RENOVO RX

1,000,000 SHARES OF COMMON STOCK PRE-FUNDED WARRANTS TO PURCHASE UP TO 557,632 SHARES OF COMMON STOCK

We are offering 1,000,000 shares ("Shares") of our common stock, par value \$0.0001 per share, and pre-funded warrants ("Pre-funded Warrants") to purchase up to 557,632 shares of common stock directly to a certain institutional investor pursuant to this prospectus supplement and the accompanying prospectus. The offering price for Shares of our common stock is \$3.21 per share.

The aggregate market value of our outstanding shares of common stock held by non-affiliates was \$ 46,289,124 based on 9,100,448 shares of common stock outstanding as of March 24, 2023, of which 8,816,976 shares are held by non-affiliates, and a per share price of \$5.25 based on the closing sale price of our common stock on March 6, 2023. Pursuant to General Instruction I.B.6 of Form S-3, in no event will we sell securities in a public primary offering with a value exceeding more than one-third of our public float in any 12-month period so long as our public float remains below \$75.0 million. During the 12-month period prior to and including the date of this prospectus supplement, we did not offer any securities pursuant to General Instruction I.B.6 of Form S-3.

A holder of Pre-funded Warrants will not have the right to exercise any portion of its Pre-funded Warrants if the holder, together with its affiliates and certain related parties, would beneficially own in excess of 4.99% (or, at the election of the holder, 9.99%) of the number of shares of common stock outstanding immediately after giving effect to such exercise. Each Pre-funded Warrant will be exercisable for one share of common stock at an exercise price of \$0.0001 per share of common stock. The offering price is \$3.2099 per Pre-funded Warrant, which is equal to the offering price per share of common stock less \$0.0001. Each Pre-funded Warrant will be exercisable upon issuance and will expire when exercised in full. There is no established public trading market for the Pre-funded Warrants, and we do not expect a market to develop. We do not intend to apply for listing of the Pre-funded Warrants on The Nasdaq Stock Market ("Nasdaq") or any other securities exchange or nationally recognized trading system. Without an active trading market, the liquidity of the Pre-funded Warrants will be limited. This offering also relates to the shares of common stock issuable upon exercise of the Pre-funded Warrants being offered by this prospectus supplement and the accompanying prospectus.

In a concurrent private placement (the "Private Placement"), we are also selling to such investor unregistered warrants (the "Common Warrants") to purchase up to 1,947,040 shares of common stock, at an exercise price of \$3.21 per share. The Common Warrants are immediately exercisable following the closing date of this offering and will expire five and a half years following the date of their initial exercisability. The Common Warrants and the shares of our common stock issuable upon the exercise of the Common Warrants (the "Common Warrant Shares") are being offered pursuant to the exemptions provided in Section 4(a)(2) under the Securities Act of 1933, as amended (the "Securities Act") and Regulation D promulgated thereunder, and are not being offered pursuant to this prospectus supplement and the accompanying prospectus. There is no established public trading market for the Common Warrants and we do not expect a market to develop. In addition, we do not intend to list the Common Warrants on Nasdaq, any other national securities exchange or any other nationally recognized trading system.

We have engaged Roth Capital Partners, LLC as our sole placement agent for this offering, or the placement agent. The placement agent is not purchasing or selling any securities offered by this prospectus supplement and the accompanying prospectus but will use its reasonable best efforts to arrange for the sale of the securities offered. See "Plan of Distribution." This offering is expected to close on or about April 3, 2023, subject to customary closing conditions, without further notice to you. We have not arranged to place the funds from the investor in an escrow, trust or similar account.

Our common stock is listed on The Nasdaq Capital Market under the symbol "RNXT." On March 29, 2023, the last reported sales price of our common stock on The Nasdaq Capital Market was \$3.90 per share.

The purchase of the securities offered through this prospectus involves a high degree of risk. You should consider carefully the risk factors beginning on page S-10 of this prospectus supplement and in the documents incorporated by reference into this prospectus supplement before purchasing any of the securities offered by this prospectus.

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

	er Share of Common Stock	Per Pre- funded Warrant	 Total
Offering price	\$ 3.21	\$ 3.2099	\$ 4,999,999
Placement agent fee (1)	\$ 0.2247	\$ 0.224693	\$ 350,000
Proceeds to us, before expenses (2)	\$ 2.9853	\$ 2.985207	\$ 4,649,999

(1) We have agreed to pay the placement agent an aggregate cash placement fee equal to 7% of the gross proceeds in this offering from sales arranged by the placement agent. We also have agreed to pay certain expenses of the placement agent, as discussed under "Plan of Distribution" in this prospectus supplement.

(2) Does not include additional compensation received by the placement agent, including reimbursement of legal fees and out of pocket expenses, as further discussed under the heading "Plan of Distribution" herein.

Roth Capital Partners

Prospectus Supplement dated March 30, 2023

TABLE OF CONTENTS

Prospectus Supplement

About this Prospectus Supplement	S-1
Special Note Regarding Forward-Looking Statements	S-3
Prospectus Supplement Summary	S-5
Risk Factors	S-10
Use of Proceeds	S-12
Dilution	S-13
Private Placement of Common Warrants	S-14
Description of Securities We Are Offering	S-15
Plan of Distribution	S-17
Legal Matters	S-19
Experts	S-19
Where You Can Find More Information	S-19
Incorporation of Certain Information by Reference	S-20

ABOUT THIS PROSPECTUS SUPPLEMENT

This prospectus supplement is part of a registration statement that we filed with the Securities and Exchange Commission (SEC) utilizing a "shelf" registration process. Under this shelf registration statement process, we may from time to time offer to sell up to \$50,000,000 of our common stock, preferred stock, debt securities, purchase contracts, units or any combination of these securities in one or more transactions.

