming a public company or the timing of such costs.

We do not currently intend to pay dividends on our common stock in the foreseeable future, and consequently, any gains from an investment in our common stock will likely depend on appreciation in the price of our common stock.

We have never declared or paid cash dividends on our common stock and do not anticipate paying any cash dividends to holders of our common stock in the foreseeable future. Consequently, investors must rely on sales of their common stock and warrants after price appreciation, which may never occur, as the only way to realize any future gains on their investments. There is no guarantee that shares of our common stock or warrants will appreciate in value or even maintain the price at which the stockholders have purchased their shares or warrants.

Upon our dissolution, the stockholders may not recoup all or any portion of their investment.

In the event of our liquidation, dissolution or winding-up, whether voluntary or involuntary, the proceeds and/or assets of remaining after giving effect to such transaction, and the payment of all debts and liabilities and distributions required to be made to holders of any outstanding preferred stock will then be distributed to the stockholders of common stock on a pro rata basis. There can be no assurance that we will have available assets to pay to the holders of our common stock, or any amounts, upon such a liquidation, dissolution or winding-up.

Our certificate of incorporation, as amended and restated, allows for our board of directors to create new series of preferred stock without further approval by the stockholders, which could adversely affect the rights of the holders of our common stock.

Our board of directors has the authority to fix and determine the relative rights and preferences of preferred stock. Our board of directors has the authority to issue up to 10 million shares of preferred stock without further stockholder approval. As a result, our board of directors could authorize the issuance of a series of preferred stock that would grant to holders the preferred right to our assets upon liquidation and the right to receive dividend payments before dividends are distributed to the holders of our common stock. In addition, our board of directors could authorize the issuance of a series of preferred stock that has greater voting power than the common stock or that is convertible into our common stock, which could decrease the relative voting power of our common stock or result in dilution to existing stockholders.

Delaware law and our certificate of incorporation, as amended and restated, and our bylaws contain certain provisions, including anti-takeover provisions that limit the ability of stockholders to take certain actions and could delay or discourage takeover attempts that stockholders may consider favorable.

Our certificate of incorporation, as amended and restated, and our bylaws, and the Delaware General Corporation Law, as amended (the “DGCL”), contain provisions that could have the effect of rendering more difficult, delaying, or preventing an acquisition deemed undesirable by our board of directors and therefore depress the trading price of our common stock. These provisions could also make it difficult for stockholders to take certain actions, including electing directors who are not nominated by the current members of our board of directors or taking other corporate actions, including effecting changes in management. Among other things, our certificate of incorporation, as amended and restated, and our bylaws include provisions regarding:

- the ability of our board of directors to issue shares of preferred stock, including “blank check” preferred stock and to determine the price and other terms of those shares, including preferences and voting rights, without stockholder approval, which could be used to significantly dilute the ownership of a hostile acquirer;
- the limitation of the liability of, and the indemnification of, our directors and officers;
- the right of our board of directors to elect a director to fill a vacancy created by the expansion of our board of directors or the resignation, death or removal of a director, which prevents stockholders from being able to fill vacancies on our board of directors;
- a prohibition on stockholder action by written consent (except as required for holders of future series of preferred stock), which forces stockholder action to be taken at an annual or special meeting of stockholders and could delay the ability of stockholders to force consideration of a stockholder proposal or to take action, including the removal of directors;
- the requirement that a special meeting of stockholders may be called only by our board of directors, which could delay the ability of stockholders to force consideration of a proposal or to take action, including the removal of directors;
- controlling the procedures for the conduct and scheduling of our board of directors and stockholder meetings;
- the requirement for the affirmative vote of holders of at least a majority of the voting power of all of the voting power of the then outstanding shares of the voting stock, voting as a single class, to amend, alter, change or repeal any provision of our bylaws and certain provisions in our certificate of incorporation, as amended and restated, respectively, which could preclude stockholders from bringing matters before annual or special meetings of stockholders and delay changes in our board of directors and also may inhibit the ability of an acquirer to effect such amendments to facilitate an unsolicited takeover attempt;
- the ability of our board of directors to amend our bylaws by an affirmative vote of a majority of our board of directors, which may allow our board of directors to take additional actions to prevent an unsolicited takeover and inhibit the ability of an acquirer to amend our bylaws to facilitate an unsolicited takeover attempt; and
- advance notice procedures with which stockholders must comply to nominate candidates to our board of directors or to propose matters to be acted upon at a stockholders’ meeting, which could preclude stockholders from bringing matters before annual or special meetings of stockholders and delay changes in our board of directors and also may discourage or deter a potential acquirer from conducting a solicitation of proxies to elect the acquirer’s own slate of directors or otherwise attempting to obtain control of us.

These provisions, alone or together, could delay or prevent hostile takeovers and changes in control or changes in our board of directors or management. In addition, as a Delaware corporation, we will generally be subject to provisions of Delaware law, including Section 203 of the DGCL.

Any provision of our certificate of incorporation, as amended and restated, our bylaws or Delaware law that has the effect of delaying or preventing a change in control could limit the opportunity for stockholders to receive a premium for their shares of our capital stock and could also affect the price that some investors are willing to pay for our common stock.

Our certificate of incorporation, as amended and restated, designates a state or federal court located within the State of Delaware as the exclusive forum for substantially all disputes between us and our stockholders, which could limit our stockholders' ability to choose the judicial forum for disputes with us or our directors, officers, or employees.

Our certificate of incorporation, as amended and restated, provides that, unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware, or if such court does not have subject matter jurisdiction, any other court located in the State of Delaware with subject matter jurisdiction, will be the sole and exclusive forum for (i) any derivative action or proceeding brought on the Company's behalf, (ii) any action asserting a claim of breach of a fiduciary duty owed by any current or former director, officer, other employee or stockholder of the Company to the Company or the Company's stockholders, (iii) any action asserting a claim against the Company or our officers or directors arising pursuant to any provision of the Delaware General Corporation Law or our certificate of incorporation, as amended and restated, or our bylaws or as to which the DGCL confers jurisdiction on the Court of Chancery of the State of Delaware, or (iv) any action asserting a claim against the Company or any director or officer of the Company governed by the internal affairs doctrine of the law of the State of Delaware; provided, that, if and only if the Court of Chancery of the State of Delaware dismisses any such action for lack of subject matter jurisdiction, such action may be brought in another state court sitting in the State of Delaware. Additionally, our certificate of incorporation, as amended and restated, provides that, unless the Company consents to the selection of an alternative forum, the federal district courts of the United States of America shall, to the fullest extent permitted by law, be the sole and exclusive forum for the resolution of any complaint asserting a cause of action arising under the Securities Act; provided, however, that such provision will not apply to suits brought to enforce any liability or duty created by the Exchange Act or any other claim for which the federal courts have exclusive jurisdiction.

Any person or entity purchasing or otherwise acquiring any interest in any of our securities will be deemed to have notice of and consented to these provisions. These exclusive-forum provisions may limit a stockholder's ability to bring a claim in a judicial forum of its choosing for disputes with us or our directors, officers, or other employees, which may discourage lawsuits against us and our directors, officers, and other employees. If a court were to find these exclusive-forum provisions to be inapplicable or unenforceable in an action, we may incur additional costs associated with resolving the dispute in other jurisdictions, which could harm our results of operations.

Item 1B. UNRESOLVED STAFF COMMENTS

Not applicable.

Item 2. PROPERTIES

Our principal offices are located at 19925 Stevens Creek Blvd., Suite 100, Cupertino, California 95014. The lease for this facility was renewed for twelve months beginning February 2022 and automatically renewed in February 2023 for an additional twelve months. The facility is used for office space only, and we believe the facility is adequate for our foreseeable needs. We operate primarily as a virtual company.

Item 3. LEGAL PROCEEDINGS

We may from time to time, become involved in various lawsuits and legal proceedings, which arise in the ordinary course of business. Litigation is subject to inherent uncertainties, and an adverse result in these or other matters may arise from time to time that may harm our business. Except as described above, we are currently not aware of any such legal proceedings or claims that may be, individually or in the aggregate, material to us.

Item 4. MINE SAFETY DISCLOSURES

Not applicable.

Part II

Item 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

Our common stock and warrants trade on Nasdaq under the symbols "RVPH" and "RVPHW," respectively.

As of December 31, 2022, there were approximately 236 holders of record of our common stock and 2 holders of record of our warrants. These numbers do not include beneficial owners whose shares or warrants were held in street name. The actual number of holders of our common stock is greater than this number of record holders and includes stockholders who are beneficial owners, but whose shares are held in street name by brokers or held by other nominees.

Unregistered Sales of Equity Securities

None except as previously reported.

Item 6. [RESERVED]

Item 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

All statements other than statements of historical fact included in this section regarding our financial position, business strategy and the plans and objectives of management for future operations, are forward-looking statements. When used in this section, words such as "anticipate," "believe," "estimate," "expect," "intend" and similar expressions, as they relate to our management, identify forward-looking statements. Such forward-looking statements are based on the beliefs of management, as well as assumptions made by, and information currently available to, our management. Actual results could differ materially from those contemplated by the forward-looking statements as a result of certain factors detailed herein. All subsequent written or oral forward-looking statements attributable to us or persons acting on our behalf are qualified in their entirety by this paragraph.

Some of the information contained in this discussion and analysis or set forth elsewhere, including information with respect to our plans and strategy for our business include forward-looking statements that involve risks, uncertainties and assumptions. You should read the sections titled "Cautionary Note Regarding Forward-Looking Statements" and "Risk Factors" for a discussion of important factors that could cause actual results to differ materially from the results described in or implied by the forward-looking statements contained in the following discussion and analysis.

Company Overview

We are a clinical-stage pharmaceutical company that discovers, develops, and seeks to commercialize next-generation therapeutics for diseases representing significant unmet medical needs and burdens to society, patients, and their families. Our current pipeline focuses on the central nervous system, respiratory, and metabolic diseases. We use a chemical genomics driven technology platform and proprietary chemistry to develop new medicines. Our pipeline currently has two drug candidates, brilaroxazine (RP5063) and RP1208. Both are new chemical entities discovered in-house. We have been granted composition of matter patents for both brilaroxazine and RP1208 in the United States (U.S.), Europe, and several other countries.

Our lead drug candidate, brilaroxazine, is in clinical development and is intended to treat multiple neuropsychiatric indications. These include schizophrenia, bipolar disorder (BD), major depressive disorder (MDD), attention-deficit/hyperactivity disorder (ADHD), behavioral and psychotic symptoms of dementia or Alzheimer's disease (BPSD), and Parkinson's disease psychosis. Furthermore, brilaroxazine is also ready for clinical development for two respiratory indications — pulmonary arterial hypertension (PAH) and idiopathic pulmonary fibrosis (IPF). The U.S. Food and Drug Administration (FDA) granted Orphan Drug designation to brilaroxazine for the treatment of PAH in November 2016 and IPF in April 2018.

On January 10, 2022, the FDA notified us that we could proceed with our Phase 3 RECOVER trial, which is a study of brilaroxazine in patients with an acute exacerbation of schizophrenia. On February 1, 2022, we announced that the first patients in the RECOVER trial had been dosed. On July 27, 2022, we announced that we had enrolled patients in 15 geographically diverse sites across the U.S. The RECOVER trial is a global Phase 3, randomized, double-blind, placebo-controlled, multicenter study designed to assess the safety and efficacy of brilaroxazine in approximately 400 patients with acute schizophrenia compared to placebo. On October 31, 2022, we announced over 30% enrollment in our Phase 3 RECOVER trial in the United States and the initiation and ongoing enrollment across sites in Europe, and we finished 2022 with about 40% enrollment. The Company has received regulatory approval for initiating the study in Asia (India) on October 11, 2022 and multiple sites were initiated in India in November and December 2022.

Our primary focus is to complete the clinical development of brilaroxazine for the treatment of acute and maintenance schizophrenia.

We are currently developing Phase 2 trial protocols for studies of brilaroxazine in ADHD and PAH and anticipate submitting the protocols to regulatory agencies in the first half of 2023 and initiating the Phase 2 studies in the second half of 2023.

Subject to the receipt of additional financing, we may also continue the clinical development of brilaroxazine for the treatment of BD, MDD, BPSD, PDP, and IPF. Moreover, subject to the receipt of additional financing, we may also advance the development of our second drug candidate, RP1208, for the treatment of depression and obesity.

Impact of COVID-19

In response to the spread of COVID-19, we have taken temporary precautionary measures intended to help minimize the risk of the virus to our employees and community, including temporarily requiring employees to work remotely and suspending all non-essential travel for our employees.

As a result of the COVID-19 pandemic, we may experience disruptions that could adversely impact our business. The COVID-19 pandemic may negatively affect clinical site initiation, patient recruitment and enrollment, patient dosing, distribution of drug to clinical sites and clinical trial monitoring for our clinical trials. The COVID-19 pandemic may also negatively affect the operations of the third-party contract research organizations that we intend to rely upon to assist us in conducting our clinical trials and the contract manufacturers who manufacture our drug candidates.

We are continuing to assess the potential impact of the COVID-19 pandemic on our business and operations. For additional information on the various risks posed by the COVID-19 pandemic, refer to Part I—Item 1A—Risk Factors of this Annual Report on Form 10-K.

Business Combination and Domestication

On December 14, 2020, our predecessor company, formerly known as Tenzing Acquisition Corp., a British Virgin Islands exempted company (“Tenzing”), and Reviva Pharmaceuticals, Inc., a Delaware corporation (together with its consolidated subsidiaries, “Old Reviva”), consummated the transactions contemplated by the Agreement and Plan of Merger, dated as of July 20, 2020 (as amended, the “Merger Agreement”), by and among Tenzing, Tenzing Merger Subsidiary Inc., a Delaware corporation and wholly-owned subsidiary of Tenzing (“Merger Sub”), Old Reviva, and the other parties thereto. Pursuant to the Merger Agreement, Merger Sub merged with and into Old Reviva, with Old Reviva surviving as our wholly owned subsidiary. We refer to this transaction as the Business Combination. In connection with and one day prior to the completion of the Business Combination, Tenzing re-domiciled out of the British Virgin Islands and continued as a company incorporated in the State of Delaware, and changed its name to Reviva Pharmaceuticals Holdings, Inc. Prior to the completion of the Business Combination, the Company was a shell company. Following the Business Combination, the business of Old Reviva is the business of the Company.

Old Reviva was incorporated in the state of Delaware on May 1, 2006 and its subsidiary, Reviva Pharmaceuticals India Pvt. Ltd., was incorporated on December 23, 2014. Tenzing was formed pursuant to the laws of the British Virgin Islands on March 20, 2018.

The Business Combination was accounted for as a reverse merger in accordance with U.S. GAAP. Under this method of accounting, Tenzing was treated as the “acquired” company for financial reporting purposes. This determination was primarily based on the holders of Old Reviva expecting to have a majority of the voting power of the post-combination company, Old Reviva senior management comprising substantially all of the senior management of the post-combination company, the relative size of Old Reviva compared to Tenzing, and Old Reviva operations comprising the ongoing operations of the post-combination company. Accordingly, for accounting purposes, the Business Combination is treated as the equivalent of Old Reviva issuing stock for the net assets of Tenzing, accompanied by a recapitalization. The net assets of Tenzing were stated at historical cost, with no goodwill or other intangible assets recorded. Operations prior to the Business Combination are those of Old Reviva.

Financial Overview

We are a clinical-stage biopharmaceutical company and have not generated any revenues from the sale of products. We have never been profitable, and our accumulated deficit as of December 31, 2022, was \$91.2 million. Our net loss for the year ended December 31, 2022 and 2021, was approximately \$24.3 million and \$8.5 million, respectively. We expect to incur significant expenses and increased operating losses for the next several years. We expect our expenses to increase in connection with our ongoing activities to research, develop and commercialize our product candidates. Furthermore, we expect to incur additional costs associated with operating as a public company. We will need to generate significant revenues to achieve profitability, and we may never do so.

We expect our expenses will increase substantially in connection with our ongoing activities, as we:

- invest significantly to further research and develop, through clinical trials for brilaroxazine and pre-clinical research for RP1208, and seek regulatory approval for our product candidates brilaroxazine and RP1208;
- identify and develop additional product candidates;
- hire additional clinical, scientific and management personnel;
- seek regulatory and marketing approvals for any product candidates that we may develop;
- ultimately establish a sales, marketing and distribution infrastructure to commercialize any drugs for which we may obtain marketing approval;
- maintain, expand and protect our intellectual property portfolio;
- acquire or in-license other drugs and technologies; and
- add operational, financial and management information systems and personnel, including personnel to support our product candidate development, any future commercialization efforts and our transition to a public company.

We have funded our operations to date primarily from the issuance and sale of our equity and convertible equity securities. As of December 31, 2022, we had cash and cash equivalents of approximately \$18.5 million. To fund our current operating plans, we will need to raise additional capital. Our existing cash and cash equivalents will not be sufficient for us to complete development of our product candidates and, if applicable, to prepare for commercializing any product candidate that may receive approval. Accordingly, we will continue to require substantial additional capital beyond our existing cash to continue our clinical development and potential commercialization activities. We believe that we have adequate cash on hand to cover anticipated outlays through the majority of fiscal year 2023, but will need additional fundraising activities and cash on hand during the fourth quarter of fiscal year 2023. These conditions raise substantial doubt regarding our ability to continue as a going concern for a period of one year after the date the financial statements are issued. The amount and timing of our future funding requirements will depend on many factors, including the pace and results of our clinical development efforts. We will seek to fund our operations through public or private equity or debt financings or other sources, which may include collaborations with third parties. Adequate additional financing may not be available to us on acceptable terms, or at all. Our failure to raise capital as and when needed would have a negative impact on our financial condition, our ability to pursue our business strategy, and our ability to continue as a going concern. We cannot assure you that we will ever be profitable or generate positive cash flow from operating activities.

Research and Development Expenses

We focus our resources on research and development activities, including the conduct of preclinical and clinical studies and product development and expenses such costs as they are incurred. We have not historically tracked or recorded research and development expenses on a project-by-project basis, primarily because we use our employee and infrastructure resources across multiple research and development projects, and it is not practical for us to allocate such costs on a project-by-project basis. Our research and development expenses primarily consist of employee-related expenses, including deferred salaries, salaries, benefits and taxes for personnel in research and development functions.

The largest recurring component of our total operating expenses has historically been research and development activities. We expect our research and development expenses will increase for the next several years as we advance our development programs, pursue regulatory approval of our product candidates in the U.S. and other jurisdictions and prepare for potential commercialization, which would require a significant investment in costs related to contract manufacturing, inventory buildup and sales and marketing activities.

Our primary product candidates and their current status is as follows:

<u>Drug Candidate</u>	<u>Indication</u>	<u>Status</u>
Brilaroxazine (RP5063)	Schizophrenia	Initiated pivotal phase 3 and long-term safety studies. Topline data for the pivotal phase 3 study is anticipated in mid-2023
Brilaroxazine	Bipolar Disorder	Phase 1 complete**
Brilaroxazine	Depression-MDD	Phase 1 complete**
Brilaroxazine	Alzheimer's (AD-Psychosis/Behavior)	Phase 1 complete**
Brilaroxazine	Parkinson's	Phase 1 complete**
Brilaroxazine	ADHD/ADD	Phase 1 complete**
Brilaroxazine	PAH	Phase 1 complete**
Brilaroxazine	IPF	Phase 1 complete**
RP1208	Depression	Completed pre-clinical development studies, including in vitro receptor binding studies, animal efficacy studies, and PK studies. Compound ready for IND enabling studies.
RP1208	Obesity	Completed pre-clinical development studies, including in vitro receptor binding studies and PK studies. Compound ready for animal efficacy studies.

** We completed the Phase 1 clinical study for brilaroxazine prior starting the Phase 2 study in schizophrenia and schizoaffective disorder. We collected safety data for brilaroxazine in over 200 patients, including healthy subjects and patients with stable schizophrenia, acute schizophrenia and schizoaffective disorder. Generally, no separate Phase 1 study is required for conducting a Phase 2 study for an additional indication, provided the treatment doses in the Phase 2 study for an additional indication are within the range of doses tested in the previously completed Phase 1 study.

