Filed Pursuant to Rule 424(b)(5)
Registration No. 333-257821

Prospectus Supplement
(To prospectus dated July 9, 2021)

35,715,000 Shares

Common stock

We are offering 35,715,000 shares of our common stock.

Our common stock is currently trading on the OTCQB Market under the stock symbol "CMPX." On October 29, 2021, the closing price for our common stock, as reported on the OTCQB Market, was $3.02 per share. In connection with this offering, our common stock has been approved for listing on the Nasdaq Capital Market under the symbol "CMPX."

We are an "emerging growth company" as that term is used in the Jumpstart Our Business Startups Act of 2012 and, as such, have elected to comply with certain reduced public company disclosure and reporting requirements.

Investing in our common stock involves a high degree of risk. See "Risk factors" beginning on page S-15 of this prospectus supplement, as well as those risks described in our most recent Annual Report on Form 10-K for the year ended December 31, 2020 and in our other filings with the Securities and Exchange Commission that are incorporated by reference into this prospectus supplement.

	Per share	Total
Public offering price	$3.50	$ 125,002,500
Underwriting discounts and commissions(1)	$0.21	$ 7,500,150
Proceeds to Compass Therapeutics, Inc., before expenses	$3.29	$ 117,502,350

(1) We have agreed to reimburse the underwriter for certain expenses. See "Underwriting."

We have granted the underwriters an option to purchase up to an additional 5,357,250 shares of common stock from us at the public offering price, less underwriting discounts and commissions, within 30 days from the date of this prospectus supplement. See "Underwriting" for more information.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus supplement or the accompanying prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

The underwriters expect to deliver the shares to purchasers on or about November 4, 2021.

Book-Running Manager

SVB Leerink

Passive Book-Running Managers

Raymond James **Wedbush Securities** **H.C. Wainwright & Co.**

Co-Managers

The Benchmark Company **Roth Capital Partners**

The date of this prospectus supplement is November 1, 2021

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Prospectus supplement

Prospectus

ABOUT THIS PROSPECTUS SUPPLEMENT

This document is in two parts. The first part is this prospectus supplement, which describes the terms of this offering of common stock and also adds to and updates information contained in the accompanying prospectus and the documents incorporated by reference into this prospectus supplement and the accompanying prospectus. The second part, the accompanying prospectus dated July 20, 2021, including the documents incorporated by reference therein, provides more general information. Generally, when we refer to this prospectus, we are referring to both parts of this document combined. To the extent there is a conflict between the information contained in this prospectus supplement, on the one hand, and the information contained in the accompanying prospectus or in any document incorporated by reference that was filed with the Securities and Exchange Commission, or the SEC, before the date of this prospectus supplement, on the other hand, you should rely on the information in this prospectus supplement. If any statement in one of these documents is inconsistent with a statement in another document having a later date—for example, a document incorporated by reference in the accompanying prospectus—the statement in the document having the later date modifies or supersedes the earlier statement.

This prospectus supplement is part of a registration statement that we filed with the SEC using a "shelf" registration process. Under the shelf registration process, we may from time to time offer and sell any combination of the securities described in the accompanying prospectus up to a total dollar amount of $300 million, of which this offering is a part.

We have not, and the underwriters have not, authorized anyone to provide any information other than that contained or incorporated by reference in this prospectus supplement or the accompanying prospectus. We and the underwriters take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. This prospectus supplement and the accompanying prospectus do not constitute an offer to sell, or a solicitation of an offer to purchase, the securities offered by this prospectus supplement and the accompanying prospectus in any jurisdiction to or from any person to whom or from whom it is unlawful to make such offer or solicitation of an offer in such jurisdiction. The information contained in this prospectus supplement and the accompanying prospectus, including the documents incorporated by reference herein or therein is accurate only as of the respective dates thereof, regardless of the time of delivery of this prospectus supplement and the accompanying prospectus or of any sale of our common stock. It is important for you to read and consider all information contained in this prospectus supplement and the accompanying prospectus, including the documents incorporated by reference herein and therein, in making your investment decision. You should also read and consider the information in the documents to which we have referred you in the sections titled "Where you can find more information" and "Incorporation of certain information by reference" in this prospectus supplement and in the accompanying prospectus.

We and the underwriters are offering to sell, and seeking offers to buy, shares of our common stock only in jurisdictions where offers and sales are permitted. The distribution of this prospectus supplement and the accompanying prospectus and the offering of the common stock in certain jurisdictions may be restricted by law. Persons outside the United States who come into possession of this prospectus supplement and the accompanying prospectus must inform themselves about, and observe any restrictions relating to, the offering of the common stock and the distribution of this prospectus supplement and the accompanying prospectus outside the United States.

Except as otherwise indicated herein or as the context otherwise requires, references in this prospectus supplement, the accompanying prospectus and the information incorporated by referenced herein or therein to "Compass," "the company," "we," "us," "our" and similar terms refer to Compass Therapeutics, Inc. and, where appropriate, our subsidiaries.

PROSPECTUS SUPPLEMENT SUMMARY

This summary highlights information contained elsewhere or incorporated by reference in this prospectus supplement. This summary does not contain all of the information you should consider before investing in our common stock. Before you decide to invest in our common stock, you should carefully read the prospectus supplement and the accompanying prospectus, including the section titled "Risk factors" contained in this prospectus supplement and in the documents incorporated by reference into this prospectus supplement. You should also carefully read the information incorporated by reference into this prospectus supplement and the accompany prospectus, including our consolidated financial statements, and the exhibits to the registration statement of which this prospectus supplement and the accompanying prospectus are a part.

Company overview

We are a clinical-stage, oncology-focused biopharmaceutical company developing proprietary antibody-based therapeutics to treat multiple human diseases. Our scientific focus is on the relationship between angiogenesis, the immune system, and tumor growth. Our pipeline of novel product candidates is designed to target multiple critical biological pathways required for an effective anti-tumor response. These include modulation of the microvasculature via angiogenesis-targeted agents, induction of a potent immune response via activators on effector cells in the tumor microenvironment, and alleviation of immunosuppressive mechanisms used by tumors to evade immune surveillance. We plan to advance our product candidates through clinical development as both standalone therapies and in combination with proprietary pipeline antibodies based on supportive clinical and nonclinical data. We were founded in 2014 and are headquartered in Boston, Massachusetts.

Recent developments

CTX-009

CTX-009 (a.k.a. TR009/ABL001/NOV1501) is an investigational bispecific antibody that simultaneously blocks Delta-like ligand 4/Notch (DLL4) and vascular endothelial growth factor A (VEGF-A) signaling pathways, which are critical to angiogenesis and tumor vascularization. In May 2021, we acquired CTX-009 through a definitive merger agreement with TRIGR Therapeutics, Inc. ("TRIGR"), which licensed exclusive global rights to CTX-009, outside of South Korea, from ABL Bio, Inc. ("ABL Bio"), a South Korea-based clinical-stage company focused on developing antibody therapeutics. Following the acquisition of TRIGR, we hold the global rights to CTX-009 with the exception of South Korea rights which are held by Handok Pharmaceuticals, Inc. ("Handok") and China rights which were out-licensed to Elpiscience Biopharmaceuticals Co., Limited ("Elpiscience").

CTX-009 is undergoing clinical development in patients with advanced solid tumors in South Korea. A Phase 1 dose escalation and dose expansion monotherapy study has been completed and a Phase 1b combination study of CTX-009 in combination with chemotherapy is ongoing in South Korea. In the first quarter of 2021, Handok commenced a Phase 2a study of CTX-009 in combination with paclitaxel in patients with biliary tract cancers ("BTC" or "cholangiocarcinoma") in South Korea.

On October 8, 2021, we, along with ABL Bio, presented clinical trial data from the CTX-009 Phase 1a/1b dose-escalation and dose expansion study at a plenary oral session during the AACR-NCI-EORTC International Conference on Molecular Targets and Cancer Therapeutics (Abstract Number: 4749; Session title: Plenary Session 2: New Drugs on the Horizon I). The significant findings presented are as follows:

- CTX-009 was generally well-tolerated and demonstrated single agent activity in heavily pre-treated patients with solid tumor who are resistant to anti-VEGF therapies, mostly of colorectal and gastric origins
- The maximum tolerated dose ("MTD") was not reached, and the recommended Phase 2 doses ("RP2D") of CTX-009 were determined to be 10.0 and 12.5 mg/kg biweekly

- Overall response rate ("ORR") of CTX-009 as a monotherapy across all doses tested (0.3 – 17.5 mg/kg) was 8% and the clinical benefit rate ("CBR") was 62% in patients treated at the 3rd and 4th line settings
- Treatment with CTX-009 as a monotherapy at the RP2D (10.0 mg/kg and 12.5 mg/kg) led to 18.8% (n=3/16) ORR, not including an additional unconfirmed partial response (PR), and a 68.5% CBR (n=11/16)

Phase 1: Monotherapy Clinical Trial of CTX-009

An open-label, Phase 1 dose-escalation and expansion study designed to identify the optimal dose and to evaluate the safety, tolerability, pharmacokinetics, pharmacodynamics and the anti-tumor activity of CTX-009 in patients with advanced solid tumors after failure of standard of care treatment was conducted by ABL Bio in South Korea. This trial consisted of a Phase 1a monotherapy dose escalation arm and a Phase 1b dose expansion arm. The study was initiated in September 2017 and enrollment was completed in February 2021.

The dose escalation portion of the study followed a traditional 3+3 dosing scheme where CTX-009 was administered by intravenous infusion across nine dose cohorts ranging from 0.3 to 17.5 mg/kg biweekly. Patients were enrolled in two arms: a Phase 1a dose-escalation arm and a Phase 1b dose expansion arm. The expansion cohorts were 7.5, 10, 12.5 and 15 mg/kg. Patient tumor volumes were measured using CT scans at baseline and then every eight weeks.

Patient Demographics. A total of 45 patients enrolled in the study were advanced solid tumor patients who had been heavily pretreated with a median of four prior lines of therapy. The median age of the patients was 53 years old and 54% of the patients were male and 46% female. Importantly, 75% of the patients had been previously dosed with anti-VEGF therapy. Most patients enrolled in the study had either advanced colorectal cancer or advanced gastric cancer.

Safety data summary. A total of 45 patients were enrolled in the study and received at least one dose of CTX-009. The dose escalation of CTX-009 dose took place uninterruptedly, and the highest dose arm was 17.5 mg/kg. Importantly, the maximal tolerated dose has not been determined in this trial. CTX-009 was observed to be generally well-tolerated.

There have been 44 Treatment Emergent Adverse Events ("TEAEs") observed in more than 5% of the 45 patients enrolled. The most prominent TEAE is hypertension, which was observed in 37.8% of the patients. Grade 3 or higher TEAEs observed in over 5% of the patients include a total of 11 Grade 3 events, the most frequent being hypertension observed in 15.6% of the patients, followed by gastrointestinal disorders, observed in 4.4% of the patients, followed by general disorders and nervous system disorders, observed in 2.2% of the patients each. A summary of the TEAEs observed in over 5% of the patients is depicted in the table below.

Drug-related adverse events observed in > 5% of patients	Total (n)	Total (%)	Grade 3 (n)	Grade 3 (%)
Hypertension*	17	37.8	7	15.6
General disorders (fatigue, fever, asthenia, edema, etc.)	7	15.6	1	2.2
Nervous system disorders (headache, dizziness)	7	15.6	1	2.2
Gastrointestinal disorders (nausea, vomiting, etc.)	6	13.3	2	4.4
Pulmonary hypertension	4	8.9	0	0
Proteinuria	3	6.7	0	0

* Hypertension is a well-known side effect of anti-VEGF blockers. In clinical trials of bevacizumab, incidence of Grade 3-4 hypertension ranged between 5%-18% (as indicated in the label). Hypertension is typically managed by anti-hypertensive drugs.

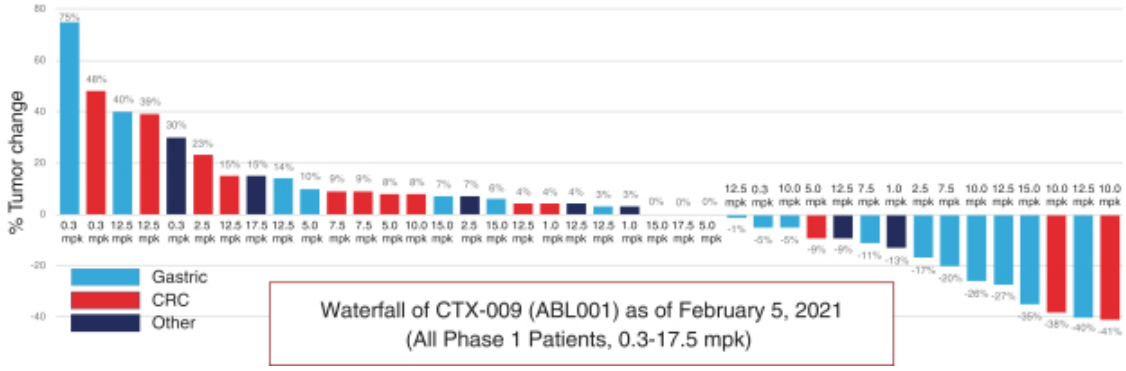
Activity data summary. A total of 40 out of the 45 patients enrolled in the study are evaluable for the purpose of determination of anti-tumor activity of CTX-009 since five patients did not reach their first scan at week eight due to progressive disease, or PD, or for other reasons. Sixteen of the 40 evaluable patients were dosed at the 10 or 12.5 mg/kg dose levels and represent what we project to be the efficacious dose levels. Among those 16 patients, there were three PRs confirmed by RECIST 1.1 with an ORR of 18.8% and eight patients with stable disease ("SD"), with a CBR of 68.8%. Two of the three PRs were in advanced colorectal patients and one of the three PRs was in an advanced gastric cancer patient. In addition, one of the patients with gastric cancer had a 35% decline in tumor mass relative to baseline, however, that regression was not confirmed upon a second CT scan, and hence not included in the ORR and the best response of this patient included in the data set is stable disease.

Phase 1 monotherapy trial: expansion cohorts (10 and 12.5 mg/kg)

Monotherapy expansion cohorts (10 and 12.5 mg/kg)	Patients	Prior VEGF target therapy	PR	SD	CBR	Median time to progression ("TTP")
All patients	16	75%	19%	50%	69%	3.9 months
Colorectal cancer	6	100%	33%	33%	67%	6.7 months
Gastric cancer	8	63%	13%	63%	75%	3.9 months

A waterfall plot depicting the best responses for each of the 40 evaluable patients is presented below.

CTX-009 (ABL001) Phase 1a Data (40 Evaluable Patients)



Phase 1b: Combination Clinical Trial of CTX-009 in South Korea

An open-label, combination Phase 1b clinical trial to evaluate the safety, pharmacokinetics, anti-tumor activity and the recommended Phase 2 dose (RP2D) of CTX-009 in combination with paclitaxel or irinotecan chemotherapy is currently being conducted by ABL Bio and Handok in South Korea. This study was initiated in June 2020 and enrollment was completed in December 2020 (clinicaltrials.gov identifier NCT04492033).

The study includes two cohorts, each of which is divided into two groups. The first cohort was administered 10 or 12.5 mg/kg of CTX-009 on a biweekly basis, in combination with 80 mg/m^2 paclitaxel administered weekly. The second cohort was administered 10 or 12.5 mg/kg of CTX-009 in combination with 150 mg/m^2 irinotecan on a biweekly basis.

Patient demographics. A total of 17 patients were enrolled in the study. Patients enrolled in the study were heavily pretreated, and the study included patients with advanced cholangiocarcinoma, colorectal, pancreatic,

gastric and other cancers with a median of three prior lines of therapy. As of October 5, 2021, one patient with non-small cell lung cancer ("NSCLC"), who has been on the study for over a year, remains on the study.

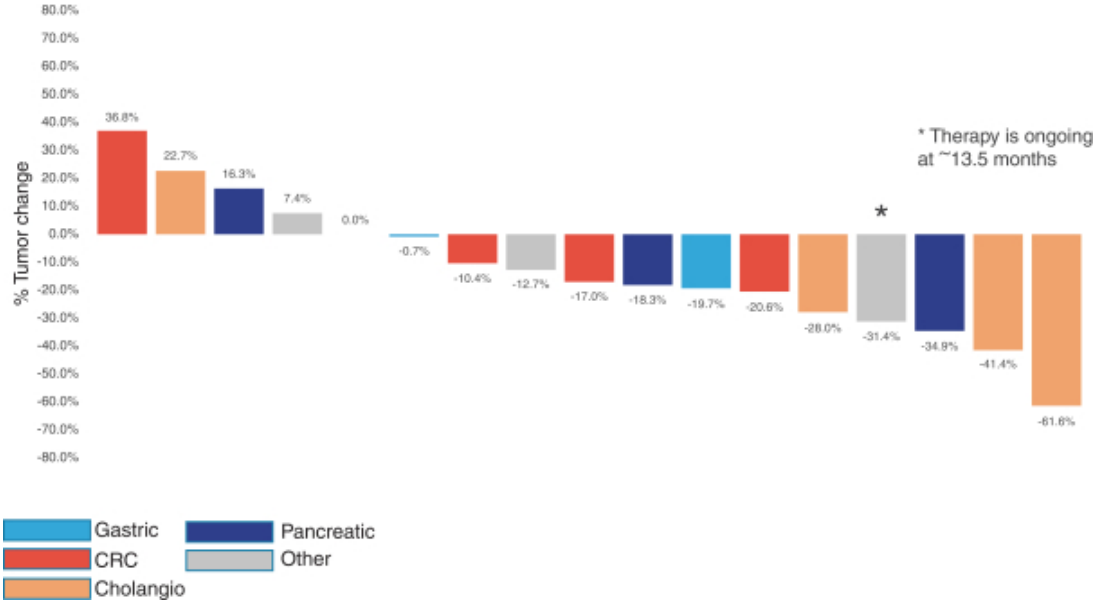
Preliminary Safety data summary. As of September 28, 2021, no formal safety data analysis has been completed, but CTX-009 was observed to be generally well-tolerated. Adverse Events ("AEs") that were determined to be probably or possibly related to CTX-009 treatment included Grade 3 hypertension observed in four patients (24%). Other AEs observed were Grade 3 neutropenia (18%), Grade 3 anemia (18%) and Grade 3 thrombocytopenia (12%), which were all attributed to the concomitant chemotherapy agent (paclitaxel or irinotecan). Pulmonary hypertension was monitored carefully in the study via measurement of BNP levels and echocardiograms, and there were five Grade 1 pulmonary hypertension events, all of which resolved. A preliminary summary of the TEAEs as of September 28, 2021, is depicted in the table below.

