Filed pursuant to Rule 424(b)(5)
Registration No. 333-268764

PROSPECTUS SUPPLEMENT

(To Prospectus Dated December 16, 2022)

10,000,000 Shares of Common Stock

TRANSCODE
THERAPEUTICS™

TransCode Therapeutics, Inc.

We are offering 10,000,000 shares of our common stock, $0.0001 par value per share, at a purchase price of $0.30 per share, pursuant to this prospectus supplement and the accompanying prospectus.

Our common stock is listed on the Nasdaq Capital Market under the symbol "RNAZ." On July 22, 2024, the last reported sale price of our common stock on the Nasdaq Capital Market was $0.7925 per share.

We have retained ThinkEquity LLC to act as our exclusive placement agent (the "placement agent") in connection with this offering. The placement agent has agreed to use its reasonable best efforts to arrange for the sale of the securities offered by this prospectus supplement. The placement agent is not purchasing or selling any of the securities we are offering and the placement agent is not required to arrange the purchase or sale of any specific number of securities or dollar amount. We have agreed to pay to the placement agent the placement agent fees set forth in the table below. Since we will deliver the securities to be issued in this offering upon our receipt of investor funds, there is no arrangement for funds to be received in escrow, trust or similar arrangement. There is no minimum offering requirement as a condition to closing of this offering. Because there is no minimum offering amount required as a condition to closing this offering, we may sell fewer than all of the securities offered hereby, which may significantly reduce the amount of proceeds received by us. Investors in this offering will not receive a refund in the event that we do not sell an amount of securities sufficient to pursue our business goals described in this prospectus supplement. In addition, because there is no escrow account and no minimum offering amount, investors could be in a position where they have invested in our securities, but we are unable to fulfill all of our contemplated objectives due to fewer shares sold in this offering than anticipated. Further, any proceeds from the sale of securities offered by us will be available for our immediate use, despite uncertainty about whether we would be able to use such funds to effectively implement our business plan. See the section entitled "Risk Factors" beginning on page S-8 for more information. We will bear all costs associated with the offering. See "Plan of Distribution" beginning on page S-22 of this prospectus supplement.

Based on the reported sale price of our common stock of $1.94 per share, as reported on the Nasdaq Capital Market on May 28, 2024, the aggregate market value of our public float, calculated according to General Instruction I.B.6. of Form S-3, is $14,083,882 based on 7,265,658 shares of our common stock outstanding as of July 19, 2024, of which 7,259,733 shares are held by non-affiliates. We have offered and sold securities with an aggregate sales price of $1,210,000 pursuant to General Instruction I.B.6. of Form S-3 during the prior 12 calendar month period that ends on, and includes, the date of this prospectus supplement. We will not sell securities with an aggregate sales price of more than $3,484,627 pursuant to this prospectus supplement.

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

Investing in our securities involves a high degree of risks. See "*Risk Factors*" beginning on page S-8. Neither the U.S. Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed upon the accuracy or adequacy of this prospectus supplement or the accompanying prospectus. Any representation to the contrary is a criminal offense.

	Per Share	Total
Public offering price	$ 0.30	$3,000,000
Placement agent fees(1)	$0.021	$ 210,000
Proceeds to us, before expenses(2)	$0.279	$2,790,000

1) In addition, we have agreed to reimburse the placement agent for certain of its expenses, as well as paying a non-accountable expense allowance of 1% of the gross proceeds in this offering, and to issue to the placement agent warrants to purchase shares of our common stock (the "Placement Agent Warrants"). See "Plan of Distribution" beginning on page S-22 of this prospectus supplement for additional information regarding the placement agent's compensation.

2) The amount of the offering proceeds to us presented in this table does not give effect to any exercise of Placement Agent Warrants.

Delivery of the securities is expected to occur on the second business day following the date of pricing of the securities which is on or about July 24, 2024, subject to satisfaction of certain customary closing conditions. Under Rule 15c6-1 of the Securities Exchange Act of 1934, as amended, or the Exchange Act, trades in the secondary market generally are required to settle in one business day, unless the parties to any such trade expressly agree otherwise. Pursuant to this prospectus supplement, the original issue date for the securities will be more than one business day after the trade date. Accordingly, if a holder wishes to trade its securities on any date prior to the first business day before the original issue date for such securities, such holder will be required, by virtue of the fact that the securities initially are expected to settle on the second business day following the date of pricing of the securities, to make alternative settlement arrangements to prevent a failed settlement.

ThinkEquity

The date of this prospectus supplement is July 22, 2024

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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 December 16, 2022, 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.

We further note that the representations, warranties and covenants made by us in any agreement that is filed as an exhibit to any document that is incorporated by reference herein or in the accompanying prospectus were made solely for the benefit of the parties to such agreement, including, in some cases, for the purpose of allocating risk among the parties to such agreements, and should not be deemed to be a representation, warranty or covenant to you. Moreover, such representations, warranties or covenants were accurate only as of the date made. Accordingly, such representations, warranties and covenants should not be relied on as accurately representing the current state of our affairs.

We have not, and the placement agent has not, authorized anyone to provide any information other than that contained or incorporated by reference in this prospectus supplement, the accompanying prospectus or in any free writing prospectus that we have authorized for use in connection with this offering. We and the placement agent 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, the accompanying prospectus, any free writing prospectus that we have authorized for use in connection with this offering, 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, the accompanying prospectus and any free writing prospectus that we have authorized for use in connection with this offering, 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 are offering to sell 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 “TransCode,” the “Company,” “we,” “us,” “our” and similar terms refer to TransCode Therapeutics, Inc., a Delaware corporation.

Trademarks, Service Marks and Trade Names

We own, have applied for or have rights to use one or more registered and common law trademarks, service marks and/or trade names in connection with our business in the United States and/or in certain foreign jurisdictions.

This prospectus supplement, the accompanying prospectus and our other public filings may contain trademarks, service marks and trade names of third-parties which are the property of their respective owners. Our use or display of third-parties' trademarks, service marks, trade names or products in this prospectus supplement, the accompanying prospectus and our other public filings is not intended to, and does not imply a relationship with, or endorsement or sponsorship by us. Solely for convenience, the trademarks, service marks, logos and trade names referred to in this prospectus supplement, the accompanying prospectus and our other public filings may appear without the®, ™ or ℠ symbols, but the omission of such references is not intended to indicate, in any way, that we will not assert, to the fullest extent under applicable law, our rights or the rights of the applicable owner of or licensor to these trademarks, service marks and trade names.

This prospectus supplement and the accompanying prospectus contains additional trademarks, service marks and trade names of others, which are the property of their respective owners. All trademarks, service marks and trade names appearing in this prospectus are, to our knowledge, the property of their respective owners. We do not intend our use or display of other companies' trademarks, service marks, copyrights or trade names to imply a relationship with, or endorsement or sponsorship of us by, any other company.

On May 30, 2023, we received a Notice Of Allowance from the United States Patent and Trademark Office allowing TRANSCODE THERAPEUTICS as a trademark under International Class 005, pharmaceutical preparations for the treatment of cancer, diagnostic preparations for medical purposes, having Serial Number 97/083236. For the purpose of this prospectus supplement and the accompanying prospectus, TransCode Therapeutics® is referred to as TransCode.

Industry and Other Data

This prospectus supplement, the accompanying prospectus and the documents incorporated by reference may include industry, market, competitive position and other data. We obtain such information from industry publications and research, surveys and studies conducted by third-parties. Industry publications and third-party research, surveys and studies generally indicate that their information has been obtained from sources believed to be reliable, although they do not guarantee the accuracy or completeness of such information. This prospectus supplement, the accompanying prospectus and the documents incorporated by reference in this prospectus supplement and the accompanying prospectus also may include data based on our own internal estimates and research, including estimates regarding the impact of the COVID-19 pandemic (or related pandemics caused by coronavirus variants) on our business, prospects, results of operations, and financial condition. Our internal estimates have not been verified by any independent source.

While we believe any data obtained from industry publications and third-party research, surveys and studies and our own estimates are reliable, we have not independently verified such data. The industry in which we operate, as well as such third-party data and our internal estimates and research, are subject to a high degree of uncertainty and risks due to a variety of factors, including those described in "*Risk Factors*" elsewhere in this prospectus supplement, the accompanying prospectus and the documents incorporated by reference. These and other factors could cause our results to differ materially from those expressed in this prospectus supplement, the accompanying prospectus and the documents incorporated by reference.

Prospectus Supplement Summary

This summary highlights selected information about us and this offering and does not contain all of the information that you should consider before investing in our securities. You should read this prospectus supplement carefully, especially the risks of investing in our securities discussed under "Risk Factors" beginning on page S-8 of this prospectus supplement and in Part I, Item 1A "Risk Factors" of our most recent Annual Report on Form 10-K and any subsequent Quarterly Reports on Form 10-Q or Current Reports on Form 8-K we file after the date of this prospectus supplement, which are incorporated by reference in this prospectus supplement, along with our consolidated financial statements and notes to those consolidated financial statements and the other information incorporated by reference in this prospectus supplement, before making an investment decision. If any of the risks materialize or other events or conditions arise that we cannot predict, our business, financial condition, operating results and prospects could be materially and adversely affected. As a result, the price of our common stock could decline, and you could lose part or all of your investment. Some of the statements in this prospectus supplement constitute forward-looking statements that involve risks and uncertainties. See "Cautionary Note Regarding Forward-Looking Statements." Our actual results could differ materially from those anticipated in such forward-looking statements as a result of certain factors, including those discussed in "Risk Factors" and other sections of this prospectus supplement.

Overview

TransCode is a platform delivery company focused on oncology, created on the belief that cancer can be defeated through the intelligent design and effective delivery of targeted therapeutics. Our lead therapeutic candidate, TTX-MC138, targets microRNA-10b, or miRNA-10b, generally believed to be a master regulator of metastatic cell viability in a range of cancers, including breast, pancreatic, ovarian, colon cancer, glioblastomas, and several others. In 2023, we received exploratory Investigational New Drug, or eIND, Study May Proceed notification from the U.S. Food and Drug Administration, or FDA. This notification permitted us to conduct a Phase 0 clinical trial intended to demonstrate quantitative delivery of radiolabeled TTX-MC138 to metastatic lesions in patients with advanced solid tumors. We treated one patient in the Phase 0 trial. In April 2024, we received IND Study May Proceed notification from FDA to conduct a Phase I/II clinical trial with TTX-MC138 which we expect to commence in mid-2024.

In addition to TTX-MC138, we have other solid tumor programs in the preclinical stage. One, TTX-siPDL1, is an siRNA-based modulator of programmed death-ligand 1. A second, TTX-RIGA, is an RNA-based agonist of the retinoic acid-inducible gene I, or RIG-I, targeting activation of innate immunity in the tumor microenvironment. In addition, we are developing TTX-CRISPR, a CRISPR/Cas9-based therapy platform for the repair or elimination of cancer-causing genes inside tumor cells; and TTX-mRNA, an mRNA-based platform for the development of cancer vaccines that activate cytotoxic immune responses against tumor cells.

All our therapeutic candidates are designed to utilize our proprietary TTX delivery mechanism with the goal of significantly improving outcomes for cancer patients.

Targeted Therapeutic Delivery Background

For decades, ribonucleic acid, or RNA, has been a topic of investigation by the scientific community as a potentially attractive therapeutic modality because it can target any gene and it lends itself to rational and straightforward drug design. RNA-based therapeutics are highly selective to their targets, potentially applicable to a broad array of previously undruggable targets in the human genome. We believe that one of the major challenges to widespread use of RNA therapeutics in oncology and other indications has been the inability to deliver these molecules inside cells other than in the liver.

Additionally, delivery remains a significant challenge with CRISPR-based genome editing tools as well as mRNAs in the context of cancer. We believe that our proprietary TTX delivery platform has the potential to resolve these key challenges. We believe overcoming the challenges of delivery would represent an important step in unlocking therapeutic access to a variety of documented targets involved in a range of cancers and other diseases.

We have developed a design engine to customize the development of targeted therapeutics that is modular at both the levels of the core nanoparticle and the therapeutic loading. The size, charge, and surface chemistry of the core iron oxide nanoparticle is designed so that it can be tuned to optimize the particles for the intended target and therapeutic load. The therapeutic load is designed to consist of synthetic oligonucleotides and other molecular moieties that can be adapted to the specific approach being developed. The approach can range from RNA interference, or RNAi, including small interfering RNAs, antisense oligonucleotides, and non-coding RNA mimics to mRNA-based cancer vaccines, CRISPR-based gene repair and replacement platforms, and Pattern Recognition Receptors such as RIG-I. We believe the platform can further be used for developing targeted radiolabeled therapeutics and diagnostics and other custom products targeting known and novel biomarkers and other genetic elements as they are discovered and validated.

The TTX platform is designed to overcome extracellular and intracellular delivery issues of stability, efficiency, and immunogenicity faced by existing lipid and liposomal nanoparticle platforms while optimizing targeting of and accumulation in tumors and metastases. We believe the ability to deliver targeted therapeutics inside tumors and metastases will potentially allow us to target genes and other important biomarkers for cancer treatment that have until now remained undruggable using other delivery systems.

Delivery System

The therapeutic potential of RNA in oncology has remained an unrealized promise due in large part, we believe, to the difficulty in safely and effectively delivering oligonucleotides, i.e., synthetic RNA molecules, to tumors. We believe we are now closer to solving this challenge by means of our TTX platform. Our TTX platform leverages an iron-oxide nanoparticle, or IONP, approved for clinical use as a cancer imaging agent and in treating iron deficiency anemia, as the physical carrier of the oligonucleotide.

Our TTX technology has gone through approximately 20 years of research and development, or R&D, and optimization, including 12 years at Harvard Medical School and the Massachusetts General Hospital, by our scientific co-founders prior to company formation. Our modular platform could allow us to participate in additional rapidly growing global marketplaces. According to a recent analysis by Emergen Research, the global CRISPR Technology Market is expected to reach $3.94 billion by 2027. The global mRNA therapeutics market was estimated to have been approximately $33.8 billion in 2023 and projected to grow at a compound annual rate of nearly 25% reaching approximately $158 billion by 2030 according to an April 2023 360iResearch™ publication.

Our TTX nanocarrier is designed to be tunable to certain specifications to deliver therapeutic oligonucleotides to RNA targets in tumors and metastases without compromising the integrity of the oligonucleotide. We believe our TTX nanocarriers differentiate us from competitive delivery approaches, many of which rely on lipid particles or chemical structures, such as GalNAc. These competitive delivery approaches effectively target sites in the liver but not sites in tumors and metastases elsewhere. Our nanocarrier is derived from, and is chemically similar to, nanoparticles extensively used in humans for imaging (Feridex, from Advanced Magnetics) or for treating iron deficiency anemia (Feraheme, also from Advanced Magnetics).

Our TTX delivery platform is also designed to minimize early kidney and liver clearance, translating into a long circulation half-life that allows for efficient accumulation in tumors and metastases.

Nanoparticles similar in formulation to ours have an excellent clinical safety record of low toxicity and immunogenicity. Because their iron core is magnetic and visible with magnetic resonance imaging, or MRI, they have the additional benefit of enabling quantification of the particles' delivery to target organs. Our nanoparticles are functionalized with amino groups to provide stable links to the therapeutic oligonucleotides of interest through covalent bonds. The nanoparticles are coated with dextran, a glucose polymer, to protect the oligonucleotides from degradation and to provide overall stability to the particle.

The small hydrodynamic size and the charge of the resulting nanoparticles are designed to maximize distribution throughout the tumor microvasculature, extravasation into the interstitium of tumors and metastases, and uptake by tumors. The physicochemical properties of the nanoparticles are expected to further facilitate their rapid uptake by tumors by exploiting the high metabolic activity of cancer cells, a process

analogous to the mechanism behind the systemic loading of metastatic cancer cells with fluorodeoxyglucose for diagnostic Positron Emission Tomography. We believe the combined result of a hydrodynamically-favored distribution and a metabolically-triggered uptake will result in the enhanced ability of our nanoparticles to access genetic targets inside tumors.

In addition, we have initiated research and development efforts designed to introduce radiotherapy into the delivery of RNA therapeutic payloads using TTX. Two of our programs, TTX-MC138 and TTX-RIGA, are being assessed for radionuclide integration in either a systemically or locally delivered manner for both the treatment and diagnosis of solid tumors.