The successful development of our platform and product candidates is highly uncertain, and we may never succeed in achieving marketing approval for our product candidates brilaroxazine, RP1208, or any future product candidates. We expect the remaining costs in connection with our ongoing Phase 3 clinical study for brilaroxazine to be approximately \$16.9 million, with approximately \$13.2 million payable during calendar 2023, and approximately \$3.7 million payable during calendar 2024. At this time, other than our estimates for conducting our ongoing Phase 3 clinical study for brilaroxazine, we cannot reasonably estimate the nature, timing, or costs of the efforts necessary to finish developing any of our product candidates or the period in which material net cash, if any, from these product candidates may commence. This is due to the numerous risks and uncertainties associated with developing therapeutics, including the uncertainty of:

- the scope, rate of progress, expense, and results of clinical trials;
- the scope, rate of progress, and expense of process development and manufacturing;
- preclinical and other research activities; and
- the timing of regulatory approvals.

General and Administrative Expenses

General and administrative expenses primarily consist of payroll and related costs for employees in executive, business development, finance, and administrative functions. Other significant general and administrative expenses include professional fees for accounting and legal services.

We expect general and administrative expenses to increase as we expand infrastructure and continue the development of our clinical programs. Other increases could potentially include increased costs for director and officer liability insurance, costs related to the hiring of additional full-time personnel, and increased fees for directors, outside consultants, lawyers, and accountants. We expect to incur significant costs to comply with corporate governance, internal controls, and similar requirements applicable to public companies.

Interest Income and Other Income

Interest income and other, net consists largely of interest earned on our cash & cash equivalents.

Results of Operations

Comparison of the years ended December 31, 2022 and 2021:

The following table summarizes our results of operations for the years ended December 31, 2022 and 2021:

	Year Ended December 31,		Change \$	Change %
	2022	2021		
Operating expenses				
Research and development.....	\$ 18,947,874	\$ 4,851,602	14,096,272	291%
General and administrative.....	5,358,734	5,252,911	105,823	2%
Total operating expenses.....	<u>24,306,608</u>	<u>10,104,513</u>		
Loss from operations.....	(24,306,608)	(10,104,513)		
(Loss) gain on remeasurement of warrant liabilities	(194,709)	1,591,055	(1,785,764)	(112)%
Interest and other income (expense), net.....	182,802	(2,414)	185,216	7673%
Total other (expense) income, net.....	<u>(11,907)</u>	<u>1,588,641</u>		
Loss before provision for income taxes.....	(24,318,515)	(8,515,872)		
Provision for income taxes.....	20,777	6,004	14,773	246%
Net loss	<u>\$ (24,339,292)</u>	<u>\$ (8,521,876)</u>		

Research and Development Expenses

We incurred approximately \$18.9 million and \$4.9 million in research and development expenses for the years ended December 31, 2022 and 2021, respectively. The primary reason for the increase of \$14.1 million, or 291%, was attributable to an increase in Phase 3 clinical trial activity and higher drug development costs of approximately \$8.2 million for our product candidate brilaroxazine, an increase of approximately \$1.3 million related to preclinical expenditures and other clinical expenses, an increase of approximately \$4.0 million related to manufacturing, testing, and delivery of chemicals, approximately \$2.0 million related to safety and toxicology studies, and \$0.3 million related to other clinical expenses. This is coupled with increases in salaries of approximately \$0.5 million, recruiting expenses of \$0.2 million, and stock-based compensation of \$0.1 million. These increases are slightly offset by a \$2.5 million decrease in consulting expenses. Our research and development expenses are expected to increase for the foreseeable future as we continue to advance our platform and product candidates.

General and Administrative Expenses

We incurred approximately \$5.4 million and \$5.3 million in general and administrative expenses for the years ended December 31, 2022 and 2021, respectively. Total general and administrative expenses have remained relatively consistent year over year. The slight increase was primarily attributable an increase in consultant and professional fees of \$0.4 million, recruiting expenses of approximately \$0.1 million, health and commercial insurance of approximately \$0.1 million, and other operating expenses of approximately \$0.1 million. This is slightly offset by decreases in legal expenses of approximately \$0.4 million, salaries and wages of approximately \$0.1 million, and decreases in other in general and administrative expenses of approximately \$0.1 million.

(Loss) Gain on Remeasurement of Warrant Liabilities

The loss on remeasurement of warrant liabilities of \$(0.2) million and gain of \$1.6 million for the years ended December 31, 2022 and 2021, respectively, resulted from the increase in calculated fair value principally as a result of the increase in our stock price during the year ended December 31, 2022. The gain on remeasurement of warrant liabilities of \$1.6 million for the year ended December 31, 2021, resulted from the decrease in calculated fair value principally as a result of the decline in stock price during the year ended December 31, 2021.

Interest and Other Income (Expense), Net

Interest and other income (expense), net was \$182,802 and \$(2,414) for the years ended December 31, 2022 and 2021, respectively. The increase is primarily due to higher interest income of approximately \$201,000 due to our moving funds to an interest-bearing account in the final months of fiscal year 2021, coupled with an increase in market interest rates in 2022 as compared to 2021. This is slightly offset by a foreign currency translation loss.

Provision for Income Taxes

The provision for income taxes was \$20,777 and \$6,004 for the years ended December 31, 2022 and 2021, respectively. The increase was primarily due to an increase of taxable income related to subsidiary revenue operations.

Liquidity and Capital Resources

	Year Ended December 31,		Change	
	2022	2021	Dollars	Percentage
Balance Sheet Data:				
Cash and cash equivalents.....	\$ 18,519,856	\$ 29,687,944	(11,168,088)	(37.6)%
Working capital.....	\$ 12,883,835	\$ 29,059,190	(16,175,355)	(55.7)%
Total assets.....	\$ 18,923,675	\$ 31,404,001	(12,480,326)	(39.7)%
Total stockholders' equity	\$ 12,316,396	\$ 28,686,460	(16,370,064)	(57.1)%
Statement of Cash Flow Data:				
Net cash used in operating activities	\$ (18,960,581)	\$ (10,668,462)	(8,292,119)	77.7%
Net cash provided by financing activities	7,792,493	31,595,944	(23,803,451)	(75.3)%
Net (decrease) increase in cash and cash equivalents.....	\$ (11,168,088)	\$ 20,927,482	(32,095,570)	(153.4)%

Capital Resources

As of December 31, 2022, we had cash and cash equivalents of approximately \$18.5 million. We believe that we have adequate cash on hand to cover anticipated outlays through the majority of fiscal year 2023, but will need additional fundraising activities and cash on hand during the fourth quarter of fiscal year 2023. These conditions raise substantial doubt regarding our ability to continue as a going concern for a period of one year after the date the financial statements are issued. We expect to continue to incur significant expenses and operating losses for the foreseeable future as we continue our research and preclinical and clinical development of our product candidates; expand the scope of our current studies for our product candidates; initiate additional preclinical, clinical or other studies for our product candidates; change or add additional manufacturers or suppliers; seek regulatory and marketing approvals for any of our product candidates that successfully complete clinical studies; seek to identify, evaluate and validate additional product candidates; acquire or in-license other product candidates and technologies; maintain, protect and expand our intellectual property portfolio; attract and retain skilled personnel; and experience any delays or encounter issues with any of the above.

On June 1, 2021, we completed a public offering (the "Offering") of Units (each, a "Unit"), with each Unit consisting of (a) one share of common stock (or pre-funded warrant to purchase one share of common stock in lieu thereof, with an exercise price of \$0.0001 per share, each a "Pre-Funded Warrant") and (b) one warrant to purchase 0.75 of a share of our common stock, with an exercise price of \$4.125 per share (each, an "Investor Warrant"). Pursuant to the Offering, we sold 4,133,400 Units consisting of (a) one share of common stock and (b) one Investor Warrant (inclusive the underwriter's overallotment option of 1,200,000 of such Units), and 5,066,600 Units consisting of (a) one Pre-Funded Warrant and (b) one Investor Warrant. The Units had no stand-alone rights and were not certificated or issued as stand-alone securities. Accordingly, as result of the sale of such Units in the Offering, we issued in aggregate 4,133,400 shares of common stock, Pre-Funded Warrants exercisable for 5,066,600 shares of common stock, and Investor Warrants exercisable for 6,900,000 shares of common stock. The offering price was \$3.75 for each Unit consisting of (a) one share of common stock and (b) one Investor Warrant, and \$3.7499 for each Unit consisting of (a) one Pre-Funded Warrant and (b) one Investor Warrant. Net proceeds from the Offering were approximately \$31.5 million, after underwriter discounts, commissions, legal and accounting fees, and certain other costs of approximately \$3.0 million.

On September 8, 2022, we completed a registered direct offering and concurrent private placement (together, the “September 2022 Offering”). In the registered direct offering, we issued 1,976,285 shares of common stock at a purchase price per share of \$2.53, for aggregate gross proceeds to us of approximately \$5.0 million, before deducting certain transaction expenses payable by us of approximately \$0.7 million. The transaction expenses were net against the proceeds received and were included in additional paid-in capital.

We issued to the investors in the September 2022 Offering warrants to purchase up to 3,359,684 shares of common stock (the “Private Placement Warrants”). The Private Placement Warrants were immediately exercisable upon issuance at an exercise price of \$2.40 per share and will expire on September 8, 2027.

In a concurrent private placement we issued pre-funded warrants (the “Private Pre-Funded Warrants”) to purchase up to an aggregate of 1,383,399 shares of common stock at a purchase price of \$2.5299 per share, for aggregate gross proceeds to us of approximately \$3.5 million, before deducting transaction expenses payable by us, which were net against the proceeds received and were included in additional paid-in capital. The Private Pre-Funded Warrants were immediately exercisable at an exercise price of \$0.0001 per share and will expire when the Private Pre-Funded Warrants are fully exercised.

No Private Pre-Funded Warrants or Private Placement Warrants have been exercised as of December 31, 2022.

The September 2022 Offering resulted in aggregate gross proceeds of approximately \$8.5 million before deducting transaction expenses. The total net proceeds totaled approximately \$7.8 million after deducting transaction costs of \$0.7 million.

As of December 31, 2022, we maintained all of our cash with two financial institutions, including Silicon Valley Bank (“SVB”), and certain of our cash balance with these financial institutions were in excess of the Federal Deposit Insurance Corporation (“FDIC”) insurance limit. On March 10, 2023, SVB was closed by the California Department of Financial Protection and Innovation, which appointed the FDIC as receiver. On March 12, 2023, federal regulators announced that the FDIC would complete its resolution of SVB in a manner that fully protects all depositors. As of March 30, 2023, the filing date of this annual report, we have transferred the majority of our cash to a different financial institution. Since the March 2023 failure and FDIC takeover of SVB and the inability of its customers to readily access their cash deposits, there has been a heightened risk and greater focus on the potential failures of other banks in the future. If these banks fail in the future, we may not be able to immediately (or ever) recover our cash in excess of the FDIC insured limits which would adversely impact our operating liquidity and could negatively impact our operations, results of operations and financial performance.

Until such time as we can generate substantial product revenue, if ever, we will need to raise additional capital to fund our operations, including our clinical trials, and expect to finance our cash needs through a combination of equity or debt financings and collaboration agreements. We do not currently have any committed external sources of capital.

To the extent that we raise additional capital through the future sale of equity or debt, the ownership interest of our stockholders will be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect the rights of our existing stockholders.

If we raise additional funds through collaboration agreements in the future, we may have to relinquish valuable rights to our technologies, future revenue streams or product candidates or grant licenses on terms that may not be favorable to us.

If we are unable to raise additional funds through equity or debt financings when needed, we may be required to delay, limit, reduce or terminate our product development or future commercialization efforts or grant rights to develop and market product candidates that we would otherwise prefer to develop and market ourselves.

Cash Flows

Net Cash Used in Operating Activities

Net cash used in operating activities for the year ended December 31, 2022 was approximately \$19.0 million, consisting primarily of a net loss of \$24.3 million, offset by a change in our operating assets and liabilities totaling \$5.0 million and by non-cash charges of \$0.4 million. Non-cash charges largely related to the remeasurement of warrant liabilities of approximately \$0.2 million and stock-based compensation expense of approximately \$0.2 million. The decrease in net operating assets was primarily due to increases in accounts payable, a decrease in prepaid expenses and other current assets and an increase in accrued expenses and other current liabilities.

Net cash used in operating activities for the year ended December 31, 2021 was \$10.7 million, consisting primarily of a net loss of \$8.5 million, change in our operating assets and liabilities totaling \$0.7 million and non-cash charges of \$1.4 million. Non-cash charges largely related to change in fair value of warrant liability of \$1.6 million, issuance of common stock in exchange for services of \$40,000 and stock-based compensation expense of \$0.1 million. The increase in net operating assets was primarily due to increases in prepaid expenses and a decrease in accounts payable, offset by the increase in accrued expenses and other current liabilities.

Net Cash Provided by Financing Activities

Net cash provided by financing activities for the year ended December 31, 2022 consists primarily of approximately \$7.8 million related to proceeds from the sale of the common stock and warrants in the September 2022 Offering. Net cash provided by financing activities for the year ended December 31, 2021 consists primarily of approximately \$31.5 million related to proceeds from the public offering and \$0.1 million from the issuance of stock upon the exercise of warrants.

Critical Accounting Policies and Use of Estimates

Our management's discussion and analysis of our financial condition and results of operations is based on our consolidated financial statements, which have been prepared in accordance with U.S. generally accepted accounting principles, or U.S. GAAP. The preparation of our consolidated financial statements requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the consolidated financial statements, and the reported amounts of expenses during the period. Significant items subject to such estimates and assumptions include stock-based compensation, warrant values, and deferred taxes and related valuation allowances. Our actual results could differ from these estimates under different assumptions or conditions.

Our significant accounting policies are more fully described in Note 2 to the consolidated financial statements included in Item 8 of this Annual Report on Form 10-K, we believe that the following accounting policies are the most critical to assist stockholders and investors reading the consolidated financial statements in fully understanding and evaluating our financial condition and results of operations.

Stock-based Compensation

We record stock-based compensation for options granted to employees, non-employees, and to members of the board of directors for their services on the board of directors based on the grant date fair value of awards issued, and the expense is recorded on a straight-line basis over the requisite service period. Forfeitures are recognized when they occur.

We use the Black-Scholes-Merton option pricing model to determine the fair value of stock options. The use of the Black-Scholes-Merton option-pricing model requires management to make assumptions with respect to the expected term of the option, the expected volatility of the common stock consistent with the expected life of the option, risk-free interest rates and expected dividend yields of the common stock. We have concluded that its historical share option exercise experience does not provide a reasonable basis upon which to estimate expected term. Therefore, the expected term was determined according to the simplified method, which is the average of the vesting tranche dates and the contractual term. Due to the lack of company specific historical and implied volatility data, the estimate of expected volatility is primarily based on the historical volatility of a group of similar companies that are publicly traded. For these analyses, companies with comparable characteristics are selected, including enterprise value and position within the industry, and with historical share price information sufficient to meet the expected life of the stock-based awards. We compute the historical volatility data using the daily closing prices for the selected companies' shares during the equivalent period of the calculated expected term of its stock-based awards. The risk-free interest rate is determined by reference to U.S. Treasury zero-coupon issues with remaining maturities similar to the expected term of the options. We have not paid, and do not anticipate paying, cash dividends on shares of its common stock.

Fair Value Measurements of Warrants

ASC 820 “Fair Value Measurements” defines fair value, establishes a framework for measuring fair value in GAAP and expands disclosures about fair value measurements. ASC 820 defines fair value as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. ASC 820 establishes a fair value hierarchy that distinguishes between (1) market participant assumptions developed based on market data obtained from independent sources (observable inputs) and (2) an entity’s own assumptions about market participant assumptions developed based on the best information available in the circumstances (unobservable inputs). The fair value hierarchy consists of three broad levels, which gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1) and the lowest priority to unobservable inputs (Level 3).

The three levels of the fair value hierarchy under ASC 820 are described below:

- Level 1 — Quoted prices (unadjusted) in active markets that are accessible at the measurement date for assets or liabilities. The fair value hierarchy gives the highest priority to Level 1 inputs.
- Level 2 — Directly or indirectly observable inputs as of the reporting date through correlation with market data, including quoted prices for similar assets and liabilities in active markets and quoted prices in markets that are not active. Level 2 also includes assets and liabilities that are valued using models or other pricing methodologies that do not require significant judgment since the input assumptions used in the models, such as interest rates and volatility factors, are corroborated by readily observable data from actively quoted markets for substantially the full term of the financial instrument.
- Level 3 — Unobservable inputs that are supported by little or no market activity and reflect the use of significant management judgment. These values are generally determined using pricing models for which the assumptions utilize management’s estimates of market participant assumptions.

In determining the fair value of warrants, we utilize valuation techniques that maximize the use of observable inputs and minimize the use of unobservable inputs to the extent possible as well as considers counterparty credit risk in its assessment of fair value.

Off-Balance Sheet Arrangements

We did not have during the periods presented, and do not currently have, any off-balance sheet arrangements, as defined under SEC rules.

JOBS Act Accounting Election

As an emerging growth company under the JOBS Act, we are eligible to take advantage of certain exemptions from various reporting requirements that are applicable to other public companies that are not emerging growth companies. We have elected not to opt out of such extended transition period. Accordingly, when a standard is issued or revised and it has different application dates for public or private companies, we, as an emerging growth company, will adopt the new or revised standard at the time private companies adopt the new or revised standard, unless early adoption is permitted by the standard, and we elect early adoption. This may make comparison of our financial statements with another public company which is neither an emerging growth company nor an emerging growth company which has opted out of using the extended transition period difficult or impossible because of the potential differences in accounting standards used. We expect that our eligibility to qualify as an emerging growth company will end on December 31, 2023, the last day of the fiscal year following the fifth anniversary of Tenzing’s initial public offering.

Item 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

As a smaller reporting company, we are not required to provide the information required by this item.

Item 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

The information required by this item appears in a separate section of this Annual Report on Form 10-K beginning on page F-1 and is incorporated herein by reference.

Item 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None.

Item 9A. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

We maintain disclosure controls and procedures that are designed to ensure that information required to be disclosed in our reports under the Exchange Act, and the rules and regulations thereunder, is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms and that such information is accumulated and communicated to our management, including our principal executive officer and principal financial officer, as appropriate, to allow for timely decisions regarding required disclosure. In designing and evaluating the disclosure controls and procedures, management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives, and management is required to apply its judgment in evaluating the cost-benefit relationship of possible controls and procedures.

As required by Rule 13a-15(b) under the Exchange Act, our management, under the supervision and with the participation of our principal executive officer and principal financial officer, has evaluated the effectiveness of the design and operation of our disclosure controls and procedures (as such term is defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act) as of December 31, 2022. Based on such evaluation, our principal executive officer and principal financial officer have concluded that, as of December 31, 2022, our disclosure controls and procedures were effective at the reasonable assurance level.

Management's Annual Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as defined in Rule 13a-15(f) of the Exchange Act. Our management conducted an evaluation of the effectiveness of our internal control over financial reporting based on the framework in *Internal Control—Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on the results of this evaluation, management has concluded that our internal control over financial reporting was effective at the reasonable assurance level as of December 31, 2022.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risks that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

This Annual Report on Form 10-K does not include an attestation report of our registered public accounting firm on our internal control over financial reporting due to an exemption established by the JOBS Act for "emerging growth companies." In addition, we are currently a non-accelerated filer and are therefore not required to provide an attestation report on our internal control over financial reporting until such time as we are an accelerated filer or large accelerated filer.