We provide information to you about this offering in two separate documents that are bound together: (1) this prospectus supplement, which describes the specific details regarding this offering; and (2) the accompanying base prospectus dated November 21, 2022, which is included in our registration statement on Form S-3 (SEC File No. 333-268302) (the "Registration Statement"), which provides general information regarding our shares of common stock, shares of preferred stock, debt securities, purchase contracts, units, or any combination of these securities and other information some of which may not apply to this offering. If information in this prospectus supplement is inconsistent with the accompanying base prospectus, you should rely on this prospectus supplement. If any statement in one of these documents is inconsistent with a statement incorporated by reference in this prospects supplement, the statement in the document having the later date modifies or supersedes the earlier statement as our business, financial condition, results of operations and prospects may have changed since the earlier dates.

You should read this prospectus supplement, together with the accompanying base prospectus, the documents incorporated by reference in this prospectus supplement and the base prospectus and any free writing prospectus that we have authorized for use in connection with this offering before making an investment decision. You should also read and consider the information in the documents referred to in the sections of this prospectus supplement and the accompanying base prospectus entitled "Where You Can Find More Information" and "Incorporation of Certain Information by Reference." When we refer to this "prospectus", we are referring to both this prospectus supplement and the base prospectus combined.

You should rely only on the information contained or incorporated by reference in this prospectus supplement, the base prospectus, or in any free writing prospectus that we have authorized for use in connection with this offering. We and the placement agent have not authorized anyone to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it.

This prospectus contains summaries of certain provisions contained in some of the documents described herein, but reference is made to the actual documents for complete information. All of the summaries are qualified in their entirety by the actual documents. Copies of some of the documents referred to herein have been filed, will be filed or will be incorporated herein by reference as exhibits to the registration statement, and you may obtain copies of those documents as described below under the section entitled "Where You Can Find More Information."

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 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 when made. Accordingly, such representations, warranties and covenants should not be relied on as accurately representing the current state of our affairs.

S-1

We are not making an offer to sell the securities covered by this prospectus supplement in any jurisdiction in which an offer or solicitation is not permitted or in which the person making the offer or solicitation is not qualified to do so or to anyone to whom it is unlawful to make an offer or solicitation.

The information appearing in this prospectus supplement, the documents incorporated by reference in this prospectus supplement, the base prospectus, and in any free writing prospectus that we have authorized for use in connection with this offering is accurate only as of its respective date, regardless of the time of delivery of the respective document or of any sale of securities covered by this prospectus. You should not assume that the information contained in or incorporated by reference in this prospectus supplement, the base prospectus, or in any free writing prospectus that we have authorized for use in connection with this offering, is accurate as of any date other than the respective dates thereof.

We own or have rights to use a number of 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. Solely for convenience, the trademarks, service marks, logos and trade names referred to in this prospectus are without the \mathbb{R} and \mathbb{T} symbols, but such references are 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 licensors 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 companies. We have trademarks for the names RENOVORX, RENOVOGEM, RENOVOCATH, TAMP and DELIVERING THERAPY WHERE IT MATTERS. We have a trademark pending for RenovoTAMP. In this prospectus supplement, except as otherwise indicated, "RenovoRx," the "Company," "we," "our," and "us" refer to RenovoRx, Inc., a Delaware corporation, and its subsidiaries.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus supplement and the information incorporated by reference herein contain forward-looking statements. All statements other than statements of historical facts contained in this prospectus supplement and the information incorporated by reference herein, including statements regarding our future results of operations and financial position, business strategy, product candidates, planned preclinical studies and clinical trials, results of clinical trials, research and development costs, regulatory approvals, timing and likelihood of success, as well as plans and objectives of management for future operations, are forward-looking statements. These statements involve

known and unknown risks, uncertainties and other important factors that are in some cases beyond our control and may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements.

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

- the sufficiency of our existing cash, cash equivalents, and investments to fund our future operating expenses and capital expenditure requirements;
- our estimates regarding expenses, future revenue, anticipated capital requirements to fund our future operating expenses, and our need for additional financing;
- our financial performance;
- our anticipated use of our existing cash, cash equivalents, and investments;
- the ability of our clinical trials to demonstrate safety and efficacy of our product candidates, and other positive results;
- the progress and focus of our current and future clinical trials, and the timing of reporting of data from those trials;
- our continued reliance on third parties to conduct clinical trials of our product candidates, and for the manufacture of our product candidates;
- the beneficial characteristics, safety, efficacy, and therapeutic effects of our product candidates;
- our ability to advance product candidates into and successfully complete clinical trials;
- our ability to further develop and expand our therapy platform, both to use different chemotherapeutic agents and to include new indications;
- expectations relating to the timing of the provision of updates on, data readouts for, and completion of our clinical trials;
- our ability to obtain and maintain regulatory approval of our product candidates and the timing or likelihood of regulatory filings and approvals, including our
 expectation to seek special designations, such as orphan drug designation, for our product candidates for various diseases;