Advancing new RNA therapies through a modular approach

TransCode's TTX platform is modular by design. The size, charge, and surface chemistry of the core nanoparticles can be tuned to optimize them for the intended target and their therapeutic load. Also, the therapeutic load can be adapted to the specific approach being developed, ranging from RNA interference, or RNAi, which includes small interfering RNAs, or siRNAs, antisense oligonucleotides, non-coding RNA mimics to mRNA-based cancer vaccines, and Clustered Regularly Interspaced Palindromic Repeats, or CRISPR, -based gene repair and replacement platforms as well as Pattern Recognition Receptors such as retinoic acid inducible gene, or RIG-I.

In September 2021, research conducted by MGH was published in *Cancer Nanotechnology*, entitled "Radiolabeling and PET-MRI microdosing of the experimental cancer therapeutic, MN-anti-miR10b, demonstrates delivery to metastatic lesions in a murine model of metastatic breast cancer." This paper reported on an MGH study using a radiolabeled derivative of TTX-MC138 (referred to in the paper as MN-anti-miR10b). In this study, TTX-MC138 was tagged with copper-64, or Cu-64. As a result, highly sensitive and specific quantitative determination of pharmacokinetics and biodistribution, as well as observation of delivery of the Cu-64 labeled TTX-MC138 to metastases, was made in laboratory tests using noninvasive positron emission tomography-magnetic resonance imaging, or PET-MRI. The key results of the study suggest that when injected intravenously, TTX-MC138 accumulates in metastatic lesions. These results suggest that our TTX platform delivers its therapeutic candidate as intended and supports clinical evaluation of TTX-MC138. In addition, the MGH investigation describes a microdosing PET-MRI approach to measure TTX-MC138 biodistribution in cancer patients and its delivery to clinical metastases. (Microdoses are minute, subpharmacologic doses of a test compound, not greater than 100 micrograms.) The capacity to carry out microdosing PET-MRI studies in patients under an exploratory IND, or eIND, application could be important because it has the potential to support additional clinical trials we may propose for FDA consideration. This research, published by Dr. Zdravka Medarova, our Chief Scientific Officer and scientific co-founder, and others describes what we believe is an effective approach to assessing delivery of TTX-MC138 in metastatic cancer patients. Since the PET-MRI technique is sensitive enough to determine the concentration of radiolabeled drug candidate in the sub-picomolar range, microgram quantities of the radiolabeled drug candidate are believed to be sufficient to perform such a study in humans. We believe this capability has significant advantages in the initial phases of drug development. Because the low mass of radiolabeled TTX-MC138 is subtherapeutic, it may inform future clinical trials with this candidate.

Dr. Medarova's paper suggests that the radiolabeling does not impact tumor cell uptake or the ability of TTX-MC138 to engage its target. The paper also shows that the biodistribution of Cu-64 labeled TTX-MC138, when injected at a microdose, reflects its biodistribution at the level of a therapeutic dose.

These key findings informed the design of our Phase 0 microdose clinical trial with radiolabeled TTX-MC138 which we believe offered numerous potential advantages:

(i) allowing more precise quantitation of the amount of TTX-MC138 delivered to the metastatic lesions because of the higher sensitivity and quantitative accuracy of positron emission tomography;

(ii) permitting measurement of the pharmacokinetics and biodistribution of TTX-MC138 not only in the metastatic lesions but in other tissues throughout the body, potentially informing Phase I/II clinical trial designs by allowing us to determine drug candidate uptake and clearance from vital organs;

(iii) supporting assessment of pharmacokinetic endpoints, potentially informing dosing for clinical trials. Specifically, because of the high sensitivity and quantitative nature of PET-MRI, we obtained information suggesting what drug concentration in the metastatic lesions over time could be which we then could assess relative to the effective dose used in our preclinical studies; and

(iv) further informing clinical trial designs by allowing patient inclusion in those trials based on the types of metastases that demonstrated accumulation of TTX-MC138 in prior trials.

Because of the benefits we believe accrue from a microdose Phase 0 clinical trial, and reflecting the studies described in *Cancer Nanotechnology*, our First-in-Human Phase 0 trial was designed to deliver a microdose of our therapeutic candidate.

Results from the microdose clinical trial could also validate delivery generally for our TTX pipeline which potentially opens-up additional relevant RNA targets that have been previously undruggable.

Recent Developments

Positive Initial Results from First Patient Dosed in Clinical Trial

In August 2023, we announced the dosing of the first patient in our First-in-Human Phase 0 clinical trial. The Phase 0 trial was an open-label, single-center, microdose study intended to demonstrate delivery of the radiolabeled version of our lead therapeutic candidate, TTX-MC138, to radiographically-confirmed metastases in patients with advanced solid tumors. The patient received a single subtherapeutic dose of radiolabeled TTX-MC138 and appeared to tolerate the dosing well. Analysis and monitoring of data from this patient is ongoing, including results of positron emission tomography-magnetic resonance imaging (PET- MRI), to determine uptake of TTX-MC138 to the patient's metastatic lesions.

The preliminary results in the Phase 0 patient showed that radiolabeled TTX-MC138 had pharmacokinetic behavior consistent with that expected based on earlier IND-enabling studies. In addition, the patient appears to have tolerated the injection well with no observed adverse reactions to the treatment. Metabolite analysis confirmed circulation of intact radiolabeled TTX-MC138 with a long half-life equivalent to that predicted by the earlier Drug Metabolism and Pharmacokinetics (DMPK) model. In addition, radioactivity was observed in the region of the metastatic lesions, consistent with accumulation of TTX-MC138 in the lesions. While analytic work on results from this patient continue, it appeared that the drug candidate in the blood was identical to that of the manufactured drug candidate demonstrating *in vivo* stability.

The Phase 0 clinical trial was designed to include patients with advanced solid cancers. The objective of the trial was to yield important data regarding TTX-MC138 delivery to metastases that could inform dose selection and dosing frequency in subsequent clinical trials. It was not designed to demonstrate therapeutic efficacy.

Results of Blood Assay from Phase 0 Patient

On May 29, 2024, we announced new results from the patient dosed in the Phase 0 trial indicating that a microdose of radiolabeled TTX-MC138 resulted in significant inhibition of the drug candidate's molecular target, miRNA-10b, in the patient's blood. Specifically, after injection, the amount of miR-10b in the patient's blood was significantly reduced compared to levels prior to administration of radiolabeled TTX-MC138, reaching a reduction of 66% at 24 hours following dosing. "We believe these data are important given that in several animal models, miRNA-10b inhibition by TTX-MC138 resulted in complete regressions of metastatic disease," stated Zdravka Medarova, PhD, our Chief Scientific Officer. These data support our belief that clinical development of TTX-MC138 has the potential for clinical benefit in patients with metastatic cancer.

In addition, the study also quantified the amount of drug candidate delivered to metastatic lesions, providing further evidence that TTX-MC138 accumulated in metastatic tumors. The increase of radioactive lesion-to-blood ratios suggests that circulating TTX-MC138 is actively taken up by the cancerous tissue.

"These new data suggest that TTX-MC138 not only inhibits the miRNA-10b target but is pharmacodynamically active at a single microdose in the patient's serum, supporting continued clinical development of TTX-MC138 for the treatment of multiple metastatic cancers in the planned Phase 1 clinical study. This could indicate a much broader therapeutic window than had previously been expected," said Dr. Daniel Vlock, TransCode's Chief Medical Officer.

The microdose of radiolabeled TTX-MC138 was well tolerated with no adverse events observed. Full data analysis is ongoing and will be included in the final study report.

FDA Allows Proceeding With Phase I/II Clinical Trial

In April 2024, the FDA completed its review of our IND application and concluded that we may proceed with our Phase I/II multicenter, open-label, dose-escalation and dose-expansion study of our lead therapeutic candidate, TTX-MC138, in patients with advanced solid tumors. The Phase I/II clinical trial is designed to generate critical data to support evaluation of the safety of TTX-MC138 and while it may provide early evidence of clinical activity in patients with metastatic disease, efficacy of TTX-MC138 is not an endpoint in this trial.

The Phase I/II clinical trial includes an initial dose-escalation phase followed by a dose-expansion phase. The dose-escalation portion of the trial is designed to include patients with a variety of metastatic solid cancers. The primary objective of this phase is to evaluate the safety and tolerability of escalating dose levels of TTX-MC138. In the dose-expansion phase, certain tumor types, dose levels and dosing schedules may be evaluated based on preliminary results from the dose-escalation phase. The primary objective of the dose-expansion phase is to further evaluate safety as well as tolerability and anti-tumor activity of TTX-MC138 in cancer patients.

Debiopharm Collaboration

On January 29, 2024, we announced that we had entered into a collaboration agreement with Debiopharm, a privately-owned Swiss-based, global biopharmaceutical company aiming to establish tomorrow's standard-of-care to cure cancer and infectious diseases. Specializing in the manufacturing and development of oncology and antibiotic therapies, Debiopharm entered this research collaboration to test the development of new targeted nucleic acid delivery modalities. As part of the collaboration, TransCode is combining its TTX delivery platform with Debiopharm's proprietary technologies and expertise in targeted drug delivery to generate constructs designed to provide targeted mRNA delivery to cancer cells. The parties intend to test these constructs in cancer cells in the laboratory and in tumor-bearing animals.

Implications of being an Emerging Growth Company and a Smaller Reporting Company

We qualify as an "emerging growth company" as defined in the Jumpstart Our Business Startups Act of 2012, as amended, or the JOBS Act. As an emerging growth company, we may take advantage of specified reduced disclosure and other requirements that are otherwise applicable generally to public companies. These provisions include those that allow us to:

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

We may take advantage of these exemptions for up to five years or such earlier time that we are no longer an emerging growth company. We would cease to be an emerging growth company on the date that is the earliest

of (i) the last day of the fiscal year in which we have total annual gross revenues of $1.235 billion or more; (ii) the last day of our fiscal year following the fifth anniversary of the completion of our initial public offering (i.e., December 31, 2026); (iii) the date on which we have issued more than $1 billion in nonconvertible debt during the previous three years; or (iv) the date on which we are deemed to be a large accelerated filer under the rules of the SEC. We may choose to take advantage of some but not all of these exemptions. We have taken advantage of reduced reporting requirements in this prospectus. Accordingly, the information contained herein may be different from the information you receive from other public companies in which you hold stock. Additionally, 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 allows an emerging growth company to delay the adoption of certain accounting standards until those standards would otherwise apply to private companies. We have elected to avail ourselves of this exemption and, therefore, while we are an emerging growth company, and we will not be subject to new or revised accounting standards at the same time that they become applicable to other public companies that are not emerging growth companies.

We are also a "smaller reporting company" as defined in the Securities Exchange Act of 1934, as amended, or 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 (i) until the fiscal year following the determination that the market value of our voting and non-voting common stock held by non-affiliates is more than $250 million measured on the last business day of our second fiscal quarter, or (ii) if our annual revenues are less than $100 million during the most recently completed fiscal year, until the fiscal year following the determination that the market value of our voting and non-voting common stock held by non-affiliates is more than $700 million measured on the last business day of our second fiscal quarter.

The Offering

Common stock offered by us	10,000,000 shares of our common stock.
Common stock to be outstanding after this offering(1)	17,265,658 shares of common stock.
Offering price	$0.30 per share of common stock.
Use of Proceeds	We estimate that the net proceeds of this offering based upon the public offering price and after deducting placement agent fees and estimated offering expenses, will be approximately $2.4 million. We intend to use the net proceeds of this offering, together with our existing funds, for product development activities, including one or more clinical trials with TTX-MC138, our lead therapeutic candidate, including related IND-enabling studies, and for working capital and other general corporate purposes. We believe that the net proceeds from this offering, together with our existing cash and cash equivalents, will meet our capital requirements into late 2024 under our current business plan. See "*Use of Proceeds*" for more information.
Nasdaq Capital Market Symbol	RNAZ
Lock-up Agreements	The company and our directors and officers have agreed, subject to certain exceptions, not to sell, transfer or dispose of, directly or indirectly, any of our common stock or securities convertible into or exercisable or exchangeable for our common stock for a period of 60 days and 90 days, respectively, after the closing date of this offering.
Risk Factors	Investing in our securities involves a high degree of risk. See "*Risk Factors*" beginning on page S-8 for important information.

1) The number of shares of common stock to be outstanding after the offering is based on 7,265,658 shares of common stock outstanding as of July 19, 2024, and excludes, as of that date, the following:

- 1,935,837 shares of common stock issuable upon exercise of outstanding stock options at a weighted average exercise price of $2.43 per share;
- 11,731,491 shares of common stock issuable upon the exercise of outstanding warrants at a weighted average exercise price of $2.58 per share;
- 1,105,365 shares of common stock reserved for future issuance under our 2021 Stock Option and Equity Incentive Plan, or the 2021 Plan; and
- 525 shares of common stock reserved for future issuance under our 2021 Employee Stock Purchase Plan, or our 2021 ESPP.

Except as otherwise indicated herein, all information in this prospectus supplement assumes the following:

- no exercise of outstanding options or warrants; and
- no exercise of the Placement Agent Warrants to be issued upon consummation of this offering at an exercise price equal to 125% of the offering price of the 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, as well as the other information in this prospectus supplement, the accompanying prospectus and the documents incorporated by reference into this prospectus supplement and the accompanying prospectus. Our business, prospects, financial condition, or operating results could be harmed by any of these risks, as well as other risks not currently known to us or that we currently consider immaterial. If any such risks or uncertainties actually occur, our business, prospects, financial condition or operating results could differ materially from the plans, projections and other forward-looking statements included in the section titled "Management's Discussion and Analysis of Financial Condition and Results of Operations" in our Annual Report on Form 10-K for the fiscal year December 31, 2023, and the Quarterly Report on Form 10-Q for the quarter ended March 31, 2024, incorporated by reference into this prospectus supplement and the accompanying prospectus. The trading price of our common stock could decline significantly due to any of these risks or other factors, and as a result, you may lose all or part of your investment.

Risks Related to our Common Stock and this Offering

The Nasdaq Capital Market may seek to delist our Common Stock if it concludes this offering does not qualify as a Public Offering as defined under Nasdaq's shareholder approval rule.

The continued listing of our common stock on the Nasdaq Capital Market depends on our compliance with the requirements for continued listing under the Nasdaq Marketplace Rules, including but not limited to Market Place Rule 5635, or the shareholder approval rule. The shareholder approval rule prohibits the issuance of shares of common stock (or derivatives) in excess of 20% of our outstanding shares of common stock without shareholder approval, unless those shares are sold at a price that equals or exceeds the Minimum Price, as defined in the shareholder approval rule, or in what Nasdaq deems a Public Offering, as defined in the shareholder approval rule. The securities sold in this offering are being sold at a significant discount to the Minimum Price as defined in the shareholder approval rule, and we do not intend to obtain the approval of our stockholders for the issuance of the securities in this offering. Accordingly, we have sought to conduct, and plan to continue to conduct, this offering as a Public Offering as defined in the shareholder approval rule, which is a qualitative analysis based on several factors as determined by Nasdaq, including by broadly marketing the offering of these securities in an offering registered under the Securities Act. Demand for the securities sold by us in this offering, and the final offering price for these securities, have been determined following a broad public marketing effort, and final distribution of these securities will ultimately be determined by the placement agent. Nasdaq has also published guidance that an offering of securities that are "deeply discounted" to the Minimum Price (for example, a discount of 50% or more) will typically preclude a determination that the offering qualifies as Public Offering for purposes of the shareholder approval rule. We cannot assure you that Nasdaq will determine that this offering will be deemed a Public Offering under the shareholder approval rule. If Nasdaq determines that this offering was not conducted in compliance with the shareholder approval rule, Nasdaq may cite a deficiency and move to delist our securities from the Nasdaq Capital Market. Upon a delisting from the Nasdaq Capital Market, our stock would likely be traded in the over-the-counter inter-dealer quotation system, more commonly known as the OTC. OTC transactions involve risks in addition to those associated with transactions in securities traded on the securities exchanges, such as the Nasdaq Capital Market, or, together, Exchange-listed stocks. Many OTC stocks trade less frequently and in smaller volumes than Exchange-listed stocks. Accordingly, our stock would be less liquid than it would be otherwise. Also, the prices of OTC stocks are often more volatile than Exchange-listed stocks. Additionally, institutional investors are usually prohibited from investing in OTC stocks, and it might be more challenging to raise capital when needed.