Changes in Internal Control Over Financial Reporting

There were no changes in our internal controls over financial reporting identified in management's evaluation pursuant to Rules 13a-15(d) and 15d-15(d) of the Exchange Act that occurred during the fourth quarter of the year ended December 31, 2022 that materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Inherent Limitations on Effectiveness of Controls

Our management does not expect that our disclosure controls and procedures or our internal control over financial reporting will prevent all errors and all fraud. A control system, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met. Further, the design of a control system must reflect the fact that there are resource constraints, and the benefits of controls must be considered relative to their costs. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, have been detected. These inherent limitations include the realities that judgments in decision-making can be faulty, and that breakdowns can occur because of a simple error or mistake. Additionally, controls can be circumvented by the individual acts of some persons, by collusion of two or more people or by management override of the controls. The design of any system of controls also is based in part upon certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions; over time, controls may become inadequate because of changes in conditions, or the degree of compliance with policies or procedures may deteriorate. Because of the inherent limitations in a cost-effective control system, misstatements due to error or fraud may occur and not be detected.

Item 9B. OTHER INFORMATION

None.

Item 9C. DISCLOSURE REGARDING FOREIGN JURISDICTIONS THAT PREVENT INSPECTIONS

Not applicable.

Part III

Item 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The following sets forth certain information with respect to our executive officers and directors.

<u>Name</u>	<u>Age</u>	<u>Position</u>
Laxminarayan Bhat.....	57	President, Chief Executive Officer, and Director
Narayan Prabhu.....	51	Chief Financial Officer
Parag Saxena.....	67	Chairman of the Board
Richard Margolin.....	72	Director
Purav Patel.....	40	Director
Les Funtleyder.....	53	Director

Management

Laxminarayan Bhat - see description below under the heading “Directors.”

Narayan Prabhu joined the Company as Chief Financial Officer in December 2020. Since May 2019, Mr. Prabhu served as an independent consultant providing Interim Chief Financial Officer and Controller services. Mr. Prabhu previously served as the Chief Financial Officer of Sony Biotechnology Inc., a biotechnology company focused on reagents, flow cytometry and spectral imaging from November 2014 to April 2019. From September 2009 to October 2014, Mr. Prabhu served as the M&A Controller at Cisco Systems, Inc. (Nasdaq: CSCO). Mr. Prabhu is a CPA and received his B.S. in Accounting & Finance from Indiana University at Bloomington - Kelley School of Business and MBA from the University of California at Berkeley - Haas School of Business.

Directors

Laxminarayan Bhat is the founder of our Company and has served as our President, Chief Executive Officer and Director since inception of Reviva in 2006. From 2000 to 2004, Dr. Bhat served as research scientist at Xenoport, Inc., now a part of Arbor Pharmaceuticals, LLC (NYSE: ABR), a public company engaged in the pharmaceuticals business. Dr. Bhat also served as a research scientist, from 2004 to 2006, at ARYx Therapeutics Inc. (previously trading under OTCM: ARYX), a former public company that focused on the development of pharmaceutical products. From 1997 to 2000, Dr. Bhat served as a post-doctoral researcher in the Drug Discovery Program at the Higuchi Biosciences Center, a biomedical research center at the University of Kansas. Dr. Bhat has over 20 years’ experience in drug discovery and development. Dr. Bhat has received a global post-doctoral training at the University of Kansas, USA, the Georg-August-Universität, Göttingen, Germany and the Université du Maine, France. In 1995, he was selected for the Alexander von Humboldt fellowship, an internationally recognized award for young scientists to pursue advanced research in Germany. Dr. Bhat received his Ph.D. in synthetic organic chemistry from the Central University (NEHU), India.

We believe Dr. Bhat’s history as the founder of Reviva and his experience in drug discovery and development qualifies him to serve on our board of directors.

Les Funtleyder has served as a member of our Board of Directors since December 2020. Mr. Funtleyder has served as a member of the board of directors of Applied Therapeutics Inc. (NASDAQ: APLT), a clinical-stage biopharmaceutical company, since June 2016 and served as its interim Chief Financial Officer from December 2018 to April 2019. Mr. Funtleyder has also served as a healthcare portfolio manager at E Squared Capital Management, LLC since January 2014, a senior external advisor with McKinsey and Co. since June 2017, and a consulting partner at Bluecloud Health, a private equity healthcare fund, since December 2013. Mr. Funtleyder previously served as the director of strategic investments and communications of OPKO Health Inc. (NASDAQ: OPK), a publicly traded healthcare company, from April 2014 to June 2016. Mr. Funtleyder currently serves on the board of directors of several private healthcare companies and foundations. Mr. Funtleyder is also an adjunct professor of Healthcare Investing at Columbia University’s School of Public Health. Mr. Funtleyder received his B.A. from Tulane University and MPH from Columbia University Mailman School of Public Health.

We believe Mr. Funtleyder’s extensive experience managing and investing in the healthcare industry and his experience serving as the CFO of another publicly-traded pharmaceutical company qualifies him to serve on our board of directors.

Richard Margolin has served as a member of our Board of Directors since December 2020. Since February 2020, Dr. Margolin has served as Senior Vice President, Translational Sciences and Clinical Development at TauC3 Biologics Ltd., a privately held British biopharmaceutical company. Dr. Margolin also currently serves as the Chief Medical Officer of Eikonizo Therapeutics, Inc., a biotechnology company since January 2020, and he is the Founder and Principal Consultant of CNS Research Solutions LLC, a consulting firm supporting the development of novel therapeutics for CNS disorders since May 2018. From December 2016 to April 2018, Dr. Margolin served as Executive Director, Internal Medicine Research Unit at Pfizer, Inc. (NYSE: PFE), a publicly-traded pharmaceutical company. From November 2013 to December 2016, Dr. Margolin served as the Vice President, Clinical Development at CereSpir, Inc., a biotechnology company. Previously, he held positions in two major pharmaceutical companies, and earlier in his career he held leadership positions in psychiatry departments of two major U.S. medical schools. Dr. Margolin earned his AB from Harvard College and his MD from the University of California, Irvine and received research training at the National Institutes of Health.

We believe Dr. Margolin's 30 years of experience in pharmaceutical research and development qualifies him to serve on our board of directors.

Purav Patel has served as a member of our Board of Directors since May 2017. Mr. Patel has also been Founder and Managing Partner of Buena Vista Fund I, a company engaged in the business of startup investments since 2014. Mr. Patel has over 14 years of experience in business operations and scaling startups. Mr. Patel serves on the Board of Pratham, a charitable organization with the mission to vastly improve the quality of education for underprivileged children and youth across India. Mr. Patel holds a Bachelor's Degree in Biology and Business from the University of Texas. Mr. Patel is skilled at financial analysis, business operations and fundraising.

We believe Mr. Patel's 12 years of knowledge of Reviva's history, team, investors and product candidates qualifies him to serve on our board of directors.

Parag Saxena served as Chairman of the board of directors of Tenzing since 2018, and continues to serve as Chairman of our board of directors. Mr. Saxena has extensive investment experience in the U.S. and in the Indian subcontinent. Mr. Saxena co-founded Vedanta Management LP (or Vedanta) and NSR Advisors in 2006, private equity investment management firms, which currently collectively manage over \$1 billion in assets. He is the Managing Partner and Chief Executive Officer of both firms. Previously, he was Chief Executive Officer of INVESCO Private Capital (and its predecessor firms), a venture capital firm in the U.S. During his 23-year tenure, over 300 investments were made, including Amgen, Costco, PictureTel, Polycom, Staples and Starbucks. Mr. Saxena led more than 90 investments for INVESCO Private Capital (and its predecessor firms), a third of which went on to become public companies. These investments include Alkermes, Celgene, Genomic Health, Indigo, Masimo, Transgenomic, Xenon Pharmaceuticals, Amber Networks, ARM Holdings, MetroPCS, and Volterra. Mr. Saxena has served on committees advising the Prime Minister of India on foreign direct investments, and the Planning Commission of India on venture capital. He was also a Director of the Indian Institute of Technology, Bombay's Heritage Fund as well as a Trustee of the Bharatiya Vidya Bhavan. He is on the Advisory Board of the Center for Advanced Studies on India at the University of Pennsylvania and is on the Indian Advisory Council of Brown University. Mr. Saxena was the President of TiE Tri-State (NY, CT, NJ) from 2003 to 2010. He was also on Mayor Bloomberg's Applied Sciences NYC Advisory Committee. Mr. Saxena received an M.B.A. from the Wharton School of the University of Pennsylvania. He earned a B.Tech. from the Indian Institute of Technology, Bombay and an M.S. in Chemical Engineering from the West Virginia College of Graduate Studies.

We believe Mr. Saxena's deep financial, entrepreneurial and business expertise and extensive experience as a member of the boards and board committees of other public companies qualifies him to serve on our board of directors.

Committees of the Board of Directors

Our board of directors has an audit committee, compensation committee and nominating and corporate governance committee. All of the committees comply with all applicable requirements of the Sarbanes-Oxley Act, Nasdaq and SEC rules and regulations as further described below. The responsibilities of each of the committees of our board of directors is described below. Members will serve on these committees until their resignation or until as otherwise determined by the our board of directors.

Audit Committee

The members of our audit committee are Mr. Funtleyder, Mr. Patel and Dr. Margolin, and Mr. Funtleyder serves as the chairperson of the audit committee. Each of the members of our audit committee satisfies the requirements for independence and financial literacy under the applicable rules and regulations of the SEC and rules of Nasdaq. We have determined that Mr. Funtleyder qualifies as an "audit committee financial expert" as defined in the SEC rules and satisfies the financial sophistication requirements of Nasdaq. Our audit committee is responsible for, among other things:

- appointing (and recommending that our board of directors submit for stockholder ratification, if applicable) compensating, retaining and overseeing the work performed by the independent auditor retained for the purpose of preparing or issuing an audit report or performing other audit or audit-related services;

- reviewing the performance and independence of the independent auditor;
- pre-approving all audit, review, and non-audit services (including any internal control-related services) to be provided to us or our subsidiaries by the independent auditor;
- discussing the scope and results of the audit with the independent registered public accounting firm and reviewing, with management and the independent registered public accounting firm, our interim and year-end financial statements;
- developing procedures for employees to submit concerns anonymously about questionable accounting or audit matters;
- reviewing our policies on and oversees risk assessment and risk management, including enterprise risk management; and
- reviewing the adequacy and effectiveness of internal control policies and procedures and our disclosure controls and procedures.

Our board of directors has adopted a written charter for the audit committee which is available on our website.

Compensation Committee

The members of our compensation committee are Mr. Patel, Dr. Margolin and Mr. Saxena, and Mr. Patel serves as the chairperson of the compensation committee. Each of the members of our compensation committee meets the requirements for independence under the applicable rules and regulations of the SEC and rules of Nasdaq. Our compensation committee is responsible for, among other things:

- developing and reviewing compensation policies and practices applicable to executive officers;
- determining bases for and fixing compensation levels executive officers;
- reviewing, approving and determining compensation and benefits, including equity awards, to directors for service on our board of directors or any committee thereof; supervising, administering and evaluating incentive, equity-based and our other compensatory plans in which executive officers and key employees participate; and
- reviewing, approving and making recommendations to our board of directors regarding incentive compensation and equity compensation plans.

Our board of directors has adopted a written charter for the compensation committee which is available on our website.

Nominating and Corporate Governance Committee

The members of our nominating and corporate governance committee are Mr. Saxena, Mr. Funtleyder and Mr. Patel, and Mr. Saxena serves as the chairperson of the nominating and corporate governance committee. Each of the members of the nominating and corporate governance committee meets the requirements for independence under the applicable rules and regulations of the SEC and rules of Nasdaq. Our nominating and corporate governance committee is responsible for, among other things:

- making recommendations to our board of directors regarding, the size of our board of directors, the composition of our board of directors, the process for filling vacancies on our board of directors and the tenure of our board of directors;
- making recommendations to our board of directors regarding the criteria for our board of directors and committee membership;
- developing, reviewing and overseeing our corporate governance practices and procedures; and
- making recommendations to our board of directors regarding corporate governance guidelines and matters.

Our board of directors has adopted a written charter for the nominating and corporate governance committee which is available on our website.

Director Independence

Our board of directors undertook a review of its composition, the composition of its committees and the independence of each director. Based upon information requested from and provided by each director concerning his or her background, employment and affiliations, including family relationships, our board of directors has determined that Mr. Saxena, Mr. Funtleyder, Dr. Margolin, and Mr. Patel do not have a relationship that would interfere with the exercise of independent judgment in carrying out the responsibilities of a director and that each of these directors is “independent” as that term is defined under the Rules of the Nasdaq Market and the SEC.

Code of Business Conduct and Ethics

We have adopted a written code of business conduct and ethics that applies to our employees, officers and directors. A current copy of the code is posted on the Corporate Governance section of our website, which is located at <http://revivapharma.com/>. We intend to disclose future amendments to certain provisions of our code of business conduct and ethics, or waivers of such provisions applicable to any principal executive officer, principal financial officer, principal accounting officer or controller, or persons performing similar functions, and our directors, on our website identified above or in filings with the SEC.

Limitations on Liability and Indemnification of Officers and Directors

The DGCL authorizes corporations to limit or eliminate the personal liability of directors to corporations and their stockholders for monetary damages for breaches of directors’ fiduciary duties, subject to certain exceptions. Our certificate of incorporation, as amended and restated, includes a provision that eliminates the personal liability of directors for monetary damages for any breach of fiduciary duty as a director, except for liability (i) for any breach of the director’s duty of loyalty to the Company or its stockholders, (ii) for acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law, (iii) under Section 174 of the DGCL or (iv) for any transaction from which the director derived an improper personal benefit. The effect of these provisions is to eliminate the rights of the Company and its stockholders, through stockholders’ derivative suits on the Company’s behalf, to recover monetary damages from a director for breach of fiduciary duty as a director, including breaches resulting from grossly negligent behavior. However, exculpation does not apply to any director if the director has acted in bad faith, knowingly or intentionally violated the law, authorized illegal dividends or redemptions or derived an improper benefit from his or her actions as a director.

Our certificate of incorporation, as amended and restated, and our bylaws provide that we must indemnify and advance expenses to directors and officers to the fullest extent authorized by the DGCL. We are also expressly authorized to carry directors’ and officers’ liability insurance providing indemnification for directors, officers and certain employees for some liabilities. We believe that these indemnification and advancement provisions and insurance are useful to attract and retain qualified directors and executive officers.

The limitation of liability, indemnification and advancement provisions in our certificate of incorporation, as amended and restated, and our bylaws may discourage stockholders from bringing a lawsuit against directors for breach of their fiduciary duty. These provisions also may have the effect of reducing the likelihood of derivative litigation against directors and officers, even though such an action, if successful, might otherwise benefit the Company and its stockholders. In addition, your investment may be adversely affected to the extent we pay the costs of settlement and damage awards against directors and officers pursuant to these indemnification provisions. We believe that these provisions, liability insurance and the indemnity agreements are necessary to attract and retain talented and experienced directors and officers.

Insofar as indemnification for liabilities arising under the Securities Act may be permitted to our directors, officers and controlling persons pursuant to the foregoing provisions, or otherwise, we have been advised that in the opinion of the SEC such indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable.

There is currently no pending material litigation or proceeding involving any of our respective directors, officers or employees for which indemnification is sought.

Item 11. EXECUTIVE COMPENSATION

As we are currently an emerging growth company, we have opted to comply with the executive compensation disclosure rules applicable to emerging growth companies. The scaled down disclosure rules are those applicable to “smaller reporting companies,” as such term is defined in the rules promulgated under the Securities Act, which require compensation disclosure for (i) our principal executive officer, (ii) our two most highly compensated executive officers, other than the principal executive officer, whose total compensation for 2022 exceeded \$100,000 and who were serving as executive officers as of December 31, 2022, and (iii) up to two additional individuals for whom disclosure would have been provided pursuant to the foregoing clause (ii) but for the fact that the individual was not serving as an executive officer as of December 31, 2022. We refer to these individuals as “named executive officers.” Our named executive officers for the year ended December 31, 2022 were:

- Laxminarayan Bhat, our Chief Executive Officer and President;
- Narayan Prabhu, our Chief Financial Officer; and
- Marc Cantillon, our former Chief Medical Officer who resigned effective July 5, 2022.

2022 Summary Compensation Table

The following table presents information regarding the total compensation awarded to, earned by, or paid to our named executive officers during the fiscal years ended December 31, 2022 and 2021.

<u>Name and Principal Position</u>	<u>Year</u>	<u>Salary (\$)</u>	<u>Bonus (\$)</u>	<u>Option awards (\$) (1)</u>	<u>All other compensation (\$)</u>	<u>Total (\$)</u>
Laxminarayan Bhat, PhD (2)	2022	400,000	160,000	—	—	560,000
<i>Chief Executive Officer and President</i>	2021	400,000	200,054	—	—	600,054
Marc Cantillon, MD (3)	2022	233,087	115,500	—	—	348,587
<i>Former Chief Medical Officer</i>	2021	385,000	116,981	—	—	501,981
Narayan Prabhu (4)	2022	275,000	137,500	—	—	412,500
<i>Chief Financial Officer</i>	2021	275,000	—	162,134	—	437,134

(1) Amounts reflect the grant date fair value of option awards granted in 2022 and 2021 in accordance with Accounting Standards Codification Topic 718. For information regarding assumptions underlying the valuation of equity awards, see Note 9 to our Consolidated Financial Statements included in this report. These amounts do not correspond to the actual value that may be received by the named executive officers if the stock options are exercised.

(2) Laxminarayan Bhat has served as Chief Executive Officer and President since the formation of Old Reviva in May 2006.

(3) Marc Cantillon resigned as our Chief Medical Officer effective July 5, 2022.

(4) Narayan Prabhu began serving as our Chief Financial Officer on December 14, 2020.

Employment Agreements

Laxminarayan Bhat. On December 14, 2020 we entered into a customary employment agreement with Dr. Bhat (the “Bhat Employment Agreement”). The Bhat Employment Agreement provides for Dr. Bhat to serve as Chief Executive Officer reporting to our board of directors and provides for an annual base salary of \$400,000 (the “Base Salary”). In addition, Dr. Bhat is eligible to receive an annual bonus of up to fifty percent (50%) of his then-Base Salary (the “Target Bonus”), subject to the satisfaction of certain subjective or objective criteria established and approved by our compensation committee. Pursuant to the terms of the Bhat Employment Agreement, Dr. Bhat is eligible to receive equity awards under the Company’s equity incentive plan. The Bhat Employment Agreement contains customary confidentiality and assignment of inventions provisions. In addition, we will indemnify and hold Dr. Bhat harmless, to the maximum extent permitted under applicable law, from and against any liabilities, costs, claims and expenses incurred in defense of any Proceeding (as defined in the Bhat Employment Agreement) that Dr. Bhat is made a party to.

If we terminate Dr. Bhat's employment without Cause or Dr. Bhat terminates his employment for Good Reason (each as defined in the Bhat Employment Agreement), Dr. Bhat will be entitled to receive (i) the Accrued Amounts (as defined in the Bhat Employment Agreement), and subject to Dr. Bhat's execution and nonrevocation of a release of claims, (ii) eighteen (18) months of his Base Salary plus one and one-half times his annual Target Bonus (reduced to six (6) months of Base Salary and one-half of his annual Target Bonus if Dr. Bhat's employment is terminated after the third anniversary of the effective date of the Bhat Employment Agreement) payable in equal installments in accordance with the Company's normal payroll practices, (iii) twelve (12) months of service credit under all outstanding unvested equity incentive awards granted during Dr. Bhat's employment (reduced to six (6) months of service credit if Dr. Bhat's employment is terminated after the third anniversary of the effective date of the Bhat Employment Agreement) and (iv) reimbursement of COBRA coverage for up to eighteen (18) months. If Dr. Bhat's employment is terminated on account of his death or Disability (as defined in the Bhat Employment Agreement), Dr. Bhat will be entitled to receive the Accrued Amounts and a lump sum payment equal to eighteen (18) months Base Salary and Target Bonus. In addition, if we terminate Dr. Bhat's employment without Cause or Dr. Bhat terminates his employment for Good Reason within twelve (12) months following a Change in Control (as defined in the Bhat Employment Agreement), Dr. Bhat will be entitled to receive (i) the Accrued Amounts and, subject to Dr. Bhat's execution and nonrevocation of a release of claims, (ii) a lump sum payment equal to 1.5 times his Base Salary and Target Bonus for the year in which the termination occurs, (iii) accelerated vesting of all of his outstanding equity incentive awards and cash incentive payments and (iv) reimbursement of COBRA coverage for up to eighteen (18) months.