S-3

- existing regulations and regulatory developments in the United States and other jurisdictions;
- our plans relating to commercializing our product candidates, if approved, including the geographic areas of focus and our potential and ability to successfully
 commercialize our product candidates and generate revenue;
- the implementation of our strategic plans for our business and product candidates;
- the expected potential benefits of strategic collaborations with third parties and our ability to attract collaborators with relevant and complementary expertise;
- our estimates of the number of patients in the United States who suffer from the diseases we target, and enrollment timing and projections for our clinical trials;
- our estimates of potential market opportunities and our ability to successfully realize these opportunities;
- the success of competing therapies that are or may become available;
- developments relating to our competitors and our industry, including competing product candidates and therapies;
- our plans relating to the further development and manufacturing of our product candidates, including for additional indications which we may pursue;
- our plans and ability to obtain or protect intellectual property rights, including extensions of existing patent terms where available;
- the scope of protection we are able to establish and maintain for intellectual property rights, including our therapy platform and product candidates;
- our ability to successfully negotiate and enter into agreements with distribution, strategic and corporate partners;
- our potential and ability to successfully manufacture and supply our product candidates for clinical trials and for commercial use, if approved;
- our ability to retain the continued service of our key personnel and to identify, hire, and then retain additional qualified personnel; and
- our expectations regarding the impact of the ongoing COVID-19 pandemic and geopolitical events on our business.

We have based these forward-looking statements largely on our current expectations and projections about our business, the industry in which we operate and financial trends that we believe may affect our business, financial condition, results of operations and prospects, and these forward-looking statements are not guarantees of future performance or development. These forward-looking statements speak only as of the date of this prospectus supplement and are subject to a number of risks, uncertainties and assumptions described in the section titled "Risk Factors" and elsewhere in this prospectus supplement, each accompanying prospectus supplement, and the information incorporated by reference herein and therein. Because forward-looking statements are inherently subject to risks and uncertainties, some of which cannot be predicted or quantified, you should not rely on these forward-looking statements as predictions of future events. The events and circumstances reflected in our forward-looking statements may not be achieved or occur and actual results could differ materially from those projected in the forward-looking statements. Except as required by applicable law, we do not plan to publicly update or revise any forward-looking statements contained herein until after we distribute this prospectus supplement, whether as a result of any new information, future events or otherwise.

In addition, statements that "we believe" and similar statements reflect our beliefs and opinions on the relevant subject. These statements are based upon information available to us as of the date of this prospectus supplement, and while we believe such information forms a reasonable basis for such statements, such information may be limited or incomplete, and our statements should not be read to indicate that we have conducted an exhaustive inquiry into, or review of, all potentially available relevant information. These statements are inherently uncertain, and you are cautioned not to unduly rely upon these statements.

PROSPECTUS SUPPLEMENT SUMMARY

This summary highlights certain information about this offering and selected information contained elsewhere in or incorporated by reference into this prospectus supplement. This summary is not complete and does not contain all of the information that you should consider before making an investment decision. You should read this entire prospectus supplement and the accompanying prospectus carefully, including the risk factors contained in this prospectus supplement, the accompanying base prospectus, our most recent Annual Report on Form 10-K, as amended, and subsequent Quarterly Report on Form 10-Q, as amended, and the financial statements and related notes thereto and other information incorporated by reference into this prospectus supplement and in the accompanying base prospectus.

OUR COMPANY

Overview

We are a clinical-stage biopharmaceutical company with a vision to disrupt the current paradigm of cancer treatment. Our mission is to lead a revolution in oncology therapy by delivering its innovative and targeted intra-arterial (IA) delivery of chemotherapy directly to solid tumors. The proprietary RenovoRx Trans-Arterial Micro-Perfusion (RenovoTAMP®) therapy platform aims to avoid the harsh side effects typical of the current standard of care, or systemic delivery methods, thus improving patient well-being and, potentially extension of life, so more time may be enjoyed with loved ones. RenovoTAMP utilizes approved chemotherapeutics with validated mechanisms of action and well-established safety and clinical use, with the goal of improving their safety, tolerance, and widening their therapeutic window by providing more targeted delivery at the location of the tumor tissue. RenovoRx's lead product candidate, RenovoGemTM, is a combination of gemcitabine and its patented delivery system, RenovoCath®. The FDA has determined that RenovoGem in two rare diseases: pancreatic cancer and cholangiocarcinoma (bile duct cancer, or eCCA). We have completed our RR1 Phase 1/2 and RR2 observational registry studies, with 20 and 25 patients respectively, in locally advanced pancreatic cancer, or LAPC. These studies demonstrated a median overall survival of 27.9 months in patients pre-treated with radiation followed by treatment with RenovoGem. Based on previous large randomized clinical trials, the expected survival of LAPC patients is 12 - 15 months in patients receiving only intravenous (IV) systemic chemotherapy plus radiation (which are both considered standard of care). Unlike the randomized trials that established these standard-of-care results, our RR1 and RR2 clinical trials did not prospectively control the standard of care therapy received prior to administration of RenovoGem. Based on an FDA safety review of our Phase 1/2 study, FDA allowed us to proceed to evaluate RenovoGem within our Phase 3 registrational clinic