The price of our common stock may be volatile or may decline regardless of our operating performance, and shareholders may not be able to resell their shares at or above the price at which they purchase those shares.

Trading volume in shares of our common stock on the Nasdaq Capital Market often has been limited and volatile. You may not be able to sell your shares quickly or at the market price if trading in shares of our common stock is not active. An active or liquid market in our common stock may not develop or, if it does

develop, it may not sustain. As a result of these and other factors, shareholders may not be able to resell their shares of our common stock at or above the price at which they purchase those shares in this offering.

Further, an inactive market may also impair our ability to raise capital by selling shares of our common stock and may impair our ability to enter into strategic collaborations or acquire companies or products by using our shares of common stock as consideration.

The price of our common stock may fluctuate substantially, which could result in substantial losses for purchasers of our common stock in this offering.

Our stock price has been volatile since our initial public offering. The stock market in general, and the market for the stocks of biopharmaceutical companies in particular, have experienced significant price and volume fluctuations often unrelated or disproportionate to the operating performance of particular companies. We believe that price fluctuations have occurred for numerous reasons including as a result of global health pandemics, economic events and expectations, the war in the Ukraine and the current armed conflict in Israel and the Gaza Strip. Broad market and industry factors may negatively affect the market price of our common stock, regardless of our actual operating performance. As a result of the foregoing, shareholders may not be able to sell their common stock at or above the price at which they purchase those shares in this offering or otherwise. The market price for our common stock may be influenced by many factors, including:

- the success of competitive drugs or technologies;
- results of clinical trials of our current or future therapeutic candidates or those of our competitors;
- regulatory or legal developments in the U.S. and other countries;
- developments or disputes concerning patent applications, issued patents or other proprietary rights;
- the recruitment or departure of key personnel;
- the level of expenses related to any of our current or future therapeutic candidates or clinical development programs;
- the results of our efforts to discover, develop, acquire or license additional current or future therapeutic candidates or drugs;
- actual or anticipated changes in estimates as to financial results, development timelines or recommendations by securities analysts;
- variations in our financial results or those of companies that are perceived to be similar to us;
- changes in the structure of healthcare payment systems;
- market conditions in the pharmaceutical and biotechnology sectors;
- general economic, industry and market conditions;
- potential delisting from Nasdaq; and
- the other factors described in this “Risk Factors” section and in the documents incorporated by reference herein.

If the market price of our common stock after this offering does not exceed the public offering price in this offering, you may not realize any return on your investment in us and you may lose some or all of your investment. Additionally, in the past, securities class action litigation has often been instituted against companies following periods of volatility in the market price of a company’s securities. This type of litigation, if instituted, could result in substantial costs and a diversion of management’s attention and resources.

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 the offering, including for any of the purposes described in “*Use of Proceeds*.” You will not have the opportunity as part of your investment decision to assess whether the net proceeds are being used effectively. Because of the number and

variability of factors that will determine our use of the net proceeds, their ultimate use may differ substantially from what we currently intend. The failure by our management to apply these funds effectively could adversely affect us. Pending their use, we may invest the net proceeds in short-term, investment-grade, interest-bearing securities or commercial bank accounts. While we intend to invest the net proceeds conservatively, there is no assurance that these investments will not decline in value or yield reasonable returns.

Raising additional capital may cause dilution to our stockholders, including purchasers of common stock in this offering, restrict our operations or require us to relinquish rights to our technologies or current or future therapeutic candidates.

Until such time, if ever, as we can generate the cash we need from operations, we expect to finance our cash needs through a combination of private and public equity offerings, debt financings, collaborations, strategic alliances and marketing, distribution or licensing arrangements. We do not currently have any committed external source of funds. To the extent that we raise additional capital through the sale of common stock or securities convertible into or exchangeable for common stock, the ownership interest of our shareholders will be diluted, and the terms of these new securities may include liquidation or other preferences that materially adversely affect the rights of our shareholders. Debt financing, if available, would increase our fixed payment obligations and may involve agreements that include covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, making capital expenditures or declaring dividends.

If we raise funds through collaborations, strategic alliances, grants or awards from government agencies or other organizations, or marketing, distribution or licensing arrangements with third-parties, we may have to relinquish valuable rights to our intellectual property, future revenue streams, research programs or current or future therapeutic candidates or grant licenses on terms that may not be favorable to us. If we are unable to raise additional funds when needed, we may be required to delay, scale back or discontinue the development and commercialization of one or more of our therapeutic candidates, delay our pursuit of potential licenses or acquisitions, or grant rights to develop and market current or future therapeutic candidates that we would otherwise prefer to develop and market ourselves.

Even if we consummate this offering, we will need to raise substantial additional funding. If we are unable to raise capital when needed, we would be forced to delay, scale back or discontinue some of our therapeutic candidate development programs or commercialization efforts.

The development of pharmaceutical drugs is capital intensive. We are currently advancing TTX-MC138 into clinical development. Our current cash resources are insufficient to fund our planned operations or development plans beyond approximately the end of the third quarter 2024. We may not be able to complete our planned Phase 1 clinical trial, or we may only be able to complete the trial in a small subset of patients. Even if completed, we will require additional funds to advance further. If we are capital constrained, we may not be able to meet our obligations. If we are unable to meet our obligations, or we experience a disruption in our cash flows, it could limit or halt our ability to continue to develop our therapeutic candidates or even to continue operations, either of which occurrence would have a material adverse effect on us.

We expect our expenses to continue to increase in connection with our ongoing activities, particularly as we continue the research and development of, advance the preclinical and clinical activities of, and seek marketing approval for, our current or future therapeutic candidates. In addition, if we obtain marketing approval for any of our current or future therapeutic candidates, we expect to incur significant commercialization expenses related to sales, marketing, manufacturing and distribution to the extent that such sales, marketing, product manufacturing and distribution are not the responsibility of our collaborators. We may also need to raise additional funds sooner if we choose to pursue additional indications and/or geographies for our current or future therapeutic candidates or otherwise expand more rapidly than we presently anticipate. Furthermore, we expect to continue to incur significant costs associated with operating as a public company. If we are unable to raise capital when needed, we would be forced to delay, scale back or discontinue the development and commercialization of one or more of our therapeutic candidates, delay our pursuit of potential licenses or acquisitions, or significantly reduce our operations.

We expect that the net proceeds from this offering, together with our existing cash, will be sufficient to fund our operations into late 2024. Our future capital requirements will depend on and could increase significantly as a result of many factors, including:

- the scope, progress, results and costs of drug discovery, preclinical development, manufacturing drug product, laboratory testing and clinical trials for our current or future therapeutic candidates;
- the potential additional expenses attributable to adjusting our development plans (including any supply-related matters) to global health pandemics;
- the scope, prioritization and number of our research and development programs;
- the costs, timing and outcome of regulatory review of our current or future therapeutic candidates;
- our ability to establish and maintain collaborations on favorable terms, if at all;
- the achievement of milestones or occurrence of other developments that trigger payments under any additional collaboration agreements we obtain;
- the extent to which we are obligated to reimburse, or are entitled to reimbursement of, clinical trial costs under future collaboration agreements, if any;
- the costs of preparing, filing and prosecuting patent applications, maintaining and enforcing our intellectual property rights and defending intellectual property-related claims;
- the extent to which we acquire or license other current or future therapeutic candidates and technologies;
- the costs of securing manufacturing arrangements for commercial production; and
- the costs of establishing or contracting for sales and marketing capabilities if we obtain regulatory approvals to market our current or future therapeutic candidates.

Identifying potential current or future therapeutic candidates and conducting preclinical testing and clinical trials is a time-consuming, expensive and uncertain process that takes years to complete, and we may never generate the necessary data or results required to obtain marketing approval and achieve drug sales.

In addition, our current or future therapeutic candidates, if approved, may not achieve commercial success. Our commercial revenues, if any, will be derived from sales of drugs that we do not expect to be commercially available for many years, if ever. Accordingly, we will need to continue to rely on additional funding to achieve our business objectives.

Any additional fundraising efforts may divert our management from their day-to-day activities, which may adversely affect our ability to develop and commercialize our current or future therapeutic candidates.

Disruptions in the financial markets in general have made equity and debt financing more difficult to obtain and may have a material adverse effect on our ability to meet our fundraising needs. We cannot guarantee that future financing will be available in sufficient amounts or on terms favorable to us, if at all. Moreover, the terms of any financing may adversely affect the holdings or the rights of our stockholders and the issuance of additional securities, whether equity or debt, by us, or the possibility of such issuance, may cause the market price of our shares to decline. The sale of additional equity or convertible securities would dilute all of our stockholders. The incurrence of indebtedness could result in fixed payment obligations, and we may be required to agree to certain restrictive covenants, such as limitations on our ability to incur additional debt, limitations on our ability to acquire, sell or license intellectual property rights and other operating restrictions that could adversely impact our ability to conduct our business. We could also be required to seek funds through arrangements with collaborators or otherwise at an earlier stage than otherwise would be desirable and we may be required to relinquish rights to some of our technologies or current or future therapeutic candidates or otherwise agree to terms unfavorable to us, any of which may have a material adverse effect on our business, operating results and prospects.

If we are unable to obtain funding on a timely basis, we may be required to significantly delay, scale back or discontinue one or more of our research or development programs or the commercialization of any therapeutic

candidates or be unable to expand our operations or otherwise capitalize on our business opportunities, as desired, which could materially affect our business, financial condition and results of operations.

We could lose our listing on the Nasdaq Capital Market, including if we do not meet the Nasdaq stockholders' equity requirement. The loss of our Nasdaq listing would in all likelihood make our common stock significantly less liquid and adversely affect its value.

Nasdaq Listing Rule 5550(b)(1) requires that companies listed on the Nasdaq Capital Market, or the Exchange, maintain stockholders' equity of at least $2,500,000, or the Stockholders' Equity Requirement. Beginning June 30, 2023, we did not meet this requirement until January 22, 2024. There is no assurance that we will be able to continue to meet this requirement in the future. Additionally, we will remain under the mandatory panel monitor as that term is defined in Nasdaq Listing Rule 5815(d)(4)(B), through January 27, 2025.

In the event of a delisting from the Nasdaq Capital Market, our stock would likely be traded in the over-the- counter inter-dealer quotation system, more commonly known as the OTC. OTC transactions involve risks in addition to those associated with transactions in securities traded on the securities exchanges, such as the Nasdaq Capital Market, or, together, Exchange-listed stocks. Many OTC stocks trade less frequently and in smaller volumes than Exchange-listed stocks. Accordingly, our stock would be less liquid than it would be otherwise. Also, the prices of OTC stocks are often more volatile than Exchange-listed stocks.

Additionally, institutional investors are usually prohibited from investing in OTC stocks, and it might be more challenging to raise capital when needed.

Cautionary Note Regarding Forward-Looking Statements

This prospectus supplement, the accompanying prospectus and the documents incorporated by reference herein contain forward-looking statements within the meaning of the federal securities laws, Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Exchange Act. We intend these forward-looking statements to be covered by the safe harbor provisions for forward-looking statements contained in the Private Securities Litigation Reform Act of 1995 and are included in this prospectus supplement, the accompanying prospectus and the documents incorporated by reference herein for purposes of complying with those safe harbor provisions. All statements other than statements of historical facts contained in this prospectus supplement, the accompanying prospectus and our other public filings are forward-looking statements. In some cases, you can identify forward-looking statements by terminology such as "may," "will," "should," "could," "expects," "plans," "intends," "anticipates," "believes," "estimates," "predicts," "potential," "continue," or the negative of these terms or other comparable terminology. These forward-looking statements include, but are not limited to, statements about our clinical development and trials, regulatory review and approvals, our results of operations and financial condition, liquidity, prospects, growth, strategies and the industry in which we operate. These forward-looking statements are subject to known and unknown risks and uncertainties, assumptions and other factors that could cause our actual results to differ materially from those expressed in, or implied by, these forward-looking statements. Factors that could cause these differences include, but are not limited to:

- our cash position, our estimates and expectations regarding our capital requirements, cash and expense levels, liquidity sources and our ability to obtain, on satisfactory terms or at all, the financing required to support operations, research, development, clinical trials, and commercialization of products;
- delisting of our common stock from trading on the Nasdaq Capital Market;
- our ability to continue as a going concern;
- the results and timing of our preclinical and clinical trial activities, including but not limited to our ability to enroll a sufficient number of patients timely to advance our clinical trials;
- our ability to expand our therapeutic candidate portfolio through internal research and development or the acquisition or in-licensing of intellectual property assets;
- the therapeutic benefits, effectiveness and safety of our therapeutic candidates;
- our ability to receive regulatory approval for our therapeutic candidates in the United States, Europe and other geographies;
- the expected regulatory approval pathway for our therapeutic candidates;
- potential changes in regulatory requirements, and delays or negative outcomes from the regulatory approval process;
- our reliance on third parties for the planning, conduct and monitoring of clinical trials, for the manufacture of clinical drug supplies and drug product meeting our specifications, and for other requirements;
- our estimates of the size and characteristics of the markets that may be addressed by our therapeutic candidates;
- market acceptance of our therapeutic candidates that are approved for marketing in the United States or other countries;
- our ability to successfully commercialize our therapeutic candidates, if approved for marketing;
- the safety and efficacy of therapeutics marketed by our competitors that are targeted to indications which our therapeutic candidates have been developed to treat;
- our ability to utilize our proprietary technological approach to develop and commercialize our therapeutic candidates;

- our heavy dependence on licensed intellectual property, including our ability to source and maintain licenses from third-party owners;
- our ability to protect our own or in-licensed intellectual property and operate our business without infringing the intellectual property rights of others;
- our ability to attract, retain and motivate key personnel;
- our ability to generate revenue and become profitable;
- our dependance on contract research organizations and other institutions to manage our clinical trials;
- the impact of natural disasters, global pandemics, armed conflicts and wars, labor disputes, lack of raw materials or other supplies, issues with facilities and equipment, or other forms of disruption to business operations at our manufacturing or laboratory facilities or those of our vendors;
- potential collaborations to license and commercialize any therapeutic candidates which receive regulatory approval in the future in or outside of the United States; and
- other risks and uncertainties, including those listed under the caption "*Risk Factors*" in our Annual Report on Form 10-K and in our other regulatory filings, including our Quarterly Report on Form 10-Q filed with the SEC on May 15, 2024.

The risks set forth above are not exhaustive. Other sections of this prospectus supplement, the accompanying prospectus and the documents incorporated by reference in this prospectus supplement and the accompanying prospectus may include additional factors that could adversely affect our business and financial performance. Moreover, we operate in a very competitive and rapidly changing environment. New risk factors emerge from time to time and it is not possible for management to predict all risk factors, nor can we assess the impact of all risk factors on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements. Forward-looking statements contained in or incorporated by reference into this prospectus supplement and the accompanying prospectus reflect our current views with respect to future events and with respect to our business and future 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. Given these uncertainties, you should not place undue reliance on 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.

Use of Proceeds

We estimate that the net proceeds we will receive from the sale of shares of our common stock in this offering, after deducting the placement agent's fees and estimated offering expenses payable by us and excluding the proceeds we may receive from any exercises of the Placement Agent Warrants, will be approximately $2,365,000.

We currently expect to use the net proceeds from this offering, together with our existing funds, for product development activities, including one or more clinical trials with TTX-MC138, our lead therapeutic candidate, including related IND-enabling studies, and for working capital and other general corporate purposes.

From time to time in the ordinary course of our business, we may evaluate the acquisition of, investment in or in-licensing of additional therapeutic candidates that we believe are commercially viable or to develop ourselves. We could use a portion of the net proceeds from this offering for such purposes. We may also use a portion of the net proceeds of this offering for the acquisition or licensing of additional technologies, other assets or businesses, or for other strategic investments or opportunities, although we currently have no understandings, agreements or commitments with respect to any of the foregoing.

Although we currently anticipate that we will use the net proceeds from this offering as described above, there may be circumstances where we determine that a different use of our funds is in the best interest of the company. The amounts and timing of our actual expenditures will depend upon numerous factors, including results and progress of our clinical trial activities, results of and progress of our preclinical development activities, the progress of any partnering efforts we conduct, our operating costs, technological advances, the competitive environment for our therapeutic candidates and other factors described in the section titled "*Risk Factors*" in this prospectus supplement, the accompanying prospectus and the documents incorporated by reference herein. Our management will have flexibility in applying the net proceeds from this offering and you will be relying on their judgment with regard to the use of these net proceeds. An investor purchasing shares of our common stock will not have the opportunity, as part of the investment decision, to evaluate the economic, financial or other information on which we base our decisions about how to use the proceeds or to make their own assessment of whether the proceeds are being used appropriately. It is possible that the net proceeds will be used in a way that does not yield a favorable, or any, return for us.