Drug-related adverse events observed in > 1 patient	Total (n)	Total (%)	Grade 3 (n)	Grade 3 (%)
Hypertension	8	47	4	24
Pulmonary hypertension (all grade 1)	5	29	0	0
Neutropenia*	4	24	3	18
Anemia*	3	18	3	18
Thrombocytopenia*	2	12	2	12
Proteinuria	4	24	0	0
Dyspnea	3	18	0	0
Fatigue	3	18	0	0
Anorexia	3	18	0	0
Gingival edema (mucositis)	2	12	0	0
Nausea	2	12	1	6
Anal hemorrhage	2	12	0	0

* Labeled Grade 3/4 cytopenia events for concomitant chemotherapy agent:
Irinotecan: 31.4% neutropenia, 4.5% anemia, 1.7% thrombocytopenia
Paclitaxel: 52% neutropenia, 16% anemia, 7% thrombocytopenia

***Preliminary activity data summary*.** Of the 17 patients enrolled, there have been four PRs, including three PRs that were confirmed by RECIST 1.1. and one PR which is unconfirmed, representing a 23.5% ORR and nine patients with SD, representing a CBR of 76.5%. The unconfirmed PR was in a patient with NSCLC who has been on the study for over a year and as of October 5, 2021 remains on the study. Of the four patients with advanced cholangiocarcinoma enrolled in the study, there were two PRs confirmed by RECIST 1.1 with 41% and 62% declines in tumor burden, respectively, representing an ORR in cholangiocarcinoma of 50%. A third patient with cholangiocarcinoma had a stable disease with 28% decline in such patient's tumor burden, and therefore the CBR observed in cholangiocarcinoma is three out of four, or 75%. The responses in cholangiocarcinoma were particularly durable with a median duration of response, or DOR, of 9.7 months as of October 5, 2021. An interim waterfall plot depicting best response for all 17 patients enrolled in the study as of September 28, 2021 is presented below.

Phase 1b Data (17 Patients)
CTX-009 + Irinotecan or CTX-009 + paclitaxel



Phase 1: Summary of Clinical Activity of CTX-009 at the RP2D

The observed ORR of CTX-009 at the 10 and 12.5 mg/kg doses are 18.8% (3/16) as a monotherapy and 23.5% (4/17) in combination with chemotherapy. The CBR of CTX-009 at the 10 and 12.5 mg/kg is 68.8% (11/16) as a monotherapy and 76.5% (13/17) in combination with chemotherapy.

Phase 2a: Interim Data from Combination Clinical Trial of CTX-009 in BTC in South Korea

A Phase 2a study of CTX-009 in combination with paclitaxel was initiated by Handok in the first quarter of 2021 in patients with BTCs. The study has been enrolling patients with unresectable advanced, metastatic, or relapsed BTCs and have received one or two prior systemic therapies.

The Phase 2a study utilizes a Simon Two-Stage adaptive design where the criteria to advance to the second stage of the study is three PRs observed in 21 patients. Based on the Simon Two-Stage design, when the criteria

for the first Stage is met, the study progresses to the second stage, where 45 additional patients will be enrolled. As of October 5, 2021, there have been five PRs observed among the first 17 patients evaluated (ORR=29%), and accordingly, the criteria to advance to the second part of the study has already been met. The study is being conducted at four leading medical centers in South Korea.

Preliminary Safety Data Summary

As of October 5, 2021, no formal safety data analysis has been completed, but CTX-009 was observed to be generally well-tolerated. AEs that were determined to be probably or possibly related to CTX-009 treatment included Grade 3 hypertension observed in 2 patients (8%). Other AEs observed were Grade 3 neutropenia (46%), Grade 3 thrombocytopenia (4%) and Grade 3 anemia (13%), which were all attributed to the concomitant chemotherapy agent (paclitaxel).

The table below depicts a preliminary summary of the drug-related AEs in 24 patients as of October 5, 2021.

Drug-related adverse events observed in > 1 patient (preliminary as of 10/5/2021)	Total (n)	Total (%)	Grade 3 (n)	Grade 3 (%)
Neutropenia*	11	46	11	46
Hypertension	9	38	2	8
Thrombocytopenia*	4	17	1	4
Anemia*	3	13	3	13
Dyspnea	3	13	0	0
General weakness	3	13	1	4
Headache	3	13	0	0
Hoarseness	3	13	0	0
Edema, Fatigue, Fever, Pneumonia, Proteinuria	2 each	8	1	1**

* Labeled Grade 3/4 cytopenia events with paclitaxel:
52% neutropenia, 16% anemia, 7% thrombocytopenia

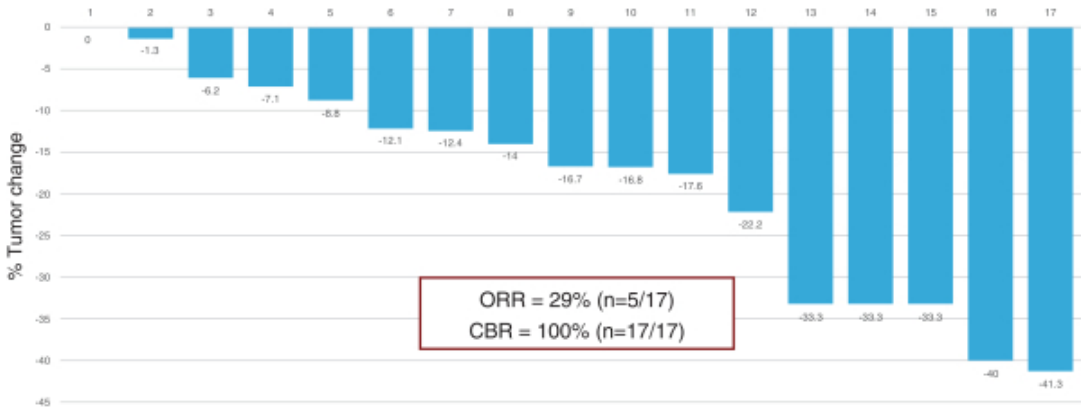
** One Grade 5 pneumonia

Preliminary Activity Data Summary

The study has enrolled 24 patients and 17 of those patients have reached their first CT scan and are considered evaluable. Five PRs confirmed by RECIST 1.1 have been observed among the first 17 evaluable patients, leading to a preliminary ORR of 29%, and all patients evaluated have had stable disease or better with a decline in tumor burden observed in 16 of the 17 patients leading to a CBR of 100%.

The interim waterfall plot below depicts the best response for the 17 patients evaluated in the study as of September 28, 2021.

Phase 2a Preliminary Data (17 patients)
CTX-009 + Taxol in Cholangiocarcinoma



Development Plans for CTX-009

We plan to submit an Investigational New Drug ("IND") application to the U.S. Food and Drug Administration ("FDA") in the fourth quarter of 2021 and subject to the IND going into effect with the FDA, to initiate a Phase 2 study of CTX-009 in combination with paclitaxel in patients with cholangiocarcinoma in the second quarter of 2022.

Taking into consideration the recent approvals of pemigatinib and infigratinib in cholangiocarcinoma patients who harbor the FGFR2 mutation, the response rate observed with CTX-009 in the Phase 1b and the preliminary response rate observed in the Phase 2a combination trials summarized above, we seek to advance CTX-009 into a Phase 2/3 study in the second line setting in the cholangiocarcinoma patient population with ORR and DOR as potential endpoints for accelerated approval.

The second clinical study we plan on pursuing is a Phase 2/3 monotherapy clinical trial of CTX-009 in the third line setting in colorectal cancer. Taking into consideration the activity of regorafenib, which was recently approved in the third line setting in colorectal cancer, and the activity seen with the small molecule KRAS G12C inhibitors, sotorasib and adagrasib in colorectal patients harboring the G12C mutation, and the response rates observed with CTX-009 in the Phase 1a monotherapy trial in colorectal cancer patients summarized above, we believe that we can advance CTX-009 into a Phase 2/3 study in the third line setting in colorectal cancer with ORR and DOR as potential endpoints for accelerated approval. We have not yet discussed this plan with regulatory agencies, including the FDA.

The timing of the initiation of the clinical trials in the United States depends, among other things, on the availability of clinical drug product for the studies, communications with the FDA, FDA allowance for each of the proposed studies to proceed and the availability of cash resources to support such trials.

These plans remain preliminary and are subject to feedback from regulatory agencies, as we have not yet discussed with the FDA or other regulatory agencies the proposed design of such trials or the regulatory path for CTX-009.

We intend to explore the potential of CTX-009 in additional indications, based on DLL4 expression in the tumor microenvironment, such as gastric cancer and pancreatic cancer, renal cell cancer, prostate cancer and ovarian cancer.

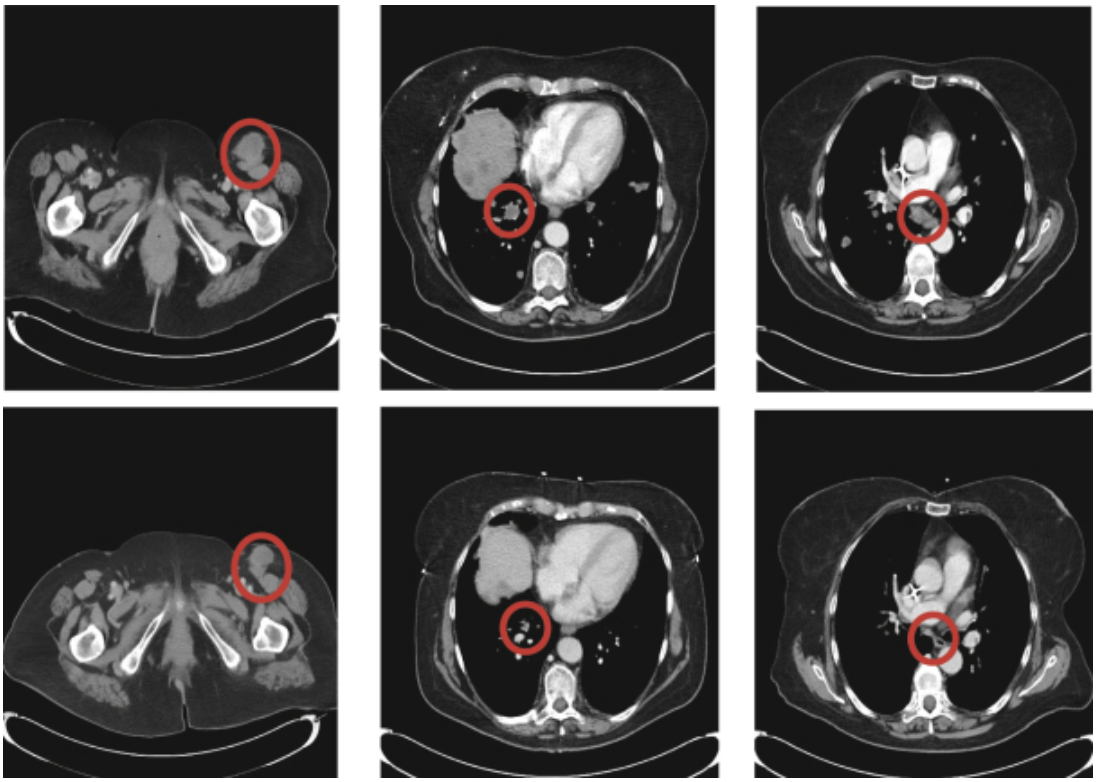
In addition, we are developing a plan to study the combination of CTX-009 with our novel bispecific checkpoint blocker, CTX-8371, and with other checkpoint blockers, such as pembrolizumab and nivolumab. Additionally, we plan to study the combination of CTX-009 with our novel CD137 agonistic antibody, CTX-471, which is currently undergoing a Phase 1b clinical trial in patients with advanced solid tumors.

CTX-471

CTX-471 is a monoclonal antibody agonist of CD137, a key co-stimulatory receptor of immune cells. In July 2019, we initiated a Phase 1 trial evaluating the safety and tolerability of CTX-471 as a monotherapy in oncology patients who were previously treated with PD-1 or PD-L1 immune checkpoint inhibitors and subsequently relapsed or progressed after a period of stable disease. The design of this trial includes a dose escalation stage (Phase 1a) followed by a dose expansion stage (Phase 1b). The dose-escalation stage of the Phase 1a trial has been completed and CTX-471 was observed to be generally well-tolerated.

The dose expansion stage of the trial is currently ongoing and nearing completion. As of October 21, 2021, 36 patients have been enrolled in the study and 25 of those patients are evaluable. Of the 25 evaluable patients, 2 patients had a PR, one of which has been confirmed by RECIST 1.1 and the other PR has been seen at the first tumor evaluation at Week 9, and 11 patients have reached stable disease, leading to a preliminary ORR of 8.0% and a CBR of 52%. The first PR observed in the study was in a patient with advanced small cell lung cancer who had a PR at week 17 and this response has been confirmed at week 25. This patient has now been dosed with CTX-471 for more than one year with a durable PR. In October 2021, a second PR was observed in a patient with metastatic melanoma who was previously treated with nivolumab and progressed on nivolumab. There has been one treatment-related serious adverse event (“SAE”) in the Phase 1b dose expansion stage of the trial. We expect to complete the Phase 1b stage of this trial during the first half of 2022.

Below is a series of CT scan images from the patient with metastatic melanoma who reached a PR. The patient had multiple metastases at baseline and has reached PR based on a 38% decline in linear tumor burden at week nine.



CTX-8371

CTX-8371 is a bispecific antibody that simultaneously targets both PD-1 and PD-L1, the targets of well-known and widely used checkpoint inhibitor antibodies. IND-enabling studies with CTX-8371 were initiated in August 2020 and are generally progressing well except that over the last six months, our contract development manufacturing organization ("CDMO"), Fuji Dyosynth Biotechnologies ("Fuji"), has been experiencing delays with its supply chain management and other challenges, leading to a delay in the GMP manufacturing campaign of CTX-8371. Based on the new timeline provided by Fuji for the GMP manufacturing campaign, we are currently targeting an IND submission for CTX-8371 in the second half of 2022.

Upcoming Milestones

We expect our programs to potentially reach a number of development milestones in the next 12 months, including:

- CTX-009: U.S. IND filing in the fourth quarter of 2021 and initiation of one or more U.S. clinical trials in 2022, subject to the IND going into effect with the FDA.
- CTX-471: Data readout from ongoing Phase 1b clinical trial in the first quarter of 2022 and initiation of a Phase 1b combination trial in 2022.

- CTX-8371: U.S. IND submission and initiation of U.S. clinical trials in 2022, subject to the IND going into effect with the FDA.

Preliminary financial results for the third quarter ended September 30, 2021

We are currently finalizing our financial quarterly closing process for the three months ended September 30, 2021. While complete financial information and operating data are not yet available, we estimate that cash and cash equivalents are expected to be $25.5 million. However, our actual results may differ materially from this estimate due to the completion of our financial closing procedures, final adjustments and other developments that may arise between now and the time the financial results for the three and nine months ended September 30, 2021 are finalized. The estimate for the three months ended September 30, 2021 is not indicative of any future period and should be read together with "Risk factors," "Special note regarding forward-looking statements" and our financial statements and related notes included elsewhere in this prospectus supplement.

We expect our closing procedures with respect to the three and nine month period ended September 30, 2021 to be completed in November 2021. Accordingly, our financial statements as of and for the three months ended September 30, 2021 will not be available until after this offering is completed.

Corporate information

We were originally incorporated in the State of Delaware on March 20, 2018 under the name Olivia Ventures, Inc. Olivia Ventures, Inc. was a "shell" company registered under the Exchange Act, with no specific business plan or purpose until it began operating the business of Compass OpCo following the closing of the merger of our wholly-owned subsidiary, Compass Acquisitions, with and into Compass OpCo, with Compass OpCo continuing as the surviving entity and our wholly owned subsidiary, or the Merger, on June 17, 2020. Compass OpCo, a clinical-stage biotechnology company developing proprietary antibody therapeutics intended to engage the immune system to treat both solid tumors and hematological malignancies, was originally formed as a private limited liability company under the name Compass Therapeutics, LLC in the State of Delaware on January 29, 2014. As a result of the Merger, we acquired the business of Compass OpCo, and continued the existing business operations of Compass OpCo as a public reporting company under the name Compass Therapeutics, Inc.

Our corporate headquarters are located at 80 Guest Street, Suite 601, Boston, Massachusetts 02135, and our telephone number is (617) 500-8099. We maintain a website at www.compasstherapeutics.com, where we regularly post copies of our press releases as well as additional information about our company. Our filings with the SEC are available free of charge through the website as soon as reasonably practicable after being electronically filed with or furnished to the SEC. Information contained in our website is not a part of, nor incorporated by reference into, this prospectus or our other filings with the SEC, and should not be relied upon.

Emerging growth company and smaller reporting company

We are an "emerging growth company" as defined in the Jumpstart Our Business Startups Act of 2012, or the JOBS Act. We may take advantage of certain exemptions from various public company reporting requirements, including not being required to have our internal control over financial reporting audited by our independent registered public accounting firm under Section 404 of the Sarbanes-Oxley Act of 2002, or 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 executive compensation and any golden parachute payments. We may take advantage of these exemptions until December 31, 2024 or until we are no longer an "emerging growth company," whichever is earlier. We will cease to be an emerging growth company prior to the end of such period if certain earlier events occur, including

if we become a "large accelerated filer" as defined in Rule 12b-2 under the Securities Exchange Act of 1934, as amended, or the Exchange Act, our annual gross revenues exceed $1.07 billion or we issue more than $1.0 billion of non-convertible debt in any three-year period.