In December 2021 we amended the protocol for this clinical trial to only allow for stereotactic body radiation therapy (SBRT) during the induction phase of the study (prior to randomization). We had previously permitted both SBRT and intensity-modulated radiation therapy (IMRT). Patients receiving IMRT, must complete 25 radiation treatments in combination with oral chemotherapy during the induction phase of the study, which takes between 35 and 56 days to complete. In comparison, patients receiving SBRT during the induction phase are only required to complete 5 treatments, over 5 consecutive days, and do not receive oral chemotherapy. The decision to modify the study population was based on the observation in the Phase 3 TIGeR-PaC study that IMRT patients had a higher dropout rate during the induction phase of the study due to the high frequency of hospital visits and side effects from the required concurrent chemotherapy. As part of the pre-randomization, induction phase change made to the protocol, we initiated a review of the statistical considerations for the study and in June 2022, submitted a modified Statistical Analysis Plan (the "Modified SAP") to FDA. As part of the Modified SAP, we now plan to (i) analyze only patients receiving SBRT, consistent with the protocol change made in December 2021, (ii) include a second interim analysis, (iii) change the total number of SBRT patients randomized in the study to 114 (a reduction from the original 200 patients) with a total of 86 deaths from SBRT patients, including all deaths from SBRT patients enrolled in the study before the submission of the Modified SAP, and (iv) repower the study from 90% to 80%, which is commonly used in clinical trials. We believe these changes will shorten the timeframe needed to complete the study and also significantly decrease our costs. We have not discussed the protocol amendment or the Modified SAP with the FDA, and we cannot provide any assurance that the FDA will agree with these modifications. The first planned interim analysis was triggered when 30%, or 26 of 86, of the total number of deaths have occurred, and the second interim analysis at 60%, or 52 of 86, of the total number of deaths have occurred and is estimated to be mid-2024. Given that the timing of the interim analysis is predicated on a specific number of deaths, it is difficult to predict the exact timing of the interim analysis or when we will be able to complete the study. As of March 20, 2023, the Phase III TIGeR-PaC trial has randomized 48 SBRT patients out of 114 total needed under the Modified SAP. At this rate, we anticipate that all patients will be enrolled and randomized in 2024, with the final study readout in 2025.

Our RenovoTAMP therapy platform is focused on optimizing drug concentration in solid tumors using approved small molecule chemotherapeutics. Our platform enables physicians to isolate segments of the vascular anatomy closest to tumors and force chemotherapy across the blood vessel wall to bathe these difficult-to-reach solid tumors in chemotherapy. Specifically, our patented approach allows physicians to combine, on the one hand, pre-treatment of the local blood vessels and tissue with standard-of-care radiation therapy to decrease chemotherapy washout and, on the other hand, local delivery via our patented RenovoCath delivery system which utilizes pressure to force small molecule chemotherapy into the tumor tissue. We believe there are many advantages to our RenovoTAMP therapy platform, including:

- Application of Approved Small Molecule Chemotherapeutic Agents: We use approved small molecule chemotherapeutic agents, such as gemcitabine, with well-known safety and efficacy profiles.
- Targeted Approach: In a preclinical study using our therapy platform, we demonstrated up to 100 times higher local drug concentration compared to systemic chemotherapy. We believe our RenovoTAMP therapy platform allows for a targeted approach that can decrease systemic exposure and improve patient outcomes.
- Delivery Method Independent of Tumor Vascularity: Our therapy platform is designed to deliver small molecule chemotherapeutic agents to solid tumors resistant to
 systemic chemotherapy due to lack of tumor feeder blood vessels. If approved, our product candidates have the potential to treat tumors that are not directly
 supported by blood vessels.
- Broad Application for Solid Tumor Indications: Our therapy platform is not restricted to a single small molecule chemotherapeutic agent or solid tumor type. As such, it may be applied for use in additional solid tumor indications, including in solid tumors without identifiable tumor feeder blood vessels.

Recent Developments

2022 Financial Highlights

We have reported our full year 2022 financial results (unaudited), including the following financial highlights for the fiscal year ended December 31, 2022:

Cash, cash equivalents and marketable securities as of December 31, 2022, were \$6.4 million. We estimate that our current capital resources will be sufficient to
fund our operating expenses and capital expenditure requirements into the third quarter of 2023.

[•] Total assets and total liabilities as of December 31, 2022, were \$7.3 million and \$1.1 million, respectively.

- Total operating expenses were \$10.0 million for the year ended December 31, 2022, compared to \$5.7 million for the year ended December 31, 2021. The increase was related to higher research and development expenses and general and administrative expenses.
- Research and development expenses were \$4.3 million for the year ended December 31, 2022, compared to \$3.0 million for the year ended December 31, 2021. The increase was primarily related to higher costs for contracted research development and consulting, including employee related costs and costs associated with a secondary manufacturer for the RenovoCath® delivery system. In addition, allocated general administrative support costs increased during the year.
- General and administrative expenses were \$5.6 million for the year ended December 31, 2022, compared to \$2.6 million for the year ended December 31, 2021. The increase was primarily related to higher professional and consulting costs, including legal expenses, employee-related costs and D&O and liability insurance and other expenses. The increase was partially offset by general and administrative support costs allocated to research and development expenses.
- Net loss was \$9.9 million for the ended December 31, 2022, compared to net loss of \$6.3 million for year ended December 31, 2021.
- Net loss per share, basic and diluted were (\$1.09) for the year ended December 31, 2022, compared to (\$1.21) for the year ended December 31, 2021.
- As of December 31, 2022 the Company had 9,097,701 common shares outstanding.

For more information, see Exhibit 99.1 of our Current Report on Form 8-K filed with the SEC on March 2, 2023.