We believe that the net proceeds from this offering, together with our existing cash, will enable us to fund our operating expenses and capital expenditure requirements into late 2024. They are not expected to be sufficient to fund advancement of any of our therapeutic candidates through regulatory approval. We have based this estimate on assumptions that may prove to be wrong, and we could use our available capital resources sooner than we currently expect. We will need to raise substantial additional funds to complete development and commercialization of our therapeutic candidates which development or commercialization may not be successful.

Pending our use of the net proceeds from this offering as described above, we intend to invest the net proceeds in investment grade interest bearing instruments or will hold the proceeds in interest bearing or non-interest-bearing accounts in U.S. banks.

Dividend Policy

We have never declared or paid any cash dividends on our capital stock. We intend to retain all available funds and future earnings, if any, for development and expansion of our business. Any future determination regarding the declaration and payment of dividends, if any, will be at the discretion of our board of directors and will depend on then-existing conditions, including our financial condition, operating results, contractual restrictions, capital requirements, business prospects and other factors our board of directors deems relevant. Investors should not purchase our common stock with the expectation of receiving cash dividends.

Material U.S. Federal Income Tax Considerations to Non-U.S. Holders

The following discussion is a summary of certain material U.S. federal income tax consequences of the purchase, ownership and disposition of shares of our common stock issued pursuant to this offering (the "Shares"). The Shares are sometimes referred to herein as our securities. This summary does not purport to be a complete analysis of all potential tax consequences relating to the purchase, ownership, exercise, lapse and disposition of our securities. The effects of other U.S. federal tax laws, such as estate and gift tax laws, and any applicable U.S. state or local or non-U.S. tax laws are not discussed, nor is the potential application of the alternative minimum tax, the Medicare contribution tax on net investment income, or the special tax accounting rules under Section 451(b) of the U.S. Internal Revenue Code of 1986, as amended, or the Code. This discussion is based on the Code, Treasury Regulations promulgated thereunder, judicial decisions, and published rulings and administrative pronouncements of the U.S. Internal Revenue Service, or the IRS, in each case in effect as of the date hereof. These authorities may change or be subject to differing interpretations. Any such change or differing interpretation may be applied retroactively in a manner that could adversely affect a holder. We have not sought and will not seek any rulings from the IRS regarding the matters discussed below. There can be no assurance the IRS or a court will not take a contrary position to that discussed below regarding the tax consequences of the purchase, ownership, exercise, lapse and disposition (as applicable) of our securities.

This discussion is limited to holders that hold our securities as "capital assets" within the meaning of Section 1221 of the Code (generally, property held for investment). This discussion does not address all U.S. federal income tax consequences relevant to a holder's particular circumstances. In addition, it does not address consequences relevant to holders subject to special rules, including, without limitation:

- holders that own or are deemed to own more than 5% of our capital stock;
- certain former citizens or long-term residents of the United States;
- persons for whom shares of our common stock constitute "qualified small business stock" within the meaning of Section 1202 of the Code;
- persons holding our securities as part of a hedge, straddle or other risk reduction strategy or as part of a conversion transaction or other integrated investment;
- persons deemed to sell our securities under the constructive sale provisions of the Code;
- banks, insurance companies, and other financial institutions;
- brokers, dealers or traders in securities or currencies;
- "controlled foreign corporations," "passive foreign investment companies," and corporations that accumulate earnings to avoid U.S. federal income tax;
- S corporations, partnerships or other entities or arrangements treated as partnerships for U.S. federal income tax purposes (and investors therein);
- tax-exempt organizations or governmental organizations;
- tax-qualified retirement plans;
- holders who hold or receive our securities pursuant to the exercise of employee stock options or otherwise as compensation; and
- "qualified foreign pension funds" as defined in Section 897(l)(2) of the Code and entities all of the interests of which are held by one or more qualified foreign pension funds.

If an entity or arrangement treated as a partnership for U.S. federal income tax purposes holds our securities, the tax treatment of a partner in such partnership will depend on the status of the partner, the activities of the partnership and certain determinations made at the partner level. Accordingly, partnerships holding securities and the partners in such partnerships should consult their tax advisors regarding the U.S. federal income tax consequences to them.

THIS DISCUSSION IS NOT TAX ADVICE. INVESTORS SHOULD CONSULT THEIR TAX ADVISORS WITH RESPECT TO THE APPLICATION OF THE U.S. FEDERAL INCOME TAX LAWS TO THEIR PARTICULAR SITUATIONS AS WELL AS ANY TAX CONSEQUENCES OF THE PURCHASE, OWNERSHIP, EXERCISE, LAPSE AND DISPOSITION OF OUR SECURITIES ARISING UNDER THE U.S. FEDERAL ESTATE OR GIFT TAX LAWS OR UNDER THE LAWS OF ANY U.S. STATE OR LOCAL OR NON-U.S. TAXING JURISDICTION OR UNDER ANY APPLICABLE INCOME TAX TREATY.

Tax Considerations Applicable to U.S. Holders

Definition of U.S. Holder

In general, a "U.S. holder" means a beneficial owner of our securities (other than a partnership or an entity or arrangement treated as a partnership for U.S. federal income tax purposes) that is, for U.S. federal income tax purposes:

- an individual who is a citizen or resident of the United States;
- a corporation, or an entity treated as a corporation for U.S. federal income tax purposes, created or organized in the United States or under the laws of the United States or of any state thereof or the District of Columbia;
- an estate, the income of which is subject to U.S. federal income tax regardless of its source; or
- a trust if (a) a U.S. court can exercise primary supervision over the trust's administration and one or more U.S. persons have the authority to control all of the trust's substantial decisions or (b) the trust has a valid election in effect under applicable U.S. Treasury Regulations to be treated as a U.S. person.

Distributions on the Shares

As described in the section titled "Dividend Policy," we do not anticipate declaring any cash dividends to holders of common stock in the foreseeable future. However, if we do make distributions (including constructive distributions as described below) on our Shares, such distributions will constitute dividends to the extent paid from our current or accumulated earnings and profits, as determined under U.S. federal income tax principles, and will be includible in your income as ordinary income when received. However, with respect to dividends received by individuals, such dividends generally are taxed under current law at applicable long-term capital gains rates, provided certain holding period requirements are satisfied. If a distribution exceeds our current and accumulated earnings and profits, the excess will be treated as a tax-free return of the U.S. holder's investment, up to such U.S. holder's adjusted tax basis in the Shares. Any remaining excess will be treated as capital gain from the sale or exchange of such Shares, as applicable, subject to the tax treatment described below in "— Sale or Other Taxable Disposition of Our Securities."

Sale or Other Taxable Disposition of Our Securities

Upon the sale, exchange or other taxable disposition of the Shares, a U.S. holder will generally recognize capital gain or loss equal to the difference between the amount of cash and the fair market value of any property received upon the sale, exchange or other taxable disposition and such U.S. holder's adjusted tax basis in such securities. This capital gain or loss will be long-term capital gain or loss if the U.S. holder's holding period in such securities is more than one year at the time of the sale, exchange or other taxable disposition. Long-term capital gains recognized by certain non-corporate U.S. holders, including individuals, generally will be subject to reduced rates of U.S. federal income tax. The deductibility of capital losses is subject to limitations.

Backup Withholding and Information Reporting

A U.S. holder may be subject to information reporting and backup withholding when such holder receives payments on our securities (including constructive dividends) or receives proceeds from the sale or other taxable disposition of our securities. Certain U.S. holders are exempt from backup withholding, including

C corporations and certain tax-exempt organizations. A U.S. holder will be subject to backup withholding if such holder is not otherwise exempt and such holder:

- fails to furnish the holder's taxpayer identification number, which for an individual is ordinarily his or her social security number;
- furnishes an incorrect taxpayer identification number;
- is notified by the IRS that the holder previously failed to properly report payments of interest or dividends; or
- fails to certify under penalties of perjury that the holder has furnished a correct taxpayer identification number and that the IRS has not notified the holder that the holder is subject to backup withholding.

Backup withholding is not an additional tax. Any amounts withheld under the backup withholding rules may be allowed as a refund or a credit against a U.S. holder's U.S. federal income tax liability, provided the required information is timely furnished to the IRS. U.S. holders should consult their tax advisors regarding their qualification for an exemption from backup withholding and the procedures for obtaining such an exemption.

Tax Considerations Applicable to Non-U.S. Holders

Definition of Non-U.S. Holder

For purposes of this discussion, a "non-U.S. holder" is a beneficial owner of our securities that is neither a U.S. holder (nor a partnership or an entity or arrangement treated as a partnership) for U.S. federal income tax purposes.

Distributions and Constructive Distributions

As described in the section titled "Dividend Policy," we do not anticipate declaring any cash dividends to holders of our common stock in the foreseeable future. However, if we do make distributions of cash or property on the Shares, such actual or deemed distributions 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. Amounts not treated as dividends for U.S. federal income tax purposes will constitute a return of capital and first be applied against and reduce a non-U.S. holder's adjusted tax basis in its Shares, but not below zero. Any excess will be treated as capital gain and will be treated as described below under "— Sale or Other Taxable Disposition of Our Securities."

Subject to the discussion below on effectively connected income, backup withholding and FATCA, dividends paid or deemed paid to a non-U.S. holder will be subject to U.S. federal withholding tax at a rate of 30% of the gross amount of the actual or deemed dividends (or such lower rate specified by an applicable income tax treaty, provided the non-U.S. holder furnishes a valid IRS Form W-8BEN or W-8BEN-E (or other applicable documentation) certifying qualification for the lower treaty rate). Because a constructive dividend deemed received by a non-U.S. holder would not give rise to any cash from which any applicable withholding tax could be satisfied, if withholding taxes are paid on behalf of a non-U.S. holder, those withholding taxes may be set off against payments of cash on the Shares or sales proceeds received by or other funds or assets of such non-U.S. holder. A non-U.S. holder that does not timely furnish the required documentation, but that qualifies for a reduced treaty rate of U.S. federal withholding tax, may obtain a refund of any excess amounts withheld by timely filing an appropriate claim for refund with the IRS. Non-U.S. holders should consult their tax advisors regarding their entitlement to benefits under any applicable income tax treaties.

If dividends paid or deemed paid to a non-U.S. holder are effectively connected with the non-U.S. holder's conduct of a trade or business within the United States (and, if required by an applicable income tax treaty, the non-U.S. holder maintains a permanent establishment in the United States to which such dividends are attributable), the non-U.S. holder will be exempt from the U.S. federal withholding tax described above. To claim the exemption, the non-U.S. holder must furnish to the applicable withholding agent a valid IRS Form W-8ECI, certifying that the dividends are effectively connected with the non-U.S. holder's conduct of a

trade or business within the United States. Any such effectively connected dividends will be subject to U.S. federal income tax on a net income basis at the regular rates. A non-U.S. holder that is a corporation also may be subject to a branch profits tax at a rate of 30% (or such lower rate specified by an applicable income tax treaty) on such effectively connected dividends, as adjusted for certain items.

Non-U.S. holders should consult their tax advisors regarding any applicable income tax treaties that may provide for different rules.

Sale or Other Taxable Disposition of Our Securities

Subject to the discussions below regarding backup withholding and FATCA, a non-U.S. holder will not be subject to U.S. federal income tax on any gain realized upon the sale or other taxable disposition of our securities unless:

- the gain is effectively connected with the non-U.S. holder's conduct of a trade or business within the United States (and, if required by an applicable income tax treaty, the non-U.S. holder maintains a permanent establishment in the United States to which such gain is attributable);
- the non-U.S. holder is a nonresident alien individual present in the United States for a period or periods aggregating 183 days or more during the taxable year of the disposition and certain other requirements are met; or
- we are, or have been, at any time during the five-year period preceding such disposition (or the non-U.S. holder's holding period, if shorter) a "U.S. real property holding corporation", or USRPHC, for U.S. federal income tax purposes.

Gain described in the first bullet point above generally will be subject to U.S. federal income tax on a net income basis at the regular rates applicable to United States persons (as defined in the Code). A non-U.S. holder that is a corporation also may be subject to a branch profits tax at a rate of 30% (or such lower rate specified by an applicable income tax treaty) on such effectively connected gain, as adjusted for certain items.

Gain described in the second bullet point above will be subject to U.S. federal income tax at a rate of 30% (or such lower rate specified by an applicable income tax treaty), which may be offset by certain U.S. source capital losses of the non-U.S. holder (even though the individual is not considered a resident of the United States), provided the non-U.S. holder has timely filed U.S. federal income tax returns with respect to such losses.

With respect to the third bullet point above, we believe we currently are not, and do not anticipate becoming, a USRPHC. Because the determination of whether we are a USRPHC depends, however, on the fair market value of our USRPIs relative to the fair market value of our worldwide real property interests and our other business assets, there can be no assurance we currently are not a USRPHC or that we will not become one in the future. Even if we are or were to become a USRPHC, gain arising from the sale or other taxable disposition of the shares or common stock by a non-U.S. holder will not be subject to U.S. federal income tax if our common stock is "regularly traded," as defined by applicable Treasury Regulations, on an established securities market, and such non-U.S. holder owned, actually and constructively, 5% or less of our common stock throughout the shorter of the five-year period ending on the date of the sale or other taxable disposition or the non-U.S. holder's holding period. There can be no assurance that our common stock will be or continue to be regularly traded on an established securities market.

Non-U.S. holders should consult their tax advisors regarding any applicable income tax treaties that may provide for different rules.

Information Reporting and Backup Withholding

Payments of distributions on our securities (and constructive distributions deemed paid) will not be subject to backup withholding, provided the non-U.S. holder certifies its non-U.S. status, such as by furnishing a valid IRS Form W-8BEN, W-8BEN-E or W-8ECI, or otherwise establishes an exemption. However, information

returns are required to be filed with the IRS in connection with any distributions paid or deemed paid to the non-U.S. holder, regardless of whether any tax was actually withheld. In addition, proceeds of the sale or other taxable disposition of our securities within the United States or conducted through certain U.S.-related brokers generally will not be subject to backup withholding or information reporting if the applicable withholding agent receives the certification described above or the non-U.S. holder otherwise establishes an exemption. Proceeds of a disposition of our common stock conducted through a non-U.S. office of a non-U.S. broker that does not have certain enumerated relationships with the United States generally will not be subject to backup withholding or information reporting.

Copies of information returns that are filed with the IRS may also be made available under the provisions of an applicable treaty or agreement to the tax authorities of the country in which the non-U.S. holder resides or is established.

Backup withholding is not an additional tax. Any amounts withheld under the backup withholding rules may be allowed as a refund or a credit against a non-U.S. holder's U.S. federal income tax liability, provided the required information is timely furnished to the IRS.

Additional Withholding Tax on Payments Made to Foreign Accounts

Withholding taxes may be imposed under Sections 1471 to 1474 of the Code (such Sections commonly referred to as the Foreign Account Tax Compliance Act, or FATCA) on certain types of payments made to non-U.S. financial institutions and certain other non-U.S. entities. Specifically, a 30% withholding tax may be imposed on actual or deemed dividends on, or (subject to the proposed Treasury Regulations discussed below) gross proceeds from the sale or other disposition of, our securities paid to a "foreign financial institution" or a "non-financial foreign entity" (each as defined in the Code), unless (1) the foreign financial institution undertakes certain diligence and reporting obligations, (2) the non-financial foreign entity either certifies it does not have any "substantial United States owners" (as defined in the Code) or furnishes identifying information regarding each substantial United States owner, or (3) the foreign financial institution or non-financial foreign entity otherwise qualifies for an exemption from these rules. If the payee is a foreign financial institution and is subject to the diligence and reporting requirements in (1) above, it must enter into an agreement with the U.S. Department of the Treasury requiring, among other things, that it undertake to identify accounts held by certain "specified United States persons" or "United States owned foreign entities" (each as defined in the Code), annually report certain information about such accounts, and withhold 30% on certain payments to non-compliant foreign financial institutions and certain other account holders. Foreign financial institutions located in jurisdictions that have an intergovernmental agreement with the United States governing FATCA may be subject to different rules.