Simultaneously with the execution of the Merger Agreement, Dr. Bhat entered into non-competition and non-solicitation agreement (the "Non-Competition Agreement"), which became effective on December 14, 2020, pursuant to which Dr. Bhat agreed not to compete with Tenzing, Reviva and their respective affiliates during the three (3) year period following the Closing in North America, Europe or India or in any other markets in which Tenzing and Reviva are engaged. Dr. Bhat also agreed that during such three (3) year restricted period to not solicit employees or customers of such entities. The Non-Competition Agreement also contains customary confidential and mutual non-disparagement provisions.

On February 8, 2023, our compensation committee (i) awarded Dr. Bhat a \$160,000 bonus for 2022, representing 40% of his then-current base salary, (ii) set Dr. Bhat's new base salary for 2023 at \$450,000, effective as of January 1, 2023, and (iii) determined that Dr. Bhat is eligible to receive a 2023 bonus at a target level of 50% of his then-current base salary, subject to the satisfaction of certain subjective and/or objective criteria established and approved by our compensation committee.

Narayan Prabhu. On December 14, 2020, an offer letter Reviva entered into with Narayan Prabhu, dated October 19, 2020, became effective (the "Prabhu Offer Letter"). The Prabhu Offer Letter provides for Mr. Prabhu to serve as Chief Financial Officer reporting to our Chief Executive Officer or our board of directors and provides for an annual base salary of \$275,000. Pursuant to the Prabhu Offer Letter, Mr. Prabhu's employment with the Company will be at-will.

In addition, Mr. Prabhu is eligible for a discretionary bonus. Pursuant to the Prabhu Offer Letter, subject to approval by the board of directors, Mr. Prabhu was granted a stock option to purchase up to fifty thousand (50,000) shares of our common stock pursuant to our 2020 Equity Incentive Plan on April 14, 2021. Pursuant to the terms of the Prabhu Offer Letter, Mr. Prabhu is also eligible to receive, from time to time, equity awards under our 2020 Equity Incentive Plan, or any other equity incentive plan that we may adopt in the future, and the terms and conditions of such awards, if any, will be determined by our board of directors, or a committee thereof, in their discretion.

On February 8, 2023, our compensation committee (i) awarded Mr. Prabhu a \$137,500 bonus for 2022, representing 50% of his then-current base salary (and taking into account that no bonus was paid to Mr. Prabhu for 2021), (ii) set Mr. Prabhu's new base salary for 2023 at \$325,000, effective as of January 1, 2023, and (iii) determined that Mr. Prabhu is eligible to receive a 2023 bonus at a target level of 41% of his then-current base salary, subject to the satisfaction of certain subjective and/or objective criteria established and approved by our compensation committee.

Marc Cantillon. Old Reviva entered into an Offer Letter on December 12, 2012 with Marc Cantillon as its Chief Medical Officer (the "2012 Offer Letter"). In October 2015, Dr. Cantillon entered into a letter agreement with Old Reviva pursuant to which Dr. Cantillon agreed to a reduction in his base annual salary to \$100,000.00 for an indefinite period of time (the "2015 Reduction Letter"). In March 2016, Dr. Cantillon entered into a letter agreement with Old Reviva pursuant to which Dr. Cantillon agreed to a reduction in his base annual salary to \$30,000.00 for an indefinite period of time (the "2016 Reduction Letter," together with the 2012 Offer Letter and the 2015 Reduction Letter, the "Prior Cantillon Offer Letter"). The Cantillon Offer Letter was assumed by us at the Effective Time and constituted an at-will employment agreement.

On April 14, 2021, we entered into an employment letter with Dr. Cantillon (the "2021 Cantillon Employment Letter"). The 2021 Employment Letter superseded the Prior Cantillon Offer Letter. The 2021 Employment Letter provided for Dr. Cantillon to continue to serve as the Company's Chief Medical Officer reporting to the Company's Chief Executive Officer or its board of directors and provided for an annual base salary of \$385,000, retroactive to December 15, 2020 (the day following the Business Combination). Under the 2021 Employment Letter, Dr. Cantillon was eligible for annual bonuses in the discretion of the Company's board of directors, with provision that he receive a bonus for 2021 equal to 30% of his 2021 base salary. To receive any bonus, Dr. Cantillon had to be employed by the Company at the time of payment. Dr. Cantillon was also eligible to receive, in the discretion of the Company's board of directors, equity awards under the Company's 2020 Equity Incentive Plan. Pursuant to the 2021 Employment Letter, Dr. Cantillon's employment with the Company continued to be at-will. The 2021 Employment Letter also contains customary confidentiality and assignment of inventions provisions.

Dr. Cantillon resigned as our Chief Medical Officer effective July 5, 2022.

Outstanding Equity Awards at Fiscal Year-End — 2022

The following table summarizes, for each of the named executive officers, the number of shares of our common stock underlying outstanding stock options held as of December 31, 2022.

Name	Option Awards			
	Number of securities underlying unexercised options		Option exercise price (\$)	Option expiration date
	Exerciseable	Unexerciseable		
Laxminarayan Bhat, PhD (CEO)	—	—	(1)	—
Marc Cantillon, MD (Former CMO) ⁽²⁾	—	—	(2)	—
Narayan Prabhu (CFO)	25,000	25,000	(3)	4.30 04/13/2031

(1) As of December 31, 2022 our principal executive officer did not hold any outstanding equity awards.

(2) Dr. Cantillon resigned as our Chief Medical Officer effective July 5, 2022.

(3) Represents options to purchase shares of our common stock granted on April 14, 2021 with an exercise price of \$4.30 per share. The shares underlying the option vest starting December 2020 with 25% after a one-year cliff in December 2021, then straight-line on a monthly basis over the following 36 months from January 2022 to December 2024. The award was made pursuant to the 2020 Equity Incentive Plan.

Director Compensation

The following table sets forth information concerning the compensation paid to certain of our non-employee directors during 2022.

Name	Fees earned or paid in cash (\$)	Stock awards (\$)	Option awards (\$ (1))	Non-equity incentive plan compensation (\$)	Nonqualified deferred compensation earnings (\$)	All other compensation (\$)	Total (\$)
Les Funtleyder	51,252	—	14,651 (2)	—	—	—	65,903
Richard Margolin	45,000	—	14,651 (3)	—	—	—	59,651
Purav Patel	53,751	—	14,651 (4)	—	—	—	68,402
Parag Saxena	70,252	—	14,651 (5)	—	—	—	84,903

(1) Amounts reflect the aggregate grant date fair value of each stock option granted in 2022 in accordance with the Accounting Standards Codification Topic 718. For information regarding assumptions underlying the valuation of equity awards, see Note 9 to our Consolidated Financial Statements included in this report. These amounts do not correspond to the actual value that may be received by the directors if the stock options are exercised.

(2) The aggregate number of shares of common stock underlying stock options outstanding as of December 31, 2022 held by Mr. Funtleyder were 13,200.

- (3) The aggregate number of shares of common stock underlying stock options outstanding as of December 31, 2022 held by Dr. Margolin were 13,200.
- (4) The aggregate number of shares of common stock underlying stock options outstanding as of December 31, 2022 held by Mr. Patel were 28,427.
- (5) The aggregate number of shares of common stock underlying stock options outstanding as of December 31, 2022 held by Mr. Saxena were 13,200.

Non-Employee Director Compensation

On the recommendation of our compensation committee, on June 15, 2021, our board of directors approved a non-employee director compensation policy (the “Non-Employee Director Compensation Policy”). On February 10, 2023, our compensation policy approved certain amendments to equity compensation provisions of the policy (the “February 2023 Amendments”), providing that going forward the equity compensation component of the policy shall consist of equity grants of fixed quantities of shares in lieu of grants determined by reference to a dollar value of shares, as described below. The Non-Employee Director Compensation Policy provides for the following compensation:

The Non-Employee Director Compensation Policy provides for the following cash compensation. The cash compensation component of the Non-Employee Director Compensation Policy was unchanged by the February 2023 Amendments:

- Each non-employee director is entitled to receive an annual cash retainer fee of \$32,500, except that the Chairman of the Board is entitled to receive an annual cash retainer fee of \$57,500;
- Each non-employee director sitting on the Audit Committee is entitled to receive an annual cash retainer fee of \$7,500, except that the Chairman of the Audit Committee is entitled to receive an annual cash retainer fee of \$15,000;
- Each non-employee director sitting on the Compensation Committee is entitled to receive an annual cash retainer fee of \$5,000, except that the Chairman of the Compensation Committee is entitled to receive an annual cash retainer fee of \$10,000;
- Each non-employee director sitting on the Governance Committee is entitled to receive an annual cash retainer fee of \$3,750, except that the Chairman of the Governance Committee is entitled to receive an annual cash retainer fee of \$7,750; and
- No per meeting fees shall be paid.

All annual cash retainer fees under the Non-Employee Director Compensation Policy are paid quarterly in arrears.

The Non-Employee Director Compensation Policy also provides generally for certain equity compensation under the Company’s existing 2020 Equity Incentive Plan, or any other equity incentive plan the Company may adopt in the future, as described below. Prior to the adoption of the February 2023 Amendments, the equity compensation under the Non-Employee Director Compensation Policy consisted of, and was paid in accordance with, the following:

- Each non-employee director was entitled to receive, upon initial election, a one-time initial equity grant of nonqualified stock options in respect of a whole number of shares of our common stock with an approximate value of \$20,000. All of the shares subject to the initial equity grant shall vest 33% per year over three years from the date of initial election, provided that the recipient remains a director of through each vesting date.
- Each non-employee director was entitled to receive an annual equity grant of nonqualified stock options in respect of a whole number of shares of the our common stock with an approximate value of \$20,000. All of the shares subject to the annual equity grant shall cliff vest after 1-year, provided that the recipient remains a director through the vesting date.

From and after the adoption of the February 2023 Amendments, the equity compensation under the Non-Employee Director Compensation Policy consists of, and is paid in accordance with, the following:

- Each non-employee director is entitled to receive, upon initial election, a one-time initial equity grant of nonqualified stock options in respect of 8,200 shares of our common stock. All of the shares subject to the initial equity grant shall vest 33% per year over three years from the date of initial election, provided that the recipient remains a director of through each vesting date.
- Each non-employee director is entitled to receive an annual equity grant of nonqualified stock options in respect of 8,200 shares of our common stock. All of the shares subject to the annual equity grant shall cliff vest after 1-year, provided that the recipient remains a director through such vesting date. Annual equity grants for directors who are initially elected in the 12 months following the most recent annual grant will be pro-rated on a monthly basis based on time of election as appropriate.

Indemnification Agreements

On December 14, 2020, our board of directors adopted and entered into (a) a form of indemnification agreement (the “Indemnification Agreement”) between the Company and each of its directors and executive officers, except for Parag Saxena, and (b) a form of indemnification agreement (the “Saxena Indemnification Agreement”) with Parag Saxena.

The Indemnification Agreement requires us to indemnify each director and officer to the fullest extent permitted by applicable law, for certain expenses, including attorneys’ fees, judgments, penalties, fines and settlement amounts actually and reasonably incurred in any threatened, pending or completed action, suit, claim, investigation, inquiry, administrative hearing, arbitration or other proceeding to which the director or officer was, or is threatened to be made, a party by reason of the fact that such director or officer is or was a director, officer, employee or agent of us. Subject to certain limitations, the Indemnification Agreement provides for the advancement of expenses incurred by the indemnitee, and the repayment to us of the amounts advanced to the extent that it is ultimately determined that the indemnitee is not entitled to be indemnified by us. The Indemnification Agreement also creates certain rights in favor of us, including the right to assume the defense of claims and to consent to settlements. The Indemnification Agreement does not exclude any other rights to indemnification or advancement of expenses to which the indemnitee may be entitled under applicable law, the certificate of incorporation or our bylaws, any agreement, a vote of stockholders or disinterested directors, or otherwise.

The Saxena Indemnification Agreement is on substantially the same form as the Indemnification Agreement, except that it includes a provision specifying that the we will act as the indemnitor of first resort and that we will not assert that Mr. Saxena, as indemnitee under the Saxena Indemnification Agreement, must seek expense advancement or reimbursement, or indemnification, from any stockholder of the Company and/or certain of any such stockholder’s affiliates who Mr. Saxena may have rights to indemnification, advancement of expenses and/or insurance from, before we must perform our expense advancement and reimbursement, and indemnification obligations, under the Saxena Indemnification Agreement.

Item 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

Securities Authorized for Issuance Under Equity Compensation Plans

2020 Equity Incentive Plan

On December 14, 2020, the Reviva Pharmaceuticals Holdings, Inc. 2020 Equity Incentive Plan (the “2020 Equity Incentive Plan”) became effective. The general purpose of the 2020 Equity Incentive Plan is to provide a means whereby employees, officers, directors, consultants, advisors or other individual service providers may develop a sense of proprietorship and personal involvement in our development and financial success, and to encourage them to devote their best efforts to us, thereby advancing our interests and the interests of our stockholders.

2006 Equity Incentive Plan

Old Reviva’s board of directors adopted, and Old Reviva’s stockholders approved, the Reviva Pharmaceuticals, Inc. 2006 Equity Incentive Plan, effective as of August 2006. The Reviva Pharmaceuticals, Inc. 2006 Equity Incentive Plan provided for the grant of incentive stock options, or ISOs, within the meaning of Section 422 of the Code, to Reviva’s employees, and for the grant of nonstatutory stock options, or NSOs, and restricted stock awards to Old Reviva’s employees, officers, directors and consultants; provided such consultants render bona fide services not in connection with the offer and sale of securities in a capital-raising transaction. As of 2016, no new grants of awards are permitted under the Reviva Pharmaceuticals, Inc. 2006 Equity Incentive Plan.

The Reviva Pharmaceuticals, Inc. 2006 Equity Incentive Plan was amended to change its name to the Reviva Pharmaceuticals Holdings, Inc. 2006 Equity Incentive Plan (the “2006 Equity Incentive Plan”), and each outstanding option to acquire Old Reviva common stock (whether vested or unvested) under the 2006 Equity Incentive Plan was assumed by us and automatically converted into an option to acquire shares of our Common Stock, with its price and number of shares equitably adjusted based on the conversion of the shares of common stock of Old Reviva into shares of our Common Stock pursuant to the Merger Agreement.

The following table provides information with respect to our compensation plans under which equity compensation was authorized as of December 31, 2022.

Plan category	Number of securities to be issued upon exercise of outstanding options, warrants and rights (a)	Weighted-average exercise price of outstanding options, warrants and rights (b)	Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column (a)) (c)(3)
Equity compensation plans approved by security holders(1)	244,774(2)	\$ 6.32	2,600,063(4)
Equity compensation plans not approved by security holders.....	—	—	—
Total.....	244,774	\$ 6.32	2,600,063

- (1) The amounts shown in this row include securities under the 2006 Equity Incentive Plan and the 2020 Equity Incentive Plan.
- (2) Includes 21,747 and 223,027 shares of common stock issuable upon exercise of outstanding options pursuant to the 2006 Equity Incentive Plan and 2020 Equity Incentive Plan, respectively, as of December 31, 2022.
- (3) In accordance with the “evergreen” provision in our 2020 Equity Incentive Plan, an additional 1,443,329 shares were automatically made available for issuance on the first day of 2022, which represents 10% of the number of shares outstanding on December 31, 2022.
- (4) Includes 0 and 2,600,063 shares of common stock available for issuance under the 2006 Equity Incentive Plan and 2020 Equity Incentive Plan, respectively, as of December 31, 2022.

Security Ownership of Certain Beneficial Owners and Management

The following table sets forth information regarding the beneficial ownership of the Company, on March 14, 2023, by:

- each person known by the Company to be, or expected to be, the beneficial owner of more than 5% of shares of the Company’s Common Stock;
- each of the Company’s named executive officers and directors; and
- all directors and current executive officers as a group.

Beneficial ownership is determined according to the rules of the SEC, which generally provide that a person has beneficial ownership of a security if he, she or it possesses sole or shared voting or investment power over that security, including options and warrants that are currently exercisable or exercisable within 60 days.

The beneficial ownership of the common stock of the Company is based on 20,452,121 shares of common stock issued and outstanding as of March 14, 2023.

<u>Name of Beneficial Owner</u>	<u>Amount and Nature of Beneficial Ownership</u>	<u>Percent of Class</u>
Named Executive Officers and Directors (1)		
Laxminarayan Bhat (2)	2,490,334	12.17%
Marc Cantillon (3)	15,720	*
Les Funtleyder (4)	7,966	*
Richard Margolin (5)	7,966	*
Purav Patel (6)	65,523	*
Narayan Prabhu (7)	129,166	*
Parag Saxena (8) (9)	4,536,075	19.99%
All Directors and Executive Officers as a Group (six persons)	7,252,750	31.87%
Greater than Five Percent Holders:		
Tang Capital Partners, L.P. (10)	2,269,625	9.99%

* Less than one percent.

- (1) The business address of each of the officers and directors is c/o Reviva Pharmaceuticals Holdings, Inc., 19925 Stevens Creek Blvd., Suite 100, Cupertino, CA 95014.
- (2) Includes (a) 5,388 shares of Common Stock held by Dr. Bhat's spouse and (b) 6,090 shares of Common Stock issuable upon the exercise of Assumed Options held by Dr. Bhat's spouse, that are exercisable or will be exercisable within 60 days of March 14, 2023.
- (3) Dr. Cantillon resigned as our Chief Medical Officer effective July 5, 2022.
- (4) Includes 7,966 shares of common stock issuable upon the exercise of stock options that are exercisable or will be exercisable within 60 days of March 14, 2023. Does not include 5,234 shares of our common stock issuable upon the exercise of stock options that are not exercisable within sixty days of March 14, 2023.
- (5) Includes 7,966 shares of common stock issuable upon the exercise of stock options that are exercisable or will be exercisable within 60 days of March 14, 2023. Does not include 5,234 shares of our common stock issuable upon the exercise of stock options that are not exercisable within sixty days of March 14, 2023.
- (6) Includes 15,579 shares of common stock issuable upon the exercise of stock options that are exercisable or will be exercisable within 60 days of March 14, 2023. Does not include 12,848 shares of our common stock issuable upon the exercise of stock options that are not exercisable within sixty days of March 14, 2023.
- (7) Includes 29,166 shares of common stock issuable upon the exercise of stock options that are exercisable or will be exercisable within 60 days of March 14, 2023. Does not include 20,834 shares of our common stock issuable upon the exercise of stock options that are not exercisable within sixty days of March 14, 2023.
- (8) Based on the information provided in the Schedule 13D/A filed with the SEC on September 12, 2022 by Mr. Saxena with respect to himself, Vedanta Associates, L.P., Beta Operators Fund, L.P., Vedanta Associates-R, L.P. and Vedanta Partners, LLC. Includes (a) 99,539 shares held by Vedanta Associates, L.P. (b) 399,000 shares held by Beta Operators Fund, L.P., (c) 931,000 shares held by Vedanta Associates-R, L.P., (d) 869,565 shares of common stock issuable upon the exercise of pre-funded warrants held by Beta Operators Fund, L.P., (e) 513,834 shares of common stock issuable upon the exercise of pre-funded warrants held by Vedanta Associates-R, L.P., (f) 330,000 shares of shares of common stock issuable upon the exercise of warrants held by Beta Operators Fund, L.P., (g) 513,834 shares of common stock issuable upon the exercise of warrants held by Vedanta Associates-R, L.P. and (h) 7,966 shares of common stock issuable upon the exercise of stock options held by Mr. Saxena that are exercisable or will be exercisable within 60 days of March 14, 2023. Vedanta Partners, LLC is the general partner of Vedanta Associates, L.P. and Vedanta Associates-R, L.P. Vedanta Associates, L.P. is the general partner of Beta Operators Fund, L.P. Vedanta Partners, LLC has voting and dispositive power over the securities held by Vedanta Associates, L.P. and Vedanta Associates-R, L.P. Vedanta Associates, L.P. has voting and dispositive power over securities held by Beta Operators Fund L.P. Parag Saxena is the majority owner of Vedanta Partners, LLC and controls Vedanta Partners, LLC, Vedanta Associates-R, L.P. and Beta Operators Fund, L.P. and may be deemed to be the beneficial owner of such securities. Mr. Saxena, however, disclaims beneficial ownership over any securities owned by Vedanta Associates, L.P. Vedanta Associates-R, L.P. and Beta Operators Fund, L.P. in which he does not have any pecuniary interest. Does not include (a) 299,250 shares of common stock issuable upon the exercise of 399,000 warrants held by Beta Operators Fund, L.P. which are subject to a 4.99% beneficial ownership limitation blocker, (b) 698,250 shares of common stock issuable upon the exercise of 931,000 warrants held by Vedanta Associates-R, L.P. which are subject to a 4.99% beneficial ownership limitation blocker, (c) 9,565 shares of common stock issuable upon the exercise of warrants held by Beta Operators Fund, L.P. which are subject to a 19.99% beneficial ownership limitation blocker or (d) 5,234 shares of common stock issuable upon the exercise of stock options held by Mr. Saxena that are not exercisable within 60 days of March 14, 2023.