TIGeR-PaC Interim Analysis Data

On January 18, 2022, we announced initial results from a pharmacokinetic (PK) substudy within the phase III un-blinded randomized control TIGeR-PaC clinical trial. The substudy provides clinical support that RenovoTAMP may increase local drug delivery and thus concentration at the tumor site while decreasing the debilitating side effects often associated with systemic intravenous (IV) delivery, which is the current standard of care.

On March 30, 2022, we announced that we have completed the first of two planned interim analyses of the ongoing open label Phase III TIGeR-PaC clinical trial. TIGeR-PaC is a randomized multi-center Phase III open label clinical trial designed to investigate the Company's first product candidate, RenovoGem, which utilizes RenovoRx's proprietary therapy platform, RenovoTAMP, to provide targeted intra-arterial delivery of FDA-approved chemotherapy, gemcitabine, to treat LAPC following SBRT. The study is comparing treatment with RenovoGem versus standard of care treatment. In this interim analysis, the control and treatment arms demonstrated divergence in median overall survival for patients. The study is designed to randomize 114 patients (57 in each arm) with all patients receiving upfront induction chemotherapy and SBRT. This first of two planned interim analysis occurred upon the discovery of the 26th event (death) which equates to 30% of the total events required (96) for the final analysis. The TIGeR-PaC Data Monitoring Committee ("DMC") met and determined the interim data is promising and warrants continuation of this pivotal trial. As of the date of the analysis, 45 patients from U.S. sites had been randomized in this trial and the survival status of all subjects was used for the analysis.

 Twenty-three patients were randomized to intra-arterial gemcitabine (RenovoGem investigational treatment) arm and 22 to continuation of IV gemcitabine and nabpaclitaxel (standard of care control) arm.

- The median overall survival in the IV gemcitabine and nab-paclitaxel control arm was 10 months, versus 16 months in the intra-arterial RenovoGem arm from time of randomization. (NOTE: Both arms' median overall survival calculations do not include 4 to 5-months of life from diagnosis to randomization during the induction chemotherapy and radiation phase of the trial).
- Observed a positive trend in median overall survival by 24-weeks (6 months); in this interim analysis, the statistical significance was not reached to stop the study early (p=0.051).
- Observed that patients had greater than 65% reduction in adverse events compared to the control arm: In the IV genetiabine and nab-paclitaxel control arm there
 were 11 reported Serious Adverse Events (out of 22 patients) vs. 4 reported Serious Adverse Events (out of 23) intra-arterial RenovoGem patients.

The second interim analysis of this Phase III trial is expected in mid-2024.

Corporate Information

We were incorporated in the State of Delaware on December 17, 2012. Our principal executive offices are located at 4546 El Camino Real, Suite B1, Los Altos, CA 94022. Our telephone number is (650) 284-4433. Our website address is https://renovorx.com. Information contained in our website does not constitute any part of, and is not incorporated into, this prospectus supplement.

S-7

THE OFFERING			
Securities offered:	1,000,000 shares of our common stock		
Offering price per share of common stock:	\$3.21 per share		
Pre-funded Warrants offered by	us Pre-funded Warrants to purchase up to 557,632 shares of common stock. Each Pre-funded Warrant will be exercisable for one share of our common stock. The purchase price of each Pre-funded Warrant will equal the price per share at which the shares of common stock are being sold to the public in this offering, minus \$0.0001, and the exercise price of each Pre-funded Warrant will be \$0.0001 per share. This offering also relates to the shares of common stock issuable upon exercise of any Pre-funded Warrants sold in this offering. The exercise price and number of shares of common stock issuable upon exercise will be subject to certain further adjustments as described herein. See "Description of Securities Offered"		

Concurrent Private Placement of Common Warrants	In a concurrent private placement, we are selling to the investor in this offering Common Warrants to purchase up to an aggregate of 1,947,040 shares of our common stock, representing 125% of the shares of our common stock and shares underlying the Pre-funded Warrants that may be purchased in this offering. Each Common Warrant has an exercise price of \$3.21 per share, is exercisable immediately following the closing date of this offering and will expire five and a half years following the date of their initial exercisability. The Common Warrants are being offered pursuant to the exemptions provided in Section 4(a)(2) under the Securities Act and Regulation D promulgated thereunder and, along with the Common Warrant Shares, have not been registered under the Act, or applicable state securities laws. Accordingly, the Common Warrants and the Common Warrant Shares may not be offered or sold in the U.S. except pursuant to an effective registration statement or an applicable exemption from the registration requirements of the Securities Act and such applicable state securities laws. See "Private Placement of Warrants."
Common stock to be outstanding after the offering:	10,655,333 shares assuming all of the Pre-funded Warrants issued in this offering are exercised (but excluding shares issuable upon the exercise of the Common Warrants to be issued in the concurrent private placement).
Use of Proceeds:	We intend to use the net proceeds from this offering for working capital and other general corporate purposes.
Listing and Symbols:	Our common stock is listed on The Nasdaq Capital Market under the symbol "RNXT".
Risk Factors:	Investing in our securities involves substantial risks. You should read the "Risk Factors" section of this prospectus supplement and in the documents incorporated by reference in this prospectus supplement for a discussion of factors to consider before deciding to purchase our securities.