Under applicable Treasury Regulations and administrative guidance, withholding under FATCA generally applies to payments of actual or deemed dividends on our securities. Proposed Treasury Regulations eliminate FATCA withholding on payments of gross proceeds from the sale or other disposition of our securities. Taxpayers generally may rely on these proposed Treasury Regulations until final Treasury Regulations are issued.

Prospective investors should consult their tax advisors regarding the potential application of withholding under FATCA to their investment in our securities.

EACH PROSPECTIVE INVESTOR SHOULD CONSULT ITS TAX ADVISOR REGARDING THE PARTICULAR U.S. FEDERAL, STATE AND LOCAL AND NON-U.S. TAX CONSEQUENCES OF THE PURCHASE, OWNERSHIP, EXERCISE, LAPSE AND DISPOSITION OF OUR SECURITIES, INCLUDING THE CONSEQUENCES OF ANY PROPOSED CHANGE IN APPLICABLE LAWS.

Plan of Distribution

We have engaged ThinkEquity LLC, or the placement agent, to act as our exclusive placement agent to solicit offers to purchase the shares of common stock offered by this prospectus supplement. The placement agent is not purchasing or selling any such securities, nor is it required to arrange for the purchase and sale of any specific number or dollar amount of such securities, other than to use its "reasonable best efforts" to arrange for the sale of such securities by us. Therefore, we may not sell all of the shares of common stock being offered. The terms of this offering are subject to market conditions and negotiations among us, the placement agent and prospective investors. The placement agent will have no authority to bind us by virtue of their placement agency agreement. This is a best efforts offering and there is no minimum offering amount required as a condition to the closing of this offering. The placement agent may retain sub-agents and selected dealers in connection with this offering.

Investors purchasing securities offered hereby will have the option to execute a securities purchase agreement with us. Investors who do not enter into a securities purchase agreement shall rely solely on this prospectus supplement and the accompanying prospectus in connection with their purchase of our securities in this offering. In addition to rights and remedies available to all purchasers in this offering under federal securities and state law, purchasers who enter into a securities purchase agreement may also be able to bring claims of breach of contract against us in certain events.

Delivery of the securities is expected to occur on the second business day following the date of pricing of the securities which is on or about July 24, 2024, subject to satisfaction of certain customary closing conditions. Under Rule 15c6-1 of the Exchange Act, trades in the secondary market generally are required to settle in one business day, unless the parties to any such trade expressly agree otherwise. Pursuant to this prospectus supplement, the original issue date for the securities will be more than one business day after the trade date. Accordingly, if a holder wishes to trade its securities on any date prior to the first business day before the original issue date for such securities, such holder will be required, by virtue of the fact that the securities initially are expected to settle on the second business day following the date of pricing of the securities, to make alternative settlement arrangements to prevent a failed settlement.

Fees and Expenses

The following table shows the per share price in this offering, cash fees we will pay to the placement agent in connection with the sale of the securities pursuant to this prospectus supplement, and the total amounts of these items.

	Per Share of Common Stock	Total
Offering price	$ 0.30	$3,000,000
Placement agent commissions (7.0%)	$0.021	$ 210,000
Proceeds, before expense, to us	$0.279	$2,790,000

We have agreed to pay a non-accountable expense allowance to the placement agent equal to 1% of the gross proceeds received in this offering.

We have also agreed to pay certain of the placement agent's expenses relating to the offering, including: (a) all fees, expenses and disbursements relating to background checks of our officers, directors and entities in an amount not to exceed $15,000 in the aggregate; (b) fees and expenses of the placement agent's legal counsel not to exceed $125,000; (c) a $29,500 cost associated with the placement agent use of Ipreo's book-building, prospectus tracking and compliance software for the offering; (d) $10,000 for data services and communications expenses; (e) up to $30,000 of market making, trading, and clearing firm settlement expenses for the offering; (f) up to $10,000 of the placement agent's actual accountable "road show" expenses; and (g) up to $2,500 of the costs associated with bound volumes of the public offering materials as well as commemorative mementos and lucite tombstones.

Our total estimated expenses of the offering, including registration, filing and listing fees, printing fees and legal and accounting expenses, but excluding placement agent fees and excluding the non-accountable expense allowance, are approximately $395,000.

Placement Agent's Warrants

Upon closing of this offering, we have agreed to issue the placement agent warrants ("Placement Agent's Warrants") to purchase up to 500,000 shares of common stock (5% of the aggregate number of shares of common stock sold in this offering). The Placement Agent's Warrants will be exercisable at a per share exercise price equal to $0.375, which is equal to 125% of the public offering price per share in this offering. The Placement Agent's Warrants are exercisable at any time and from time to time, in whole or in part, during the five-year period commencing 180 days from the commencement of sales of the shares of common stock in this offering.

The Placement Agent's Warrants have been deemed compensation by FINRA and are therefore subject to a 180-day lock-up pursuant to FINRA Rule 5110(e)(1)(A). The placement agent (or permitted assignees under Rule 5110(e)(2)) will not sell, transfer, assign, pledge, or hypothecate these warrants or the securities underlying these warrants, nor will they engage in any hedging, short sale, derivative, put, or call transaction that would result in the effective economic disposition of the warrants or the underlying securities for a period of 180 days following the commencement of sales of the securities issued in this offering. In addition, the Placement Agent's Warrants provide for registration rights upon request, in certain cases. The sole demand registration right provided will not be greater than five years from the commencement of sales of the securities issued in this offering in compliance with FINRA Rule 5110(g)(8)(C). The piggyback registration rights provided will not be greater than seven years from the commencement of sales of the securities issued in this offering in compliance with FINRA Rule 5110(g)(8)(D). We will bear all fees and expenses attendant to registering the securities issuable on exercise of the warrants other than underwriting commissions incurred and payable by the holders. The exercise price and number of shares issuable upon exercise of the Placement Agent's Warrants may be adjusted in certain circumstances including in the event of a stock dividend or our recapitalization, reorganization, merger or consolidation. However, the Placement Agent's Warrant exercise price or underlying securities will not be adjusted for issuances of shares of common stock at prices below the warrant exercise price.

Lock-Up Agreements

Pursuant to "lock-up" agreements, we and our executive officers, directors and affiliates have agreed, for a period of 60 and 90 days, respectively, from the date of this prospectus supplement not to, directly or indirectly, offer to sell, sell, pledge or otherwise transfer or dispose of any of shares of (or enter into any transaction or device that is designed to, or could be expected to, result in the transfer or disposition by any person at any time in the future of) our shares of common stock, enter into any swap or other derivatives transaction that transfers to another, in whole or in part, any of the economic benefits or risks of ownership of shares of our common stock, make any demand for or exercise any right or cause to be filed a registration statement, including any amendments thereto, with respect to the registration of any shares of common stock or securities convertible into or exercisable or exchangeable for shares of common stock or any other of our securities or publicly disclose the intention to do any of the foregoing, subject to customary exceptions, without the prior written consent of the placement agent. We have also agreed to a covenant not to enter into variable rate financings for a period of 12 months following the closing of this offering without the consent of the placement agent.

Right of First Refusal

We have granted the placement agent an irrevocable right of first refusal, until May 17, 2025, to act, except under certain circumstances, as sole investment banker, sole book-runner and/or sole placement agent, at the placement agent's sole discretion, for each and every future public and private equity and debt offering, including all equity linked financings, when the Company seeks an investment banker, book-runner or placement agent, during such period for the Company, or any successor to or any subsidiary of the Company,

on reasonable and customary terms. The placement agent shall have the sole right to determine whether or not any other broker dealer shall have the right to participate in any such offering and the economic terms of any such participation.

Regulation M Compliance

The placement agent may be deemed to be an underwriter within the meaning of Section 2(a)(11) of the Securities Act, and any commissions received by it and any profit realized on the sale of our securities offered hereby by it while acting as principal might be deemed to be underwriting discounts or commissions under the Securities Act. The placement agent will be required to comply with the requirements of the Securities Act and the Exchange Act, including, without limitation, Rule 10b-5 and Regulation M under the Exchange Act. These rules and regulations may limit the timing of purchases and sales of our securities by the placement agent. Under these rules and regulations, the placement agent may not (i) engage in any stabilization activity in connection with our securities; and (ii) bid for or purchase any of our securities or attempt to induce any person to purchase any of our securities, other than as permitted under the Exchange Act, until they have completed their participation in the distribution.

Indemnification

We have agreed to indemnify the placement agent against certain liabilities, including liabilities under the Securities Act and liabilities arising from breaches of representations and warranties contained in our placement agency agreement with the placement agent. We have also agreed to contribute to payments the placement agent may be required to make in respect of such liabilities.

Nasdaq Capital Market Listing

Our common stock is listed on The Nasdaq Capital Market under the symbol “RNAZ.”

Other

From time to time, the placement agent and/or their affiliates may in the future provide various investment banking and other financial services for us for which they may receive customary fees. In the course of their businesses, the placement agent and their affiliates may actively trade our securities or loans for their own account or for the accounts of customers, and, accordingly, the placement agent and their affiliates may at any time hold long or short positions in such securities or loans.

Except for services provided in connection with this offering, the placement agent has not provided any investment banking or other financial services to us during the 180-day period preceding the date of this prospectus supplement.

Legal Matters

The validity of the securities offered by this prospectus will be passed upon for us by Goodwin Procter LLP. Certain legal matters will be passed upon for the placement agent by Troutman Pepper Hamilton Sanders LLP.

Experts

Our financial statements as of and for the years ended December 31, 2023 and 2022, included in our Annual Report on Form 10-K have been audited by Withum Smith+Brown, PC, independent registered public accounting firm, as stated in their report incorporated herein by reference (which report includes an explanatory paragraph about the existence of substantial doubt concerning the Company's ability to continue as a going concern). Such financial statements have been so included in reliance upon the authority of said firm as experts in accounting and auditing.

Where You Can Find More Information

We are subject to the information requirements of the Exchange Act and, in accordance therewith, file annual, quarterly and special reports, proxy statements and other information with the SEC. These documents also may be accessed through the SEC's electronic data gathering, analysis and retrieval system, or EDGAR, via electronic means, including the SEC's home page on the internet (www.sec.gov). You may also inspect the registration statement and this prospectus supplement on this SEC website.

We have the authority to designate and issue more than one class or series of stock having various preferences, conversion and other rights, voting powers, restrictions, limitations as to dividends, qualifications, and terms and conditions of redemption. We will furnish a full statement of the relative rights and preferences of each class or series of our stock which has been so designated and any restrictions on the ownership or transfer of our stock to any shareholder upon request and without charge. Written requests for such copies should be directed to our Investor Relations Department, TransCode Therapeutics, Inc., 6 Liberty Square, #2382, Boston, Massachusetts 02109. Our website is located at https://www.transcodetherapeutics.com/. Information contained on our website is not incorporated by reference into this prospectus supplement or the accompanying prospectus, and, except for the documents incorporated by reference as noted below, you should not consider any information on, or that can be accessed from, our website as part of this prospectus supplement or the accompanying prospectus.

Incorporation by Reference

The SEC allows us to incorporate by reference the information and reports we file with it, which means that we can disclose important information to you by referring you to these documents. The information incorporated by reference is an important part of this prospectus supplement and the accompanying prospectus, and information that we file after the date hereof with the SEC will automatically update and supersede the information already incorporated by reference. We are incorporating by reference the documents listed below, which we previously filed with the SEC, and any future filings we make with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act, except as to any portion of any future report or document that is not deemed filed under such provisions, after the date of this prospectus supplement and prior to the termination of this offering:

- our Annual Report on Form 10-K for the fiscal year ended December 31, 2023, filed with the SEC on April 1, 2024;
- our Definitive Proxy Statement on Schedule 14A (other than information furnished rather than filed), filed with the SEC on May 20, 2024;
- our Quarterly Reports on Form 10-Q for the quarter ended March 31, 2024, filed with the SEC on May 15, 2024;
- our Current Reports on Form 8-K filed with the SEC on January 8, 2024; January 16, 2024; January 22, 2024; January 31, 2024; April 5, 2024; April 23, 2024; May 10, 2024; May 15, 2024; June 7, 2024; and June 14, 2024; and
- the description of our common stock contained in our registration statement on Form 8-A filed with the SEC on April 26, 2021, as supplemented by the description of our common stock contained in Exhibit 4.1 to our Annual Report on Form 10-K for the year ended December 31, 2021, filed with the SEC on March 31, 2022, and any amendment or report filed with the SEC for the purpose of updating such description.

Pursuant to Rule 412 under the Securities Act, any statement contained in a document incorporated or deemed to be incorporated by reference into this prospectus supplement and the accompanying prospectus will be deemed to be modified or superseded for purposes of this prospectus to the extent that a statement contained in this prospectus supplement, the accompanying prospectus or any other subsequently filed document that is deemed to be incorporated by reference into this prospectus supplement and the accompanying prospectus modifies or supersedes the statement. Any statement so modified or superseded will not be deemed, except as so modified or superseded, to constitute a part of this prospectus.

Upon request, we will provide, without charge, to each person, including any beneficial owner, to whom a copy of this prospectus supplement and the accompanying prospectus is delivered, a copy of the documents incorporated by reference into this prospectus supplement and the accompanying prospectus but not delivered with the prospectus. You may request a copy of these filings, and any exhibits we have specifically incorporated by reference as an exhibit in this prospectus supplement and the accompanying prospectus, at no cost, by writing to us at the following address: Investor Relations Department, TransCode Therapeutics, Inc., 6 Liberty Square, #2382, Boston, Massachusetts 02109. These filings may also be obtained through our website located at https://www.transcodetherapeutics.com/. The reference to our website is intended to be an inactive textual reference and, except for the documents incorporated by reference as noted above, the information on, or accessible through, our website is not intended to be part of this prospectus supplement and the accompanying prospectus.

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

PROSPECTUS

$150,000,000

TRANSCODE THERAPEUTICS™

Common Stock
Preferred Stock
Debt Securities
Warrants
Units

We may from time to time issue, in one or more series or classes, up to $150,000,000 in aggregate principal amount of our common stock, preferred stock, debt securities, warrants and/or units, in any combination, together or separately, in one or more offerings, in amounts, at prices and on the terms that we will determine at the time of the offering and which will be set forth in a prospectus supplement and any related free writing prospectus.

We may offer these securities separately or together in units. Each time we sell securities described herein, we will provide prospective investors with a supplement to this prospectus that will specify 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 related 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.

The address of our principal executive offices is 6 Liberty Square, #2382, Boston, Massachusetts 02109.

Our common stock is listed on the Nasdaq Capital Market under the symbol “RNAZ.” Based on the last reported sale price of our common stock of $1.23 per share, as reported on the Nasdaq Capital Market on October 18, 2022, the aggregate market value of our public float, calculated according to General Instruction I.B.6. of Form S-3, is $10,663,844.16 based on 12,977,234 shares of our common stock outstanding as of October 18, 2022, of which 8,669,792 shares of our common stock are held by non-affiliates. We have not offered any securities pursuant to General Instruction I.B.6. of Form S-3 during the prior 12 calendar month period that ends on, and includes, the date of this prospectus.

Investing in our securities involves a high degree of risk. You should review carefully the risks and uncertainties described under the heading “Risk Factors” contained in this prospectus beginning on page 3 and any applicable prospectus supplement, and under similar headings in the other documents that are incorporated by reference into 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 December 16, 2022.

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ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement, as amended, that we filed with the U.S. Securities and Exchange Commission, or SEC, under the Securities Act of 1933, as amended, or Securities Act.

Under this shelf registration process, we may offer the securities described in this prospectus from time to time in one or more offerings for an aggregate offering amount of up to $150,000,000, at prices and on terms to be determined by market conditions at the time of offering. This prospectus provides you with a general description of the securities we may offer. Each time we offer a type or series of securities, we will provide a prospectus supplement that will describe the specific amounts, prices and other important terms of the securities.

Registration of the securities covered by this prospectus does not mean that these securities will necessarily be offered or sold. As of the date of filing of this registration statement, we have no specific plans for selling the securities registered hereunder.

A prospectus supplement may include a discussion of risks or other special considerations applicable to us or the offered securities. A prospectus supplement or any free writing prospectus may also add, update or change information in this prospectus. **If there is any inconsistency between the information in this prospectus and the applicable prospectus supplement, you must rely on the information in the prospectus supplement**. Please carefully read both this prospectus, including the information incorporated by reference into this prospectus, and the applicable prospectus supplement or any free writing prospectus together with additional information described under the heading "Where You Can Find More Information." This prospectus may not be used to offer or sell any securities unless accompanied by a prospectus supplement.