In addition, the JOBS Act provides that an emerging growth company can take advantage of an extended transition period for complying with new or revised accounting standards. This provision allows an emerging growth company to delay the adoption of accounting standards that have different effective dates for public and private companies until those standards would otherwise apply to private companies. We have elected not to "opt out" of such extended transition period, which means that when a standard is issued or revised and it has different application dates for public or private companies, we will adopt the new or revised standard at the time private companies adopt the new or revised standard and will do so until such time that we either (i) irrevocably elect to "opt out" of such extended transition period or (ii) no longer qualify as an emerging growth company.

We are also a "smaller reporting company" as defined in the Exchange Act. We may continue to be a smaller reporting company even after we are no longer an emerging growth company. We may take advantage of certain of the scaled disclosures available to smaller reporting companies and will be able to take advantage of these scaled disclosures for so long as our voting and non-voting common stock held by non-affiliates is less than $250.0 million measured on the last business day of our second fiscal quarter, or our annual revenue is less than $100.0 million during the most recently completed fiscal year and our voting and non-voting common stock held by non-affiliates is less than $700.0 million measured on the last business day of our second fiscal quarter.

Preliminary Illustrative Capitalization

In connection with this offering and our plans to list on the Nasdaq Capital Market, we are required to raise at least $40.0 million in gross proceeds in this offering. The following table sets forth our cash and cash equivalents and capitalization as of June 30, 2021 on (i) an actual basis; and (ii) on an as adjusted basis to give further effect to the issuance and sale of $125.0 million of shares of common stock in this offering, based on a public offering price of $3.50 per share.

	As of June 30, 2021	
(In thousands, except share and per share data)	**Actual (Unaudited)**	**As Adjusted**
Cash and cash equivalents	$ 31,208	$ 148,485
Long-term debt (including current portion)	$ 5,611	$ 5,611
Stockholders' equity:		
Common stock, $0.0001 par value; 300,000,000 shares authorized, 62,319,147 shares issued and outstanding, actual; 98,038,147 shares issued and outstanding, as adjusted	$ 6	$ 10
Preferred stock, $0.0001 par value; 10,000,000 shares authorized and no shares issued and outstanding, actual and as adjusted	—	—
Additional paid in capital	243,503	360,776
Accumulated deficit	(214,634)	(214,634)
Total stockholders' equity	$ 28,875	$ 146,152
Total capitalization	$ 34,486	$ 151,763

The number of shares of our common stock to be outstanding after this offering set forth above is based on 62,323,147 shares of our common stock outstanding as of June 30, 2021, and excludes:

- 3,372,083 shares of our common stock issuable upon the exercise of stock options outstanding as of June 30, 2021, at a weighted-average exercise price of $5.15 per share; and
- 1,643,436 shares of our common stock reserved for future issuance under our 2020 Stock Option and Incentive Plan, or 2020 Plan, as of June 30, 2021, as well as any automatic increases in the number of shares of our common stock reserved for future issuance under our 2020 Plan.

THE OFFERING

Common stock offered by us	35,715,000 shares.
Option to purchase additional shares	The underwriters have been granted an option to purchase up to an additional 5,357,250 shares of our common stock from us. This option is exercisable, in whole or in part, for a period of 30 days following the date of this prospectus supplement.
Common stock to be outstanding immediately after this offering	98,038,147 shares (or 103,395,397 shares if the underwriters exercise their option to purchase additional shares in full).
Use of proceeds	We estimate that our net proceeds from this offering will be approximately $117.3 million (or approximately $134.9 million if the underwriters' option to purchase additional shares of our common stock from us is exercised in full), after deducting underwriting discounts and commissions and estimated offering expenses payable by us. The principal purposes of this offering are to obtain additional capital to support our operations and to secure the listing of our common stock on The Nasdaq Capital Market, or Nasdaq. We expect to use the net proceeds of this offering, in addition to our existing cash resources, for funding of ongoing operations including clinical trials for the programs noted in this prospectus, which may change based on clinical and preclinical results. See "Use of proceeds" for additional information.
Risk factors	See "Risk factors" beginning on page S-15 of this prospectus supplement and other information included and incorporated by reference in this prospectus supplement and the accompanying prospectus for a discussion of factors that you should carefully consider before deciding to invest in our common stock.
Market symbol	Our common stock currently is quoted on the OTCQB Market under the symbol "CMPX." In connection with this offering, our common stock has been approved for listing on Nasdaq under the symbol "CMPX."

The number of shares of our common stock to be outstanding after this offering set forth above is based on 62,323,147 shares of our common stock outstanding as of June 30, 2021 and excludes:

- 3,372,083 shares of our common stock issuable upon the exercise of stock options outstanding as of June 30, 2021, at a weighted-average exercise price of $5.15 per share; and
- 1,643,436 shares of our common stock reserved for future issuance under our 2020 Stock Option and Incentive Plan, or 2020 Plan, as of June 30, 2021, as well as any automatic increases in the number of shares of our common stock reserved for future issuance under our 2020 Plan.

Unless otherwise indicated, all information in this prospectus supplement assumes no exercise of the outstanding options described above after June 30, 2021 and no exercise by the underwriters of their option to purchase additional shares of our common stock.

RISK FACTORS

Investing in our common stock involves a high degree of risk. Before making an investment decision, you should carefully consider the risks described below and in our most recent Annual Report on Form 10-K for the year ended December 31, 2020, as updated or superseded by the risks and uncertainties described in our subsequent filings under the Exchange Act, each of which is incorporated by reference into this prospectus supplement and the accompanying prospectus, and all of the other information in this prospectus supplement and the accompanying prospectus, including our financial statements and related notes incorporated by reference in this prospectus supplement and the accompanying prospectus. If any of these risks is realized, our business, financial condition, results of operations and prospects could be harmed. In that event, the trading price of our common stock could decline and you could lose part or all of your investment. Additional risks and uncertainties that are not yet identified or that we think are immaterial may also harm our business, operating results and financial condition and could result in a complete loss of your investment.

Risks related to our common stock

We may not be able to meet the continued listing requirements for Nasdaq or another nationally recognized stock exchange, which could limit investors' ability to make transactions in our securities and subject us to additional trading restrictions.

Our common stock is quoted on the OTC Market Group's OTCQB ® Market quotation system under the ticker symbol "CMPX." In connection with this offering, our common stock has been approved for listing on Nasdaq under the symbol "CMPX."

Further, in order to remain listed on Nasdaq, we will be required to meet the continued listing requirements of Nasdaq or any other U.S. or nationally recognized stock exchange to which we may apply and be approved for listing. We may be unable to satisfy these continued listing requirements, and there is no guarantee that our common stock will remain listed on Nasdaq or any other U.S. or nationally recognized stock exchange. If, after listing, our common stock is delisted from Nasdaq or any other U.S. or nationally recognized stock exchange, we could face significant material adverse consequences, including:

- a limited availability of market quotations for our common stock;
- reduced liquidity with respect to the market for our common stock;
- a determination that our common stock is a "penny stock," which will require brokers trading in our common stock to adhere to different rules, possibly resulting in a reduced level of trading activity in the secondary trading market for our common stock;
- a limited amount of news and analyst coverage; and
- decreased ability to issue additional shares of our common stock or obtain additional financing in the future.

An active trading market for our common stock may never develop following this offering.

Prior to this offering, trading in our common stock on the OTC Market Group's OTCQB ® Market quotation system has been limited and sporadic. An active trading market for our common stock may never develop or be sustained, which may affect your ability to sell your common stock and could depress the market price of your common stock. In connection with this offering, our common stock has been approved for listing on Nasdaq under the symbol "CMPX." Listing on Nasdaq may not ensure that an actual market will develop for our common stock. As a result, no assurances can be given that you will be able to readily sell your common stock at a price equal to or above the price you paid.

Risks related to this offering

We have broad discretion in the use of the net proceeds from this offering and may not use them effectively.

Our management will have broad discretion in the application of the net proceeds from this offering and could spend the net proceeds in ways that do not improve our results of operations or enhance the value of our common stock. Furthermore, you will not have the opportunity as part of your investment decision to assess whether such proceeds are being used appropriately. Because of the number and variability of factors that will determine our use of our cash and cash equivalents, including the net proceeds from this offering, their ultimate use may vary substantially from their currently intended use. The failure by our management to apply these funds effectively could result in financial losses that could have a material adverse effect on our business, cause the price of our common stock to decline and delay the development of our drug candidates. Pending their use, we may invest the net proceeds from this offering in short-term, investment-grade, interest-bearing instruments, which may not yield a favorable return to our stockholders.

If you purchase shares of common stock in this offering, you will suffer immediate dilution of your investment.

The price of our common stock in this offering is higher than the net tangible book value per share of our common stock. Therefore, if you purchase shares of our common stock in this offering, you will pay a price per share that substantially exceeds our net tangible book value per share after this offering. Based on the public offering price of $3.50 per share, our as adjusted net tangible book value as of June 30, 2021 would have been $146.2 million, or $1.49 per share, resulting in an immediate increase in the net tangible book value per share of $1.03 to existing stockholders and an immediate dilution of $2.01 in net tangible book value per share to investors purchasing common stock in this offering, representing the difference between our as adjusted net tangible book value per share after giving effect to this offering and the assumed public offering price. To the extent outstanding stock options or warrants are exercised, there will be further dilution to new investors. See “Dilution.”

You may experience future dilution as a result of future equity offerings.

In order to raise additional capital, we expect to offer additional shares of our common stock or other securities convertible into or exchangeable for our common stock in the future. We cannot assure you that we will be able to sell shares or other securities in any other offering at a price per share that is equal to or greater than the price per share paid by investors in this offering, and investors purchasing shares or other securities in the future could have rights superior to existing stockholders. The price per share at which we sell additional shares of our common stock or other securities convertible into or exchangeable for our common stock in future transactions may be higher or lower than the price per share in this offering.

We do not intend to pay dividends on our common stock so any returns will be limited to the value of our stock.

You should not rely on an investment in our common stock to provide dividend income. We do not anticipate that we will pay any cash dividends to holders of our common stock in the foreseeable future. Instead, we plan to retain any earnings to maintain and expand our operations. In addition, our 2018 Credit Facility with Pacific Western Bank contains, and any future debt financing arrangement we enter into may contain, terms prohibiting or limiting the amount of dividends that may be declared or paid on our common stock. Accordingly, investors must rely on sales of their common stock after price appreciation, which may never occur, as the only way to realize any return on their investment. As a result, investors seeking cash dividends should not purchase our common stock.

The price of our stock may be volatile, and our stockholders could lose all or part of their investment.

The trading price of our common stock is likely to be volatile and could be subject to fluctuations in response to various factors, some of which are beyond our control, including limited trading volume. Since our

common stock began trading on the OTCQB Market on April 5, 2021, our stock price has traded at prices as low as $2.01 per share and as high as $11.00 per share through October 29, 2021. In addition to the factors discussed in this "Risk factors" section and in our most recent Annual Report on Form 10-K for the year ended December 31, 2020, these factors include:

- results of clinical trials of our product candidates;
- the timing of the release of results of our clinical trials;
- results of clinical trials of our competitors' products;
- safety issues with respect to our products or our competitors' products;
- regulatory actions with respect to our products or our competitors' products;
- actual or anticipated fluctuations in our financial condition and operating results;
- publication of research reports by securities analysts about us or our competitors or our industry;
- our failure or the failure of our competitors to meet analysts' projections or guidance that we or our competitors may give to the market;
- additions and departures of key personnel;
- strategic decisions by us or our competitors, such as acquisitions, divestitures, spin-offs, joint ventures, strategic investments or changes in business strategy;
- the passage of legislation or other regulatory developments affecting us or our industry;
- fluctuations in the valuation of companies perceived by investors to be comparable to us;
- sales of our common stock by us, our insiders or our other stockholders;
- speculation in the press or investment community;
- our ability to continue as a going concern;
- announcement or expectation of additional financing efforts;
- changes in accounting principles;
- terrorist acts, acts of war or periods of widespread civil unrest;
- natural disasters and other calamities;
- changes in market conditions for biopharmaceutical stocks; and
- changes in general market and economic conditions.

In addition, the stock market has recently experienced significant volatility, including as a result of the COVID-19 pandemic and particularly with respect to pharmaceutical, biotechnology and other life sciences company stocks. The volatility of pharmaceutical, biotechnology and other life sciences company stocks often does not relate to the operating performance of the companies represented by the stock. As we operate in a single industry, we are especially vulnerable to these factors to the extent that they affect our industry or our products, or to a lesser extent our markets. In the past, securities class action litigation has often been initiated against companies following periods of volatility in their stock price. This type of litigation could result in substantial costs and divert our management's attention and resources, and could also require us to make substantial payments to satisfy judgments or to settle litigation.

Sales of a substantial number of our common stock by our existing shareholders in the public market could cause our stock price to fall.

If our existing shareholders sell, or indicate an intention to sell, substantial amounts of our common stock in the public market, the trading price of our common stock could decline. In addition, a substantial number of

shares of common stock are subject to outstanding options or will become eligible for sale in the public market to the extent permitted by the provisions of various vesting schedules. If these additional shares of common stock are sold, or if it is perceived that they will be sold, in the public market, the trading price of our common stock could decline.

We, our executive officers and directors and certain of our stockholders have agreed for a period of 90 days from the date of this prospectus supplement, without the prior written consent of SVB Leerink LLC, with certain limited exceptions, not to offer, pledge, sell, contract to sell, or otherwise dispose of any shares of our common stock. The lock-up provisions apply to common stock and to securities convertible into or exchangeable or exercisable for common stock. They also apply to common stock owned now or acquired later by the person executing the lock-up agreement or for which the person executing the lock-up agreement later acquires the power of disposition.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus supplement, the accompanying prospectus, the documents incorporated by reference herein and therein contain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, or the Securities Act, and Section 21E of the Exchange Act, and the Private Securities Litigation Reform Act of 1995. These statements are based on our management's current beliefs, expectations and assumptions about future events, conditions and results and on information currently available to us. All statements other than statements of historical facts contained in this prospectus supplement and the accompanying prospectus, including statements regarding our strategy, future operations, future financial position, future revenue, projected costs, prospects, plan, objectives of management, results of preclinical studies or clinical trials and expected market growth are forward-looking statements.

In some cases, you can identify forward-looking statements by terms such as "may," "will," "should," "would," "expect," "plan," "anticipate," "could," "intend," "target," "project," "contemplate," "believe," "estimate," "predict," "potential," or "continue" or the negative of these terms or other similar expressions. Forward-looking statements contained in this report include, but are not limited to, statements about:

- our ability to initiate and conduct clinical testing for our product candidates, including the initiation of clinical trials in the U.S. for CTX-009, using trial designs that we have envisioned;
- our interactions with regulatory agencies in relation to the initiation and conduct of our clinical trials, as well as our regulatory strategies with respect to our product candidates;
- the ability of our clinical trials to demonstrate safety and efficacy of our product candidates, and other positive results;
- the timing and focus of our future clinical trials, and the reporting of data from those trials;
- our plans relating to commercializing our product candidates, if approved, including the geographic areas of focus and sales strategy;
- the expected potential benefits of strategic collaborations with third parties and our ability to attract collaborators with development,
- regulatory and commercialization expertise;
- our estimates of the number of patients in the United States who suffer from the diseases we are targeting and the number of patients that will enroll in our clinical trials;
- the size of the market opportunity for our product candidates in each of the diseases we are targeting;
- our ability to expand our product candidates into additional indications and patient populations;
- our ability to integrate the business and asset of TRIGR with our own business and assets;
- our ability to continue to develop the asset that we acquired in the TRIGR acquisition;
- the success of competing therapies that are or may become available;
- the beneficial characteristics, safety, efficacy, and therapeutic effects of our product candidates;
- the timing or likelihood of regulatory filings and approvals, including our expectation to seek special designations, such as orphan drug designation, or accelerated approval pathways, for our product candidates for various diseases;
- our ability to obtain and maintain regulatory approval of our product candidates;
- our plans relating to the further development and manufacturing of our product candidates, including additional indications that we may pursue;
- existing regulations and regulatory developments in the United States and other jurisdictions;
- our continued reliance on third parties to conduct additional clinical trials of our product candidates, and for the manufacture of our product candidates for preclinical studies and clinical trials;

- our plans and ability to obtain or protect intellectual property rights, including extensions of existing patent terms where available and the outcome of our ongoing arbitration proceedings;
- the need to hire additional personnel and our ability to attract and retain such personnel;
- the accuracy of our estimates regarding expenses, future revenue, capital requirements, and needs for additional financing;
- our financial performance;
- the impact of the outbreak of the novel strain of coronavirus (COVID-19) and associated containment and remediation efforts;
- the sufficiency of our existing cash and cash equivalents to fund our future operating expenses and capital expenditure requirements; and
- our expectations regarding the period during which we will qualify as an emerging growth company under the Jumpstart Our Business Startups Act of 2012 (JOBS Act) and as a "smaller reporting company" under the Exchange Act.

All of our forward-looking statements are as of the date of this prospectus supplement only. In each case, actual results may differ materially from such forward-looking information. We can give no assurance that such expectations or forward-looking statements will prove to be correct. An occurrence of or any material adverse change in one or more of the risk factors or risks and uncertainties referred to in this prospectus supplement or included in our other public disclosures or our other periodic reports or other documents or filings filed with or furnished to the SEC, could materially and adversely affect our business, prospects, financial condition and results of operations. Except as required by law, we do not undertake or plan to update or revise any such forward-looking statements to reflect actual results, changes in plans, assumptions, estimates or projections or other circumstances affecting such forward-looking statements occurring after the date of this prospectus supplement, even if such results, changes or circumstances make it clear that any forward-looking information will not be realized. Any public statements or disclosures by us following this prospectus supplement that modify or impact any of the forward-looking statements contained herein will be deemed to modify or supersede such statements in this prospectus supplement.