S-8

The number of shares of our common stock to be outstanding after this offering is based on 9,097,701 shares of our common stock outstanding as of December 31, 2022, and excludes as of such date:

- 1,399,252 shares reserved for issuance upon the exercise of outstanding stock options at a weighted average exercise price of \$7.79 per share;
- 3,035,195 shares reserved for issuance upon the exercise of outstanding warrants at a weighted average exercise price of \$10.80 per share;
- 1,058,971 shares of common stock reserved for future issuance under our 2021 Equity Incentive Plan;
- 1,947,040 shares of common stock issuable upon exercise of the Common Warrants to be issued to the investor in the concurrent private placement.

Except as otherwise indicated, all information in this prospectus supplement assumes (i) no exercise or conversion of the outstanding options or warrants described above; (ii) no exercise of the Common Warrants to be issued to the investor in the concurrent private placement and (iii) all of the Pre-funded Warrants issued in this offering are exercised.

S-9

RISK FACTORS

Investment in our securities involves a high degree of risk. In addition to the risks and investment considerations discussed elsewhere in this prospectus supplement or any document incorporated by reference herein, the following factors should be carefully considered by anyone purchasing the securities offered by this prospectus supplement. The risks and uncertainties described below are not the only ones we face. Additional risks and uncertainties not presently known to us or that we currently deem immaterial also may impair our business operations. We also update risk factors from time to time in our periodic reports on Forms 10-K, 10-Q and 8-K which will be incorporated by reference in this prospectus supplement. See "Where You Can Find More Information" and "Incorporation of Certain Information by Reference." If any of the following risks actually occur, our business could be harmed. In such case, the trading price of our common stock could decline and investors could lose all or a part of their investment. This prospectus supplement also contains forward-looking statements that involve risks and uncertainties. Our actual results could differ materially from those anticipated in these forward-looking statements as a result of certain factors, including the risks we face as described below and elsewhere in this prospectus supplement. See "Special Note Regarding Forward Looking Statements."

Risks Relating to this Offering:

Our management has broad discretion as to the use of the net proceeds from this offering.

We cannot specify with certainty the particular uses of the net proceeds we will receive from this offering, and these uses may vary from our current plans. Our management will have broad discretion in the application of the net proceeds, including for any of the purposes described in "Use of Proceeds." Accordingly, you will have to rely upon the judgment of our management with respect to the use of the proceeds. Our management may spend a portion or all of the net proceeds from this offering in ways that holders of our common stock may not desire or that may not yield a significant return or any return at all. The failure by our management to apply these funds effectively could harm our business. Pending their use, we may also invest the net proceeds from this offering in a manner that does not produce income or that loses value.

If you purchase the common stock being offered in this offering, you will experience immediate dilution as a result of this offering.

Since the price per share of our common stock being offered is substantially higher than the net tangible book value per share of our common stock, you will suffer immediate and substantial dilution in the net tangible book value of the common stock you purchase in this offering or the shares of common stock underlying the Pre-funded Warrants you purchase in this offering. After giving effect to the sale by us of (i) 1,000,000 shares of our common stock at the offering price of \$3.21 per share of common stock and (ii) Pre-funded Warrants to purchase up to 557,632 shares of common stock at the offering price of \$3.2099 per Pre-funded Warrant, if you purchase shares of

S-10

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

In order to raise additional capital, we may in the future offer additional shares of our common stock or other securities convertible into or exchangeable for our common stock that could result in further dilution to the investor purchasing our common stock in this offering or result in downward pressure on the price of our common stock. We may sell shares of our common stock or other securities in any other offering at prices that are higher or lower than the prices paid by the investor in this offering, and the investor purchasing shares or other securities in the future could have rights superior to existing stockholders. Moreover, to the extent that we issue options or warrants to purchase, or securities convertible into or exchangeable for, shares of our common stock in the future and those options, warrants or other securities are exercised, converted or exchanged, stockholders may experience further dilution.

The trading price of our common stock has been, and is likely to continue to be highly volatile and could be subject to wide fluctuations in response to various factors, some of which are beyond our control.

Our stock price is volatile. During the period from January 1, 2022 to March 29, 2023, the closing price of our common stock ranged from a high of \$5.25 per share to a low of \$1.52 per share. The stock market in general and the market for smaller pharmaceutical and biotechnology companies in particular have experienced extreme volatility that has often been unrelated to the operating performance of particular companies. As a result of this volatility, you may not be able to sell your common stock at or above the public offering price and you may lose some or all of your investment.

There is no public market for the Pre-funded Warrants being offered in this offering.

There is no established public trading market for the Pre-funded Warrants being offered in this offering, and we do not expect a market to develop. In addition, we do not intend to apply to list the Pre-funded Warrants on any securities exchange or nationally recognized trading system, including the Nasdaq Capital Market. Without an active market, the liquidity of the Pre-funded Warrants will be limited.

Holders of our Pre-funded Warrants and Note Warrants will have no rights as shareholders until they acquire shares of our common stock, if ever, except as set forth in the Pre-funded Warrants.

If you acquire the Pre-funded Warrants or warrants issued in a private transaction upon the conversion of our outstanding convertible notes at the time of our initial public offering (the "Note Warrants") to purchase shares of our common stock in this offering, you will have no rights with respect to our common stock until you acquire shares of such common stock upon exercise of your Pre-funded Warrants or Note Warrants, except as set forth in the Pre-funded Warrants or Note Warrants, respectively. Upon exercise of your Pre-funded Warrants or the Note Warrants, you will be entitled to exercise the rights of a holder of common stock only as to matters for which the record date occurs after the exercise date.