- (9) The business address of Vedanta Associates, L.P., Beta Operators Fund, L.P., Vedanta Associates-R, L.P. and Vedanta Partners, LLC is c/o Vedanta Partners, LLC, 250 West 55th Street, New York, New York 10019.
- (10) Based on the information provided in the Schedule 13G filed with the SEC on February 14, 2023 by Tang Capital Partners, L.P. with respect to itself, Tang Capital Management, LLC and Kevin Tang. Includes 2,244,500 shares of Common Stock issuable upon the exercise of warrants that are exercisable or will be exercisable within 60 days. The exercise of the warrants are subject to a 9.99% beneficial ownership limitation blocker which the holder has elected. The amounts and percentages in the table give effect to the beneficial ownership limitation. Tang Capital Management, LLC is the general partner of Tang Capital Partners, L.P. and has voting and dispositive power over the securities held by Tang Capital Partners, L.P. Kevin Tang is the manager of Tang Capital Management, LLC. The address for Tang Capital Partners, L.P., Tang Capital Management, LLC and Kevin Tang is 4747 Executive Drive, Suite 210, San Diego, CA 92121. Does not include 1,154,475 shares of common stock issuable upon the exercise of warrants held by Tang Capital Partners, L.P. which are subject to a 9.99% beneficial ownership limitation blocker.

Item 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

The following includes a summary of transactions since January 1, 2021, to which we or Tenzing have been a participant in which the amount involved exceeded or will exceed the lesser of (i) \$120,000 or (ii) 1% of our average total assets at year-end for the last two completed fiscal years, and in which any of our directors, executive officers or beneficial owners of more than 5% of our capital stock or any member of the immediate family of any of the foregoing persons had or will have a direct or indirect material interest, other than equity and other compensation, termination, change in control and other arrangements, which are described in the section entitled “*Executive Compensation*.”

Indian Subsidiary

Mr. Krishnamurthy Bhat, an Indian resident and the brother of Dr. Bhat, the Company’s Chief Executive Officer, holds a 1% ownership stake and is a director of the Company’s subsidiary, Reviva Pharmaceuticals India Private Limited. The Indian government regulates ownership of Indian companies by non-residents. Foreign investment in Indian securities is generally regulated by the Consolidated Policy on Foreign Direct Investment issued by the Government and the Foreign Exchange Management Act, 1999, which prevents 100% ownership by a foreign parent company of its Indian subsidiary.

Employment

Reviva employs Seema R. Bhat, the spouse of Laxminarayan Bhat, the Company’s Chief Executive Officer, as its Vice President for Program & Portfolio Management, pursuant to an Offer Letter dated March 1, 2011 (the “Bhat 2011 Offer Letter”). In October 2015, Ms. Bhat entered into a letter agreement with Old Reviva pursuant to which Ms. Bhat agreed to a reduction in her base annual salary to \$30,000.00 for an indefinite period of time. Effective since October 2018, Ms. Bhat had agreed to defer her entire salary, without interest. Effective as of October 2, 2020, 35,385 shares of Old Reviva common stock were issued to Ms. Bhat in full satisfaction of the entire deferred salary balance owed to Ms. Bhat, pursuant to a Stock Issuance Agreement and Release.

On June 16, 2021, the Company entered into an Employment Letter with Ms. Bhat (the “Bhat 2021 Employment Letter”), which supersedes the Bhat 2011 Offer Letter. The Bhat 2021 Employment Letter provides for Ms. Bhat to continue to serve as our Vice President for Program & Portfolio Management reporting to our Chief Executive Officer or our Board and provides for an annual base salary of \$277,000, retroactive to December 15, 2020 (the day following the Business Combination). Under the Bhat 2021 Employment Letter, Ms. Bhat is eligible for annual bonuses in the discretion of our Board. The Bhat 2021 Employment Letter provides that to receive any bonus, Ms. Bhat must be employed by the Company at the time of payment. The Bhat 2021 Employment Letter provides that Ms. Bhat may also receive, in the discretion of our Board, equity awards under the Company’s 2020 Equity Incentive Plan or any other equity incentive plan that the Company may adopt in the future. The Bhat 2021 Employment Letter contains customary confidentiality and assignment of inventions provisions. On February 8, 2023, our compensation committee (i) awarded Ms. Bhat a \$83,100 bonus for 2022, representing 30% of her then-current base salary, (ii) set Ms. Bhat’s new base salary for 2023 at \$310,000, effective as of January 1, 2023, and (iii) determined that Ms. Bhat is eligible to receive a 2023 bonus at a target level of 32% of her then-current base salary, subject to the satisfaction of certain subjective and/or objective criteria established and approved by our compensation committee.

Effective since October 2018, Dr. Cantillon had agreed to defer his entire salary, without interest. Effective as of October 2, 2020, 35,385 shares of Old Reviva common stock were issued to Dr. Cantillon in full satisfaction of the entire deferred salary balance owed to Dr. Cantillon, pursuant to a Stock Issuance Agreement and Release. Dr. Cantillon resigned as our Chief Medical Officer effective July 5, 2022.

Effective since April 2019, Dr. Bhat had agreed to the deferral of his past salary as necessary, without interest. Effective as of October 2, 2020, 132,506 shares of Old Reviva common stock were issued to Dr. Bhat in full satisfaction of the entire deferred salary balance owed to Dr. Bhat, pursuant to a Stock Issuance Agreement and Release.

Participation in 2021 Offering

Vedanta Associates, LP (“VA”), an affiliate of Parag Saxena, the Chairman of our Board, or one or more accounts affiliated with VA (such funds or accounts, together with VA, the “Vedanta Accounts”) purchased an aggregate of \$4,987,500 in units in the Company’s public offering completed in June 2021 at the public offering price. The underwriters received the same discount on the units purchased by the Vedanta Accounts as they did from any other units sold to the public in this public offering.

Participation in 2022 Offering

The Vedanta Accounts purchased an aggregate of \$3,499,861.13 in Pre-Funded Warrants and Common Warrants in a private placement which completed in September 2022. The placement agent received the same commission on the securities purchased by the Vedanta Accounts as they did from any other securities sold to other investors in the offering.

Indemnification Agreements

The Company has entered into indemnification agreements with each of its directors and named executive officers. These agreements require the Company to indemnify these individuals to the fullest extent permitted under Delaware law against liabilities that may arise by reason of their service to the Company, and to advance expenses incurred as a result of any proceeding against them as to which they could be indemnified. The Company also intends to enter into indemnification agreements with its future directors and executive officers. For a more fulsome description of the indemnification agreements refer to the disclosure in “*Executive Compensation*”.

Policies and Procedures for Related Party Transactions:

Our board of directors has adopted a policy that its executive officers, directors, nominees for election as a director, beneficial owners of more than 5% of any class of its common stock, any members of the immediate family of any of the foregoing persons and any firms, corporations or other entities in which any of the foregoing persons is employed or is a partner or principal or in a similar position or in which such person has a 5% or greater beneficial ownership interest (collectively “related parties”), are not permitted to enter into a transaction with the Company without the prior consent of the our board of directors acting through the Audit Committee or, in certain circumstances, the chairman of the Audit Committee. Any request for the Company to enter into a transaction with a related party, in which the amount involved exceeds \$100,000 and such related party would have a direct or indirect interest must first be presented to the Audit Committee, or in certain circumstances the chairman of the Audit Committee, for review, consideration and approval. In approving or rejecting any such proposal, the Audit Committee, or the chairman of the Audit Committee, is to consider the material facts of the transaction, including, but not limited to, whether the transaction is on terms no less favorable than terms generally available to an unaffiliated third party under the same or similar circumstances, the extent of the benefits to us, the availability of other sources of comparable products or services and the extent of the related party’s interest in the transaction.

Director Independence

Our board of directors undertook a review of its composition, the composition of its committees and the independence of each director. Based upon information requested from and provided by each director concerning his background, employment and affiliations, including family relationships, our board of directors has determined that Mr. Saxena, Mr. Funtleyder, Dr. Margolin, and Mr. Patel do not have a relationship that would interfere with the exercise of independent judgment in carrying out the responsibilities of a director and that each of these directors is “independent” as that term is defined under the Rules of the Nasdaq Market and the SEC.

Item 14.

PRINCIPAL ACCOUNTANT FEES AND SERVICES

Fees Paid to the Independent Registered Public Accounting Firm

The following table summarizes the fees for professional services rendered by Armanino LLP, the Company’s (and Old Reviva’s, prior to the Business Combination) independent registered public accounting firm, for each of the respective last two fiscal years:

Year ending December 31,	2022	2021
Audit Fees(1)(2)(3)	\$ 233,911	\$ 336,417
Audit-Related Fees.....	—	—
Tax Fees.....	—	—
All Other Fees.....	—	—
Total	\$ 233,911	\$ 336,417

(1) Audit fees consist of fees incurred for professional services rendered for the audit of our annual financial statements and review of the quarterly financial statements, assistance with registration statements filed with the SEC, and services that are normally provided by our independent registered public accounting firm in connection with regulatory filings or engagements.

(2) For the fiscal year ended December 31, 2022, Audit fees of \$94,878 were paid to Armanino LLP.

(3) For the fiscal year ended December 31, 2021, Audit fees of \$384,300 were paid to Armanino LLP.

Auditor Independence

In our fiscal year ended December 31, 2022, there were no other professional services provided by Armanino LLP that would have required our audit committee to consider their compatibility with maintaining the independence of Armanino LLP.

Audit Committee Policy on Pre-Approval of Audit and Permissible Non-Audit Services of Independent Registered Public Accounting Firm

Our audit committee has established a policy governing our use of the services of our independent registered public accounting firm. Under this policy, our audit committee is required to pre-approve all audit and non-audit services performed by our independent registered public accounting firm in order to ensure that the provision of such services does not impair the public accountants' independence. All fees paid to Armanino LLP for our fiscal years ended December 31, 2022 and 2021 were pre-approved by our audit committee.

Part IV

Item 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

(a)(1) Financial Statements

The financial statements and related notes, together with the report of Armanino LLP appear at pages F-2 through F-21 following the Exhibit List as required by "Part II—Item 8—Financial Statements and Supplementary Data" of this Annual Report on Form 10-K.

(a)(2) Financial Statement Schedules

All schedules have been omitted because the information required to be set forth therein is not applicable or is shown in the financial statements or notes thereto.

(a)(3) Exhibits

The following exhibits are filed as part of, or incorporated by reference into, this Annual Report on Form 10-K.

<u>Exhibit No.</u>	<u>Exhibit</u>
2.1+	Agreement and Plan of Merger, dated as of July 20, 2020, by and among the Company, Merger Sub, Sponsor in the capacity as the Purchaser Representative, Reviva, and Dr. Bhat in the capacity as the Seller Representative (filed as Exhibit 2.1 to the Company's Current Report on Form 8-K as filed on July 24, 2020, and incorporated herein by reference).
3.1	Certificate of Corporate Domestication (filed as Exhibit 3.1 to the Company's Current Report on Form 8-K as filed on December 18, 2020 and incorporated herein by reference).
3.2	Interim Certificate of Incorporation (filed as Exhibit 3.1 to the Company's Current Report on Form 8-K as filed on December 14, 2020, and incorporated herein by reference).
3.3	Amended and Restated Certificate of Incorporation (filed as Exhibit 3.3 to the Company's Current Report on Form 8-K as filed on December 18, 2020 and incorporated herein by reference).
3.4	Bylaws of Reviva Pharmaceuticals Holdings, Inc. (filed as Exhibit 3.2 to the Company's Current Report on Form 8-K as filed on December 14, 2020, and incorporated herein by reference).
4.1*	Description of Securities.
4.2	Form of Assumed Warrant (filed as Exhibit 4.1 to the Company's Current Report on Form 8-K as filed on December 18, 2020 and incorporated herein by reference).
4.3	Specimen Warrant Certificate (filed as Exhibit 4.3 to the Company's Form S-1 (File No. 333-226263) as filed on August 16, 2018, and incorporated herein by reference).

- 4.4 Warrant Agreement, dated August 20, 2018, between the Company and Continental Stock Transfer & Trust Company (filed as Exhibit 4.1 to the Company's Form 8-K as filed on August 24, 2018, and incorporated herein by reference).
- 4.5 Specimen common stock certificate of the Company (filed as Exhibit 4.4 to the Company's Form S-4 (File No. (333-245057) as filed on November 3, 2020, and incorporated herein by reference).
- 4.6 Form of Common Stock Purchase Warrant (filed as Exhibit 4.1 to the Company's Form 10-Q as filed on August 16, 2021, and incorporated herein by reference).
- 4.7 Form of Pre-Funded Common Stock Purchase Warrant (filed as Exhibit 4.2 to the Company's Form 10-Q as filed on August 16, 2021, and incorporated herein by reference).
- 4.8 Warrant Agency Agreement, dated June 1, 2021, between the Company and Continental Stock Transfer & Trust Company (filed as Exhibit 4.3 to the Company's Form 10-Q as filed on August 16, 2021, and incorporated herein by reference).
- 4.9 Form of Private Pre-Funded Warrant (filed as Exhibit 4.1 to the Company's Current Report on Form 8-K as filed on September 7, 2022, and incorporated herein by reference).
- 4.10 Form of Private Placement Warrant (filed as Exhibit 4.2 to the Company's Current Report on Form 8-K as filed on September 7, 2022, and incorporated here by reference).
- 10.1# Employment Agreement, dated as of December 14, 2020, by and between the Company and Dr. Bhat. (filed as Exhibit 10.1 to the Company's Current Report on Form 8-K as filed on December 18, 2020 and incorporated herein by reference).
- 10.2 Form of Lock-Up Agreement (General) (filed as Exhibit 10.2 to the Company's Current Report on Form 8-K as filed on July 24, 2020, and incorporated herein by reference).
- 10.3 Lock-Up Agreement, dated as of July 20, 2020, by and among Dr. Bhat, Tenzing and the Purchaser Representative (filed as Exhibit 10.3 to the Company's Current Report on Form 8-K as filed on July 24, 2020, and incorporated herein by reference).
- 10.4 Non-Competition Agreement, dated as of July 20, 2020, by Dr. Bhat in favor of Tenzing, Reviva and their respective affiliates (filed as Exhibit 10.4 to the Company's Current Report on Form 8-K as filed on July 24, 2020, and incorporated herein by reference).
- 10.5+++ Offer of Employment, dated as of October 19, 2020, by and between Narayan Prabhu and Reviva Pharmaceuticals, Inc. (filed as Exhibit 10.16 to the Company's Form S-4 (File No. (333-245057) as filed on November 6, 2020, and incorporated herein by reference).
- 10.6# Offer of Employment, dated as of December 12, 2012, by and between Marc Cantillon, MD and Reviva Pharmaceuticals, Inc. (filed as Exhibit 10.6 to the Company's Current Report on Form 8-K as filed on December 18, 2020 and incorporated herein by reference).
- 10.7# Letter Agreement, dated as of October 28, 2015, by and between Marc Cantillon, MD and Reviva Pharmaceuticals, Inc. (filed as Exhibit 10.7 to the Company's Current Report on Form 8-K as filed on December 18, 2020 and incorporated herein by reference).
- 10.8# Letter Agreement, dated as of March 15, 2016, by and between Marc Cantillon, MD and Reviva Pharmaceuticals, Inc. (filed as Exhibit 10.8 to the Company's Current Report on Form 8-K as filed on December 18, 2020 and incorporated herein by reference).

- 10.9+++ Letter Agreement, dated as of April 14, 2021, by and between Marc Cantillon, MD and Reviva Pharmaceuticals Holdings, Inc. (filed as Exhibit 10.1 to the Company's Current Report on Form 8-K as filed on April 15, 2021 and incorporated herein by reference).
- 10.10# Form of Indemnification Agreement (filed as Exhibit 10.9 to the Company's Current Report on Form 8-K as filed on December 18, 2020 and incorporated herein by reference).
- 10.11# Saxena Indemnification Agreement (filed as Exhibit 10.10 to the Company's Current Report on Form 8-K as filed on December 18, 2020 and incorporated herein by reference).
- 10.12 Form of Non-Redemption Agreement, dated as of December 8, 2020, by and among the Company, Tenzing LLC and the shareholder party thereto (filed as Exhibit 10.11 to the Company's Current Report on Form 8-K as filed on December 18, 2020 and incorporated herein by reference).
- 10.13 Form of Registration Rights Agreement, dated as of December 14, 2020, by and between the Company and the shareholder party thereto (filed as Exhibit 10.12 to the Company's Current Report on Form 8-K as filed on December 18, 2020 and incorporated herein by reference).
- 10.14# Reviva Pharmaceuticals Holdings, Inc. 2020 Equity Incentive Plan (filed as Exhibit 10.13 to the Company's Current Report on Form 8-K as filed on December 18, 2020 and incorporated herein by reference).
- 10.15# Form of Incentive Stock Option Grant Agreement (filed as Exhibit 10.14 to the Company's Current Report on Form 8-K as filed on December 18, 2020 and incorporated herein by reference).
- 10.16# Form of Nonqualified Stock Option Grant Agreement (filed as Exhibit 10.15 to the Company's Current Report on Form 8-K as filed on December 18, 2020 and incorporated herein by reference).
- 10.17# Reviva Pharmaceuticals, Inc. 2006 Equity Incentive Plan (filed as Exhibit 10.16 to the Company's Current Report on Form 8-K as filed on December 18, 2020 and incorporated herein by reference).
- 10.18# First Amendment to Reviva Pharmaceuticals, Inc. 2006 Equity Incentive Plan (filed as Exhibit 10.17 to the Company's Current Report on Form 8-K as filed on December 18, 2020 and incorporated herein by reference).
- 10.19# Form of Assumed Option (filed as Exhibit 10.18 to the Company's Current Report on Form 8-K as filed on December 18, 2020 and incorporated herein by reference).
- 10.20 Form of Note Purchase Agreement, dated as of August 27, 2020, by and between the Company and the investors party thereto (filed as Exhibit 10.19 to the Company's Current Report on Form 8-K as filed on December 18, 2020 and incorporated herein by reference).
- 10.21 Form of Note Purchase Agreement, dated as of August 29, 2020, by and between the Company and the investors party thereto (filed as Exhibit 10.20 to the Company's Current Report on Form 8-K as filed on December 18, 2020 and incorporated herein by reference).
- 10.22 Letter Agreement, dated as of December 14, 2020, by and between the Company, Maxim Group LLC and Maxim Partners LLC (filed as Exhibit 10.21 to the Company's Current Report on Form 8-K as filed on December 18, 2020 and incorporated herein by reference).
- 10.23 Letter Agreement, dated August 20, 2018, by and among the Company, its officers, its directors and the Sponsor (filed as Exhibit 10.3 to the Company's Form 8-K filed on August 24, 2018, and incorporated herein by reference).
- 10.24 Registration Rights Agreement, dated as of August 20, 2018, by and among Tenzing, the Sponsor, Maxim and the holders party thereto (filed as Exhibit 10.2 to the Company's Form 8-K filed on August 24, 2018, and incorporated herein by reference).
- 10.25 Escrow Agreement, dated as of December 14, 2020, by and among the Company, Tenzing LLC, Laxminarayan Bhat and Continental Stock Transfer & Trust Company (filed as Exhibit 10.24 to the Company's Current Report on Form 8-K as filed on December 18, 2020 and incorporated herein by reference).