USE OF PROCEEDS

We expect that the net proceeds from our issuance and sale of shares of our common stock in this offering will be approximately $117.3 million (or approximately $134.9 million if the underwriters exercise their option to purchase additional shares of our common stock in full), after deducting underwriting discounts and commissions and estimated offering expenses payable by us.

The principal purposes of this offering are to obtain additional capital to support our operations and to secure the listing of our common stock on Nasdaq. We expect to use the net proceeds of this offering, in addition to our existing cash resources, for funding of ongoing operations including clinical trials for the programs noted in this prospectus, which may change based on clinical and preclinical results.

The amounts and timing of our actual expenditures will depend on numerous factors, including the time and cost necessary to conduct our planned clinical trials, the results of our planned clinical trials and other factors described in the section titled “Risk factors” in this prospectus supplement and the accompanying prospectus, as well as the amount of cash used in our operations and any unforeseen cash needs. Therefore, our actual expenditures may differ materially from the estimates described above. We may find it necessary or advisable to use the net proceeds for other purposes, and we will have broad discretion in the application of the net proceeds.

We will have broad discretion over how to use the net proceeds to us from this offering. We intend to invest the net proceeds to us from the offering that are not used as described above in short-term, investment-grade, interest-bearing instruments.

DIVIDEND POLICY

We have never declared or paid cash dividends on our capital stock. We intend to retain all of our future earnings, if any, to finance the growth and development of our business. We do not intend to pay cash dividends to our stockholders in the foreseeable future.

In addition, our 2018 Credit Facility with Pacific Western Bank contains, and any future debt financing arrangement we enter into may contain, terms prohibiting or limiting the amount of dividends that may be declared or paid on our common stock. Accordingly, investors must rely on sales of their common stock after price appreciation, which may never occur, as the only way to realize any return on their investment. As a result, investors seeking cash dividends should not purchase our common stock.

DILUTION

As of June 30, 2021, we had a historical net tangible book value of $28.9 million, or $0.46 per share of common stock, based on 62,323,147 shares of common stock outstanding. Our historical net tangible book value per share represents total tangible assets less total liabilities, divided by the number of shares of common stock outstanding.

After giving effect to the sale by us of 35,715,000 shares of common stock in this offering at the public offering price of $3.50 per share, and after deducting underwriting discounts and commissions and estimated offering expenses payable by us, our as adjusted net tangible book value as of June 30, 2021 would have been $146.2 million, or $1.49 per share. This amount represents an immediate increase in our net tangible book value of $1.03 per share to our existing stockholders and an immediate dilution in our net tangible book value of $2.01 per share to investors purchasing common stock in this offering. We determine dilution by subtracting our as adjusted net tangible book value per share after this offering from the amount of cash paid by an investor for a share of common stock in this offering. The following table illustrates this dilution on a per share basis:

Public offering price per share		$3.50
Historical net tangible book value per share as of June 30, 2021	0.46	
Increase in net tangible book value per share attributable to investors purchasing shares in this offering	1.03	
As adjusted net tangible book value per share after this offering		1.49
Dilution in net tangible book value per share to investors purchasing shares in this offering		$2.01

If the underwriters exercise in full their option to purchase up to 5,357,250 of additional shares of common stock at the public offering price of $3.50 per share, the as adjusted net tangible book value after this offering would be $1.58 per share, representing an increase in net tangible book value of $1.12 per share to existing stockholders and immediate dilution in net tangible book value of $1.92 per share to investors purchasing our common stock in this offering at the public offering price.

The number of shares of our common stock to be outstanding after this offering set forth above is based on 62,323,147 shares of our common stock outstanding as of June 30, 2021 and excludes:

- 3,372,083 shares of our common stock issuable upon the exercise of stock options outstanding as of June 30, 2021, at a weighted-average exercise price of $5.15 per share; and
- 1,643,436 shares of our common stock reserved for future issuance under our 2020 Plan as of June 30, 2021, as well as any automatic increases in the number of shares of our common stock reserved for future issuance under our 2020 Plan.

MATERIAL U.S. FEDERAL INCOME TAX CONSIDERATIONS FOR NON-U.S. HOLDERS

The following discussion is a summary of the material U.S. federal income tax considerations for non-U.S. holders (as defined below) with respect to their ownership and disposition of shares of our common stock issued pursuant to this offering. For purposes of this discussion, a non-U.S. holder means a beneficial owner of our common stock that is for U.S. federal income tax purposes:

- a non-resident alien individual;
- a foreign corporation or any other foreign organization taxable as a corporation for U.S. federal income tax purposes; or
- a foreign estate or trust, the income of which is not subject to U.S. federal income tax on a net income basis.

This discussion does not address the tax treatment of partnerships or other entities that are pass-through entities for U.S. federal income tax purposes or persons that hold their common stock through partnerships or other pass-through entities. If an entity treated as a partnership for U.S. federal income tax purposes holds our common stock, the tax treatment of a partner in the partnership will depend on the status of the partner, the activities of the partnership and certain determinations made at the partner level. A partner in a partnership or other pass-through entity that will hold our common stock should consult his, her or its tax advisor regarding the tax consequences of acquiring, holding and disposing of our common stock through a partnership or other pass-through entity, as applicable.

This discussion is based on current provisions of the U.S. Internal Revenue Code of 1986, as amended, or the Code, U.S. Treasury Regulations promulgated thereunder, administrative rulings and judicial decisions, all as in effect as of the date of this prospectus supplement and all of which are subject to change or to differing interpretation, possibly with retroactive effect. Any such change or differing interpretation could alter the tax consequences to non-U.S. holders described in this prospectus supplement. There can be no assurance that the U.S. Internal Revenue Service, or the IRS, will not challenge one or more of the tax consequences described herein. We assume in this discussion that a non-U.S. holder holds shares of our common stock as a capital asset within the meaning of Section 1221 of the Code, generally property held for investment.

This discussion does not address all aspects of U.S. federal income taxation that may be relevant to a particular non-U.S. holder in light of that non-U.S. holder's individual circumstances nor does it address U.S. state, local or non-U.S. taxes, U.S. federal estate or gift tax laws, the alternative minimum tax, the rules regarding qualified small business stock within the meaning of Section 1202 of the Code, the Medicare tax on net investment income or any other aspect of any U.S. federal tax other than the income tax. This discussion also does not consider any specific facts or circumstances that may apply to a non-U.S. holder and does not address the special tax rules applicable to particular non-U.S. holders, such as:

- insurance companies;
- tax-exempt or governmental organizations;
- financial institutions;
- brokers or dealers in securities;
- regulated investment companies;
- pension plans;
- "controlled foreign corporations," "passive foreign investment companies," and corporations that accumulate earnings to avoid U.S. federal income tax;
- "qualified foreign pension funds" as defined in Section 897(I)(2) of the Code and entities all of the interests of which are held by qualified foreign pension funds;
- persons deemed to sell our common stock under the constructive sale provisions of the Code;

- persons that hold our common stock as part of a straddle, hedge, conversion transaction, synthetic security or other integrated investment;
- persons who hold or receive our common stock pursuant to the exercise of any employee stock option or otherwise as compensation; and
- certain U.S. expatriates.

This discussion is for general information only and is not tax advice. Accordingly, all prospective non-U.S. holders of our common stock should consult their tax advisors with respect to the U.S. federal, state, local and non-U.S. tax consequences of the purchase, ownership and disposition of our common stock.

Distributions on Our Common Stock

As described in the "Dividend Policy" section above, we do not anticipate paying any cash dividends to our stockholders in the foreseeable future. Distributions, if any, on our common stock will constitute dividends for U.S. federal income tax purposes to the extent paid from our current or accumulated earnings and profits, as determined under U.S. federal income tax principles. If a distribution exceeds our current and accumulated earnings and profits, the excess will be treated as a tax-free return of the non-U.S. holder's investment, up to such holder's tax basis in the common stock. Any remaining excess will be treated as capital gain, subject to the tax treatment described below in "Gain on Sale or Other Taxable Disposition of Our Common Stock." Any such distributions will also be subject to the discussions below in the sections titled "Backup Withholding and Information Reporting" and "FATCA."

Subject to the discussion in the following two paragraphs in this section, dividends paid to a non-U.S. holder generally will be subject to withholding of U.S. federal income tax at a 30% rate or such lower rate as may be specified by an applicable income tax treaty between the United States and such holder's country of residence. Dividends that are treated as effectively connected with a trade or business conducted by a non-U.S. holder within the United States and, if an applicable income tax treaty so provides, that are attributable to a permanent establishment or a fixed base maintained by the non-U.S. holder within the United States, are generally exempt from the 30% withholding tax if the non-U.S. holder satisfies applicable certification and disclosure requirements. However, such U.S. effectively connected income, net of specified deductions and credits, is generally taxed at the same regular U.S. federal income tax rates applicable to United States persons (as defined in the Code). Any U.S. effectively connected income received by a non-U.S. holder that is a corporation may also, under certain circumstances, be subject to an additional "branch profits tax" at a 30% rate or such lower rate as may be specified by an applicable income tax treaty between the United States and such holder's country of residence.

A non-U.S. holder of our common stock who claims the benefit of an applicable income tax treaty between the United States and such holder's country of residence generally will be required to provide a properly executed IRS Form W-8BEN or W-8BEN-E (or successor form) to the applicable withholding agent and satisfy applicable certification and other requirements. Non-U.S. holders are urged to consult their tax advisors regarding their entitlement to benefits under a relevant income tax treaty. A non-U.S. holder that is eligible for a reduced rate of U.S. withholding tax under an income tax treaty may obtain a refund or credit of any excess amounts withheld by timely filing a U.S. tax return with the IRS.

Gains on Sale or Other Taxable Disposition of Our Common Stock

Subject to the discussions below under "Backup Withholding and Information Reporting" and "FATCA," a non-U.S. holder generally will not be subject to any U.S. federal income or withholding tax on any gain realized upon such holder's sale or other taxable disposition of shares of our common stock unless:

- the gain is effectively connected with the non-U.S. holder's conduct of a U.S. trade or business and, if an applicable income tax treaty so provides, is attributable to a permanent establishment or a fixed base

maintained by such non-U.S. holder in the United States, in which case the non-U.S. holder generally will be taxed on a net income basis at the regular U.S. federal income tax rates applicable to United States persons (as defined in the Code) and, if the non-U.S. holder is a foreign corporation, the branch profits tax described above in "Distributions on Our Common Stock" also may apply;

- the non-U.S. holder is a nonresident alien individual who is present in the United States for 183 days or more in the taxable year of the disposition and certain other conditions are met, in which case the non-U.S. holder will be subject to a 30% tax (or such lower rate as may be specified by an applicable income tax treaty between the United States and such holder's country of residence) on the net gain derived from the disposition, which may be offset by certain U.S. source capital losses of the non-U.S. holder, if any (even though the individual is not considered a resident of the United States), provided that the non-U.S. holder has timely filed U.S. federal income tax returns with respect to such losses; or
- we are, or have been, at any time during the five-year period preceding such sale or other taxable disposition (or the non-U.S. holder's holding period, if shorter) a U.S. real property holding corporation, unless our common stock is regularly traded on an established securities market and the non-U.S. holder holds no more than 5% of our outstanding common stock, directly or indirectly, actually or constructively, during the shorter of the 5-year period ending on the date of the disposition or the period that the non-U.S. holder held our common stock. If we are or were a U.S. real property holding corporation during the relevant period and the foregoing exception does not apply, the non-U.S. holder generally will be taxed on its net gain derived from the disposition at the regular U.S. federal income tax rates applicable to United States persons (as defined in the Code). Generally, a corporation is a U.S. real property holding corporation only if the fair market value of its U.S. real property interests equals or exceeds 50% of the sum of the fair market value of its worldwide real property interests plus its other assets used or held for use in a trade or business. Although there can be no assurance, we do not believe that we are, or have been, a U.S. real property holding corporation, or that we are likely to become one in the future. No assurance can be provided that our common stock will be regularly traded on an established securities market for purposes of the rules described above.

Backup Withholding and Information Reporting

We must report annually to the IRS and to each non-U.S. holder the gross amount of the distributions on our common stock paid to such holder and the tax withheld, if any, with respect to such distributions. Non-U.S. holders may have to comply with specific certification procedures to establish that the holder is not a United States person (as defined in the Code) in order to avoid backup withholding at the applicable rate with respect to dividends on our common stock. Dividends paid to non-U.S. holders subject to withholding of U.S. federal income tax, as described above in "Distributions on Our Common Stock," generally will be exempt from U.S. backup withholding.

Information reporting and backup withholding will generally apply to the proceeds of a disposition of our common stock by a non-U.S. holder effected by or through the U.S. office of any broker, U.S. or foreign, unless the holder certifies its status as a non-U.S. holder and satisfies certain other requirements, or otherwise establishes an exemption. Generally, information reporting and backup withholding will not apply to a payment of disposition proceeds to a non-U.S. holder where the transaction is effected outside the United States through a non-U.S. office of a broker. However, for information reporting purposes, dispositions effected through a non-U.S. office of a broker with substantial U.S. ownership or operations generally will be treated in a manner similar to dispositions effected through a U.S. office of a broker.

Non-U.S. holders should consult their tax advisors regarding the application of the information reporting and backup withholding rules to them. Copies of information returns may be made available to the tax authorities of the country in which the non-U.S. holder resides or is incorporated under the provisions of a specific treaty or agreement. Backup withholding is not an additional tax. Any amounts withheld under the backup withholding rules from a payment to a non-U.S. holder can be refunded or credited against the non-U.S. holder's U.S. federal income tax liability, if any, provided that an appropriate claim is filed with the IRS in a timely manner.

FATCA

Provisions of the Code commonly referred to as the Foreign Account Tax Compliance Act, or FATCA, generally impose a U.S. federal withholding tax at a rate of 30% on payments of dividends on our common stock paid to a foreign entity unless (i) if the foreign entity is a "foreign financial institution," such foreign entity undertakes certain due diligence, reporting, withholding, and certification obligations, (ii) if the foreign entity is not a "foreign financial institution," such foreign entity either certifies it does not have any substantial U.S. owners or furnishes identifying information regarding each substantial U.S. owner and such entity meets certain other specified requirements, or (iii) the foreign entity is otherwise exempt under FATCA. Such withholding may also apply to gross proceeds from the sale or other disposition of our common stock, although under proposed U.S. Treasury Regulations, no withholding would apply to such gross proceeds. The preamble to the proposed regulations specifies that taxpayers (including withholding agents) are permitted to rely on the proposed regulations pending finalization. Under certain circumstances, a non-U.S. holder may be eligible for refunds or credits of this withholding tax. An intergovernmental agreement between the United States and an applicable foreign country may modify the requirements described in this paragraph. Non-U.S. holders should consult their tax advisors regarding the possible implications of this legislation on their investment in our common stock and the entities through which they hold our common stock, including, without limitation, the process and deadlines for meeting the applicable requirements to prevent the imposition of the 30% withholding tax under FATCA.

The preceding discussion of U.S. federal income tax considerations is for general information only. It is not tax advice. Each prospective investor should consult its tax advisor regarding the particular U.S. federal, state and local and non-U.S. tax consequences of purchasing, holding and disposing of our common stock, including the consequences of any proposed change in applicable laws.

UNDERWRITING

SVB Leerink LLC is acting as representative of each of the underwriters named below and as book-running manager for this offering. Subject to the terms and conditions set forth in the underwriting agreement among us and the underwriters, we have agreed to sell to the underwriters, and each of the underwriters has agreed, severally and not jointly, to purchase from us, the number of shares of common stock set forth opposite its name below.

Underwriter	Number of Shares
SVB Leerink LLC	19,643,250
Raymond James & Associates, Inc.	5,357,250
Wedbush Securities Inc.	5,357,250
H.C. Wainwright & Co., LLC	3,571,500
The Benchmark Company	892,875
Roth Capital Partners, LLC	892,875
Total	35,715,000

Subject to the terms and conditions set forth in the underwriting agreement, the underwriters have agreed, severally and not jointly, to purchase all of the shares sold under the underwriting agreement if any of the shares are purchased. If an underwriter defaults, the underwriting agreement provides that the purchase commitments of the non-defaulting underwriters may be increased or the underwriting agreement may be terminated.

We have agreed to indemnify the underwriters against certain liabilities, including liabilities under the Securities Act, or to contribute to payments the underwriters may be required to make in respect of those liabilities.

The underwriters are offering the shares, subject to prior sale, when, as and if issued to and accepted by them, subject to approval of legal matters by their counsel, including the validity of the shares, and subject to other conditions contained in the underwriting agreement, such as the receipt by the underwriters of officers' certificates and legal opinions. The underwriters reserve the right to withdraw, cancel or modify offers to the public and to reject orders in whole or in part.

Discounts and Commissions

The representative has advised us that the underwriters propose initially to offer the shares to the public at the initial public offering price set forth on the cover page of this prospectus supplement and to dealers at that price less a concession not in excess of $0.126 per share. After the initial offering of the shares, the public offering price, concession or any other term of this offering may be changed by the representative.

The following table shows the public offering price, underwriting discounts and commissions and proceeds, before expenses, to us. The information assumes either no exercise or full exercise by the underwriters of their option to purchase additional shares of our common stock.

	Per Share	Total	
		Without Option	With Option
Public offering price	$ 3.50	$ 125,002,500	$ 143,752,875
Underwriting discounts and commissions	$ 0.21	$ 7,500,150	$ 8,625,173
Proceeds, before expenses, to us	$ 3.29	$ 117,502,350	$ 135,127,702

We estimate expenses payable by us in connection with this offering, other than the underwriting discounts and commissions referred to above, will be approximately $0.2 million. We also have agreed to reimburse the underwriters for their FINRA counsel fee. In accordance with FINRA Rule 5110, this reimbursed fee is deemed underwriting compensation for this offering.

Option to Purchase Additional Shares

We have granted an option to the underwriters, exercisable for 30 days after the date of this prospectus supplement, to purchase up to 5,357,250 additional shares at the public offering price, less underwriting discounts and commissions. If the underwriters exercise this option, each underwriter will be obligated, subject to the conditions contained in the underwriting agreement, to purchase a number of additional shares proportionate to that underwriter's initial amount reflected in the above table.