Risks Relating to Our Business:

We will need to raise substantial additional capital to develop and commercialize RenovoGem, and our failure to obtain funding when needed may force us to delay, reduce or eliminate our product development programs or collaboration efforts. If we do not obtain adequate and timely funding, we may not be able to continue as a going concern.

As of December 31, 2022, we had cash, cash equivalents and short-term marketable securities of \$6.4 million. Due to our recurring operating losses and the expectation that we will continue to incur net losses in the future, we will be required to raise additional capital to complete the development and commercialization of our product candidates. We have historically financed our operations primarily through private sales of our equity, debt financing and the sale of common stock and warrants in our initial public offering, or IPO. To raise additional capital, we may seek to sell additional equity and/or debt securities, obtain a credit facility or other loan or enter into collaborations, licenses or other similar arrangements, which we may not be able to do on favorable terms, or at all. For example, we have filed an omnibus shelf registration statement on Form S-3 that provides for aggregate offerings of up to \$50.0 million of the Company's securities subject to various limitations, including limited sales in any twelve-month period while we are subject to the "baby-shelf" rules. We also have filed a registration statement on Form S-1 to register the cash exercise of our outstanding warrants, with such cash exercise only expected to occur when the trading price of our common stock is in excess of the \$10.80 per share exercise or our outstanding warrants. Our ability to obtain additional financing will be subject to a number of factors, including market conditions, fluctuations in interest rates, our operating performance and investor sentiment. If we are unable to raise additional capital when required or on acceptable terms, we may have to significantly delay, scale back or discontinue the development and/or commercialization of our product candidates, restrict or cease our operations or obtain funds by entering into agreements on unfavorable terms. Failure to obtain additional capital on acceptable terms, or at all, would result in a material and adverse impact on our operations. As a result, there is subst

Our financial statements as of September 30, 2022 have been prepared on a going concern basis and do not include any adjustments that may result from the outcome of this uncertainty. If we fail to raise additional working capital, or do so on commercially unfavorable terms, it would materially and adversely affect our business, prospects, financial condition and results of operations, and we may be unable to continue as a going concern. If we seek additional financing to fund our business activities in the future and there remains substantial doubt about our ability to continue as a going concern, investors or other financing sources may be unwilling to provide additional funding to us on commercially reasonable terms, if at all. If we are unable to continue as a going concern, we might have to liquidate our assets and the value we receive for our assets in liquidation or dissolution could be significantly lower than the values reflected in our financial statements, and our shareholders may lose their entire investment in our common stock.

S-11

USE OF PROCEEDS

We expect to receive net proceeds from the sale of the shares of common stock and Pre-funded Warrants in this offering of approximately \$4.45 million, after deducting the placement agent fees and estimated offering expenses payable by us. These estimates exclude the proceeds, if any, from the exercise of the Pre-funded Warrants sold in this offering and the Common Warrants sold in a private placement concurrently with this offering.

We estimate that our current capital resources, along with the net proceeds from this offering, will be sufficient to fund our operating expenses and capital expenditure requirements through early 2024. However, the net proceeds from this offering, together with our current cash, will not be sufficient for us to fund the development of RenovoGem through regulatory approval, and we will need to raise additional capital to complete the development and commercialization of RenovoGem. At this time, we cannot predict with certainty the amount of capital needed to complete the development and commercialization of RenovoGem, but we anticipate seeking additional capital in the future to fund such capital needs through further equity offerings and/or debt borrowings. We cannot guarantee that we will be able to raise additional capital on reasonable terms or at all.

We may also use a portion of the net proceeds of this offering to acquire or invest in complementary businesses, products, or technologies, or to obtain the right to use

such complementary technologies. We have no commitments with respect to any acquisition or investment, and we are not currently involved in any negotiations with respect to any such transaction.

As of the date of this prospectus supplement, we cannot specify with certainty all of the particular uses for the net proceeds to be received upon the completion of this offering. The amounts and timing of our actual expenditures will depend on numerous factors, including the status of our product development efforts, sales and marketing activities, technological advances, amount of cash generated or used by our operations and competition. Accordingly, our management will have broad discretion in the application of the net proceeds and investors will be relying on the judgment of our management regarding the application of the proceeds of this offering. Pending such use, we intend to invest the net proceeds in interest-bearing investment-grade securities or government securities.

S-12

DILUTION

If you purchase securities in this offering, your interest will be immediately and substantially diluted to the extent of the difference between the offering price per share of our common stock and/or Pre-funded Warrants in this offering and the as adjusted net tangible book value per share of our common stock after giving effect to this offering.

Our net tangible book value as of December 31, 2022 was approximately \$6,163,108, or approximately \$0.68 per share of common stock. After giving effect to (i) the sale of 1,000,000 shares in this offering at the offering price of \$3.21 per share, (ii) sale of 557,632 Pre-funded Warrants at the offering price of \$3.2099 and (iii) the concurrent private placement of 1,947,090 Common Warrants with an exercise price of \$3.21, and after deducting the placement agent's fees and other estimated offering expenses payable by us, our pro forma as adjusted net tangible book value at December 31, 2022 would have been approximately \$10,613,107 or \$1.00 per share. This represents an immediate increase in net tangible book value of approximately \$0.32 per share to our existing stockholders, and an immediate dilution of \$2.21 per share to the investor purchasing shares in the offering.

Dilution in net tangible book value per share represents the difference between the amount per share paid by the investor of our common stock in this offering and the net tangible book value per share of our common stock immediately after this offering.