- 10.26 Form of Backstop Agreement, by and among Tenzing Acquisition Corp., Reviva Pharmaceuticals, Inc., and the Investor named therein (filed as exhibit 10.1 to the Company's Form 8-K filed on October 21, 2020, and incorporated herein by reference).
- 10.27 Letter Agreement, dated August 20, 2018, by and among Tenzing, its officers, its directors and the Sponsor (incorporated by reference to Exhibit 10.3 of Tenzing's Form 8-K (File No. 001-38634), filed with the SEC on August 24, 2018).
- 10.28 Investment Management Trust Agreement, dated August 20, 2018, by and between Tenzing and Continental Stock Transfer & Trust Company, as trustee (incorporated by reference to Exhibit 10.1 of Tenzing's Form 8-K (File No. 001-38634), filed with the SEC on August 24, 2018).
- 10.29 Securities Purchase Agreement between Tenzing and Tenzing LLC (incorporated by reference to Exhibit 10.4 of Tenzing's Form S-1 (File No. 333-226263), filed with the SEC on July 20, 2018).
- 10.30 Form of Amended and Restated Unit Purchase Agreement between Tenzing and the Sponsor (incorporated by reference to Exhibit 10.4 of Tenzing's Form S-1 (File No. 333-226263), filed with the SEC on August 16, 2018).
- 10.31 Form of Unit Purchase Agreement between Tenzing and Maxim Group LLC (incorporated by reference to Exhibit 10.7 of Tenzing's Form S-1 (File No. 333-226263), filed with the SEC on August 16, 2018).
- 10.32 Promissory Note, dated February 10, 2020, issued by Tenzing Acquisition Corp. to Tenzing LLC (filed as exhibit 10.1 to the Company's Form 8-K filed on February 14, 2020, and incorporated herein by reference).
- 10.33 Promissory Note, dated May 21, 2020, issued by Tenzing Acquisition Corp. to Tenzing LLC (filed as exhibit 10.1 to the Company's Form 8-K filed on May 21, 2020, and incorporated herein by reference).
- 10.34 Promissory Note, dated July 24, 2020, issued by Tenzing Acquisition Corp. to Tenzing LLC (filed as exhibit 10.1 to the Company's Form 8-K filed on July 29, 2020, and incorporated herein by reference).
- 10.35 Promissory Note, dated August 18, 2020, issued by Tenzing Acquisition Corp. to Tenzing LLC (filed as exhibit 10.1 to the Company's Form 8-K filed on August 18, 2020, and incorporated herein by reference).
- 10.36 Promissory Note, dated September 24, 2020, issued by Tenzing Acquisition Corp. to Tenzing LLC (filed as exhibit 10.1 to the Company's Form 8-K filed on September 25, 2020, and incorporated herein by reference).
- 10.37 Promissory Note, dated November 12, 2020, issued by Tenzing Acquisition Corp. to Tenzing LLC (filed as exhibit 10.1 to the Company's Form 8-K filed on November 13, 2020, and incorporated herein by reference).
- 10.38 Form of Securities Purchase Agreement, dated September 6, 2022, by and between the Company and the Institutional Investor (filed as exhibit 10.1 to the Company's Form 8-K filed on September 7, 2022, and incorporated herein by reference).
- 10.39 Form of Securities Purchase Agreement, dated September 6, 2022, by and between the Company and the Private Placement Entities (filed as exhibit 10.2 to the Company's Form 8-K filed on September 7, 2022, and incorporated herein by reference).
- 10.40 Placement Agency Agreement, dated September 6, 2022, by and between the Company and the Placement Agent (filed as exhibit 10.3 to the Company's Form 8-K filed on September 7, 2022, and incorporated herein by reference).
- 16.1 Letter from Marcum LLP, dated January 20, 2021 (filed as exhibit 16.1 to the Company's Form 8-K/A filed on January 20, 2021, and incorporated herein by reference).
- 21.1 List of Subsidiaries of the Company (filed as Exhibit 21.1 to the Company's Current Report on Form 8-K as filed on December 18, 2020 and incorporated herein by reference).

23.1*	Consent of Armanino LLP
24.1*	Power of Attorney (included on the signature page).
31.1*	Certification of Chief Executive Officer pursuant to Rule 13a-14(a) or Rule 15d-14(a)
31.2*	Certification of Chief Financial Officer pursuant to Rule 13a-14(a) or Rule 15d-14(a)
32.1**	Certification of Chief Executive Officer and Chief Financial Officer pursuant to 18 U.S.C. Section 1350
101.INS*	Inline XBRL Instance Document
101.SCH*	Inline XBRL Taxonomy Extension Schema Document
101.CAL*	Inline XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF*	Inline XBRL Taxonomy Extension Definition Linkbase Document
101.LAB*	Inline XBRL Taxonomy Extension Label Linkbase Document
101.PRE*	Inline XBRL Taxonomy Extension Presentation Linkbase Document
104*	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101)

* Filed herewith.

** The certifications furnished in Exhibit 32.1 hereto are deemed to accompany this Annual Report on Form 10-K and will not be deemed “filed” for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, except to the extent that the registrant specifically incorporates it by reference.

+ The exhibits and schedules to this Exhibit have been omitted pursuant to Item 601(b)(2) of Regulation S-K. The registrant hereby agrees to furnish a copy of any omitted schedules to the Commission upon request.

++ Certain information in this exhibit has been omitted pursuant to Item 601(a)(6) of Regulation S-K.

Indicates management contract or compensatory plan.

Item 16. FORM 10-K SUMMARY

None.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

Reviva Pharmaceuticals Holdings, Inc.
(Registrant)

Date: March 30, 2023

/s/ Laxminarayan Bhat

Laxminarayan Bhat
Chief Executive Officer
(Principal Executive Officer)

Date: March 30, 2023

/s/ Narayan Prabhu

Narayan Prabhu
Chief Financial Officer
(Principal Financial and Accounting Officer)

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Laxminarayan Bhat and Narayan Prabhu, jointly and severally, as his true and lawful attorneys-in-fact and agents, with full power of substitution and resubstitution, for him, and in his name, place and stead, in any and all capacities, to sign any and all amendments to this Annual Report on Form 10-K, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents full power and authority to do and perform each and every act and thing requisite or necessary to be done in and about the premises hereby ratifying and confirming all that said attorneys-in-fact and agents, or his substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Laxminarayan Bhat</u> Laxminarayan Bhat	Chief Executive Officer and Director (Principal Executive Officer)	March 30, 2023
<u>/s/ Narayan Prabhu</u> Narayan Prabhu	Chief Financial Officer (Principal Financial and Accounting Officer)	March 30, 2023
<u>/s/ Parag Saxena</u> Parag Saxena	Chairman of the Board	March 30, 2023
<u>/s/ Richard Margolin</u> Richard Margolin	Director	March 30, 2023
<u>/s/ Purav Patel</u> Purav Patel	Director	March 30, 2023
<u>/s/ Les Funtleyder</u> Les Funtleyder	Director	March 30, 2023

**REVIVA PHARMACEUTICALS HOLDINGS, INC.
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REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Stockholders of
Reviva Pharmaceuticals Holdings, Inc.
Cupertino, California

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheets of Reviva Pharmaceuticals Holdings, Inc. (the "Company") as of December 31, 2022 and 2021, and the related consolidated statements of operations, stockholders' equity, and cash flows for each of the years in the two-year period ended December 31, 2022, and the related notes (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2022 and 2021, and the consolidated results of its operations and its cash flows for each of the years in the two-year period ended December 31, 2022, in conformity with accounting principles generally accepted in the United States of America.

Emphasis of Matter Regarding Going Concern

The accompanying consolidated financial statements have been prepared assuming that the Company will continue as a going concern. As discussed in Note 2 to the financial statements, the Company's significant recurring losses and accumulated deficit raise substantial doubt about its ability to continue as a going concern. Management's plans in regard to these matters are described in Note 2. The consolidated financial statements do not include any adjustments that might result from the outcome of this uncertainty.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's consolidated financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) ("PCAOB") and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion.

Our audits included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/Armanino^{LLP}

We have served as the Company's auditor since 2016.

San Ramon, California
March 30, 2023



REVIVA PHARMACEUTICALS HOLDINGS, INC.

CONSOLIDATED BALANCE SHEETS
December 31, 2022 and 2021

	December 31, 2022	December 31, 2021
Assets		
Cash and cash equivalents.....	\$ 18,519,856	\$ 29,687,944
Prepaid expenses and other current assets.....	403,819	1,716,057
Total Assets	\$ 18,923,675	\$ 31,404,001
Liabilities and Stockholders' Equity		
Liabilities		
Accounts payable.....	\$ 3,520,271	\$ 509,583
Accrued expenses and other current liabilities.....	2,519,569	1,835,228
Total current liabilities.....	6,039,840	2,344,811
Warrant liabilities.....	567,439	372,730
Total Liabilities	6,607,279	2,717,541
Commitments and contingencies (Note 10)		
Stockholders' equity		
Common stock, par value of \$0.0001; 115,000,000 shares authorized; 20,447,371 and 14,433,286 shares issued and outstanding as of December 31, 2022, and December 31, 2021, respectively.....	2,045	1,443
Additional paid-in capital.....	103,485,612	95,516,986
Accumulated deficit.....	(91,171,261)	(66,831,969)
Total stockholders' equity.....	12,316,396	28,686,460
Total Liabilities and Stockholders' Equity	\$ 18,923,675	\$ 31,404,001

The accompanying notes are an integral part of these consolidated financial statements.

REVIVA PHARMACEUTICALS HOLDINGS, INC.

CONSOLIDATED STATEMENTS OF OPERATIONS
For the Years Ended December 31, 2022 and 2021

	Year Ended December 31,	
	2022	2021
Operating expenses		
Research and development.....	\$ 18,947,874	\$ 4,851,602
General and administrative.....	5,358,734	5,252,911
Total operating expenses.....	<u>24,306,608</u>	<u>10,104,513</u>
Loss from operations.....	(24,306,608)	(10,104,513)
Other income (expense)		
(Loss) gain on remeasurement of warrant liabilities	(194,709)	1,591,055
Interest and other income (expense), net.....	182,802	(2,414)
Total other (expense) income, net.....	<u>(11,907)</u>	<u>1,588,641</u>
Loss before provision for income taxes.....	(24,318,515)	(8,515,872)
Provision for income taxes.....	20,777	6,004
Net loss	<u>\$ (24,339,292)</u>	<u>\$ (8,521,876)</u>
Net loss per share:		
Basic and diluted	<u>\$ (1.25)</u>	<u>\$ (0.58)</u>
Weighted average shares outstanding		
Basic and diluted	<u>19,516,479</u>	<u>14,790,843</u>

The accompanying notes are an integral part of these consolidated financial statements.

REVIVA PHARMACEUTICALS HOLDINGS, INC.

CONSOLIDATED STATEMENT OF STOCKHOLDERS' EQUITY
For the Years Ended December 31, 2022 and 2021

	Common Stock		Additional Paid-In Capital	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount			
Year Ended December 31, 2021					
Balance at December 31, 2020	9,231,737	\$ 923	\$ 63,774,920	\$ (58,310,093)	\$ 5,465,750
Issuance of units in public offering, net	4,133,400	413	31,497,050	—	31,497,463
Common stock issued in connection with warrant exercises.....	1,057,149	106	98,375	—	98,481
Common stock issued to consultant in exchange for services.....	11,000	1	39,928	—	39,929
Stock-based compensation expense	—	—	106,713	—	106,713
Net loss	—	—	—	(8,521,876)	(8,521,876)
Balance at December 31, 2021	<u>14,433,286</u>	<u>\$ 1,443</u>	<u>\$ 95,516,986</u>	<u>\$ (66,831,969)</u>	<u>\$ 28,686,460</u>
Year Ended December 31, 2022					
Balance at December 31, 2021	14,433,286	\$ 1,443	\$ 95,516,986	\$ (66,831,969)	\$ 28,686,460
Common stock issued in connection with warrant exercises.....	4,037,800	404	18,562	—	18,966
Issuance of common stock and warrants in offering, net of transaction costs.....	1,976,285	198	7,773,329	—	7,773,527
Stock-based compensation expense	—	—	176,735	—	176,735
Net loss	—	—	—	(24,339,292)	(24,339,292)
Balance at December 31, 2022	<u>20,447,371</u>	<u>\$ 2,045</u>	<u>\$ 103,485,612</u>	<u>\$ (91,171,261)</u>	<u>\$ 12,316,396</u>

The accompanying notes are an integral part of these consolidated financial statements.

REVIVA PHARMACEUTICALS HOLDINGS, INC.

CONSOLIDATED STATEMENTS OF CASH FLOWS
For the Years Ended December 31, 2022 and 2021

	<u>Year Ended December 31,</u>	
	<u>2022</u>	<u>2021</u>
Cash flows from operating activities		
Net loss	\$ (24,339,292)	\$ (8,521,876)
Adjustments to reconcile net loss to net cash used in operating activities		
Change in fair value of warrant liabilities	194,709	(1,591,055)
Issuance of stock in exchange for services	—	39,929
Stock-based compensation expense	176,735	106,713
Changes in operating assets and liabilities:		
Prepaid expenses and other current assets	1,312,238	(1,714,241)
Accounts payable	3,010,688	(498,463)
Accrued expenses and other current liabilities	684,341	1,510,531
Net cash used in operating activities	<u>(18,960,581)</u>	<u>(10,668,462)</u>
Cash flows from financing activities		
Proceeds from issuance common stock and warrants in offering, net	7,773,527	31,497,463
Proceeds from exercise of warrants	18,966	98,481
Net cash provided by financing activities	<u>7,792,493</u>	<u>31,595,944</u>
Net (decrease) increase in cash and cash equivalents	<u>(11,168,088)</u>	<u>20,927,482</u>
Cash and cash equivalents, beginning of year	29,687,944	8,760,462
Cash and cash equivalents, end of year	<u>\$ 18,519,856</u>	<u>\$ 29,687,944</u>
Supplemental disclosures of cash flow information:		
Cash paid for taxes	\$ 16,484	\$ 2,400

The accompanying notes are an integral part of these consolidated financial statements.

REVIVA PHARMACEUTICALS HOLDINGS, INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS December 31, 2022 and 2021

1. ORGANIZATION AND NATURE OF OPERATIONS

On December 14, 2020, Reviva Pharmaceuticals Holdings, Inc. (the “Company”), a Delaware corporation and the successor by re-domiciliation to Tenzing Acquisition Corp. (“Tenzing”), a British Virgin Islands exempted company, Tenzing Merger Subsidiary Inc., a Delaware corporation and wholly-owned subsidiary of Tenzing (“Merger Sub”), and Reviva Pharmaceuticals, Inc., a Delaware corporation (together with its consolidated subsidiary), consummated a business combination (the “Business Combination”) through the merger of Merger Sub with and into Reviva Pharmaceuticals, Inc., contemplated by the previously announced Agreement and Plan of Merger, dated as of July 20, 2020 (the “Merger Agreement”), by and among Tenzing, Merger Sub, Reviva Pharmaceuticals, Inc., and the other parties thereto. Pursuant to the Merger Agreement, at the effective time of the Merger (the “Effective Time”), Merger Sub merged with and into Reviva Pharmaceuticals, Inc., with Reviva Pharmaceuticals, Inc. as the surviving company in the Merger and, after giving effect to such Merger, Reviva Pharmaceuticals, Inc. becoming a wholly-owned subsidiary of Reviva Pharmaceuticals Holdings, Inc. (together with its consolidated subsidiary).

Reviva Pharmaceuticals, Inc. was originally incorporated in the state of Delaware and commenced operations on May 1, 2006 and its Indian subsidiary, Reviva Pharmaceuticals India Pvt. Ltd. was incorporated in 2014. The Company is an emerging research based pharmaceutical company focused on developing a portfolio of internally discovered next generation safe and effective therapeutic drugs by using an integrated chemical genomics technology platform and proprietary chemistries. The Company is currently focused on developing drugs for the central nervous system (CNS), cardiovascular (CV), metabolic and inflammatory diseases.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES AND BASIS OF PRESENTATION

Basis of Presentation

The accompanying consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the United States of America (“GAAP”). The summary of significant accounting policies presented below is designed to assist in understanding the Company’s financial statements. Such financial statements and accompanying notes are the representations of Company’s management, who is responsible for their integrity and objectivity.

Principals of consolidation

The accompanying consolidated financial statements include the accounts of the Reviva Pharmaceuticals Holdings, Inc. and its wholly owned subsidiary Reviva Pharmaceuticals, India Pvt Ltd. The accompanying consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the United States of America. All transactions and balances between the parent and its subsidiary have been eliminated in consolidation.

Liquidity and Going Concern

The Company has incurred losses since inception and as of December 31, 2022, the Company had a working capital of approximately \$12.9 million, an accumulated deficit of \$91.2 million and cash and cash equivalents on hand of approximately \$18.5 million. The Company’s net loss for the years ended December 31, 2022 and 2021, was approximately \$24.3 million and \$8.5 million, respectively. The Company expects to incur significant expenses and increased operating losses for the next several years. The Company expects its expenses to increase in connection with its ongoing activities to research, develop and commercialize its product candidates. The Company will need to generate significant revenues to achieve profitability, and it may never do so.

The Company’s current cash on hand is potentially not sufficient to satisfy its operating cash needs for the 12 months from the filing of this Annual Report on Form 10-K. The Company believes that it has adequate cash on hand to cover anticipated outlays through the majority of fiscal year 2023, but will need additional fundraising activities and cash on hand during the fourth quarter of fiscal year 2023. These conditions raise substantial doubt regarding the Company’s ability to continue as a going concern for a period of one year after the date the financial statements are issued. Management’s plan to alleviate the conditions that raise substantial doubt include raising additional working capital through public or private equity or debt financings or other sources, which may include collaborations with third parties as well as disciplined cash spending. Adequate additional financing may not be available to the Company on acceptable terms, or at all. Should the Company be unable to raise sufficient additional capital, the Company may be required to undertake cost-cutting measures including delaying or discontinuing certain clinical activities. These factors among others create a substantial doubt about the Company’s ability to continue as a going concern.

Use of estimates

The preparation of consolidated financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities as of the date of the financial statements and the reported amounts of expenses during the reporting periods covered by the financial statements and accompanying notes. Significant areas requiring the use of management estimates include, but are not limited to, depreciable and amortization useful lives, assumptions used to calculate the fair value of stock-based compensation, warrant values, deferred taxes, and related valuation allowances. Actual results could differ materially from such estimates under different assumptions or circumstances.

Concentration of credit risk and other risks and uncertainties

Financial instruments that potentially subject the Company to a concentration of credit risk consist of cash. Substantially, all the Company's cash and cash equivalents are held in demand deposit form at two financial institutions. The Company has not experienced any losses on its deposits of cash.

The Company is subject to all of the risks inherent in an early-stage company developing new pharmaceutical products. These risks include, but are not limited to, limited management resources, dependence upon medical acceptance of the product in development, regulatory approvals, successful clinical trials, availability and willingness of patients to participate in human trials, and competition in the pharmaceutical industry. The Company's operating results may be materially affected by the foregoing factors.