No Sales of Similar Securities

We, our executive officers and directors and certain of our stockholders have agreed for a period of 90 days from the date of this prospectus supplement, without the prior written consent of SVB Leerink LLC, with certain limited exceptions, not to offer, pledge, sell, contract to sell, or otherwise dispose of any shares of our common stock.

The lock-up provisions apply to common stock and to securities convertible into or exchangeable or exercisable for common stock. They also apply to common stock owned now or acquired later by the person executing the lock-up agreement or for which the person executing the lock-up agreement later acquires the power of disposition.

Stock Exchange Listing

Our common stock is currently listed for quotation on the OTCQB Market under the symbol "CMPX." In connection with this offering, our common stock has been approved for listing on Nasdaq under the symbol "CMPX."

Price Stabilization, Short Positions and Penalty Bids

Until the distribution of the shares is completed, SEC rules may limit underwriters and selling group members from bidding for and purchasing our common stock. However, the representative may engage in transactions that stabilize the price of the common stock, such as bids or purchases to peg, fix or maintain that price.

In connection with this offering, the underwriters may purchase and sell our common stock in the open market. These transactions may include short sales, purchases on the open market to cover positions created by short sales and stabilizing transactions. Short sales involve the sale by the underwriters of a greater number of shares than they are required to purchase in this offering. "Covered" short sales are sales made in an amount not greater than the underwriters' option to purchase additional shares described above. The underwriters may close out any covered short position by either exercising their option to purchase additional shares or purchasing shares in the open market. In determining the source of shares to close out the covered short position, the underwriters will consider, among other things, the price of shares available for purchase in the open market as compared to the price at which they may purchase shares through the option to purchase additional shares granted to them under the underwriting agreement described above. "Naked" short sales are sales in excess of such option. The underwriters must close out any naked short position by purchasing shares in the open market. A naked short position is more likely to be created if the underwriters are concerned that there may be downward pressure on the price of our common stock in the open market after pricing that could adversely affect investors who purchase in this offering. Stabilizing transactions consist of various bids for or purchases of shares of common stock made by the underwriters in the open market prior to the closing of this offering.

The underwriters may also impose a penalty bid. This occurs when a particular underwriter repays to the underwriters a portion of the underwriting discount received by it because the representative has repurchased shares sold by or for the account of such underwriter in stabilizing or short covering transactions.

Similar to other purchase transactions, the underwriters' purchases to cover the syndicate short sales may have the effect of raising or maintaining the market price of our common stock or preventing or retarding a decline in the market price of our common stock. As a result, the price of our common stock may be higher than the price

that might otherwise exist in the open market. The underwriters may conduct these transactions on Nasdaq, in the over-the-counter market or otherwise.

Neither we nor any of the underwriters make any representation or prediction as to the direction or magnitude of any effect that the transactions described above may have on the price of our common stock. In addition, neither we nor any of the underwriters make any representation that the representative will engage in these transactions or that these transactions, once commenced, will not be discontinued without notice.

The underwriters may also engage in passive market making transactions in our common stock on Nasdaq in accordance with Rule 103 of Regulation M during a period before the commencement of offers or sales of shares of our common stock in this offering and extending through the completion of distribution. A passive market maker must display its bid at a price not in excess of the highest independent bid of that security. However, if all independent bids are lowered below the passive market maker's bid, then that bid must then be lowered when specified purchase limits are exceeded.

Electronic Distribution

In connection with this offering, certain of the underwriters or securities dealers may distribute prospectuses by electronic means, such as e-mail.

Other Relationships

The underwriters and certain of their affiliates are full service financial institutions engaged in various activities, which may include securities trading, commercial and investment banking, financial advisory, investment management, investment research, principal investment, hedging, financing and brokerage activities. Some of the underwriters and certain of their affiliates may in the future engage in investment banking and other commercial dealings in the ordinary course of business with us and our affiliates, for which they may in the future receive customary fees, commissions and expenses.

In addition, in the ordinary course of their business activities, the underwriters and their affiliates may make or hold a broad array of investments and actively trade debt and equity securities (or related derivative securities) and financial instruments (including bank loans) for their own account and for the accounts of their customers. Such investments and securities activities may involve securities and/or instruments of ours or our affiliates. The underwriters and their affiliates may also make investment recommendations and/or publish or express independent research views in respect of such securities or financial instruments and may hold, or recommend to clients that they acquire, long and/or short positions in such securities and instruments.

Selling Restrictions

Notice to Prospective Investors in the European Economic Area

In relation to each Member State of the European Economic Area (each, a "Relevant State"), no shares have been offered or will be offered pursuant to the offering to the public in that Relevant State prior to the publication of a prospectus in relation to the shares which has been approved by the competent authority in that Relevant State or, where appropriate, approved in another Relevant State and notified to the competent authority in that Relevant State, all in accordance with the Prospectus Regulation, except that shares may be offered to the public in that Relevant State at any time:

A. to any legal entity which is a qualified investor as defined under Article 2 of the Prospectus Regulation;

B. to fewer than 150 natural or legal persons (other than qualified investors as defined under Article 2 of the Prospectus Regulation), subject to obtaining the prior consent of the representatives for any such offer; or

C. in any other circumstances falling within Article 1(4) of the Prospectus Regulation,

provided that no such offer of shares shall require us or any of the representatives to publish a prospectus pursuant to Article 3 of the Prospectus Regulation or supplement a prospectus pursuant to Article 23 of the Prospectus Regulation.

For the purposes of this provision, the expression an "offer to the public" in relation to any shares in any Relevant State means the communication in any form and by any means of sufficient information on the terms of the offer and any shares to be offered so as to enable an investor to decide to purchase or subscribe for any shares, and the expression "Prospectus Regulation" means Regulation (EU) 2017/1129, as amended.

Notice to Prospective Investors in the United Kingdom

No shares have been offered or will be offered pursuant to the offering to the public in the United Kingdom prior to the publication of a prospectus in relation to the Shares which has been approved by the Financial Conduct Authority, except that the shares may be offered to the public in the United Kingdom at any time:

A. to any legal entity which is a qualified investor as defined under Article 2 of the UK Prospectus Regulation;

B. to fewer than 150 natural or legal persons (other than qualified investors as defined under Article 2 of the UK Prospectus Regulation), subject to obtaining the prior consent of the representatives for any such offer; or

C. in any other circumstances falling within Section 86 of the Financial Services and Markets Act 2000 (the "FMSA"),

provided that no such offer of the shares shall require us or any representative to publish a prospectus pursuant to Section 85 of the FSMA or supplement a prospectus pursuant to Article 23 of the UK Prospectus Regulation. For the purposes of this provision, the expression an "offer to the public" in relation to the shares in the United Kingdom means the communication in any form and by any means of sufficient information on the terms of the offer and any shares to be offered so as to enable an investor to decide to purchase or subscribe for any shares and the expression "UK Prospectus Regulation" means Regulation (EU) 2017/1129 as it forms part of domestic law by virtue of the European Union (Withdrawal) Act 2018.

Notice to Prospective Investors in Canada

The shares may be sold only to purchasers purchasing, or deemed to be purchasing, as principal that are accredited investors, as defined in National Instrument 45-106 Prospectus Exemptions or subsection 73.3(1) of the Securities Act (Ontario), and are permitted clients, as defined in National Instrument 31-103 Registration Requirements, Exemptions and Ongoing Registrant Obligations. Any resale of the shares must be made in accordance with an exemption from, or in a transaction not subject to, the prospectus requirements of applicable securities laws.

Securities legislation in certain provinces or territories of Canada may provide a purchaser with remedies for rescission or damages if this prospectus supplement (including any amendment thereto) contains a misrepresentation, provided that the remedies for rescission or damages are exercised by the purchaser within the time limit prescribed by the securities legislation of the purchaser's province or territory. The purchaser should refer to any applicable provisions of the securities legislation of the purchaser's province or territory for particulars of these rights or consult with a legal advisor.

Pursuant to section 3A.3 of National Instrument 33-105 Underwriting Conflicts (NI 33-105), the underwriters are not required to comply with the disclosure requirements of NI 33-105 regarding underwriter conflicts of interest in connection with this offering.

LEGAL MATTERS

Goodwin Procter LLP, Boston, Massachusetts, which has acted as our counsel in connection with this offering, will pass upon the validity of the shares of common stock offered hereby. Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., Boston, Massachusetts, has acted as counsel to the underwriters in connection with this offering.

EXPERTS

The consolidated financial statements of Compass Therapeutics, Inc. and subsidiaries as of December 31, 2020 and 2019 and for the years then ended, incorporated in this prospectus supplement by reference from the Company's Annual Report on Form 10-K for the year ended December 31, 2020 have been audited by CohnReznick LLP, an independent registered public accounting firm, as set forth in their report thereon, included therein, and incorporated herein by reference. Such consolidated financial statements are incorporated herein by reference in reliance upon such report given on the authority of such firm as experts in accounting and auditing.

The financial statements of Trigr Therapeutics, Inc. as of December 31, 2020 and for the year then ended, incorporated in this prospectus supplement by reference from the Company's Current Report on Form 8-K/A filed on August 16, 2021 have been audited by CohnReznick LLP, an independent registered public accounting firm, as set forth in their report thereon, which includes an explanatory paragraph relating to Trigr Therapeutics, Inc.'s ability to continue as a going concern, included therein, and incorporated herein by reference. Such financial statements are incorporated herein by reference in reliance upon such report given on the authority of such firm as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

This prospectus supplement and the accompanying prospectus are part of a registration statement on Form S-3 we filed with the SEC under the Securities Act and do not contain all of the information set forth in the registration statement and the exhibits thereto. Whenever a reference is made in this prospectus supplement or the accompanying prospectus to any of our contracts, agreements or other documents, the reference may not be complete and you should refer to the exhibits that are a part of the registration statement or the exhibits to the reports or other documents incorporated by reference therein. For further information with respect to us and the common stock we are offering under this prospectus supplement, we refer you to the registration statement and the exhibits and schedules filed as a part of the registration statement.

We file annual, quarterly and current reports, proxy statements and other information with the SEC. The SEC maintains a website that contains reports, proxy statements and other information regarding issuers that file electronically with the SEC, including us. The address of the SEC website is www.sec.gov.

Copies of certain information filed by us with the SEC are also available on our website at www.compasstherapeutics.com. Information contained in or accessible through our website does not constitute a part of this prospectus supplement or the accompanying prospectus and is not incorporated by reference into this prospectus supplement or the accompanying prospectus.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC allows us to "incorporate by reference" information from other documents that we file with it, which means that we can disclose important information to you by referring you to those documents instead of having to repeat the information in this prospectus supplement or the accompanying prospectus. The information incorporated by reference is considered to be part of this prospectus supplement and the accompanying prospectus, and later information that we file with the SEC will automatically update and supersede this information. We incorporate by reference the documents listed below and any future filings made by us with the SEC (other than Current Reports or portions thereof furnished under Item 2.02 or Item 7.01 of Form 8-K and exhibits filed on such form that are related to such items and other portions of documents that are furnished, but not filed, pursuant to applicable rules promulgated by the SEC) that are filed by us with the SEC pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act after the filing and concurrent effectiveness of the registration statement but prior to the termination of all offerings covered by this prospectus supplement:

- our Annual Report on Form 10-K for the fiscal year ended December 31, 2020, filed with the SEC on March 5, 2021;
- our Quarterly Reports on Form 10-Q for the quarters ended March 31, 2021, as filed with the SEC on April 30, 2021 and June 30, 2021, as filed with the SEC on August 16, 2021;
- the portions of our definitive proxy statement on Schedule 14A, as filed with the SEC on April 29, 2021 that are deemed "filed" with the SEC under the Exchange Act;
- our Current Reports on Form 8-K filed with the SEC on April 19, 2021, May 13, 2021 June 4, 2021, June 30, 2021, our Amended Current Report on Form 8-K/A filed on August 5, 2021 and our Current Reports on Form 8-K filed on October 8, 2021 and November 1, 2021 (other than any reports or portions thereof that are furnished under Item 2.02 or Item 7.01 and any exhibits included with such Items); and
- the description of our Common Stock in our registration statement on Form 8-A filed with the SEC on November 1, 2021, including any amendments or reports filed for the purpose of updating such description.

Any statement contained in a document incorporated by reference herein shall be deemed to be modified or superseded for all purposes to the extent that a statement contained in this prospectus or in any other subsequently filed document which is also incorporated or deemed to be incorporated by reference, modifies or supersedes such statement. Any statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this prospectus. You may request a copy of these filings (other than an exhibit to a filing unless that exhibit is specifically incorporated by reference into that filing) at no cost by writing, telephoning or e-mailing us at the following address or telephone number:

Compass Therapeutics, Inc.
80 Guest Street
Suite 601
Boston, Massachusetts 02135
(617) 500-8099

You may also access these documents, free of charge on the SEC's website at *www.sec.gov* or on our website at *www.compasstherapeutics.com*. Information contained on our website is not incorporated by reference into this prospectus, and you should not consider any information on, or that can be accessed from, our website as part of this prospectus or any accompanying prospectus supplement.

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PROSPECTUS

$300,000,000

Common Stock
Preferred Stock
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Units

We may from time to time issue, in one or more series or classes, up to $300,000,000 in aggregate principal amount of our common stock, preferred stock, warrants and/or units in one or more offerings. We may offer these securities separately or together in units. We will specify in the accompanying prospectus supplement the terms of the securities being offered. We may sell these securities to or through underwriters and also to other purchasers or through agents. We will set forth the names of any underwriters or agents, and any fees, conversions or discount arrangements, in the accompanying prospectus supplement. We may not sell any securities under this prospectus without delivery of the applicable prospectus supplement.

You should read this document and any prospectus supplement or amendment carefully before you invest in our securities.

Our securities are currently trading on the OTCQB Market under the stock symbol CMPX. On July 2, 2021, the closing price for our common stock, as reported on the OTCQB Market, was $4.90 per share. Our principal executive office is located at 80 Guest Street, Suite 601, Boston, Massachusetts 02135.

We may amend or supplement this prospectus from time to time by filing amendments or supplements as required. You should read the entire prospectus and any amendments or supplements carefully before you make your investment decision.

We are an "emerging growth company" as defined under the federal securities laws and, as such, are eligible for reduced public company reporting requirements. See "Prospectus Summary—Emerging Growth Company".

Investing in our common stock involves a high degree of risk. Before making an investment decision, please read "Risk Factors" on page 2 of this prospectus.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

The date of this prospectus is July 9, 2021.

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ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we filed with the United States Securities and Exchange Commission (the "SEC"), using a "shelf" registration process. Under this shelf registration process, we may from time to time sell any combination of the securities described in this prospectus in one or more offerings up to a total amount of $300,000,000.

This prospectus provides you with a general description of the securities we may offer. Each time we sell securities, we will provide one or more prospectus supplements that will contain specific information about the terms of the offering. The prospectus supplement may also add, update or change information contained in this prospectus. You should read both this prospectus and the accompanying prospectus supplement together with the additional information described under the heading "Where You Can Find More Information" beginning on page 27 of this prospectus.

You should rely only on the information contained in or incorporated by reference in this prospectus, any accompanying prospectus supplement or in any related free writing prospectus filed by us with the SEC. We have not authorized anyone to provide you with different information. This prospectus and the accompanying prospectus supplement do not constitute an offer to sell or the solicitation of an offer to buy any securities other than the securities described in the accompanying prospectus supplement or an offer to sell or the solicitation of an offer to buy such securities in any circumstances in which such offer or solicitation is unlawful. You should assume that the information appearing in this prospectus, any prospectus supplement, the documents incorporated by reference and any related free writing prospectus is accurate only as of their respective dates. Our business, financial condition, results of operations and prospects may have changed materially since those dates.

All references to "Compass OpCo" refer to Compass Therapeutics LLC, a privately held Delaware limited liability company and our direct, wholly owned subsidiary. Unless otherwise stated or the context otherwise indicates, references to the "Company", "we", "our", "us" or similar terms refer to Compass Therapeutics, Inc. (formerly named Olivia Ventures, Inc.) together with its wholly-owned subsidiary, Compass OpCo. Compass OpCo holds all material assets and conducts all business activities and operations of Compass Therapeutics, Inc.

RISK FACTORS

Investing in our securities involves a high degree of risk. You should carefully consider the risks referenced below and described in the documents incorporated by reference in this prospectus and any prospectus supplement, as well as other information we include or incorporate by reference into this prospectus and any applicable prospectus supplement, before making an investment decision. Our business, financial condition or results of operations could be materially adversely affected by the materialization of any of these risks. The trading price of our securities could decline due to the materialization of any of these risks, and you may lose all or part of your investment. This prospectus and the documents incorporated herein by reference also contain forward-looking statements that involve risks and uncertainties. Actual results could differ materially from those anticipated in these forward-looking statements as a result of certain factors, including the risks referenced below and described in the documents incorporated herein by reference, including (i) our annual report on Form 10-K for the fiscal year ended December 31, 2020, which is on file with the SEC and is incorporated herein by reference, (ii) our quarterly report on Form 10-Q for the quarter ended March 31, 2021, which is incorporated by reference into this prospectus, and (iii) other documents we file with the SEC that are deemed incorporated by reference into this prospectus.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus, including the documents that we incorporate by reference, includes forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, or the Securities Act, and Section 21E of the Securities Exchange Act of 1934, as amended, or the Exchange Act. Forward-looking statements relate to, among others, our plans, objectives and expectations for our business, operations and financial performance and condition, and can be identified by terminology such as “may”, “should”, “expect”, “intend”, “plan”, “anticipate”, “believe”, “estimate”, “predict”, “potential”, “continue” and similar expressions that do not relate solely to historical matters. Forward-looking statements are based on management’s belief and assumptions and on information currently available to management. Although we believe that the expectations reflected in forward-looking statements are reasonable, such statements involve known and unknown risks, uncertainties and other factors that may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by forward-looking statements.