The registration statement containing this prospectus, including exhibits to the registration statement, provides additional information about us and the securities offered under this prospectus. The registration statement can be read at the SEC website mentioned under the heading "Where You Can Find More Information."

We may sell the securities directly or to or through underwriters, dealers or agents. We and our underwriters or agents, reserve the right to accept or reject all or part of any proposed purchase of securities. If we do offer securities through underwriters or agents, we will include in the applicable prospectus supplement:

- the names of those underwriters or agents;
- applicable fees, discounts and commissions to be paid to them;
- details regarding over-allotment options, if any; and
- the net proceeds to us.

We have not authorized any broker-dealer, salesperson or other person to give any information or to make any representation other than those contained or incorporated by reference in this prospectus and the accompanying supplement to this prospectus. You must not rely upon any information or representation not contained or incorporated by reference in this prospectus or the accompanying prospectus supplement. This prospectus and the accompanying supplement to this prospectus and any free writing prospectus do not constitute an offer to sell or the solicitation of an offer to buy securities, nor do this prospectus and the accompanying supplement to this prospectus and any free writing prospectus constitute an offer to sell or the solicitation of an offer to buy securities in any jurisdiction to any person to whom it is unlawful to make such offer or solicitation. The information contained in this prospectus and the accompanying prospectus supplement and any free writing prospectus speaks only as of their respective dates and may not reflect subsequent changes in our business, financial condition, results of operations and business prospects even though this prospectus and any accompanying prospectus supplement and any free writing prospectus is delivered or securities are sold on a later date.

Unless the context otherwise indicates, references in this prospectus, and any accompanying prospectus, to "TransCode," "we," "our," "us" and the "Company" refer, collectively, to TransCode Therapeutics, Inc.

TRADEMARKS, SERVICE MARKS AND TRADE NAMES

We own, have applied for or have rights to use one or more registered and common law trademarks, service marks and/or trade names in connection with our business in the United States and/or in certain foreign jurisdictions.

This prospectus and the documents incorporated herein by reference may contain trademarks, service marks and trade names of third parties which are the property of their respective owners. Our use or display of third parties' trademarks, service marks, trade names or products in this prospectus, any applicable prospectus supplement and our other public filings is not intended to, and does not imply a relationship with, or endorsement or sponsorship by us. Solely for convenience, the trademarks, service marks, logos and trade names referred to in this prospectus, any applicable prospectus supplement and the documents incorporated herein by reference may appear without the ®, ™ or ℠ symbols, but the omission of such references is not intended to indicate, in any way, that we will not assert, to the fullest extent under applicable law, our rights or the rights of the applicable owner of or licensor to these trademarks, service marks and trade names.

This prospectus contains additional trademarks, service marks and trade names of others, which are the property of their respective owners. All trademarks, service marks and trade names appearing in this prospectus are, to our knowledge, the property of their respective owners. We do not intend our use or display of other companies' trademarks, service marks, copyrights or trade names to imply a relationship with, or endorsement or sponsorship of us by, any other company.

On October 20, 2021, TransCode Therapeutics, Inc. applied to the United States Commissioner of Trademarks to register TRANSCODE THERAPEUTICS as a trademark under International Class 005, pharmaceutical preparations for the treatment of cancer, diagnostic preparations for medical purposes, having Serial Number 97/083236. For the purpose of this prospectus, TransCode Therapeutics® is referred to as TransCode.

RISK FACTORS

Investing in our securities involves a high degree of risk. You should carefully consider the risks 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, any applicable prospectus supplement and any applicable prospectus supplement, before making an investment decision. Our business, financial condition, results of operations or business prospects could be materially adversely affected by the materialization or realization of any of these risks as well as other risks about which we are not aware or which we do not presently deem material. The trading price of our securities could decline due to the materialization or realization of any of these risks, and you may lose all or part of your investment. This prospectus, any applicable prospectus supplement 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 or by these forward-looking statements as a result of certain factors, including the risks described herein or in the documents incorporated herein by reference, including (i) our Annual Report on Form 10-K for the fiscal year ended December 31, 2021, which is on file with the SEC and is incorporated herein by reference, as updated by our subsequent annual, quarterly and other reports and documents that are incorporated by reference into this prospectus and (ii) other documents we file with the SEC that are deemed incorporated by reference into this prospectus.

CAUTIONARY STATEMENT REGARDING FORWARD-LOOKING STATEMENTS

This prospectus, any applicable prospectus supplement, any free writing prospectus and the documents incorporated by reference herein contain forward-looking statements within the meaning of the federal securities laws, Section 27A of the Securities Act and Section 21E of the Securities Exchange Act of 1934, or Exchange Act. We intend these forward-looking statements to be covered by the safe harbor provisions for forward-looking statements contained in the Private Securities Litigation Reform Act of 1995 and are included in this prospectus, any applicable prospectus supplement, any free writing prospectus and the documents incorporated by reference herein for purposes of complying with those safe harbor provisions. Please see the Cautionary Statement Regarding Forward-Looking Statements in each document incorporated by reference for information about that filing's forward-looking statements. All statements other than statements of historical facts contained in this prospectus, any applicable prospectus supplement, any free writing prospectus and our other public filings are forward-looking statements. In some cases, you can identify forward-looking statements by terminology such as "may," "will," "should," "could," "expects," "plans," "intends," "anticipates," "believes," "estimates," "predicts," "potential," "continue" or the negative of these terms or other comparable terminology. These forward-looking statements include, but are not limited to, statements about:

- our estimates and expectations regarding our capital requirements, cash and expense levels, liquidity sources and our need for additional financing;
- whether we will authorize or issue any securities mentioned in this prospectus or the method of distribution on which we will rely during any such sale;
- whether any supplemental prospectus will be filed and whether such a prospectus will adequately specify the terms of securities being offered;
- whether any of the patent applications or trademark registrations that are currently pending will be issued;
- the development of our platforms commercially or otherwise or what they may be developed into in the future;
- the design, conduct and outcome of our planned preclinical activities to support an eIND for our planned Phase 0 trial of a radiolabeled version of TTX-MC138, our lead product candidate focused on metastatic cancer treatment, and our ability to initiate and complete this trial or Phase I/II clinical trials;
- our ability to expand our drug candidate portfolio through internal research and development or the acquisition or in-licensing of intellectual property assets;
- the impact of the global COVID-19 coronavirus pandemic, including the spread of new strains of the virus, on our activities as described herein and otherwise, including but not limited to our ability to enroll a sufficient number of patients to complete the above-described clinical trial;
- the results and timing of preclinical and clinical trial activities;
- the therapeutic benefits, effectiveness and safety of our product candidates;
- our ability to receive regulatory approval for our product candidates in the United States, Europe and other geographies;
- predictions about how any of our product candidates will behave or their effects in clinical trials or in humans;
- our ability to receive regulatory approval for our product candidates in the United States, Europe and other geographies;
- the expected regulatory approval pathway for our product candidates, and our ability to obtain, on satisfactory terms or at all, the financing required to support operations, research, development, clinical trials and commercialization of products;
- our reliance on third parties for the planning, conduct and monitoring of clinical trials, for the manufacture of clinical drug supplies and drug product, and for other requirements;

- our estimates of the size and characteristics of the markets that may be addressed by our product candidates, if approved;
- our ability to utilize our proprietary technological approach to develop and commercialize our product candidates;
- our ability to attract, retain and motivate key personnel;
- how we intend to use the net proceeds;
- whether the potential of RNA in oncology can be realized and whether the Company is able to address challenges related to RNA therapeutics;
- whether we will successfully and timely furnish information requested of us and whether it will remain available through our website at all times;
- whether any of the securities we offer will have the terms specified in this prospectus;
- the regulatory or legal codes that do or may apply to us, our securities or our securityholders now or in the future;
- whether we will engage underwriters, brokers or other professionals to sell our securities;
- our ability to generate revenue and become profitable; and
- other forward-looking statements, including those listed under the caption "Cautionary Statement Regarding Forward-Looking Statements" in our Annual Report on Form 10-K for the fiscal year ended December 31, 2021, and our other filings with the SEC incorporated herein by reference.

The factors that could cause actual results to differ materially from our expectations, assumptions and beliefs include, but are not limited to the following:

- the conduct and outcome of our Phase 0 clinical trial of a radiolabeled version of TTX-MC138, our lead therapeutic candidate focused on metastatic cancer treatment, and our ability to initiate and complete this trial;
- our ability to expand our therapeutic candidate portfolio through internal research and development or the acquisition or in-licensing of intellectual property assets;
- the impact of the global outbreak of the COVID-19 coronavirus, including the spread of new strains of the virus, on our activities as described above and otherwise, including but not limited to our ability to enroll a sufficient number of patients to advance the above-described clinical trial;
- the results and timing of our preclinical and clinical trial activities;
- the therapeutic benefits, effectiveness and safety of our therapeutic candidates;
- our ability to receive regulatory approval for our therapeutic candidates in the United States, Europe and other geographies;
- the expected regulatory approval pathway for our therapeutic candidates, and our ability to obtain, on satisfactory terms or at all, the financing required to support operations, research, development, clinical trials, and commercialization of products;
- our reliance on third-parties for the planning, conduct and monitoring of clinical trials, for the manufacture of clinical drug supplies and drug product, and for other requirements;
- potential changes in regulatory requirements, and delays or negative outcomes from the regulatory approval process;
- our estimates of the size and characteristics of the markets that may be addressed by our therapeutic candidates;
- market acceptance of our therapeutic candidates that are approved for marketing in the United States or other countries;
- our ability to successfully commercialize our therapeutic candidates;

- the safety and efficacy of therapeutics marketed by our competitors that are targeted to indications which our therapeutic candidates have been developed to treat;
- the impact of natural disasters, global pandemics (including further outbreaks of existing strains of COVID-19 or new variants of the virus), labor disputes, lack of raw materials or other supplies, issues with facilities and equipment or other forms of disruption to business operations at our manufacturing or laboratory facilities or those of our vendors;
- our ability to utilize our proprietary technological approach to develop and commercialize our therapeutic candidates;
- potential collaborators to license and commercialize any therapeutic candidates for which we receive regulatory approval in the future in or outside of the United States;
- our heavy dependence on licensed intellectual property, including our ability to source and maintain licenses from third-party owners;
- our ability to protect our intellectual property and operate our business without infringing the intellectual property rights of others;
- our ability to attract, retain and motivate key personnel;
- our ability to generate revenue and become profitable; and
- other risks and uncertainties, including those listed under the caption “Risk Factors” in our Annual Report on Form 10-K and in our other regulatory filings.

Other sections of this prospectus and the documents incorporated by reference in this prospectus may include additional factors that could adversely affect our business and financial performance. Moreover, we operate in a very competitive and rapidly changing environment. New risk factors emerge from time to time and it is not possible for management to predict all risk factors, nor can we assess the impact of all risk factors on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in or implied by any forward-looking statements. Forward-looking statements contained in, implied by or incorporated by reference into this prospectus reflect our current views with respect to future events and with respect to our business and future 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 described under “Risk Factors” and elsewhere in this prospectus and the documents incorporated by reference. Given these uncertainties, you should not place undue reliance on 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.

THE COMPANY

TransCode is an RNA oncology company created on the belief that cancer can be defeated through the intelligent design and effective delivery of RNA therapeutics. For decades, ribonucleic acid, or RNA, has been a topic of investigation by the scientific community as a potentially attractive therapeutic modality because it can target any gene and it lends itself to rational and straightforward drug design. RNA-based therapeutics are highly selective to their targets, potentially making available a broad array of previously undruggable targets in the human genome.

TransCode has created a design engine to customize the development of RNA therapeutics that is modular, both at the levels of the core nanoparticle and therapeutic loading. The size, charge, and surface chemistry of the core iron oxide nanoparticle can be tuned to optimize the particles for the intended genetic target and therapeutic load. The therapeutic load, consisting of synthetic oligonucleotides, can also be adapted to the specific approach being developed. The approach can range from RNA interference, RNAi, including small interfering RNAs, antisense oligonucleotides, and non-coding RNA mimics to mRNA — based cancer vaccines and CRISPR — based gene repair and replacement platforms as well as Pattern Recognition Receptors such as retinoic acid inducible gene, or RIG-I. The platform can further be used for developing RNA-targeted radiolabeled therapeutics and diagnostics and other custom products targeting known and novel biomarkers and other genetic elements as they are discovered and validated. The TTX platform is intended to overcome delivery issues of stability, efficiency, and immunogenicity faced by existing lipid and liposomal nanoparticle platforms while optimizing targeting of and accumulation in tumor cells and metastatic sites.

The ability to deliver RNA therapeutics inside tumors and metastases gives us the potential to target genes of importance for cancer treatment that have remained undruggable up until now using an RNA approach.

Our lead therapeutic candidate, TTX-MC138, targets microRNA-10b, or miRNA-10b, a master regulator of metastatic cell viability in a range of cancers, including breast, pancreatic, ovarian, colon cancer, glioblastomas, and several others. In November 2022, TransCode submitted to the U.S. Food and Drug Administration, or FDA, an exploratory investigational new drug application, or eIND, to conduct a Phase 0 clinical trial intended to demonstrate quantitative delivery of TTX-MC138 to metastatic lesions in subjects with advanced solid tumors. We also intend to complete investigational new drug enabling studies, or IND-enabling studies, for TTX-MC138 in support of our planned IND application for a Phase I/II clinical trial with TTX-MC138.

Our other preclinical programs include two solid tumor programs, TTX-siPDL1, an siRNA — based modulator of programmed death-ligand 1, or PD-L1, and TTX-siLIN28B, an siRNA-based inhibitor of RNA-binding protein LIN28B. TransCode also has three cancer agnostic programs, TTX-RIGA, an RNA — based agonist of the retinoic acid-inducible gene I, or RIG-I, targeting activation of innate immunity in the tumor microenvironment; TTX-CRISPR, a CRISPR/Cas9-based therapy platform for the repair or elimination of cancer-causing genes inside tumor cells; and TTX-mRNA, an mRNA-based platform for the development of cancer vaccines designed to activate cytotoxic immune responses against tumor cells.

Corporate Information

We were incorporated in the State of Delaware in January 2016. Our principal corporate address is 6 Liberty Square, #2382, Boston, Massachusetts 02109; our telephone number is (857) 837-3099. Our website is www.transcodetherapeutics.com. Information contained in, or that can be accessed through, our website is not incorporated by reference into this prospectus, and you should not consider information on our website to be part of this prospectus. Our design logo and our other registered and common law trade names, trademarks and service marks are the property of TransCode.

USE OF PROCEEDS

We intend to use the net proceeds from the sale of any securities offered under this prospectus primarily for product development activities, including one or more clinical trials with TTX-MC138, our lead therapeutic candidate, further research and development of our other product candidates, and for other general corporate purposes (unless otherwise indicated in the applicable prospectus supplement), including, but not limited to, potential strategic acquisitions of complementary businesses, services or technologies, expansion of our technology infrastructure and capabilities, working capital, capital expenditures and the associated costs of operating as a public company.

We may temporarily invest the net proceeds in a variety of capital preservation instruments, including investment grade, interest-bearing instruments and U.S. government securities, or we will hold the proceeds in interest-bearing or non-interest-bearing accounts in U.S. banks, until they are used for the above purposes. 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. This prospectus provides you with a general description of the securities we may offer. Each time we sell securities described herein, we will provide prospective investors with a supplement to this prospectus that will contain specific information about the terms of that offering, including the specific amounts, prices and terms of the securities offered.

We may sell the securities to or through underwriters, registered broker-dealers or selling agents, directly to purchasers or through a combination of any of these methods of sale or as otherwise set forth below under “Plan of Distribution.” We, as well as any agents acting on our behalf, reserve the sole right to accept and to reject in whole or in part any proposed purchase of securities. Any prospectus supplement will set forth the names of any underwriters, dealers, agents or other entities involved in the sale of securities described in that prospectus supplement and any applicable fee, commission or discount arrangements with them.