Impact of COVID-19

In response to the spread of COVID-19, the Company has taken temporary precautionary measures intended to help minimize the risk of the virus to its employees and community, including temporarily requiring employees to work remotely and suspending all non-essential travel for the Company's employees.

As a result of the COVID-19 pandemic, the Company may experience disruptions that could adversely impact the Company's business. The COVID-19 pandemic may negatively affect clinical site initiation, patient recruitment and enrollment, patient dosing, distribution of drug to clinical sites and clinical trial monitoring for our clinical trials. The COVID-19 pandemic may also negatively affect the operations of the third-party contract research organizations that the Company intends to rely upon to assist it in conducting its clinical trials and the contract manufacturers who manufacture the Company's drug candidates.

The Company is continuing to assess the potential impact of the COVID-19 pandemic on its business and operations as of December 31, 2022.

Cash and Cash Equivalents

The Company considers all highly liquid investments, readily convertible to cash without penalty, purchased with an original maturity at the date of purchase of three months or less to be cash equivalents. The Company's cash equivalents are short-term in nature and of high credit quality; therefore, the Company determined its exposure to credit losses over the life of these instruments is immaterial. As of December 31, 2022, and 2021, the Company's cash was maintained in demand deposit forms at two financial institutions. Deposits in financial institutions may, from time to time, exceed federally insured limits.

Leases

In February 2016, the FASB issued ASU 2016-2, Leases (Topic 842), as amended. The ASU introduces a new lessee model that brings most leases on the balance sheet. The new standard also aligns many of the underlying principles of the new lessor model with those in the current accounting guidance as well as the FASB's new revenue recognition standard. However, the ASU eliminates the use of bright-line tests in determining lease classification as required in the current guidance. The ASU also requires additional qualitative disclosures along with specific quantitative disclosures to better enable users of consolidated financial statements to assess the amount, timing, and uncertainty of cash flows arising from leases. The Company adopted this standard effective January 1, 2019, and determined that there was no material impact that the new accounting guidance had on its financial statements and related disclosures.

Research and development costs

Research and development costs are charged to operating expenses as incurred. Research and development costs include, but are not limited to, payroll and personnel expenses, laboratory supplies, consulting costs, and allocated overhead, including rent, equipment depreciation, and utilities.

General and administrative costs

General and administrative costs are charged to operating expenses as incurred. General and administrative costs include, but are not limited to, payroll and personnel expenses, travel and entertainment, consulting costs, conference and meeting costs, legal expenses and allocated overhead, including rent depreciation, and utilities.

Income taxes

The Company utilizes FASB ASC 740, "Income Taxes," which requires the recognition of deferred tax assets and liabilities for the expected future tax consequences of events that have been included in the financial statements or tax returns. Under this method, deferred tax assets and liabilities are determined based on the difference between the tax basis of assets and liabilities and their financial reporting amounts based on enacted tax laws and statutory tax rates applicable to the periods in which the differences are expected to affect taxable income. A valuation allowance is recorded when it is "more likely-than-not" that a deferred tax asset will not be realized.

The Company accounts for income taxes using the liability method whereby deferred tax asset and liability account balances are determined based on differences between the financial reporting and tax bases of assets and liabilities and are measured using the enacted tax rates and laws that will be in effect when the differences are expected to reverse. The Company provides a valuation allowance, if necessary, to reduce deferred tax assets to their estimated realizable value.

In evaluating the ability to recover its deferred income tax assets, the Company considers all available positive and negative evidence, including its opening results, ongoing tax planning, and forecasts of future taxable income on a jurisdiction-by-jurisdiction basis. The Company generated a deferred tax asset through net operating loss carry-forward. However, a valuation allowance of 100% has been established due to the uncertainty of the Company's realization of the net operating loss carry forward prior to its expiration. In the event the Company determines that it would be able to realize its deferred income tax assets in the future in excess of their net recorded amount, it would make an adjustment to the valuation allowance that would reduce the provision for income taxes. Conversely, in the event that all or part of the net deferred tax assets are determined not to be realizable in the future, an adjustment to the valuation allowance would be charged to earnings in the period such determination is made.

Stock-based compensation

Stock-based compensation is calculated based on the requirements of the Stock-Based Payment Topic of ASC 718 which requires recognition in the consolidated financial statements of the cost of employee and director services received in exchange for an award of equity instruments over the period the employee or director is required to perform the services in exchange for the award (presumptively, the vesting period). The ASC also requires measurement of the cost of employee and director services received in exchange for an award based on the grant-date fair value of the award.

The fair value of the award that is ultimately expected to vest is recognized as expense on a straight-line basis over the requisite service period, which is generally the vesting period. The determination of the fair value of stock-based payment awards on the date of grant is affected by the stock price as well as assumptions regarding a number of complex and subjective variables. These variables include expected stock price volatility over the term of the awards, actual and projected employee stock option exercise behaviors, risk-free interest rates, and expected dividends as under:

- Expected term: The Company's expected term represents the period that the Company's stock-based awards are expected to be outstanding and is determined using the simplified method.
- Expected volatility: Expected volatility is estimated using comparable public companies' volatility for similar terms.
- Expected dividend: The Black-Scholes-Merton valuation model calls for a single expected dividend yield as an input. The Company has never paid dividends and has no plans to pay dividends.
- Risk-free interest rate: The risk-free interest rate used in the Black-Scholes-Merton valuation method is based on the U.S. Treasury zero-coupon issues in effect at the time of grant for periods corresponding with the expected term of option.
- Forfeiture rate: The Company made the one-time election to recognize forfeitures when they occur.

As of January 1, 2019, the Company adopted ASU No. 2018-07, Compensation-Stock Compensation (Topic 718): Improvements to Nonemployee Stock-Based Payment Accounting, which aligns the accounting of stock-based payment awards issued to employees and nonemployees. The adoption did not materially impact our consolidated financial statements. The Company recognizes fair value of stock options granted to non-employees as a stock-based compensation expense over the period in which the related services are received. Non-employee option grants that do not vest immediately upon grant are recorded as an expense over the vesting period. At the end of each financial reporting period, the value of these options, as calculated using the Black-Scholes-Merton option-pricing model, is determined, and compensation expense recognized during the period is adjusted accordingly.

Fair Value of Financial Instruments

Due to their short maturities, the carrying amounts for cash, accounts payable, and accrued expenses approximate their fair value. Non-current assets are primarily related to certain advances with carrying values that approximate their fair values.

Fair Value Measurements of Warrants

ASC 820 "Fair Value Measurements" defines fair value, establishes a framework for measuring fair value in GAAP and expands disclosures about fair value measurements. ASC 820 defines fair value as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. ASC 820 establishes a fair value hierarchy that distinguishes between (1) market participant assumptions developed based on market data obtained from independent sources (observable inputs) and (2) an entity's own assumptions about market participant assumptions developed based on the best information available in the circumstances (unobservable inputs). The fair value hierarchy consists of three broad levels, which gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1) and the lowest priority to unobservable inputs (Level 3).

The three levels of the fair value hierarchy under ASC 820 are described below:

- Level 1 — Quoted prices (unadjusted) in active markets that are accessible at the measurement date for assets or liabilities. The fair value hierarchy gives the highest priority to Level 1 inputs.
- Level 2 — Directly or indirectly observable inputs as of the reporting date through correlation with market data, including quoted prices for similar assets and liabilities in active markets and quoted prices in markets that are not active. Level 2 also includes assets and liabilities that are valued using models or other pricing methodologies that do not require significant judgment since the input assumptions used in the models, such as interest rates and volatility factors, are corroborated by readily observable data from actively quoted markets for substantially the full term of the financial instrument.
- Level 3 — Unobservable inputs that are supported by little or no market activity and reflect the use of significant management judgment. These values are generally determined using pricing models for which the assumptions utilize management's estimates of market participant assumptions.

In determining the fair value of warrants, the Company utilizes valuation techniques that maximize the use of observable inputs and minimize the use of unobservable inputs to the extent possible as well as considers counterparty credit risk in its assessment of fair value.

New Accounting Pronouncements

There are no new accounting pronouncements expected to have a material impact on the Company's accounting policies or financial reporting.

3. FINANCING AGREEMENTS

Public Offering

On June 1, 2021, the Company completed a public offering (the "Offering") of Units (each, a "Unit"), with each Unit consisting of (a) one share of common stock (or pre-funded warrant to purchase one share of common stock in lieu thereof, with an exercise price of \$0.0001 per share, each a "Pre-Funded Warrant") and (b) one warrant to purchase 0.75 of a share of our common stock, with an exercise price of \$4.125 per share (each, an "Investor Warrant"). Pursuant to the Offering, the Company sold 4,133,400 Units consisting of (a) one share of common stock and (b) one Investor Warrant (inclusive the underwriter's overallotment option of 1,200,000 of such Units), and 5,066,600 Units consisting of (a) one Pre-Funded Warrant and (b) one Investor Warrant. The Units had no stand-alone rights and were not certificated or issued as stand-alone securities. Accordingly, as result of the sale of such Units in the Offering, the Company issued in aggregate 4,133,400 shares of common stock, Pre-Funded Warrants exercisable for 5,066,600 shares of common stock, and Investor Warrants exercisable for 6,900,000 shares of common stock. The offering price was \$3.75 for each Unit consisting of (a) one share of common stock and (b) one Investor Warrant, and \$3.7499 for each Unit consisting of (a) one Pre-Funded Warrant and (b) one Investor Warrant. Net proceeds from the Offering were approximately \$31.5 million, after underwriter discounts, commissions, legal and accounting fees, and certain other costs of approximately \$3.0 million. During the year ended December 31, 2022, 6,000 Investor Warrants were exercised for \$18,563 in proceeds, resulting in the issuance of 4,500 shares of common shares.

Registered Direct Offering and Private Placement

On September 8, 2022, the Company completed a registered direct offering and concurrent private placement (together, the "September 2022 Offering"). In the registered direct offering, the Company issued 1,976,285 shares of common stock at a purchase price per share of \$2.53, for aggregate gross proceeds to the Company of approximately \$5.0 million, before deducting certain transaction expenses payable by the Company. The transaction expenses were deducted from the proceeds received and included in additional paid-in capital.

The Company issued to the investors in the September 2022 Offering warrants to purchase up to 3,359,684 shares of common stock (the "Private Placement Warrants"). The Private Placement Warrants were immediately exercisable upon issuance at an exercise price of \$2.40 per share and will expire on September 8, 2027.

In a concurrent private placement the Company issued pre-funded warrants (the "Private Pre-Funded Warrants") to purchase up to an aggregate of 1,383,399 shares of common stock at a purchase price of \$2.5299 per Private Pre-Funded Warrant, for aggregate gross proceeds to the Company of approximately \$3.5 million, before deducting transaction expenses payable by the Company, which were deducted from the proceeds received and included in additional paid-in capital. The Private Pre-Funded Warrants were immediately exercisable at an exercise price of \$0.0001 per share and will expire when the Private Pre-Funded Warrants are fully exercised.

No Private Pre-Funded Warrants or Private Placement Warrants have been exercised as of December 31, 2022 (see Note 8).

The September 2022 Offering resulted in aggregate gross proceeds of approximately \$8.5 million before deducting transaction expenses. The total net proceeds totaled approximately \$7.8 million after deducting transaction costs of \$0.7 million.

At the Market Offering

In January 2022, the Company entered into an At the Market Offering Agreement (the "ATM Agreement") with H.C. Wainwright & Co., LLC, as sales agent ("Wainwright"), pursuant to which the Company may offer and sell, from time to time through Wainwright, shares of its common stock for aggregate gross proceeds of up to \$12.9 million.

Effective July 28, 2022, the Company terminated the ATM Agreement. Prior to termination, the Company had not sold any shares of its Common Stock pursuant to the ATM Agreement.

4. BUSINESS COMBINATION

On December 14, 2020, Reviva Pharmaceuticals Holdings, Inc., a Delaware corporation and the successor by re-domiciliation to Tenzing Acquisition Corp., a British Virgin Islands exempted company ("Tenzing"), Tenzing Merger Subsidiary Inc., a Delaware corporation and wholly-owned subsidiary of Tenzing ("Merger Sub"), and Reviva Pharmaceuticals, Inc., a Delaware corporation (together with its consolidated subsidiaries) Reviva Pharmaceuticals, Inc., consummated a business combination (the "Business Combination") through the merger of Merger Sub with and into Reviva Pharmaceuticals, Inc., contemplated by the previously announced Agreement and Plan of Merger, dated as of July 20, 2020 (the "Merger Agreement"), by and among Tenzing, Merger Sub, Reviva Pharmaceuticals, Inc.,

and the other parties thereto. Pursuant to the Merger Agreement, at the effective time of the Merger (the “Effective Time”), Merger Sub merged with and into Reviva Pharmaceuticals, Inc., with Reviva Pharmaceuticals, Inc. as the surviving company in the Merger and, after giving effect to such Merger, Reviva Pharmaceuticals, Inc. becoming a wholly-owned subsidiary of Reviva Pharmaceuticals Holdings, Inc. (together with its consolidated subsidiaries).

Upon the closing of the Business Combination, all shares of Reviva Pharmaceuticals, Inc. common stock and preferred stock issuance and outstanding immediately prior to the Business Combination converted into common stock of Reviva Pharmaceuticals Holdings, Inc., with a par value of \$0.0001 per share at an exchange rate of 0.152268 for common stock and 0.414647 for preferred stock. Each issued and outstanding warrant to acquire shares of Reviva Pharmaceuticals, Inc. common stock were assumed by Reviva Pharmaceuticals Holdings, Inc. and automatically converted into a warrant for Reviva Pharmaceuticals Holdings, Inc. common stock, with its price and number of shares adjusted based on the common stock exchange rate of 0.152268. Each outstanding option to acquire Reviva Pharmaceuticals, Inc. common stock (all of which were vested at the date of the Business Combination), were assumed by Reviva Pharmaceuticals Holdings, Inc. and automatically converted into an option to acquire shares of Reviva Pharmaceuticals Holdings, Inc. common stock at the common stock exchange rate of 0.152268.

In addition to the merger consideration set forth above, the Reviva Pharmaceuticals, Inc. Security holders also have a contingent right to receive up to an additional 1,000,000 shares of Reviva Pharmaceuticals Holdings, Inc. (the “Earnout Shares”) based on the stock price performance of the common stock and the achievement by the Company of certain clinical trial milestones during the three (3) year period following the Closing (the “Earnout Period”). In order to receive the Earnout Shares, during the Earnout Period, both:

- the closing price of the Company’s common stock has to be equal to or greater than \$15.00 per share for any 20 trading days within any 30 trading day period; and
- the Company must receive positive data from (i) its first Phase 3 trial in Acute Schizophrenia and (ii) either a Phase 2 clinical trial in pulmonary arterial hypertension or idiopathic pulmonary fibrosis.

The Business Combination was accounted for as a reverse merger in accordance with U.S. GAAP. Under this method of accounting, Tenzing is treated as the “acquired” company for financial reporting purposes. This determination was primarily based on the holders of Reviva Pharmaceuticals, Inc. having a majority of the voting power of the post-combination company, Reviva Pharmaceuticals, Inc. senior management comprising substantially all of the senior management of the post-combination company, the relative size of Reviva compared to Tenzing, and Reviva Pharmaceuticals, Inc. operations comprising the ongoing operations of the post-combination company. Accordingly, for accounting purposes, the Business Combination was treated as the equivalent of Reviva Pharmaceuticals, Inc. issuing stock for the net assets of Tenzing, accompanied by a recapitalization. The net assets of Tenzing are stated at historical cost, with no goodwill or other intangible assets recorded.

5. EMPLOYEE BENEFIT PLAN

In 2014, Reviva Pharmaceuticals, Inc. implemented a tax deferred savings plan, commonly referred to as a 401(k) plan. Employee’s contributions are withheld from standard payroll checks and are automatically withdrawn from the Company checking account and deposited into individual employee retirement accounts a few days following each payroll period. Employees can defer or contribute the statutory legal limits. There has been no Company matching of employee contributions to the plan through December 31, 2022.

6. INCOME TAXES

As a result of the Company's history of net operating losses and the full valuation allowance against its deferred tax assets, there was no current or deferred income tax provision other than current state minimum taxes and current foreign taxes for the years ended December 31, 2022 and 2021.

Domestic and international pre-tax income/(loss) consists of the following:

	December 31,	
	2022	2021
	<i>(in thousands)</i>	
United States	\$ (24,363)	\$ (8,544)
International	44	28
Loss before income taxes	<u>\$ (24,319)</u>	<u>\$ (8,516)</u>

Income tax expense attributable to operations is comprised of the following:

	December 31,	
	2022	2021
	<i>(in thousands)</i>	
Current:		
Federal	\$ —	\$ —
State	9	2
Foreign	12	6
Total current expense	<u>21</u>	<u>8</u>
Deferred:		
Federal	—	—
State	—	—
Foreign	—	—
Total deferred expense	<u>—</u>	<u>—</u>
Total Tax Expense	<u>\$ 21</u>	<u>\$ 8</u>

Reconciliations to the statutory federal income tax rate and the Company's effective tax rate consist of the following:

	December 31,	
	2022	2021
Statutory federal income tax rate.....	\$ (5,103,894)	\$ (1,788,135)
State income taxes, net of federal tax benefits	4,424	(58,152)
Warrant Expense	48,653	(334,122)
Stock-based compensation expense	10,766	8,924
Foreign Rate Differential	2,212	1,414
Other Permanent Differences	100,365	5,301
Valuation allowance.....	4,958,074	2,173,051
	<u>\$ 20,600</u>	<u>\$ 8,281</u>

The components of deferred tax assets included on the balance sheet are:

	December 31,	
	2022	2021
Net operating loss Carryforwards.....	12,619,407	11,262,916
Accruals and Reserves	117,909	81,911
Stock-based compensation expense	218,421	197,508
Fixed Assets/Capitalized Start Up Costs.....	2,419	2,557
Capitalized Section 174.....	3,539,335	—
Others.....	5,475	—
	<u>16,502,966</u>	<u>11,544,892</u>
Valuation allowance.....		
Net deferred tax assets	(16,502,966)	(11,544,892)
Deferred income taxes.....	<u>\$ —</u>	<u>\$ —</u>

The Company has established a full valuation allowance against its deferred tax assets due to the uncertainty surrounding realization of such assets. Total increase in valuation allowance is \$4,958,074 for the year ending December 31, 2022.

The Company currently has net operating loss carryforwards of approximately \$55.9 million and \$12.6 million for US Federal and state purposes, respectively. Approximately \$35.3 million of the US Federal losses begin to expire in 2029. The balance, all post-2017 federal net operating losses may be carried forward indefinitely. The deferred tax asset relates to the NOL carryforwards. Management has determined based on all the available information that a 100% Valuation reserve is required.

As of December 31, 2022, the Company has \$0.1 million research and development credit carryforwards to offset federal and California state income taxes, respectively, if any.

The Tax Reform Act of 1986 limits the use of net operating loss carryforwards in certain situations where changes occur in the stock ownership of a company. In the event that the Company has a change in ownership, utilization of carryforwards could be limited.

The Company has elected to recognize interest and penalties related to uncertain tax positions as components of income tax expense. As of December 31, 2022, The Company has no accrual for payment of interest related to unrecognized tax benefits.

The Company's income tax returns for all years remain open to examination by federal and state taxing authorities. The Company does not expect that is unrecognized tax benefit will change significantly in the next 12 months.

As of December 31, 2022 the Company has \$.1 million unrecognized tax benefits that, if recognized, would change its effective rate. As of December 31, 2021, the Company had no unrecognized tax benefits.