Forward-looking statements include, but are not limited to, statements about:

- our expectations regarding the timing, progress and results of preclinical studies and clinical trials for CTX-009, CTX-471, CTX-8371 and any other product candidates we develop, including statements regarding the timing of initiation and completion of studies or trials and related preparatory work, the period during which the results of the trials will become available and our research and development programs;
- the sufficiency of our existing cash and cash equivalents to fund our future operating expenses and capital expenditure requirements;
- the timing or likelihood of regulatory filings for CTX-009, CTX-471, CTX-8371 and any other product candidates we develop and our ability to obtain and maintain regulatory approvals for such product candidates for any indication;
- our expectations regarding the potential benefits, activity, effectiveness and safety of CTX-009, CTX-471, CTX-8371 and any other product candidates we develop;
- our intentions and ability to successfully commercialize our product candidates;
- our expectations regarding the nature of the biological pathways we are targeting;
- our estimates regarding the use of proceeds from this offering, expenses, future revenues,
- capital requirements and our need for or ability to obtain additional financing, together with our current cash, cash equivalents and marketable securities, to fund our operations;
- our intended reliance on and the performance of third parties, including collaborators, contract research organizations and third-party manufacturers;
- our ability to protect and enforce our intellectual property protection and the scope and duration of such protection;
- developments and projections relating to our competitors and our industry, including competing therapies;
- the impact of current and future laws and regulations;
- the impact of the COVID-19 pandemic on our business, results of operations and future growth prospects; and
- other risks and uncertainties, including those listed under the caption “Risk Factors”.

These statements relate to future events or our future operational or financial performance, and involve known and unknown risks, uncertainties and other factors that may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by these forward-looking statements. Factors that may cause actual results to differ materially from current expectations include, among other things, those listed under the section titled “Risk Factors” and elsewhere in this prospectus, in any applicable prospectus supplement and in any related free writing prospectus.

Any forward-looking statement in this prospectus, in any applicable prospectus supplement and in any related free writing prospectus reflects our current view with respect to future events and is subject to these and other risks, uncertainties and assumptions relating to our business, results of operations, industry and future growth. Given these uncertainties, you should not place undue reliance on these forward-looking statements. No forward-looking statement is a guarantee of future performance. You should read this prospectus, any applicable prospectus supplement and any related free writing prospectus and the documents that we reference therein and have filed with the SEC as exhibits thereto completely and with the understanding that our actual future results may be materially different from any future results expressed or implied by these forward-looking statements. Except as required by law, we assume no obligation to update or revise these forward-looking statements for any reason, even if new information becomes available in the future.

PROSPECTUS SUMMARY

This summary highlights certain information about us, this offering and selected information contained elsewhere in this prospectus. This summary is not complete and does not contain all of the information that you should consider before deciding whether to invest in the securities covered by this prospectus. For a more complete understanding of the Company and this offering, we encourage you to read and consider carefully the more detailed information in this prospectus, any related prospectus supplement and any related free writing prospectus, including the information set forth in the section titled "Risk Factors" in this prospectus, any related prospectus supplement and any related free writing prospectus in their entirety before making an investment decision.

Overview

We are a clinical-stage, oncology-focused biopharmaceutical company developing proprietary antibody-based therapeutics to treat multiple human diseases. Our scientific focus is on the relationship between angiogenesis and the immune system. Our pipeline includes novel product candidates that leverage our understanding of the tumor microenvironment, including both angiogenesis-targeted agents and immune-oncology focused agents. These product candidates are designed to optimize critical components required for an effective anti-tumor response to cancer. These include modulation of the microvasculature via angiogenesis-targeted agents; induction of a potent immune response via activators on effector cells in the tumor microenvironment; and alleviation of immunosuppressive mechanisms used by tumors to evade immune surveillance. We plan to advance our product candidates through clinical development as both standalone therapies and in combination with our proprietary drug candidates as long as their continued development is supported by clinical and nonclinical data.

Recent Developments

TRIGR Acquisition

On May 13, 2021, we and TRIGR Therapeutics, Inc., or TRIGR, a private biotechnology company, entered into a definitive merger agreement, or the TRIGR Merger Agreement. On June 28, 2021, pursuant to the TRIGR Merger Agreement, we, through our wholly owned subsidiaries and a two-step merger structure, acquired all of the outstanding shares of TRIGR, or the TRIGR Merger. Consideration payable to TRIGR shareholders at closing totaled an aggregate of 10,265,145 shares of our common stock, issued as unregistered shares in a private placement. In addition, TRIGR shareholders are eligible to receive up to $9 million, representing earnout payments which are dependent on certain events, including $5 million which is dependent on biologics license application approval of a product candidate acquired in the transaction, renamed CTX-009.

Emerging Growth Company

We are an "emerging growth company" as defined in the JOBS Act. We could be an emerging growth company for up to five years, although circumstances could cause us to lose that status earlier, including if the market value of our common stock held by non-affiliates exceeds $700.0 million as of the prior June 30, if we have total annual gross revenue of approximately $1.1 billion or more during any fiscal year, or if we issue more than $1.0 billion in non-convertible debt during any three-year period.

As an emerging growth company, we may take advantage of specified reduced disclosure and other requirements that are otherwise generally applicable to public companies. These provisions include:

- only two years of audited financial statements in addition to any required unaudited interim financial statements with correspondingly reduced "Management's Discussion and Analysis of Financial Condition and Results of Operations" disclosure;

- reduced disclosure about our executive compensation arrangements;
- no requirement that we hold non-binding advisory votes on executive compensation or golden parachute arrangements; and
- exemption from the auditor attestation requirement in the assessment of our internal control over financial reporting.

We have taken advantage of some of these reduced disclosure and other requirements, and thus the information we provide stockholders may be different than you might receive or obtain from other public companies in which you hold shares.

In addition, Section 107 of the JOBS Act provides that an emerging growth company can use the extended transition period provided in Section 7(a)(2)(B) of the Securities Act for complying with new or revised accounting standards. This permits an emerging growth company to delay the adoption of certain accounting standards until those standards would otherwise apply to private companies. We have irrevocably elected not to avail ourselves of this extended transition period and, as a result, we will adopt new or revised accounting standards on the relevant dates on which adoption of such standards is required for other companies. Section 107 of the JOBS Act provides that our decision to opt out of the extended transition period for complying with new or revised accounting standards is irrevocable.

Corporate Information

We were originally incorporated in the State of Delaware on March 20, 2018 under the name Olivia Ventures, Inc. Olivia Ventures, Inc. was a "shell" company registered under the Exchange Act, with no specific business plan or purpose until it began operating the business of Compass OpCo following the closing of the merger of our wholly-owned subsidiary, Compass Acquisitions, with and into Compass OpCo, with Compass OpCo continuing as the surviving entity and our wholly owned subsidiary, or the Merger, on June 17, 2020. Compass OpCo, a clinical-stage biotechnology company developing proprietary antibody therapeutics intended to engage the immune system to treat both solid tumors and hematological malignancies, was originally formed as a private limited liability company under the name Compass Therapeutics, LLC in the State of Delaware on January 29, 2014. As a result of the Merger, we acquired the business of Compass OpCo, and we will continue the existing business operations of Compass OpCo as a public reporting company under the name Compass Therapeutics, Inc.

Our corporate headquarters are located at 80 Guest Street, Suite 601, Boston, Massachusetts 02135, and our telephone number is (617) 500-8099. We maintain a website at www.compasstherapeutics.com, where we regularly post copies of our press releases as well as additional information about our company. Our filings with the SEC are available free of charge through the website as soon as reasonably practicable after being electronically filed with or furnished to the SEC. Information contained in our website is not a part of, nor incorporated by reference into, this prospectus or our other filings with the SEC, and should not be relied upon.

All trademarks, service marks and trade names appearing in this prospectus are the property of their respective holders. Use or display by us of other parties' trademarks, trade dress, or products in this prospectus is not intended to, and does not, imply a relationship with, or endorsements or sponsorship of, us by the trademark or trade dress owners.

USE OF PROCEEDS

We intend to use the net proceeds from the sale of any securities offered under this prospectus for general corporate purposes unless otherwise indicated in the applicable prospectus supplement. General corporate purposes may include research and development and clinical development costs to support the advancement of our product candidates and the expansion of our product candidate pipeline; repayment and refinancing of debt; working capital; and capital expenditures. We may also use a portion of the net proceeds to acquire or invest in businesses, products and technologies that are complementary to our own, although we have no commitments or agreements with respect to any acquisitions as of the date of this prospectus. Pending these uses, we may invest the net proceeds in a variety of capital preservation instruments, including short-term, investment-grade, interest-bearing instruments and U.S. government securities, or may hold such proceeds as cash, until they are used for their stated purpose. We have not determined the amount of net proceeds to be used specifically for such purposes. As a result, management will retain broad discretion over the allocation of net proceeds.

SECURITIES WE MAY OFFER

This prospectus contains summary descriptions of the securities we may offer from time to time. These summary descriptions are not meant to be complete descriptions of each security. The particular terms of any security will be described in the applicable prospectus supplement.

DESCRIPTION OF CAPITAL STOCK

We have authorized capital stock consisting of 300,000,000 shares of common stock and 10,000,000 shares of preferred stock, each of par value $0.0001 per share. Except as otherwise provided in the certificate of designation of any series of preferred stock we may issue, the number of authorized shares of common stock or preferred stock may from time to time be increased or decreased (but not below the number of shares of such class outstanding) by the affirmative vote of the holders of a majority in voting power of the outstanding shares of our capital stock.

As of June 30, 2021, we had 62,323,147 shares of common stock issued and outstanding, and no shares of preferred stock issued and outstanding. Unless stated otherwise, the following discussion summarizes the term and provisions of our amended and restated certificate of incorporation and our amended and restated bylaws.

Common Stock

The holders of outstanding shares of common stock are entitled to receive dividends out of assets or funds legally available for the payment of dividends at such times and in such amounts as the board of directors from time to time may determine. Holders of common stock are entitled to one vote for each share held on all matters submitted to a vote of stockholders. There is no cumulative voting of the election of directors then standing for election. The common stock is not entitled to pre-emptive rights and is not subject to conversion or redemption. Upon liquidation, dissolution or winding up of our company, the assets legally available for distribution to stockholders are distributable ratably among the holders of the common stock after payment of liquidation preferences, if any, on any outstanding payment of other claims of creditors. Each outstanding share of common stock is duly and validly issued, fully paid and non-assessable.

Preferred Stock

Shares of preferred stock may be issued from time to time in one or more series, each of which will have such distinctive designation or title as may be determined by our board of directors prior to the issuance of any shares thereof. Preferred stock will have such voting powers, full or limited, or no voting powers, and such preferences and relative, participating, optional or other special rights and such qualifications, limitations or restrictions thereof, as shall be stated in such resolution or resolutions providing for the issue of such class or series of preferred stock as may be adopted from time to time by the board of directors prior to the issuance of any shares thereof.

While we do not currently have any plans for the issuance of additional preferred stock, the issuance of such preferred stock could adversely affect the rights of the holders of common stock and, therefore, reduce the value of the common stock. It is not possible to state the actual effect of the issuance of any shares of preferred stock on the rights of holders of the common stock until the board of directors determines the specific rights of the holders of the preferred stock; however, these effects may include:

- Restricting dividends on the common stock;
- Diluting the voting power of the common stock;
- Impairing the liquidation rights of the common stock; or
- Delaying or preventing a change in control of our company without further action by the stockholders.

Other than in connection with shares of preferred stock, which preferred stock is not currently designated nor contemplated by us, and the division of our board of directors into three classes with staggered three-year terms, we do not believe that any provision of our amended and restated certificate of incorporation or amended and restated bylaws would delay, defer or prevent a change in control.

Other Convertible Securities

As of the date hereof, other than the securities described above, we do not have any outstanding convertible securities.

Anti-Takeover Effects of Provisions of our Amended and Restated Certificate of Incorporation, our Amended and Restated Bylaws and Delaware Law

Some provisions of Delaware law, our amended and restated certificate of incorporation and our amended and restated bylaws contain provisions that could make the following transactions more difficult: (i) acquisition of us by means of a tender offer (ii) acquisition of us by means of a proxy contest or otherwise, or (iii) removal of our incumbent officers and directors. It is possible that these provisions could make it more difficult to accomplish or could deter transactions that stockholders may otherwise consider to be in their best interest or in our best interests, including transactions that might result in a premium over the price of our common stock.

These provisions, summarized below, are expected to discourage coercive takeover practices and inadequate takeover bids. These provisions are also designed to encourage persons seeking to acquire control of us to first negotiate with our board of directors. We believe that the benefits of increased protection of our potential ability to negotiate with the proponent of an unfriendly or unsolicited proposal to acquire or restructure us outweigh the disadvantages of discouraging these proposals because negotiation of these proposals could result in an improvement of their terms.

Delaware Anti-Takeover Statute

We are subject to Section 203 of the DGCL, which prohibits a person deemed an "interested stockholder" from engaging in a "business combination" with a publicly held Delaware corporation for three years following the date such person becomes an interested stockholder unless the business combination is, or the transaction in which the person became an interested stockholder was, approved in a prescribed manner or another prescribed exception applies. Generally, an "interested stockholder" is a person who, together with affiliates and associates, owns, or within three years prior to the determination of interested stockholder status did own, 15% or more of a corporation's voting stock. Generally, a "business combination" includes a merger, asset or stock sale, or other transaction resulting in a financial benefit to the interested stockholder. The existence of this provision may have an anti-takeover effect with respect to transactions not approved in advance by the board of directors, such as discouraging takeover attempts that might result in a premium over the price of our common stock.

Undesignated Preferred Stock

The ability to authorize undesignated preferred stock makes it possible for our board of directors to issue preferred stock with voting or other rights or preferences that could impede the success of any attempt to change control of our company. These and other provisions may have the effect of deterring hostile takeovers or delaying changes in control or management of our company.

Special Stockholder Meetings

Our amended and restated bylaws provide that a special meeting of stockholders may be called only by a majority of our board of directors then in office.

Requirements for Advance Notification of Stockholder Nominations and Proposals

Our amended and restated bylaws establish advance notice procedures with respect to stockholder proposals and the nomination of candidates for election as directors, other than nominations made by or at the direction of the board of directors or a committee of the board of directors.

Elimination of Stockholder Action by Written Consent

Our amended and restated certificate of incorporation will eliminates the right of stockholders to act by written consent without a meeting.

Classified Board; Election and Removal of Directors

Our board of directors is divided into three classes. The directors in each class will serve for a three-year term, one class being elected each year by our stockholders, with staggered three-year terms. Only one class of directors will be elected at each annual meeting of our stockholders, with the other classes continuing for the remainder of their respective three-year terms. Because our stockholders do not have cumulative voting rights, our stockholders holding a majority of the shares of our common stock outstanding will be able to elect all of our directors. In addition, our directors may not be removed without cause, and removal of our directors for cause will require a supermajority (66 2/3%) stockholder vote. For more information on the classified board of directors, see the section titled “Management—Board Composition”. This system of electing and removing directors may tend to discourage a third party from making a tender offer or otherwise attempting to obtain control of us, because it generally makes it more difficult for stockholders to replace a majority of the directors.

Choice of Forum

Our amended and restated bylaws provide that the Court of Chancery of the State of Delaware shall be the sole and exclusive forum for any state law claims for: (i) any derivative action or proceeding brought on behalf of our company, (ii) any action asserting a claim of breach of a fiduciary duty owed by any of our directors or officers to the company or our stockholders, (iii) any action asserting a claim against our company arising pursuant to any provision of the DGCL or our certificate of incorporation or bylaws, (iv) any action to interpret, apply, enforce, or determine the validity of our certificate of incorporation or bylaws, or (v) any action asserting a claim against our company governed by the internal affairs doctrine. This exclusive forum provision will not apply to any causes of action arising under the Securities Act or the Exchange Act or any other claim for which the federal courts have exclusive jurisdiction. Unless we consent in writing to the selection of an alternate forum, the United States District Court for the District of Massachusetts is the sole and exclusive forum for resolving any complaint asserting a cause of action arising under the Securities Act, as our principal executive office is located Cambridge, Massachusetts. Although our amended and restated bylaws contain the choice of forum provision described above, it is possible that a court could rule that such provisions are inapplicable for a particular claim or action or that such provisions are unenforceable.

Amendment of Charter and Bylaw Provisions

The amendment of any of the above provisions in our amended and restated certificate of incorporation and amended and restated bylaws, except for the provision making it possible for our board of directors to issue convertible preferred stock, would require a supermajority (66 2/3% and majority of the minority, if applicable) stockholder vote.

The provisions of the DGCL, our amended and restated certificate of incorporation and amended and restated bylaws could have the effect of discouraging others from attempting hostile takeovers and, as a consequence, they may also inhibit temporary fluctuations in the price of our common stock that often result from actual or rumored hostile takeover attempts. These provisions may also have the effect of preventing changes in our management. It is possible that these provisions could make it more difficult to accomplish transactions that stockholders may otherwise deem to be in their best interests.

Limitations of Liability and Indemnification Matters

For a discussion of liability and indemnification, see the section titled “Directors, Executive Officers, Promoters and Control Persons—Limitation on Liability and Indemnification Matters”.

Transfer Agent

We have appointed American Stock Transfer & Trust Company to serve as transfer agent and registrar for our common stock.

DESCRIPTION OF DEBT SECURITIES

We may issue debt securities from time to time, in one or more series, as either senior or subordinated debt or as senior or subordinated convertible debt. While the terms we have summarized below will apply generally to any debt securities that we may offer under this prospectus, we will describe the particular terms of any debt securities that we may offer in more detail in the applicable prospectus supplement. The terms of any debt securities offered under a prospectus supplement may differ from the terms described below. Unless the context requires otherwise, whenever we refer to the indenture, we also are referring to any supplemental indentures that specify the terms of a particular series of debt securities.

We will issue the debt securities under the indenture that we will enter into with the trustee named in the indenture. The indenture will be qualified under the Trust Indenture Act of 1939, as amended, or the Trust Indenture Act. We have filed the form of indenture as an exhibit to the registration statement of which this prospectus is a part, and supplemental indentures and forms of debt securities containing the terms of the debt securities being offered will be filed as exhibits to the registration statement of which this prospectus is a part, or will be incorporated by reference from, reports that we file with the SEC.