DESCRIPTION OF CAPITAL STOCK

The following description of our common stock and preferred stock, together with the additional information we include in any applicable prospectus supplements, summarizes the material terms and provisions of the common stock and preferred stock that we may offer under this prospectus. The following description of our capital stock does not purport to be complete and is subject to, and qualified in its entirety by, the Amended and Restated Certificate of Incorporation of TransCode Therapeutics, Inc. (the "Certificate of Incorporation") and the Amended and Restated Bylaws of TransCode Therapeutics, Inc. (the "Bylaws"), which are exhibits to the registration statement of which this prospectus forms a part, and by applicable law. The terms of our common stock and preferred stock may also be affected by Delaware law.

Authorized Capital Stock

Our authorized capital stock consists of 290 million shares of common stock, par value $0.0001 per share, and 10 million shares of preferred stock, par value $0.0001 per share, all of which shares of preferred stock are undesignated.

As of September 30, 2022, 12,977,234 shares of our common stock were outstanding and held by approximately 21 stockholders of record.

Common Stock

The holders of our common stock are entitled to one vote for each share held on all matters submitted to a vote of our stockholders. The holders of our common stock do not have any cumulative voting rights. Holders of our common stock are entitled to receive ratably any dividends declared by our board of directors out of funds legally available for that purpose, subject to any preferential dividend rights of any outstanding preferred stock. Our common stock has no preemptive rights, conversion rights or other subscription rights or redemption or sinking fund provisions.

In the event of our liquidation, dissolution or winding up, holders of our common stock will be entitled to share ratably in all assets remaining after payment of all debts and other liabilities and any liquidation preference of any outstanding preferred stock. The shares to be issued by us in this offering will be, when issued and paid for, validly issued, fully paid and non-assessable.

Listing

Our common stock is traded on the Nasdaq Capital Market under the trading symbol "RNAZ."

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is Vstock Transfer, LLC.

Preferred Stock

Our board of directors has the authority, without further action by our stockholders, to issue up to 10 million shares of preferred stock in one or more series and to fix the rights, preferences, privileges and restrictions thereof. These rights, preferences and privileges could include dividend rights, conversion rights, voting rights, terms of redemption, liquidation preferences, sinking fund terms and the number of shares constituting, or the designation of, such series, any or all of which may be greater than the rights of common stock. The issuance of our preferred stock could adversely affect the voting power of holders of common stock and the likelihood that such holders will receive dividend payments and payments if we liquidate. In addition, the issuance of preferred stock could have the effect of delaying, deferring or preventing a change in control of our Company or other corporate action. As of September 30, 2022, no shares of preferred stock were outstanding.

Series of Preferred Stock

We will incorporate by reference as an exhibit to the registration statement, which includes this prospectus, the form of any certificate of designation that describes the terms of any series of preferred stock we are offering. This description and the applicable prospectus supplement will include:

- the title and stated value;
- the number of shares authorized;
- the liquidation preference per share;
- the purchase price;
- the dividend rate, period and payment date, and method of calculation for dividends;
- whether dividends will be cumulative or non-cumulative and, if cumulative, the date from which dividends will accumulate;
- the procedures for any auction and remarketing, if any;
- the provisions for a sinking fund, if any;
- the provisions for redemption or repurchase, if applicable, and any restrictions on our ability to exercise those redemption and repurchase rights;
- any listing of the preferred stock on any securities exchange, market or trading system;
- whether the preferred stock will be convertible into our common stock, and, if applicable, the conversion price, or how it will be calculated, and the conversion period;
- whether the preferred stock will be exchangeable into any of our other securities, debt or otherwise, and, if applicable, the exchange price, or how it will be calculated, and the exchange period;
- voting rights, if any, of the preferred stock;
- preemptive rights, if any;
- restrictions on transfer, sale or other assignment, if any;
- whether interests in the preferred stock will be represented by depositary shares;
- a discussion of any material United States federal income tax considerations applicable to the preferred stock;
- the relative ranking and preferences of the preferred stock as to dividend rights and rights if we liquidate, dissolve or wind up our affairs;
- any limitations on issuance of any class or series of preferred stock ranking senior to or on a parity with that series of preferred stock as to dividend rights and rights if we liquidate, dissolve or wind up our affairs; and
- any other specific terms, preferences, rights or limitations of, or restrictions on, the preferred stock.

When we issue shares of preferred stock under this prospectus, the shares will be fully paid and nonassessable and will not have, or be subject to, any preemptive or similar rights.

Anti-Takeover Effects of our Certificate of Incorporation and Bylaws and Delaware Law

Our Certificate of Incorporation and Bylaws include a number of provisions that may have the effect of delaying, deferring or preventing another party from acquiring control of us and encouraging persons considering unsolicited tender offers or other unilateral takeover proposals to negotiate with our board of directors rather than pursue non-negotiated takeover attempts. These provisions include those described below.

Board Composition and Filling Vacancies

Our Certificate of Incorporation provides that directors may be removed only for cause and then only by the affirmative vote of the holders of at least two-thirds of the shares then entitled to vote at an election of directors. Furthermore, any vacancy on our board of directors, however occurring, including a vacancy resulting from an increase in the size of our board, may only be filled by the affirmative vote of a majority of our directors then in office even if less than a quorum. The limitations on removal of directors and

treatment of vacancies has the effect of making it more difficult for stockholders to change the composition of our board of directors.

No Written Consent of Stockholders

Our Certificate of Incorporation provides that all stockholder actions are required to be taken by a vote of the stockholders at an annual or special meeting, and that stockholders may not take any action by written consent in lieu of a meeting. This limit may lengthen the amount of time required to take stockholder actions and would prevent the amendment of our Bylaws or removal of directors by our stockholders without holding a meeting of stockholders.

Meetings of Stockholders

Our Certificate of Incorporation and Bylaws provide that only a majority of the members of our board of directors then in office may call special meetings of stockholders and only those matters set forth in the notice of the special meeting may be considered or acted upon at that special meeting of stockholders. Our Bylaws limit the business that may be conducted at an annual meeting of stockholders to those matters brought before the meeting in conformance with our Bylaws.

Advance Notice Requirements

Our Bylaws establish advance notice procedures with regard to stockholder proposals relating to the nomination of candidates for election as directors or new business to be brought before meetings of our stockholders. These procedures provide that notice of stockholder proposals must be timely given in writing to our corporate secretary prior to the meeting at which the action is to be considered. Generally, to be timely, notice must be received at our principal executive offices not less than 90 days nor more than 120 days prior to the first anniversary date of the annual meeting for the preceding year. Our Bylaws specify the requirements as to form and content of all stockholders' notices. These requirements may preclude stockholders from bringing matters before the stockholders at an annual or special meeting.

Amendment to Certificate of Incorporation and Bylaws

Any amendment of our Certificate of Incorporation must first be approved by a majority of our board of directors, and if required by law or our Certificate of Incorporation, must thereafter be approved by a majority of the outstanding shares entitled to vote on the amendment and a majority of the outstanding shares of each class entitled to vote thereon as a class, except that the amendment of the provisions relating to stockholder action, board composition, and limitation of liability must be approved by not less than two-thirds of the outstanding shares entitled to vote on the amendment, and not less than two-thirds of the outstanding shares of each class entitled to vote thereon as a class. Our Bylaws may be amended by the affirmative vote of a majority of the directors then in office, subject to any limitations set forth in the Bylaws; and may also be amended by the affirmative vote of a majority of the outstanding shares entitled to vote on the amendment, voting together as a single class, except that the amendment of the provisions relating to notice of stockholder business and nominations and special meetings must be approved by not less than two-thirds of the outstanding shares entitled to vote on the amendment, and not less than two-thirds of the outstanding shares of each class entitled to vote thereon as a class, or, if our board of directors recommends that the stockholders approve the amendment, by the affirmative vote of the majority of the outstanding shares entitled to vote on the amendment, in each case voting together as a single class.

Undesignated Preferred Stock

Our Certificate of Incorporation provides for 10 million authorized shares of preferred stock. The existence of authorized but unissued shares of preferred stock may enable our board of directors to discourage an attempt to obtain control of us by means of a merger, tender offer, proxy contest or otherwise. For example, if in the due exercise of its fiduciary obligations, our board of directors were to determine that a takeover proposal is not in the best interests of our stockholders, our board of directors could cause shares of preferred stock to be issued without stockholder approval in one or more private offerings or other transactions that might dilute the voting or other rights of the proposed acquirer or insurgent stockholder or stockholder group. In this regard, our Certificate of Incorporation grants our board of directors broad

power to establish the rights and preferences of authorized and unissued shares of preferred stock. The issuance of shares of preferred stock could decrease the amount of earnings and assets available for distribution to holders of shares of common stock. The issuance may also adversely affect the rights and powers, including voting rights, of these holders and may have the effect of delaying, deterring or preventing a change in control of us.

Choice of forum

Pursuant to our Bylaws, unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware will be the sole and exclusive forum for any state law claims for (i) any derivative action or proceeding brought on our behalf, (ii) any action asserting a claim of breach of fiduciary duty owed by any of our directors, officers, employees or agents to us or our stockholders, (iii) any action asserting a claim arising pursuant to any provision of the Delaware General Corporation Law, our Certificate of Incorporation and our 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 that is governed by the internal affairs doctrine, in each case subject to the Court of Chancery having personal jurisdiction over the indispensable parties named as defendants therein, or the Delaware Forum Provision. The Delaware 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 Stated District Court for the District of Massachusetts shall be the sole and exclusive forum for resolving any complaint asserting a cause of action arising under the Securities Act, or the Federal Forum Provision, as the address of our principal executive offices is in Boston, Massachusetts. These Forum Provisions may impose additional costs on stockholders, may limit our stockholders' ability to bring a claim in a forum they find favorable, and the designated courts may reach different judgments or results than other courts. In addition, there is uncertainty as to whether the Federal Forum Provision will be enforced, which may impose additional costs on us and stockholders.

Section 203 of the Delaware General Corporation Law

We are subject to the provisions of Section 203 of the Delaware General Corporation Law. In general, Section 203 prohibits a publicly held Delaware corporation from engaging in a "business combination" with an "interested stockholder" for a three-year period following the time that this stockholder becomes an interested stockholder, unless the business combination is approved in a prescribed manner. Under Section 203, a business combination between a corporation and an interested stockholder is prohibited unless it satisfies one of the following conditions:

- before the stockholder became an interested stockholder, our board of directors approved either the business combination or the transaction which resulted in the stockholder becoming an interested stockholder;
- upon consummation of the transaction which resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding, excluding for purposes of determining the voting stock outstanding, shares owned by persons who are directors and also officers, and employee stock plans, in some instances, but not the outstanding voting stock owned by the interested stockholder; or
- at or after the time the stockholder became an interested stockholder, the business combination was approved by our board of directors and authorized at an annual or special meeting of our stockholders by the affirmative vote of at least two-thirds of the outstanding voting stock which is not owned by the interested stockholder.

Section 203 defines a business combination to include:

- any merger or consolidation involving the corporation and the interested stockholder;
- any sale, transfer, lease, pledge or other disposition involving 10% or more of the assets of the corporation and the interested stockholder;
- subject to exceptions, any transaction that results in the issuance or transfer by the corporation of any stock of the corporation to the interested stockholder;

- subject to exceptions, any transaction involving the corporation that has the effect of increasing the proportionate share of the stock of any class or series of the corporation beneficially owned by the interested stockholder; and
- the receipt by the interested stockholder of the benefit of any loans, advances, guarantees, pledges or other financial benefits provided by or through the corporation.

In general, Section 203 defines an interested stockholder as any entity or person beneficially owning 15% or more of the outstanding voting stock of the corporation and any entity or person affiliated with or controlling or controlled by that entity or person.

DESCRIPTION OF DEBT SECURITIES

We may offer debt securities which may be senior or subordinated. We refer to senior debt securities and subordinated debt securities collectively as debt securities. Each series of debt securities may have different terms. The following description summarizes the general terms and provisions of the debt securities. We will describe the specific terms of the debt securities and the extent, if any, to which the general provisions summarized below apply to any series of debt securities in the prospectus supplement relating to the series and any applicable free writing prospectus that we authorize to be delivered.

We may issue senior debt securities from time to time, in one or more series under a senior indenture to be entered into between us and a senior trustee to be named in a prospectus supplement, which we refer to as the senior trustee. We may issue subordinated debt securities from time to time, in one or more series, under a subordinated indenture to be entered into between us and a subordinated trustee to be named in a prospectus supplement, which we refer to as the subordinated trustee. The forms of senior indenture and subordinated indenture are filed as exhibits to the registration statement of which this prospectus forms a part. Together, the senior indenture and the subordinated indenture are referred to as the indentures and, together, the senior trustee and the subordinated trustee are referred to as the trustees. This prospectus briefly outlines some of the provisions of the indentures. The following summary of the material provisions of the indentures is qualified in its entirety by the provisions of the indentures, including definitions of certain terms used in the indentures. Wherever we refer to particular sections or defined terms of the indentures, those sections or defined terms are incorporated by reference in this prospectus or the applicable prospectus supplement. You should review the indentures that are filed as exhibits to the registration statement of which this prospectus forms a part for additional information. As used in this prospectus, the term “debt securities” includes the debt securities being offered by this prospectus and all other debt securities issued by us under the indentures.

General

The indentures:

- do not limit the amount of debt securities that we may issue;
- allow us to issue debt securities in one or more series;
- do not require us to issue all of the debt securities of a series at the same time; and
- allow us to reopen a series to issue additional debt securities without the consent of the holders of the debt securities of such series.

Unless otherwise provided in the applicable prospectus supplement, the senior debt securities will be unsubordinated obligations and will rank equally with all of our other unsecured and unsubordinated indebtedness. Payments on the subordinated debt securities may be subordinated to the prior payment in full of all of our senior indebtedness, as described under — “Subordination” and in the applicable prospectus supplement.

Each indenture provides that we may, but need not, designate more than one trustee under an indenture. Any trustee under an indenture may resign or be removed and a successor trustee may be appointed to act with respect to the series of debt securities administered by the resigning or removed trustee. If two or more persons are acting as trustee with respect to different series of debt securities, each trustee shall be a trustee of a trust under the applicable indenture separate and apart from the trust administered by any other trustee. Except as otherwise indicated in this prospectus, any action described in this prospectus to be taken by each trustee may be taken by each trustee with respect to, and only with respect to, the one or more series of debt securities for which it is trustee under the applicable indenture.

The prospectus supplement for each offering will provide the following terms, where applicable:

- the title of the debt securities and whether they are senior or subordinated;
- any limit upon the aggregate principal amount of the debt securities of that series;
- the date or dates on which the principal of the debt securities of the series is payable;

- the price at which the debt securities will be issued, expressed as a percentage of the principal and, if other than the principal amount thereof, the portion of the principal amount thereof payable upon declaration of acceleration of the maturity thereof;
- the rate or rates at which the debt securities of the series shall bear interest or the manner of calculation of such rate or rates, if any;
- the date or dates from which interest will accrue, the interest payment dates on which such interest will be payable or the manner of determination of such interest payment dates, the place(s) of payment, and the record date for the determination of holders to whom interest is payable on any such interest payment dates or the manner of determination of such record dates;
- the right, if any, to extend the interest payment periods and the duration of such extension;
- the period or periods within which the price or prices at which, and the terms and conditions upon which, debt securities of the series may be redeemed, converted or exchanged, in whole or in part;
- our obligation, if any, to redeem or purchase debt securities of the series pursuant to any sinking fund, mandatory redemption, or analogous provisions (including payments made in cash in satisfaction of future sinking fund obligations) or at the option of a holder thereof and the period or periods within which the price or prices at which, and the terms and conditions upon which, debt securities of the series shall be redeemed or purchased, in whole or in part, pursuant to such obligation;
- the form of the debt securities of the series including the form of the certificate of authentication for such series;
- if other than minimum denominations of one thousand U.S. dollars ($1,000) or any integral multiple of $1,000 thereof, the denominations in which the debt securities of the series shall be issuable;
- whether the debt securities of the series shall be issued in whole or in part in the form of a global debt security or global debt securities; the terms and conditions, if any, upon which such global debt security or global debt securities may be exchanged in whole or in part for other individual debt securities; and the depositary for such global debt security or global debt securities;
- whether the debt securities will be convertible into or exchangeable for common stock or other securities of ours or any other Person and, if so, 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, and the applicable conversion or exchange period;
- any additional or alternative events of default to those set forth in the indenture;
- any additional or alternative covenants to those set forth in the indenture;
- the currency or currencies including composite currencies, in which payment of the principal of (and premium, if any) and interest, if any, on such debt securities shall be payable (if other than in currency of the United States of America), which unless otherwise specified shall be the currency of the United States of America as at the time of payment is legal tender for payment of public or private debts;
- if the principal of (and premium, if any), or interest, if any, on such debt securities is to be payable, at our election or at the election of any holder thereof, in a coin or currency other than that in which such debt securities are stated to be payable, then the period or periods within which, and the terms and conditions upon which, such election may be made;
- 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 U.S. federal tax purposes;
- provisions, if any, related to defeasance and discharge of the offered debt securities in addition to or alternate than those set forth in the indenture;

- the applicability of any guarantees;
- any restrictions on transfer, sale or assignment of the debt securities of the series; and
- any other terms of the debt securities (which may supplement, modify or delete any provision of the indenture insofar as it applies to such series).