On March 27, 2020, the Coronavirus Aid, Relief and Economic Security ("CARES") Act was enacted and signed into law. Certain provision of the CARES Act impacted the 2019 and 2020 income tax provision computations of the Company and were reflected in the appropriate period. The CARES Act contains modification on the limitation of business interest for the tax years beginning in 2019 and 2020. The modifications to Section 163(j) increase the allowable business interest deduction from 30% of adjusted taxable income to 50% of adjusted taxable income. As the company is in losses, there is no modification for the current year.

7. LOSS PER SHARE

Basic and diluted net loss per share is computed by dividing the net loss for the period by the weighted average number of common stock outstanding during the period. Diluted loss per share includes potentially dilutive securities such as stock options, warrants to purchase common shares, and other convertible instruments unless the result of inclusion would be anti-dilutive. These securities have been excluded from the calculation of diluted net loss per shares for the years ended December 31, 2022 and December 31, 2021 because all such securities are anti-dilutive for all periods presented.

The following table summarizes the Company's potentially dilutive securities, in common share equivalents, which have been excluded from the calculation of dilutive loss per share as their effect would be anti-dilutive:

	Year Ended December 31,	
	2022	2021
Shares issuable upon exercise of stock options	244,774	192,898
Shares issuable upon exercise of warrants to purchase common stock	17,233,104	13,883,732
Shares contingently issuable for earnout.....	1,000,000	1,000,000
	<u>18,477,878</u>	<u>15,076,630</u>

The diluted loss per share computation equals basic loss per share for the year ended December 31, 2022 and December 31, 2021 because the Company had a net loss and the impact of the assumed exercise of stock options and warrants would have been anti-dilutive.

8. WARRANTS

As of December 31, 2022, there were public warrants outstanding to purchase an aggregate of 6,325,000 shares of common stock, private warrants outstanding to purchase an aggregate of 3,915,997 shares of common stock, investor warrants outstanding to purchase an aggregate of 6,871,651 shares of common stock, private pre-funded warrants to purchase an aggregate of 1,383,399 shares of common stock, and assumed warrants outstanding to purchase an aggregate of 120,456 shares of common stock.

2020 Business Combination

In connection with the closing of our Business Combination in 2020, our predecessor company, Tenzing, issued public warrants to purchase 6,325,000 shares and private placement warrants to purchase 556,313 shares.

Further, there were assumed warrants to purchase an aggregate of 126,268 shares of common stock, of which 5,812 expired during the year ended December 31, 2022. These warrants were classified as equity as of December 31, 2022, and December 31, 2021. The fair value of these warrants on the date of issuance was \$1,279,182.

Each public warrant entitles the holder thereof to purchase one share of common stock at a price of \$11.50 per share, subject to adjustment. No public warrants will be exercisable for cash unless we have an effective and current registration statement covering the issuance of the shares of common stock issuable upon exercise of the public warrants and a current prospectus relating to such shares of common stock.

We may call the public warrants for redemption, in whole and not in part, at a price of \$0.01 per warrant;

- if, and only if, the reported last sale price of the common stock equals or exceeds \$21.00 per share (as adjusted for stock splits, stock dividends, reorganizations and recapitalizations), for any 20 trading days within a 30 trading day period ending on the third trading business day prior to the notice of redemption to holders of the public warrants, and

- if, and only if, there is a current registration statement in effect with respect to the issuance of the shares of Common Stock underlying such Public Warrants at the time of redemption and for the entire 30-day trading period referred to above and continuing each day thereafter until the date of redemption
- at any time while the public warrants are exercisable
- upon not less than 30 days' prior written notice of redemption to each warrant holder

The private warrants are substantially similar to the public warrants except such private warrants;

- are exercisable for cash or on a cashless basis, at the holder's option
- cannot be redeemed by us, so long as they are still held by the initial purchasers or their affiliates.
- The redemption price is to be calculated as the 10-day average trading price ending one trading business day prior to the notice of redemption.

In no event will the Company be required to net cash settle either the public or the private warrants.

The exercise price and number of shares of common stock issuable on exercise of the warrants may be adjusted in certain circumstances including in the event of a share dividend, extraordinary dividend or a recapitalization, reorganization, merger or consolidation.

2021 Public Offering

In connection with the Offering of Units, the Company issued Pre-Funded Warrants exercisable for 5,066,600 shares of common stock, and Investor Warrants exercisable for 6,900,000 shares of common stock.

During fiscal year 2021, 1,033,300 of Pre-Funded Warrants were exercised for \$103 in proceeds, resulting in the issuance of 1,033,300 common shares. During the fiscal year ended December 31, 2022, 4,033,300 Pre-Funded Warrants were exercised for \$403 in proceeds, resulting in the issuance of 4,033,300 common shares. There were no 2021 issued Pre-Funded Warrants outstanding as of December 31, 2022.

During the year ended December 31, 2021, 31,800 Investor Warrants were exercised for \$98,377 in proceeds, resulting in the issuance of 23,849 shares of common shares. During the year ended December 31, 2022, 6,000 Investor Warrants were exercised for \$18,563 in proceeds, resulting in the issuance of 4,500 shares of common shares. As of December 31, 2022, there are investor warrants outstanding to purchase an aggregate of 6,871,651 shares of common stock.

2022 Registered Direct Offering and Private Placement

In connection with the September 2022 Offering, the Company issued to investors Private Placement Warrants to purchase up to 3,359,684 shares of common stock. The Private Placement Warrants were immediately exercisable upon issuance.

In a concurrent private placement, the Company issued Private Pre-Funded Warrants to purchase up to an aggregate of 1,383,399 shares of common stock. The Private Pre-Funded Warrants were immediately exercisable.

No 2022 Private Pre-Funded Warrants or 2022 Private Placement Warrants issued during the September 2022 Offering have been exercised as of December 31, 2022.

The Company has determined that as the Pre-Funded Warrants and Investor Warrants were issued at fair value in a public offering of Units with no debt funding included in the offering, the Pre-Funded Warrants and Investor Warrants should be classified as equity.

The fair value of the Private Placement Warrants and Private Pre-Funded Warrants was determined utilizing a Black-Scholes model considering all relevant assumptions current at the date of issuance (i.e., Company share price of \$2.20, exercise price of \$2.40 for the Private Placement Warrants and \$0.0001 for the Private Pre-Funded Warrants, term of 5 years, volatility of 111%, risk-free rate of 3.4%, and expected dividend rate of 0%). The grant date relative fair value of these warrants was estimated to be \$5,712,592 on September 8, 2022 and are classified as equity.

The Company evaluated the Private Placement Warrants and the Private Pre-Funded Warrants in accordance with the guidance at ASC 480, *Distinguishing Liabilities from Equity* and ASC 815-40, *Derivatives and Hedging*, and determined that they should be classified as equity instruments, with no recurring fair value measurement required. The warrants are indexed to the Company's common stock and are required to be settled through physical settlement or net share settlement, if exercised. Accordingly, the warrants were recorded at their grant date fair value with no subsequent remeasurement.

9. STOCKHOLDERS' EQUITY (DEFICIT) STOCK OPTION PLANS AND STOCK-BASED COMPENSATION

Our authorized capital stock consists of:

- 115,000,000 shares of common stock, par value \$0.0001 per share; and
- 10,000,000 shares of preferred stock, par value \$0.0001 per share.

As of December 31, 2022, there were 20,447,371 shares of our common stock outstanding, and no shares of preferred stock outstanding.

Common Stock

Voting. The holders of our common stock are entitled to one vote for each share held of record on all matters on which the holders are entitled to vote (or consent pursuant to written consent). Directors are elected by a plurality of the votes present in person or represented by proxy and entitled to vote.

Dividends. The holders of common stock are entitled to receive, ratably, dividends only if, when and as declared by our board of directors out of funds legally available therefor and after provision is made for each class of capital stock having preference over the common stock.

Liquidation Rights. In the event of the Company's liquidation, dissolution or winding-up, the holders of common stock will be entitled to share, ratably, in all assets remaining available for distribution after payment of all liabilities and after provision is made for each class of capital stock having preference over the Common Stock.

Conversion Right. The holders of common stock have no conversion rights.

Preemptive and Similar Rights. The holders of common stock have no preemptive or similar rights.

Redemption/Put Rights. There are no redemption or sinking fund provisions applicable to the Common Stock. All of the outstanding shares of common stock will be fully-paid and nonassessable.

Preferred Stock

Our board of directors has the authority to issue shares of preferred stock from time to time on terms it may determine, to divide shares of preferred stock into one or more series and to fix the designations, preferences, privileges, and restrictions of preferred stock, including dividend rights, conversion rights, voting rights, terms of redemption, liquidation preference, sinking fund terms, and the number of shares constituting any series or the designation of any series to the fullest extent permitted.

Stock-Based Compensation Expense

2006 Equity Incentive Plan

Reviva's board of directors adopted, and Reviva's stockholders approved, the Reviva Pharmaceuticals, Inc. 2006 Equity Incentive Plan, effective as of August 2006. The Reviva Pharmaceuticals, Inc. 2006 Equity Incentive Plan provided for the grant of incentive stock options, or ISOs, within the meaning of Section 422 of the Code, to Reviva's employees, and for the grant of nonstatutory stock options, or NSOs, and restricted stock awards to Reviva's employees, officers, directors and consultants; provided such consultants render bona fide services not in connection with the offer and sale of securities in a capital-raising transaction. As of 2016, no new grants of awards are permitted under the Reviva Pharmaceuticals, Inc. 2006 Equity Incentive Plan.

Upon the Business Combination, the Reviva Pharmaceuticals, Inc. 2006 Equity Incentive Plan was amended to change its name to the Reviva Pharmaceuticals Holdings, Inc. 2006 Equity Incentive Plan (the "2006 Equity Incentive Plan"), and each outstanding option to acquire Reviva common stock (whether vested or unvested) under the 2006 Equity Incentive Plan was assumed by the Company and automatically converted into an option to acquire shares of common stock, with its price and number of shares equitably adjusted based on the conversion of the shares of common stock of Reviva into shares of common stock of the Company pursuant to the Merger Agreement. Pursuant to such assumption and automatic conversion, as of the consummation of the Business Combination there are outstanding options under the 2006 Equity Incentive Plan exercisable for an aggregate of 65,471 shares of Company common stock, and no new grants of awards are permitted under the 2006 Equity Incentive Plan.

2020 Equity Incentive Plan

On December 14, 2020, the Reviva Pharmaceuticals Holdings, Inc. 2020 Equity Incentive Plan (the "2020 Equity Incentive Plan") became effective. The general purpose of the 2020 Equity Incentive Plan is to provide a means whereby employees, officers, directors, consultants, advisors or other individual service providers may develop a sense of proprietorship and personal involvement in our development and financial success, and to encourage them to devote their best efforts to us, thereby advancing our interests and the interests of our stockholders.

As of December 31, 2022, an aggregate of 2,600,063 shares of common stock may be issued under the 2020 Equity Incentive Plan, subject to equitable adjustment in the event of stock splits and other capital changes (the "Share Reserve"). The Share Reserve will automatically increase on January 1st of each year, for a period of not more than ten years, commencing on January 1st of the year following the year in which the effective date of the 2020 Equity Incentive Plan occurs, and ending on (and including) January 1, 2030, in an amount equal to the lesser of (i) ten percent (10%) of the total number of shares of Common Stock outstanding on December 31st of the preceding calendar year or (ii) such number of shares of common stock determined by the Company's board of directors (the "Annual Increase"). In accordance with the "evergreen" provision in our 2020 Equity Incentive Plan, 1,443,329 shares were automatically made available for issuance on the first day of 2022.

The Company records stock-based compensation expense in connection with the amortization of the fair value of stock options granted to employees, non-employee consultants and non-employee directors. During the years ended December 31, 2022, and 2021, the Company recorded stock-based compensation of \$176,735 and \$106,713 respectively. As of December 31, 2022, the Company had unrecognized stock-based compensation expense of \$474,173, which is expected to be recognized over a weighted-average period of 2.9 years. As of December 31, 2021, the Company had unrecognized stock-based compensation expense of \$281,397.

Determining Fair Value

Valuation and Recognition – The fair value of each option award is estimated on the date of grant using the Black-Scholes option-pricing model. The Black-Scholes pricing model utilizes the following assumptions:

Expected Term – Expected life of an option award is the average length of time over which the Company expects employees will exercise their options, which is based on historical experience with similar grants.

Expected Volatility - Expected volatility is based on the Company’s historical stock volatility data over the expected term of the awards.

Risk-Free Interest Rate - The Company bases the risk-free interest rate on the implied yield currently available on U.S. Treasury zero-coupon issues with an equivalent expected term.

Dividend Yield – The Company has not paid a dividend and does not anticipate paying a dividend in the foreseeable future.

The value of option grants is calculated using the Black-Scholes option pricing model with the following assumptions for options granted during the year ended December 31, 2022 and 2021:

	December 31, 2022	December 31, 2021
Risk-free interest rate	2.96% - 3.94%	0.95% - 1.31%
Expected term (in years)	5.45 - 6.06	5.20 - 6.08
Expected volatility	86.6% - 88.5%	87.1% - 93.9%
Expected dividend yield	0%	0%

Activity under the stock plans for the years ended December 31, 2021 and 2022, is as follows:

	Shares Available for Grant	Number of Options Outstanding	Weighted Average Exercise price per share	Weighted Average Remaining Contractual Term in Years	Aggregate Intrinsic Value
Balance, December 31, 2020	461,587	65,471	\$ 16.86	2.13	\$ —
Authorized	923,174	—	—		
Granted	<u>(127,427)</u>	<u>127,427</u>	\$ 4.14		
Balance, December 31, 2021	1,257,334	192,898	\$ 8.46	6.76	\$ —
Authorized (Evergreen Shares)	1,443,329				
Granted	(100,600)	100,600	\$ 4.91		
Expired		<u>(48,724)</u>	\$ 11.89		
Balance, December 31, 2022	2,600,063	<u>244,774</u>	\$ 6.32	8.62	\$ —
Balance at December 31, 2022		<u>244,774</u>	\$ 6.32	8.62	\$ —
Options exercisable at December 31, 2022		<u>107,455</u>	\$ 8.22	7.60	\$ —

10. COMMITMENTS AND CONTINGENCIES

Clinical trials

Since 2010, the Company has entered into multiple clinical trial agreements with medical institutions in the United States, Europe and Asia for the purpose of enrolling patients into various clinical trials. The agreements are substantially similar by trial and include a detailed listing of the clinical trial services for which the Company will pay, how much will be paid for each service, a set-up charge (if any), Investigational Review Board fees, contractual term, and other provisions. The clinical trial services provided by each site generally include the screening of prospective patients and, for those patients to be enrolled in the study, administration of the Company's investigation drug according to the trial protocol, any required hospitalization, ancillary medical supplies, and 2-week patient follow-up. Further, each agreement requires the Company to indemnify each respective clinical site against any and all liability, loss, or damage it may suffer as a result of third-party claims; the Company maintains product liability insurance of not less than \$10 million in conjunction with this indemnification. The agreements may be terminated upon 30 days' written notice, subject to conditions of paying all liabilities incurred through the date of termination. Additionally, with each screened patient, the Company incurs expense with other entities engaged to provide independent review of patient medical records.

As part of the Company's agreement with one of its clinical research organizations, the Company is required to maintain a 7% upfront float for fees related to expenses incurred in clinical studies. When the float has depleted to 15% (i.e. 85% of the float has been used) the Company will receive an invoice to replenish the float up to 7% of the remaining estimated budget for the studies. In December 2022, the Company received an invoice for approximately \$646 thousand. The Company paid this invoice in January 2023 and will expense the prepaid balance in fiscal 2023 as the services are incurred.

Indemnification

From time to time, in its normal course of business, the Company may indemnify other parties, with whom it enters into contractual relationships, including lessors and parties to other transactions with the Company. The Company may agree to hold other parties harmless against specific losses, such as those that could arise from a breach of representation, covenant or third-party infringement claims. It may not be possible to determine the maximum potential amount of liability under such indemnification obligations due to the unique facts and circumstances that are likely to be involved in each particular claim and indemnification provision. Historically, there have been no such indemnification claims. The Company has also indemnified its directors and executive officers, to the extent legally permissible, against all liabilities reasonably incurred in connection with any action in which such individual may be involved by reason of such individual being or having been a director or executive officer.

Operating Leases

The Company adopted ASC 842, Leases, on January 1, 2019. The Company has elected to apply the short-term lease exception to leases of one year or less. Presently, the Company has a single twelve-month lease on its Corporate Office located at 19925 Stevens Creek Blvd., Suite 100, Cupertino, CA 95014. The monthly lease payment is approximately \$1,447 and the lease was renewed in February 2022 and again on February 1, 2023, for another 12-month term.

11. FAIR VALUE MEASUREMENTS

Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. To increase the comparability of fair value measures, the following hierarchy prioritizes the inputs to valuation methodologies used to measure fair value:

- Level 1 — Quoted prices (unadjusted) in active markets that are accessible at the measurement date for assets or liabilities. The fair value hierarchy gives the highest priority to Level 1 inputs.
- Level 2 — Directly or indirectly observable inputs as of the reporting date through correlation with market data, including quoted prices for similar assets and liabilities in active markets and quoted prices in markets that are not active. Level 2 also includes assets and liabilities that are valued using models or other pricing methodologies that do not require significant judgment since the input assumptions used in the models, such as interest rates and volatility factors, are corroborated by readily observable data from actively quoted markets for substantially the full term of the financial instrument.
- Level 3 — Unobservable inputs that are supported by little or no market activity and reflect the use of significant management judgment. These values are generally determined using pricing models for which the assumptions utilize management's estimates of market participant assumptions.

The determination of where assets and liabilities fall within this hierarchy is based upon the lowest level of input that is significant to the fair value measurement.

The following is a listing of the Company's warrant liabilities required to be measured at fair value on a recurring basis and where they are classified within the fair value hierarchy as of December 31, 2022 and December 31, 2021:

	December 31, 2022			
	Level 1	Level 2	Level 3	Total
Liabilities:				
Warrant liability	—	—	\$ 567,439	\$ 567,439
Total	\$ —	\$ —	\$ 567,439	\$ 567,439

	December 31, 2021			
	Level 1	Level 2	Level 3	Total
Liabilities:				
Warrant liability	\$ —	\$ —	\$ 372,730	\$ 372,730
Total	\$ —	\$ —	\$ 372,730	\$ 372,730

The following table summarizes the changes in the fair value of the warrant liabilities measured at fair value on a recurring basis using significant unobservable inputs (Level 3):

	Twelve Months Ended December 31,	
	2022	2021
Balance, beginning of period	\$ 372,730	\$ 1,963,785
Change in fair value of warrant liability	194,709	(1,591,055)
Balance, end of period	\$ 567,439	\$ 372,730

The Company classified the private warrants pursuant to ASC 815 as derivative liabilities, as the warrants have terms which are modified upon any future transfer of ownership, with subsequent changes in their fair values to be recognized in the consolidated financial statements at each reporting date. The Company calculated the fair value of the private warrants as of December 31, 2022 as \$567,439 using a Black-Scholes model. The key inputs used in the Black-Scholes calculation were, the risk-free interest rate, expected volatility, expected life, exercise price and stock price. The risk-free interest rate was estimated to be 4.23%, the expected volatility was estimated to be 71.6%, and the expected life was estimated to be 2.96 years. The exercise price was \$11.50, and the stock price \$4.25.

The Company recorded a loss and (gain) on remeasurement of warrant liabilities of \$194,709 and \$(1,591,055) for the years ended December 31, 2022 and 2021, respectively.

12. SUBSEQUENT EVENTS

On March 10, 2023, Silicon Valley Bank ("SVB") was closed by the California Department of Financial Protection and Innovation, which appointed the Federal Deposit Insurance Corporation ("FDIC") as receiver. On March 12, 2023, the Secretary of the Treasury, the chair of the Federal Reserve Board and the chairman of the FDIC released a joint statement related to the FDIC's resolution of the SVB receivership, which provides that all depositors will have access to all their money starting March 13, 2023. The Company has subsequently transferred the majority of its deposits out of SVB to another financial institution. As of March 30, 2023, all cash deposited with SVB by the Company are accessible to the Company.

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