The following summary of material provisions of the debt securities and the indenture is subject to, and qualified in its entirety by reference to, all of the provisions of the indenture applicable to a particular series of debt securities. We urge you to read the applicable prospectus supplements and any related free writing prospectuses related to the debt securities that we may offer under this prospectus, as well as the complete indenture that contains the terms of the debt securities.

General

The indenture does not limit the amount of debt securities that we may issue. It provides that we may issue debt securities up to the principal amount that we may authorize and may be in any currency or currency unit that we may designate. Except for the limitations on consolidation, merger and sale of all or substantially all of our assets contained in the indenture, the terms of the indenture do not contain any covenants or other provisions designed to give holders of any debt securities protection against changes in our operations, financial condition or transactions involving us.

We may issue the debt securities issued under the indenture as “discount securities,” which means they may be sold at a discount below their stated principal amount. These debt securities, as well as other debt securities that are not issued at a discount, may be issued with “original issue discount,” or OID, for U.S. federal income tax purposes because of interest payment and other characteristics or terms of the debt securities. Material U.S. federal income tax considerations applicable to debt securities issued with OID will be described in more detail in any applicable prospectus supplement.

We will describe in the applicable prospectus supplement the terms of the series of debt securities being offered, including:

- the title of the series of debt securities;
- any limit upon the aggregate principal amount that may be issued;
- the maturity date or dates;
- the form of the debt securities of the series;
- the applicability of any guarantees;
- whether or not the debt securities will be secured or unsecured, and the terms of any secured debt;
- whether the debt securities rank as senior debt, senior subordinated debt, subordinated debt or any combination thereof, and the terms of any subordination;

- if the price (expressed as a percentage of the aggregate principal amount thereof) at which such debt securities will be issued is a price other than the principal amount thereof, the portion of the principal amount thereof payable upon declaration of acceleration of the maturity thereof, or if applicable, the portion of the principal amount of such debt securities that is convertible into another security or the method by which any such portion shall be determined;
- the interest rate or rates, which may be fixed or variable, or the method for determining the rate and the date interest will begin to accrue, the dates interest will be payable and the regular record dates for interest payment dates or the method for determining such dates;
- our right, if any, to defer payment of interest and the maximum length of any such deferral period;
- if applicable, the date or dates after which, or the period or periods during which, and the price or prices at which, we may, at our option, redeem the series of debt securities pursuant to any optional or provisional redemption provisions and the terms of those redemption provisions;
- the date or dates, if any, on which, and the price or prices at which we are obligated, pursuant to any mandatory sinking fund or analogous fund provisions or otherwise, to redeem, or at the holder's option to purchase, the series of debt securities and the currency or currency unit in which the debt securities are payable;
- the denominations in which we will issue the series of debt securities, if other than denominations of $1,000 and any integral multiple thereof;
- any and all terms, if applicable, relating to any auction or remarketing of the debt securities of that series and any security for our obligations with respect to such debt securities and any other terms which may be advisable in connection with the marketing of debt securities of that series;
- whether the debt securities of the series shall be issued in whole or in part in the form of a global security or securities; the terms and conditions, if any, upon which such global security or securities may be exchanged in whole or in part for other individual securities; and the depositary for such global security or securities;
- if applicable, the provisions relating to conversion or exchange of any debt securities of the series and the terms and conditions upon which such debt securities will be so convertible or exchangeable, including the conversion or exchange price, as applicable, or how it will be calculated and may be adjusted, any mandatory or optional (at our option or the holders' option) conversion or exchange features, the applicable conversion or exchange period and the manner of settlement for any conversion or exchange;
- if other than the full principal amount thereof, the portion of the principal amount of debt securities of the series which shall be payable upon declaration of acceleration of the maturity thereof;
- additions to or changes in the covenants applicable to the particular debt securities being issued, including, among others, the consolidation, merger or sale covenant;
- additions to or changes in the events of default with respect to the securities and any change in the right of the trustee or the holders to declare the principal, premium, if any, and interest, if any, with respect to such securities to be due and payable;
- additions to or changes in or deletions of the provisions relating to covenant defeasance and legal defeasance;
- additions to or changes in the provisions relating to satisfaction and discharge of the indenture;
- additions to or changes in the provisions relating to the modification of the indenture both with and without the consent of holders of debt securities issued under the indenture;
- the currency of payment of debt securities if other than U.S. dollars and the manner of determining the equivalent amount in U.S. dollars;

- whether interest will be payable in cash or additional debt securities at our or the holders' option and the terms and conditions upon which the election may be made;
- the terms and conditions, if any, upon which we will pay amounts in addition to the stated interest, premium, if any and principal amounts of the debt securities of the series to any holder that is not a "United States person" for federal tax purposes;
- any restrictions on transfer, sale or assignment of the debt securities of the series; and
- any other specific terms, preferences, rights or limitations of, or restrictions on, the debt securities, any other additions or changes in the provisions of the indenture, and any terms that may be required by us or advisable under applicable laws or regulations.

Conversion or Exchange Rights

We will set forth in the applicable prospectus supplement the terms on which a series of debt securities may be convertible into or exchangeable for our common stock or our other securities. We will include provisions as to settlement upon conversion or exchange and whether conversion or exchange is mandatory, at the option of the holder or at our option. We may include provisions pursuant to which the number of shares of our common stock or our other securities that the holders of the series of debt securities receive would be subject to adjustment.

Consolidation, Merger or Sale

Unless we provide otherwise in the prospectus supplement applicable to a particular series of debt securities, the indenture will not contain any covenant that restricts our ability to merge or consolidate, or sell, convey, transfer or otherwise dispose of our assets as an entirety or substantially as an entirety. However, any successor to or acquirer of such assets (other than any subsidiary of ours) must assume all of our obligations under the indenture or the debt securities, as appropriate.

Events of Default under the Indenture

Unless we provide otherwise in the prospectus supplement applicable to a particular series of debt securities, the following are events of default under the indenture with respect to any series of debt securities that we may issue:

- if we fail to pay any installment of interest on any series of debt securities, as and when the same shall become due and payable, and such default continues for a period of 90 days; provided, however, that a valid extension of an interest payment period by us in accordance with the terms of any indenture supplemental thereto shall not constitute a default in the payment of interest for this purpose;
- if we fail to pay the principal of, or premium, if any, on any series of debt securities as and when the same shall become due and payable whether at maturity, upon redemption, by declaration or otherwise, or in any payment required by any sinking or analogous fund established with respect to such series; provided, however, that a valid extension of the maturity of such debt securities in accordance with the terms of any indenture supplemental thereto shall not constitute a default in the payment of principal or premium, if any;
- if we fail to observe or perform any other covenant or agreement contained in the debt securities or the indenture, other than a covenant specifically relating to another series of debt securities, and our failure continues for 90 days after we receive written notice of such failure, requiring the same to be remedied and stating that such is a notice of default thereunder, from the trustee or holders of at least 25% in aggregate principal amount of the outstanding debt securities of the applicable series; and
- if specified events of bankruptcy, insolvency or reorganization occur.

If an event of default with respect to debt securities of any series occurs and is continuing, other than an event of default specified in the last bullet point above, the trustee or the holders of at least 25% in aggregate principal

amount of the outstanding debt securities of that series, by notice to us in writing, and to the trustee if notice is given by such holders, may declare the unpaid principal of, premium, if any, and accrued interest, if any, due and payable immediately. If an event of default specified in the last bullet point above occurs with respect to us, the principal amount of and accrued interest, if any, of each issue of debt securities then outstanding shall be due and payable without any notice or other action on the part of the trustee or any holder.

The holders of a majority in principal amount of the outstanding debt securities of an affected series may waive any default or event of default with respect to the series and its consequences, except defaults or events of default regarding payment of principal, premium, if any, or interest, unless we have cured the default or event of default in accordance with the indenture. Any waiver shall cure the default or event of default.

Subject to the terms of the indenture, if an event of default under an indenture shall occur and be continuing, the trustee will be under no obligation to exercise any of its rights or powers under such indenture at the request or direction of any of the holders of the applicable series of debt securities, unless such holders have offered the trustee reasonable indemnity. The holders of a majority in principal amount of the outstanding debt securities of any series will have the right to direct the time, method and place of conducting any proceeding for any remedy available to the trustee, or exercising any trust or power conferred on the trustee, with respect to the debt securities of that series, provided that:

- the direction so given by the holder is not in conflict with any law or the applicable indenture; and
- subject to its duties under the Trust Indenture Act, the trustee need not take any action that might involve it in personal liability or might be unduly prejudicial to the holders not involved in the proceeding.

A holder of the debt securities of any series will have the right to institute a proceeding under the indenture or to appoint a receiver or trustee, or to seek other remedies only if:

- the holder has given written notice to the trustee of a continuing event of default with respect to that series;
- the holders of at least 25% in aggregate principal amount of the outstanding debt securities of that series have made written request,
- such holders have offered to the trustee indemnity satisfactory to it against the costs, expenses and liabilities to be incurred by the trustee in compliance with the request; and
- the trustee does not institute the proceeding, and does not receive from the holders of a majority in aggregate principal amount of the outstanding debt securities of that series other conflicting directions within 90 days after the notice, request and offer.

These limitations do not apply to a suit instituted by a holder of debt securities if we default in the payment of the principal, premium, if any, or interest on, the debt securities.

We will periodically file statements with the trustee regarding our compliance with specified covenants in the indenture.

Modification of Indenture; Waiver

We and the trustee may change an indenture without the consent of any holders with respect to specific matters:

- to cure any ambiguity, defect or inconsistency in the indenture or in the debt securities of any series;
- to comply with the provisions described above under “Description of Debt Securities—Consolidation, Merger or Sale”;
- to provide for uncertificated debt securities in addition to or in place of certificated debt securities;

- to add to our covenants, restrictions, conditions or provisions such new covenants, restrictions, conditions or provisions for the benefit of the holders of all or any series of debt securities, to make the occurrence, or the occurrence and the continuance, of a default in any such additional covenants, restrictions, conditions or provisions an event of default or to surrender any right or power conferred upon us in the indenture;
- to add to, delete from or revise the conditions, limitations, and restrictions on the authorized amount, terms, or purposes of issue, authentication and delivery of debt securities, as set forth in the indenture;
- to make any change that does not adversely affect the interests of any holder of debt securities of any series in any material respect;
- to provide for the issuance of and establish the form and terms and conditions of the debt securities of any series as provided above under "Description of Debt Securities—General" to establish the form of any certifications required to be furnished pursuant to the terms of the indenture or any series of debt securities, or to add to the rights of the holders of any series of debt securities;
- to evidence and provide for the acceptance of appointment under any indenture by a successor trustee; or
- to comply with any requirements of the SEC in connection with the qualification of any indenture under the Trust Indenture Act.

In addition, under the indenture, the rights of holders of a series of debt securities may be changed by us and the trustee with the written consent of the holders of at least a majority in aggregate principal amount of the outstanding debt securities of each series that is affected. However, unless we provide otherwise in the prospectus supplement applicable to a particular series of debt securities, we and the trustee may make the following changes only with the consent of each holder of any outstanding debt securities affected:

- extending the fixed maturity of any debt securities of any series;
- reducing the principal amount, reducing the rate of or extending the time of payment of interest, or reducing any premium payable upon the redemption of any series of any debt securities; or
- reducing the percentage of debt securities, the holders of which are required to consent to any amendment, supplement, modification or waiver.

Discharge

Each indenture provides that we can elect to be discharged from our obligations with respect to one or more series of debt securities, except for specified obligations, including obligations to:

- provide for payment;
- register the transfer or exchange of debt securities of the series;
- replace stolen, lost or mutilated debt securities of the series;
- pay principal of and premium and interest on any debt securities of the series;
- maintain paying agencies;
- hold monies for payment in trust;
- recover excess money held by the trustee;
- compensate and indemnify the trustee; and
- appoint any successor trustee.

In order to exercise our rights to be discharged, we must deposit with the trustee money or government obligations sufficient to pay all the principal of, any premium, if any, and interest on, the debt securities of the series on the dates payments are due.

Form, Exchange and Transfer

We will issue the debt securities of each series only in fully registered form without coupons and, unless we provide otherwise in the applicable prospectus supplement, in denominations of $1,000 and any integral multiple thereof. The indenture provides that we may issue debt securities of a series in temporary or permanent global form and as book-entry securities that will be deposited with, or on behalf of, The Depository Trust Company, or DTC, or another depositary named by us and identified in the applicable prospectus supplement with respect to that series. To the extent the debt securities of a series are issued in global form and as book-entry, a description of terms relating to any book-entry securities will be set forth in the applicable prospectus supplement.

At the option of the holder, subject to the terms of the indenture and the limitations applicable to global securities described in the applicable prospectus supplement, the holder of the debt securities of any series can exchange the debt securities for other debt securities of the same series, in any authorized denomination and of like tenor and aggregate principal amount.

Subject to the terms of the indenture and the limitations applicable to global securities set forth in the applicable prospectus supplement, holders of the debt securities may present the debt securities for exchange or for registration of transfer, duly endorsed or with the form of transfer endorsed thereon duly executed if so required by us or the security registrar, at the office of the security registrar or at the office of any transfer agent designated by us for this purpose. Unless otherwise provided in the debt securities that the holder presents for transfer or exchange, we will impose no service charge for any registration of transfer or exchange, but we may require payment of any taxes or other governmental charges.

We will name in the applicable prospectus supplement the security registrar, and any transfer agent in addition to the security registrar, that we initially designate for any debt securities. We may at any time designate additional transfer agents or rescind the designation of any transfer agent or approve a change in the office through which any transfer agent acts, except that we will be required to maintain a transfer agent in each place of payment for the debt securities of each series.

If we elect to redeem the debt securities of any series, we will not be required to:

- issue, register the transfer of, or exchange any debt securities of that series during a period beginning at the opening of business 15 days before the day of mailing of a notice of redemption of any debt securities that may be selected for redemption and ending at the close of business on the day of the mailing; or
- register the transfer of or exchange any debt securities so selected for redemption, in whole or in part, except the unredeemed portion of any debt securities we are redeeming in part.

Information Concerning the Trustee

The trustee, other than during the occurrence and continuance of an event of default under an indenture, undertakes to perform only those duties as are specifically set forth in the applicable indenture. Upon an event of default under an indenture, the trustee must use the same degree of care as a prudent person would exercise or use in the conduct of his or her own affairs. Subject to this provision, the trustee is under no obligation to exercise any of the powers given it by the indenture at the request of any holder of debt securities unless it is offered reasonable security and indemnity against the costs, expenses and liabilities that it might incur.

Payment and Paying Agents

Unless we otherwise indicate in the applicable prospectus supplement, we will make payment of the interest on any debt securities on any interest payment date to the person in whose name the debt securities, or one or more predecessor securities, are registered at the close of business on the regular record date for the interest.

We will pay principal of and any premium and interest on the debt securities of a particular series at the office of the paying agents designated by us, except that unless we otherwise indicate in the applicable prospectus supplement, we will make interest payments by check that we will mail to the holder or by wire transfer to certain holders. Unless we otherwise indicate in the applicable prospectus supplement, we will designate the corporate trust office of the trustee as our sole paying agent for payments with respect to debt securities of each series. We will name in the applicable prospectus supplement any other paying agents that we initially designate for the debt securities of a particular series. We will maintain a paying agent in each place of payment for the debt securities of a particular series.

All money we pay to a paying agent or the trustee for the payment of the principal of or any premium or interest on any debt securities that remains unclaimed at the end of two years after such principal, premium or interest has become due and payable will be repaid to us, and the holder of the debt security thereafter may look only to us for payment thereof.

Governing Law

The indenture and the debt securities will be governed by and construed in accordance with the laws of the state of New York, except to the extent that the Trust Indenture Act of 1939 is applicable.

DESCRIPTION OF WARRANTS

The following description, together with the additional information we may include in any applicable prospectus supplements, summarizes the material terms and provisions of the warrants that we may offer under this prospectus and the related warrant agreements and warrant certificates. While the terms summarized below will apply generally to any warrants that we may offer, we will describe the particular terms of any series of warrants in more detail in the applicable prospectus supplement. If we indicate in the prospectus supplement, the terms of any warrants offered under that prospectus supplement may differ from the terms described below. Specific warrant agreements will contain additional important terms and provisions and will be incorporated by reference as an exhibit to the registration statement, which includes this prospectus.

General

We may issue warrants for the purchase of common stock, preferred stock in one or more series. We may issue warrants independently or together with common stock, preferred stock, and the warrants may be attached to or separate from these securities.

We will evidence each series of warrants by warrant certificates that we will issue under a separate warrant agreement. We will enter into the warrant agreement with a warrant agent. We will indicate the name and address of the warrant agent in the applicable prospectus supplement relating to a particular series of warrants.

We will describe in the applicable prospectus supplement the terms of the series of warrants, including:

- the offering price and aggregate number of warrants offered;
- the currency for which the warrants may be purchased;
- if applicable, the designation and terms of the securities with which the warrants are issued and the number of warrants issued with each such security or each principal amount of such security;
- if applicable, the date on and after which the warrants and the related securities will be separately transferable;
- in the case of warrants to purchase common stock or preferred stock, the number of shares of common stock or preferred stock, as the case may be, purchasable upon the exercise of one warrant and the price at which these shares may be purchased upon such exercise;
- the effect of any merger, consolidation, sale or other disposition of our business on the warrant agreement and the warrants;
- the terms of any rights to redeem or call the warrants;
- any provisions for changes to or adjustments in the exercise price or number of securities issuable upon exercise of the warrants;
- the periods during which, and places at which, the warrants are exercisable;
- the manner of exercise;
- the dates on which the right to exercise the warrants will commence and expire;
- the manner in which the warrant agreement and warrants may be modified;
- federal income tax consequences of holding or exercising the warrants;
- the terms of the securities issuable upon exercise of the warrants; and
- any other specific terms, preferences, rights or limitations of or restrictions on the warrants.