We may issue debt securities that provide for less than the entire principal amount thereof to be payable upon declaration of acceleration of the maturity of the debt securities. We refer to any such debt securities throughout this prospectus as "original issue discount securities."

We will provide you with more information in the applicable prospectus supplement regarding any deletions, modifications, or additions to the events of default or covenants that are described below, including any addition of a covenant or other provision providing event risk or similar protection.

Payment

Unless otherwise provided in the applicable prospectus supplement, the principal of, and any premium or make-whole amount and interest on, any series of the debt securities will be payable by mailing a check to the address of the person entitled to it as it appears in the applicable register for the debt securities or by wire transfer of funds to that person at an account maintained within the United States.

All monies that we pay to a paying agent or a trustee for the payment of the principal of, and any premium or interest on, any debt security will be repaid to us if unclaimed at the end of two years after the obligation underlying payment becomes due and payable. After funds have been returned to us, the holder of the debt security may look only to us for payment, without payment of interest for the period in which we hold the funds.

Merger, Consolidation or Sale of Assets

The indentures provide that we may, without the consent of the holders of any outstanding debt securities, (i) consolidate with, (ii) sell, lease or convey all or substantially all of our assets to, or (iii) merge with or into, any other entity provided that:

- either we are the continuing entity, or the successor entity, if other than us, assumes the obligations (a) to pay the principal of, and any premium and interest on, all of the debt securities and (b) to duly perform and observe all of the covenants and conditions contained in the applicable indenture; and in the event the debt securities are convertible into or exchangeable for common stock or other securities of ours, such successor entity will, by the applicable supplemental indenture, make provision so that the holders of debt securities of that series shall thereafter be entitled to receive upon conversion or exchange of such debt securities the number of securities or property to which a holder of the number of shares of common stock or other securities of ours deliverable upon conversion or exchange of those debt securities would have been entitled had such conversion or exchange occurred immediately prior to such consolidation, merger, sale, conveyance, transfer or other disposition; and
- an officers' certificate and legal opinion covering such conditions are delivered to each applicable trustee.

Events of Default, Notice and Waiver

Unless the applicable prospectus supplement states otherwise, when we refer to "events of default" as defined in the indentures with respect to any series of debt securities, we mean:

- default in the payment of any installment of interest on any debt security of such series continuing for 90 days unless such date has been extended or deferred;
- default in the payment of principal of, or any premium on, any debt security of such series when due and payable unless such date has been extended or deferred;
- default in the performance or breach of any covenant or warranty in the debt securities or in the indenture by us continuing for 90 days after written notice described below;

- bankruptcy, insolvency or reorganization, or court appointment of a receiver, liquidator or trustee of us; and
- any other event of default provided with respect to a particular series of debt securities.

If an event of default (other than an event of default described in the fourth bullet point immediately above) occurs and is continuing with respect to debt securities of any series outstanding, then the applicable trustee or the holders of 25% or more in principal amount of the debt securities of that series will have the right to declare the principal amount of, and accrued interest on, all the debt securities of that series to be due and payable. If an event of default described in the fourth bullet point above occurs, the principal amount of, and accrued interest on, all the debt securities of that series will automatically become and will be immediately due and payable without any declaration or other act on the part of the trustee or the holders of the debt securities. However, at any time after such a declaration of acceleration has been made, but before a judgment or decree for payment of the money due has been obtained by the applicable trustee, the holders of at least a majority in principal amount of outstanding debt securities of such series or of all debt securities then outstanding under the applicable indenture may rescind and annul such declaration and its consequences if:

- we have deposited with the applicable trustee all required payments of the principal, any premium, interest and, to the extent permitted by law, interest on any overdue installment of interest, plus applicable fees, expenses, disbursements and advances made by the applicable trustee; and
- all events of default, other than the non-payment of accelerated principal, or a specified portion thereof, and any premium, have been cured or waived.

The indentures provide that holders of debt securities of any series may not institute any proceedings, judicial or otherwise, with respect to such indenture or for any remedy under the indenture, unless the trustee fails to act for a period of 90 days after the trustee has received a written request to institute proceedings in respect of an event of default from the holders of 25% or more in principal amount of the outstanding debt securities of such series, as well as an offer of indemnity reasonably satisfactory to the trustee. However, this provision will not prevent any holder of debt securities from instituting suit for the enforcement of payment of the principal of, and any premium and interest on, such debt securities at the respective due dates thereof.

The indentures provide that, subject to provisions in each indenture relating to its duties in the case of a default, a trustee has no obligation to exercise any of its rights or powers at the request or direction of any holders of any series of debt securities then outstanding under the indenture, unless the holders have offered to the trustee reasonable security or indemnity. The holders of at least a majority in principal amount of the outstanding debt securities of any series or of all debt securities then outstanding under any indenture shall have the right to direct the time, method and place of conducting any proceeding for any remedy available to the applicable trustee, or of exercising any trust or power conferred upon such trustee. However, a trustee may refuse to follow any direction which:

- is in conflict with any law or the applicable indenture;
- may involve the trustee in personal liability; or
- may be unduly prejudicial to the holders of debt securities of the series not joining the proceeding.

Within 120 days after the close of each fiscal year, we will be required to deliver to each trustee a certificate, signed by one of our several specified officers, stating whether or not that officer has knowledge of any default under the applicable indenture. If the officer has knowledge of any default, the notice must specify the nature and status of the default.

Modification of the Indentures

Subject to certain exceptions, the indentures may be amended with the consent of the holders of a majority in aggregate principal amount of the outstanding debt securities of all series affected by such amendment (including consents obtained in connection with a tender offer or exchange for the debt securities of such series).

We and the applicable trustee may make modifications and amendments of an indenture without the consent of any holder of debt securities for any of the following purposes:

- to cure any ambiguity, defect, or inconsistency in the applicable indenture or in the Securities of any series;
- to comply with the covenant described above under "— Merger, Consolidation or Sale of Assets";
- to provide for uncertificated debt securities in addition to or in place of certificated debt securities;
- to add events of default for the benefit of the holders of all or any series of debt securities;
- to add the covenants, restrictions, conditions or provisions relating to us for the benefit of the holders of all or any series of debt securities (and if such covenants, restrictions, conditions or provisions are to be for the benefit of less than all series of debt securities, stating that such covenants, restrictions, conditions or provisions are expressly being included solely for the benefit of such series), 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 in the applicable indenture conferred upon us;
- 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 applicable indenture;
- to make any change that does not adversely affect the rights of any holder of notes under the applicable indenture 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 in the applicable indenture, to establish the form of any certifications required to be furnished pursuant to the terms of the applicable indenture or any series of debt securities under the applicable indenture, 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 the applicable indenture by a successor trustee or to appoint a separate trustee with respect to any series;
- to comply with any requirements of the SEC or any successor in connection with the qualification of the indenture under the Trust Indenture Act of 1939, as amended, or the Trust Indenture Act; or
- to conform the applicable indenture to this "— Description of Debt Securities" or any other similarly titled section in any prospectus supplement or other offering document relating to a series of debt securities.

Subordination

Payment by us of the principal of, premium, if any, and interest on any series of subordinated debt securities issued under the subordinated indenture will be subordinated to the extent set forth in an indenture supplemental to the subordinated indenture relating to such series.

Discharge, Defeasance and Covenant Defeasance

Unless otherwise provided in the applicable prospectus supplement, the indentures allow us to discharge our obligations to holders of any series of debt securities issued under any indenture when:

- either (i) all securities of such series have already been delivered to the applicable trustee for cancellation; or (ii) all securities of such series have not already been delivered to the applicable trustee for cancellation but (a) have become due and payable, (b) will become due and payable within one year, or (c) if redeemable at our option, are to be redeemed within one year, and we have irrevocably deposited with the applicable trustee, in trust, funds in such currency or currencies, or governmental obligations in an amount sufficient to pay the entire indebtedness on such debt securities in respect of principal and any premium, and interest to the date of such deposit if such debt securities have become due and payable or, if they have not, to the stated maturity or redemption date;

- we have paid or caused to be paid all other sums payable.

Unless otherwise provided in the applicable prospectus supplement, the indentures provide that, upon our irrevocable deposit with the applicable trustee, in trust, of an amount, in such currency or currencies in which such debt securities are payable at stated maturity, or government obligations, or both, applicable to such debt securities, which through the scheduled payment of principal and interest in accordance with their terms will provide money in an amount sufficient to pay the principal of, and any premium or make-whole amount, and interest on, such debt securities, and any mandatory sinking fund or analogous payments thereon, on the scheduled due dates therefor, the issuing company shall be released from its obligations with respect to such debt securities under the applicable indenture or, if provided in the applicable prospectus supplement, its obligations with respect to any other covenant, and any noncompliance with such obligations shall not constitute an event of default with respect to such debt securities.

The applicable prospectus supplement may further describe the provisions, if any, permitting such defeasance or covenant defeasance, including any modifications to the provisions described above, with respect to the debt securities of or within a particular series.

Conversion Rights

The terms and conditions, if any, upon which the debt securities are convertible into common stock or other securities of ours will be set forth in the applicable prospectus supplement. The terms will include whether the debt securities are convertible into shares of common stock or other securities of ours, the conversion price, or manner of calculation thereof, the conversion period, provisions as to whether conversion will be at the issuing company's option or the option of the holders, the events requiring an adjustment of the conversion price and provisions affecting conversion in the event of the redemption of the debt securities and any restrictions on conversion.

Governing Law

The indentures 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 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 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. The terms of any warrants offered under a 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 this registration statement which includes this prospectus.

General

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

We may evidence each series of warrants by warrant certificates that we may 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 which may be used to purchase the warrants;
- 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 debt securities, the principal amount of debt securities purchasable upon exercise of one warrant and the price at, and currency in which, this principal amount of debt securities may be purchased upon such exercise;
- 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;
- United States federal income tax consequences of holding or exercising the warrants;
- the amount of warrants outstanding;
- 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 comprising shares of common stock, shares of preferred stock, debt securities 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 this 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 comprising 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 comprising 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,” “Description of Debt Securities” and “Description of Warrants” will apply to the securities comprising each unit, to the extent relevant and as may be updated or amended 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, including modifying 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 that 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 holders of the unaffected unit; we need only obtain any required approvals from 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 comprising 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 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 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 Delaware law.

Form, Exchange and Transfer

Unless the accompanying prospectus supplement states otherwise, 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 participation 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.

Unless the accompanying prospectus supplement states otherwise, 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 of units in that series 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 this 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 of this right and ending on the day of that mailing, in order to freeze the list of holders in preparation of 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 the securities offered through this prospectus and any accompanying prospectus supplement, if required, in any of the following ways:

- through underwriters;
- through dealers;
- through agents;
- directly to purchasers; 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 any agent or 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 we seek to list the securities.

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 additional underwriting commissions thereon 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, who would be acting as principal for their own account. 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 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 others, 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 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 sold, 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 two business days, unless the parties to any such trade expressly agree otherwise. The applicable prospectus supplement may provide that the original issue date for the securities may be more than two business days after the trade date. Accordingly, in such a case, if a holder wishes to trade its securities on any date prior to the second business day before the original issue date for such securities, such holder will be required, by virtue of the fact that the securities initially are expected to settle in more than two business days after the trade date for the 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 or that they will be accepted for listing on any securities exchange.

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

The underwriters, dealers and agents involved in any given offering may engage in other transactions with us, or perform other 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 applicable prospectus supplement.

EXPERTS

Our financial statements as of and for the years ended December 31, 2021 and 2020, in our Annual Report on Form 10-K have been audited by WithumSmith+Brown, PC, independent registered public accounting firm, and included in such Annual Report and incorporated by reference herein in reliance upon the report (which report includes an explanatory paragraph about the existence of substantial doubt concerning the Company's ability to continue as a going concern) upon the authority of said firm as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We are subject to the information requirements of the Exchange Act and, in accordance therewith, file annual, quarterly and special reports, proxy statements and other information with the SEC. These documents also may be accessed through the SEC's electronic data gathering, analysis and retrieval system, or EDGAR, via electronic means, including the SEC's home page on the internet (www.sec.gov). You may also inspect the registration statement and this prospectus on this SEC website.

We have the authority to designate and issue more than one class or series of stock having various preferences, conversion and other rights, voting powers, restrictions, limitations as to dividends, qualifications, and terms and conditions of redemption. We will furnish a full statement of the relative rights and preferences of each class or series of our stock which has been so designated and any restrictions on the ownership or transfer of our stock to any shareholder upon request and without charge. Written requests for such copies should be directed to our Investor Relations Department, TransCode Therapeutics, Inc., 6 Liberty Square, #2382, Boston, Massachusetts 02109. Our website is located at https://www.transcodetherapeutics.com/. Information contained on our website is not incorporated by reference into this prospectus, and, except for the documents incorporated by reference as noted below, 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.

INCORPORATION BY REFERENCE

The SEC allows us to incorporate by reference the information and reports we file with it, which means that we can disclose important information to you by referring you to these documents. The information incorporated by reference is an important part of this prospectus, and information that we file after the date hereof with the SEC will automatically update and supersede the information already incorporated by reference. We are incorporating by reference the documents listed below, which we have already filed with the SEC, and any future filings we make with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act, except as to any portion of any future report or document that is not deemed filed under such provisions, after the date of this prospectus and prior to the termination of this offering:

- our Annual Report on Form 10-K for the fiscal year ended December 31, 2021, filed with the SEC on March 31, 2022;
- our Definitive Proxy Statement on Schedule 14A (other than information furnished rather than filed), filed with the SEC on May 2, 2022;
- our Quarterly Reports on Form 10-Q for the quarters ended March 31, 2022, June 30, 2022, and September 30, 2022, filed with the SEC on May 16, 2022, August 15, 2022, and November 14, 2022, respectively;
- our Current Reports on Form 8-K filed with the SEC on June 23, 2022, August 3, 2022, November 30, 2022, and December 9, 2022; and

- the description of our common stock contained in our registration statement on Form 8-A filed with the SEC on April 26, 2021, as supplemented by the description of our common stock contained in Exhibit 4.1 to our Annual Report on Form 10-K for the year ended December 31, 2021, filed with the SEC on March 31, 2022, and any amendment or report filed with the SEC for the purpose of updating such description.

Pursuant to Rule 412 under the Securities Act, any statement contained in a document incorporated or deemed to be incorporated by reference into this prospectus will be deemed to be modified or superseded for purposes of this prospectus to the extent that a statement contained in this prospectus or any other subsequently filed document that is deemed to be incorporated by reference into this prospectus modifies or supersedes the statement. Any statement so modified or superseded will not be deemed, except as so modified or superseded, to constitute a part of this prospectus.

Upon request, we will provide, without charge, to each person, including any beneficial owner, to whom a copy of this prospectus is delivered, a copy of the documents incorporated by reference into this prospectus but not delivered with the prospectus. You may request a copy of these filings, and any exhibits we have specifically incorporated by reference as an exhibit in this prospectus, at no cost, by writing to us at the following address: Investor Relations Department, TransCode Therapeutics, Inc., 6 Liberty Square, #2382, Boston, Massachusetts 02109. These filings may also be obtained through our website located at https://www.transcodetherapeutics.com/. The reference to our website is intended to be an inactive textual reference and, except for the documents incorporated by reference as noted above, the information on, or accessible through, our website is not intended to be part of this prospectus.

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

We advise that there have been no material changes in our affairs that have occurred since the end of the latest fiscal period for which audited financial statements were included in our latest Form 10-K that have not been described in a Form 10-Q or Form 8-K filed subsequently under the Exchange Act.

10,000,000 Shares of Common Stock

TransCode Therapeutics, Inc.

PROSPECTUS SUPPLEMENT

ThinkEquity

July 22, 2024