DESCRIPTION OF UNITS

We may issue units comprised of shares of common stock, shares of preferred stock and warrants in any combination. We may issue units in such amounts and in as many distinct series as we wish. This section outlines certain provisions of the units that we may issue. If we issue units, they will be issued under one or more unit agreements to be entered into between us and a bank or other financial institution, as unit agent. The information described in this section may not be complete in all respects and is qualified entirely by reference to the unit agreement with respect to the units of any particular series. The specific terms of any series of units offered will be described in the applicable prospectus supplement. If so described in a particular supplement, the specific terms of any series of units may differ from the general description of terms presented below. We urge you to read any prospectus supplement related to any series of units we may offer, as well as the complete unit agreement and unit certificate that contain the terms of the units. If we issue units, forms of unit agreements and unit certificates relating to such units will be incorporated by reference as exhibits to the registration statement, which includes this prospectus.

Each unit that we may issue will be issued so that the holder of the unit is also the holder of each security included in the unit. Thus, the holder of a unit will have the rights and obligations of a holder of each included security. The unit agreement under which a unit is issued may provide that the securities included in the unit may not be held or transferred separately, at any time or at any time before a specified date. The applicable prospectus supplement may describe:

- the designation and terms of the units and of the securities comprising the units, including whether and under what circumstances those securities may be held or transferred separately;
- any provisions of the governing unit agreement;
- the price or prices at which such units will be issued;
- the applicable United States federal income tax considerations relating to the units;
- any provisions for the issuance, payment, settlement, transfer or exchange of the units or of the securities comprising the units; and
- any other terms of the units and of the securities comprising the units.

The provisions described in this section, as well as those described under “Description of Capital Stock,” and “Description of Warrants” will apply to the securities included in each unit, to the extent relevant and as may be updated in any prospectus supplements.

Issuance in Series

We may issue units in such amounts and in as many distinct series as we wish. This section summarizes terms of the units that apply generally to all series. Most of the financial and other specific terms of a particular series of units will be described in the applicable prospectus supplement.

Unit Agreements

We will issue the units under one or more unit agreements to be entered into between us and a bank or other financial institution, as unit agent. We may add, replace or terminate unit agents from time to time. We will identify the unit agreement under which each series of units will be issued and the unit agent under that agreement in the applicable prospectus supplement.

The following provisions will generally apply to all unit agreements unless otherwise stated in the applicable prospectus supplement:

Modification without Consent

We and the applicable unit agent may amend any unit or unit agreement without the consent of any holder:

- to cure any ambiguity; any provisions of the governing unit agreement that differ from those described below;
- to correct or supplement any defective or inconsistent provision; or
- to make any other change that we believe is necessary or desirable and will not adversely affect the interests of the affected holders in any material respect.

We do not need any approval to make changes that affect only units to be issued after the changes take effect. We may also make changes that do not adversely affect a particular unit in any material respect, even if they adversely affect other units in a material respect. In those cases, we do not need to obtain the approval of the holder of the unaffected unit; we need only obtain any required approvals from the holders of the affected units.

Modification with Consent

We may not amend any particular unit or a unit agreement with respect to any particular unit unless we obtain the consent of the holder of that unit, if the amendment would:

- impair any right of the holder to exercise or enforce any right under a security included in the unit if the terms of that security require the consent of the holder to any changes that would impair the exercise or enforcement of that right; or
- reduce the percentage of outstanding units or any series or class the consent of whose holders is required to amend that series or class, or the applicable unit agreement with respect to that series or class, as described below.

Any other change to a particular unit agreement and the units issued under that agreement would require the following approval:

- If the change affects only the units of a particular series issued under that agreement, the change must be approved by the holders of a majority of the outstanding units of that series; or
- If the change affects the units of more than one series issued under that agreement, it must be approved by the holders of a majority of all outstanding units of all series affected by the change, with the units of all the affected series voting together as one class for this purpose.

These provisions regarding changes with majority approval also apply to changes affecting any securities issued under a unit agreement, as the governing document.

In each case, the required approval must be given by written consent.

Unit Agreements Will Not Be Qualified under Trust Indenture Act

No unit agreement will be qualified as an indenture, and no unit agent will be required to qualify as a trustee, under the Trust Indenture Act. Therefore, holders of units issued under unit agreements will not have the protections of the Trust Indenture Act with respect to their units.

Mergers and Similar Transactions Permitted; No Restrictive Covenants or Events of Default

The unit agreements will not restrict our ability to merge or consolidate with, or sell our assets to, another corporation or other entity or to engage in any other transactions. If at any time we merge or consolidate with, or

sell our assets substantially as an entirety to, another corporation or other entity, the successor entity will succeed to and assume our obligations under the unit agreements. We will then be relieved of any further obligation under these agreements.

The unit agreements will not include any restrictions on our ability to put liens on our assets, nor will they restrict our ability to sell our assets. The unit agreements also will not provide for any events of default or remedies upon the occurrence of any events of default.

Governing Law

The unit agreements and the units will be governed by New York law.

Form, Exchange and Transfer

We will issue each unit in global—i.e., book-entry—form only. Units in book-entry form will be represented by a global security registered in the name of a depositary, which will be the holder of all the units represented by the global security. Those who own beneficial interests in a unit will do so through participants in the depositary's system, and the rights of these indirect owners will be governed solely by the applicable procedures of the depositary and its participants. We will describe book-entry securities, and other terms regarding the issuance and registration of the units in the applicable prospectus supplement.

Each unit and all securities comprising the unit will be issued in the same form.

If we issue any units in registered, non-global form, the following will apply to them.

The units will be issued in the denominations stated in the applicable prospectus supplement. Holders may exchange their units for units of smaller denominations or combined into fewer units of larger denominations, as long as the total amount is not changed.

- Holders may exchange or transfer their units at the office of the unit agent. Holders may also replace lost, stolen, destroyed or mutilated units at that office. We may appoint another entity to perform these functions or perform them ourselves.
- Holders will not be required to pay a service charge to transfer or exchange their units, but they may be required to pay for any tax or other governmental charge associated with the transfer or exchange. The transfer or exchange, and any replacement, will be made only if our transfer agent is satisfied with the holder's proof of legal ownership. The transfer agent may also require an indemnity before replacing any units.
- If we have the right to redeem, accelerate or settle any units before their maturity, and we exercise our right as to less than all those units or other securities, we may block the exchange or transfer of those units during the period beginning 15 days before the day we mail the notice of exercise and ending on the day of that mailing, in order to freeze the list of holders to prepare the mailing. We may also refuse to register transfers of or exchange any unit selected for early settlement, except that we will continue to permit transfers and exchanges of the unsettled portion of any unit being partially settled. We may also block the transfer or exchange of any unit in this manner if the unit includes securities that are or may be selected for early settlement.

Only the depositary will be entitled to transfer or exchange a unit in global form, since it will be the sole holder of the unit.

Payments and Notices

In making payments and giving notices with respect to our units, we will follow the procedures as described in the applicable prospectus supplement.

PLAN OF DISTRIBUTION

We may sell securities:

- through underwriters;
- through dealers;
- through agents;
- directly to purchasers;
- in “at the market offering”, within the meaning of Rule 415(a)(4) of the Securities Act; or
- through a combination of any of these methods or any other method permitted by law.

In addition, we may issue the securities as a dividend or distribution or in a subscription rights offering to our existing security holders.

We may directly solicit offers to purchase securities, or agents may be designated to solicit such offers. In the prospectus supplement relating to such offering, we will name any agent that could be viewed as an underwriter under the Securities Act and describe any commissions that we must pay to any such agent. Any such agent will be acting on a best efforts basis for the period of its appointment or, if indicated in the applicable prospectus supplement, on a firm commitment basis. This prospectus may be used in connection with any offering of our securities through any of these methods or other methods described in the applicable prospectus supplement.

The distribution of the securities may be effected from time to time in one or more transactions:

- at a fixed price, or prices, which may be changed from time to time;
- at market prices prevailing at the time of sale;
- at prices related to such prevailing market prices; or
- at negotiated prices.

Each prospectus supplement will describe the method of distribution of the securities and any applicable restrictions.

The prospectus supplement with respect to the securities of a particular series will describe the terms of the offering of the securities, including the following:

- the name of the agent or any underwriters;
- the public offering or purchase price;
- any discounts and commissions to be allowed or paid to the agent or underwriters;
- all other items constituting underwriting compensation;
- any discounts and commissions to be allowed or paid to dealers; and
- any exchanges on which the securities will be listed.

If any underwriters or agents are used in the sale of the securities in respect of which this prospectus is delivered, we will enter into an underwriting agreement, sales agreement or other agreement with them at the time of sale to them, and we will set forth in the prospectus supplement relating to such offering the names of the underwriters or agents and the terms of the related agreement with them.

In connection with the offering of securities, we may grant to the underwriters an option to purchase additional securities with an additional underwriting commission, as may be set forth in the accompanying prospectus supplement. If we grant any such option, the terms of such option will be set forth in the prospectus supplement for such securities.

If a dealer is used in the sale of the securities in respect of which the prospectus is delivered, we will sell such securities to the dealer, as principal. The dealer, who may be deemed to be an "underwriter" as that term is defined in the Securities Act, may then resell such securities to the public at varying prices to be determined by such dealer at the time of resale.

If we offer securities in a subscription rights offering to our existing security holders, we may enter into a standby underwriting agreement with dealers, acting as standby underwriters. We may pay the standby underwriters a commitment fee for the securities they commit to purchase on a standby basis. If we do not enter into a standby underwriting arrangement, we may retain a dealer-manager to manage a subscription rights offering for us.

Agents, underwriters, dealers and other persons may be entitled under agreements which they may enter into with us to indemnification by us against certain civil liabilities, including liabilities under the Securities Act, and may be customers of, engage in transactions with or perform services for us in the ordinary course of business.

If so indicated in the applicable prospectus supplement, we will authorize underwriters or other persons acting as our agents to solicit offers by certain institutions to purchase securities from us pursuant to delayed delivery contracts providing for payment and delivery on the date stated in the prospectus supplement. Each contract will be for an amount not less than, and the aggregate amount of securities sold pursuant to such contracts shall not be less nor more than, the respective amounts stated in the prospectus supplement. Institutions with whom the contracts, when authorized, may be made include commercial and savings banks, insurance companies, pension funds, investment companies, educational and charitable institutions and other institutions, but shall in all cases be subject to our approval. Delayed delivery contracts will not be subject to any conditions except that:

- the purchase by an institution of the securities covered under that contract shall not at the time of delivery be prohibited under the laws of the jurisdiction to which that institution is subject; and
- if the securities are also being sold to underwriters acting as principals for their own account, the underwriters shall have purchased such securities not sold for delayed delivery. The underwriters and other persons acting as our agents will not have any responsibility in respect of the validity or performance of delayed delivery contracts.

Offered securities may also be offered and sold, if so indicated in the prospectus supplement, in connection with a remarketing upon their purchase, in accordance with a redemption or repayment pursuant to their terms, or otherwise, by one or more remarketing firms, acting as principals for their own accounts or as agents for us. Any remarketing firm will be identified and the terms of its agreement, if any, with us and its compensation will be described in the applicable prospectus supplement. Remarketing firms may be deemed to be underwriters in connection with their remarketing of offered securities.

Certain agents, underwriters and dealers, and their associates and affiliates, may be customers of, have borrowing relationships with, engage in other transactions with, or perform services, including investment banking services, for us or one or more of our respective affiliates in the ordinary course of business.

In order to facilitate the offering of the securities, any underwriters may engage in transactions that stabilize, maintain or otherwise affect the price of the securities or any other securities the prices of which may be used to determine payments on such securities. Specifically, any underwriters may overallot in connection with the offering, creating a short position for their own accounts. In addition, to cover overallotments or to stabilize the price of the securities or of any such other securities, the underwriters may bid for, and purchase, the securities or

any such other securities in the open market. Finally, in any offering of the securities through a syndicate of underwriters, the underwriting syndicate may reclaim selling concessions allowed to an underwriter or a dealer for distributing the securities in the offering if the syndicate repurchases previously distributed securities in transactions to cover syndicate short positions, in stabilization transactions or otherwise. Any of these activities may stabilize or maintain the market price of the securities above independent market levels. Any such underwriters are not required to engage in these activities and may end any of these activities at any time.

We may engage in at the market offerings into an existing trading market in accordance with Rule 415(a)(4) under the Securities Act. In addition, we may enter into derivative transactions with third parties, or sell securities not covered by this prospectus to third parties in privately negotiated transactions. If the applicable prospectus supplement so indicates, in connection with those derivatives, the third parties may sell securities covered by this prospectus and the applicable prospectus supplement, including in short sale transactions. If so, the third party may use securities pledged by us or borrowed from us or others to settle those sales or to close out any related open borrowings of stock, and may use securities received from us in settlement of those derivatives to close out any related open borrowings of stock. The third party in such sale transactions will be an underwriter and, if not identified in this prospectus, will be named in the applicable prospectus supplement (or a post-effective amendment). In addition, we may otherwise loan or pledge securities to a financial institution or other third party that in turn may sell the securities short using this prospectus and an applicable prospectus supplement. Such financial institution or other third party may transfer its economic short position to investors in our securities or in connection with a concurrent offering of other securities.

Under Rule 15c6-1 of the Exchange Act, trades in the secondary market generally are required to settle in three business days, unless the parties to any such trade expressly agree otherwise. The applicable prospectus supplement may provide that the original issue date for your securities may be more than three scheduled business days after the trade date for your securities. Accordingly, in such a case, if you wish to trade securities on any date prior to the third business day before the original issue date for your securities, you will be required, by virtue of the fact that your securities initially are expected to settle in more than three scheduled business days after the trade date for your securities, to make alternative settlement arrangements to prevent a failed settlement.

The securities may be new issues of securities and may have no established trading market. The securities may or may not be listed on a national securities exchange. We can make no assurance as to the liquidity of or the existence of trading markets for any of the securities.

The specific terms of any lock-up provisions in respect of any given offering will be described in the applicable prospectus supplement.

The underwriters, dealers and agents may engage in transactions with us, or perform services for us, in the ordinary course of business for which they receive compensation.

The anticipated date of delivery of offered securities will be set forth in the applicable prospectus supplement relating to each offer.

LEGAL MATTERS

Certain legal matters in connection with this offering will be passed upon for us by Goodwin Procter LLP, Boston, Massachusetts. Any underwriters will also be advised about the validity of the securities and other legal matters by their own counsel, which will be named in the prospectus supplement.

EXPERTS

The consolidated financial statements of Compass Therapeutics, Inc. and subsidiaries as of December 31, 2020 and 2019 incorporated in this registration statement by reference from the Company's Annual Report on Form 10-K for the year ended December 31, 2020 have been audited by CohnReznick LLP, an independent registered public accounting firm, as set forth in their report thereon, included therein, and incorporated herein by reference. Such consolidated financial statements are incorporated herein by reference in reliance upon such report given on the authority of such firm as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We have filed with the SEC this registration statement on Form S-3 under the Securities Act with respect to the shares of common stock being offered by this prospectus. This prospectus, which constitutes a part of this registration statement, does not contain all of the information in this registration statement and its exhibits. For further information with respect to us and the common stock offered by this prospectus, you should refer to this registration statement and the exhibits filed as part of this document. Statements contained in this prospectus as to the contents of any contract or any other document referred to are not necessarily complete, and in each instance, we refer you to the copy of the contract or other document filed as an exhibit to this registration statement. Each of these statements is qualified in all respects by this reference.

We are subject to the informational requirements of the Exchange Act and file annual, quarterly and current reports, proxy statements and other information with the SEC. You can read our SEC filings, including this registration statement, over the Internet on the SEC's website at http://www.sec.gov. You may also request a copy of these filings, at no cost, by writing or telephoning us at: 80 Guest Street, Suite 601, Boston, Massachusetts 02135, (617) 500-8099.

INCORPORATION BY REFERENCE

We have elected to incorporate the following documents into this prospectus, together with all exhibits filed therewith or incorporated therein by reference, to the extent not otherwise amended or superseded by the contents of this prospectus:

- our Annual Report on Form 10-K for the fiscal year ended December 31, 2020, as filed with the SEC on March 5, 2021;
- our Quarterly Report on Form 10-Q for the quarter ended March 31, 2021, as filed with the SEC on April 30, 2021;
- our definitive proxy statement on Schedule 14A, as filed with the SEC on April 29, 2021; and
- our Current Reports on Form 8-K filed with the SEC on April 19, 2021, May 13, 2021 June 4, 2021 and June 30, 2021 (other than any reports or portions thereof that are furnished under Item 2.02 or Item 7.01 and any exhibits included with such Items).

The information incorporated by reference is an important part of this prospectus. In addition, we incorporate by reference in this prospectus any future filings we make with the SEC under Sections 13(a), 13(c), 14, or 15(d) of

the Exchange Act (excluding any information furnished and not filed with the SEC) after the date on which the registration statement that includes this prospectus was initially filed with the SEC (including all such documents we may file with the SEC after the date of the initial registration statement and prior to the effectiveness of the registration statement) and until all offerings under this prospectus are terminated.

Any statement contained in a document incorporated by reference herein shall be deemed to be modified or superseded for all purposes to the extent that a statement contained in this prospectus or in any other subsequently filed document which is also incorporated or deemed to be incorporated by reference, modifies or supersedes such statement. Any statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this prospectus. You may request a copy of these filings (other than an exhibit to a filing unless that exhibit is specifically incorporated by reference into that filing) at no cost by writing, telephoning or e-mailing us at the following address or telephone number:

Compass Therapeutics, Inc.
80 Guest Street
Suite 601
Boston, Massachusetts 02135
(617) 500-8099

You may also access these documents, free of charge on the SEC's website at *www.sec.gov* or on our website at *www.compasstherapeutics.com*. Information contained on our website is not incorporated by reference into this prospectus, and you should not consider any information on, or that can be accessed from, our website as part of this prospectus or any accompanying prospectus supplement.

35,715,000 Shares

Common stock

Prospectus supplement

Book-Running Manager

SVB Leerink

Passive Book-Running Managers

Raymond James
Wedbush Securities
H.C. Wainwright & Co.

Co-Managers

The Benchmark Company
Roth Capital Partners

November 1, 2021