The following table illustrates the per share dilution to the investor purchasing securities in the offering:

Offering price per share		\$	3.21
Net tangible book value per share as of December 31, 2022	\$	0.68	
Increase in net tangible book value per share attributable to this offering		0.32	
Adjusted net tangible book value per share after this offering			1.00
Amount of dilution in net tangible book value per share to the new investor in this offering		\$	2.21

The discussion and table above are based on 9,097,701 shares of our common stock outstanding as of December 31, 2022, and excludes:

- 1,399,252 shares reserved for issuance upon the exercise of outstanding stock options at a weighted average exercise price of \$7.79 per share;
- 3,035,195 shares reserved for issuance upon the exercise of outstanding warrants at a weighted average exercise price of \$10.80 per share;
- 1,058,971 shares of common stock reserved for future issuance under our 2021 Equity Incentive Plan;
- 1,947,040 shares of common stock issuable upon exercise of the Common Warrants to be issued to the investor in the concurrent private placement.

Except as otherwise indicated, all information in this prospectus supplement assumes (i) no exercise or conversion of the outstanding options or warrants described above; (ii) no exercise of the Common Warrants to be issued to the investor in the concurrent private placement and (iii) all of the Pre-funded Warrants issued in this offering are exercised. To the extent that options or warrants outstanding as of December 31, 2022 have been or may be exercised, the investor purchasing our common stock in this offering may experience further dilution. In addition, we may choose to raise additional capital due to market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating plans. To the extent that we raise additional capital through the sale of equity or convertible debt securities, the issuance of these securities could result in further dilution to our stockholders.

S-13

PRIVATE PLACEMENT OF COMMON WARRANTS

In a concurrent Private Placement, we are selling to the investor in this offering Common Warrants to purchase up to an aggregate of 1,947,040 shares of common stock, representing 125% of the shares of our common stock and Pre-funded Warrants that may be purchased in this offering. The Common Warrants are exercisable at an exercise price of \$3.21 per share, subject to certain adjustments, are exercisable immediately following the closing date of this offering and have a term of exercise equal to five and a half years from the date of their initial exercisability. A holder of Common Warrants will have the right to exercise the Common Warrants on a "cashless" basis if there is no effective registration statement registering, or the prospectus contained therein is not available for the resale of the Common Warrant Shares. Subject to limited exceptions, a holder of Common Warrants will not have the right to exercise any portion of its Common Warrants if the holder, together with its affiliates, would beneficially own in excess of 4.99% (or 9.99% at the election of the holder prior to the date of issuance) of the number of shares of our common stock outstanding immediately after giving effect to such exercise, provided that the holder may increase or decrease the beneficial ownership limitation up to 9.99%. Any increase in the beneficial ownership limitation shall not be effective until 61 days following notice of such change to us.

Except as otherwise provided in the Common Warrants or by virtue of such holder's ownership of shares of our common stock, the holders of the Common Warrants do not have the rights or privileges of holders of our common stock, including any voting rights, until they exercise their Common Warrants.

The Common Warrants and the Common Warrant Shares are being offered pursuant to the exemptions provided in Section 4(a)(2) under the Securities Act and Regulation D promulgated thereunder, and are not being offered pursuant to this prospectus supplement and the accompanying prospectus.

In the event of any fundamental transaction, as described in the Common Warrants and generally including any merger or consolidation with or into another entity, sale of all or substantially all of our assets, tender offer or exchange offer that have been accepted by the holders of 50% or more of our outstanding common stock, reclassification, reorganization or recapitalization of our shares of common stock, or purchase of more than 50% or more of our outstanding shares of common stock, then upon any subsequent exercise of a Common Warrant, the holder will have the right to receive as alternative consideration, for each share of common stock that would have been issuable upon such exercise immediately prior to the occurrence of such fundamental transaction, the number of shares of common stock of the successor or acquiring corporation of our company, if it is the surviving corporation, and any additional consideration receivable upon or as a result of such transaction by a holder of the number of shares of common Warrant is exercised immediately prior to such event. Notwithstanding the foregoing, in the event of a fundamental transaction, the holders of the Common Warrant have the right to require us or a successor entity to redeem the Common Warrants for cash in the amount of the Black Scholes Value (as defined in each Common Warrant) of the unexercised portion of the Common Warrant sorcurrently with or within 30 days following the consumation of a fundamental transaction.

There is no established public trading market for the Common Warrants and we do not expect a market to develop. In addition, we do not intend to list the Common Warrants on the Nasdaq Capital Market, any other national securities exchange or any other nationally recognized trading system.

S-14

DESCRIPTION OF SECURITIES WE ARE OFFERING

Common Stock

We are offering shares of our common stock in this offering. See "Description of Securities" and "Description of Capital Stock" in our base prospectus and "Description of Securities" filed as Exhibit 4.6 to our Annual Report on 10-K for more information regarding our shares of common stock.

Pre-funded Warrants

The following summary of certain terms and provisions of the purchase contracts issued as Pre-funded Warrants that are being offered hereby is not complete and is subject to, and qualified in its entirety by, the provisions of the Pre-funded Warrant, the form of which will be filed as an exhibit to a Current Report on Form 8-K in connection with this offering and incorporated by reference into the registration statement of which this prospectus supplement forms a part. Prospective investors should carefully review the terms and provisions of the form of Pre-funded Warrant for a complete description of the terms and conditions of the Pre-funded Warrants.

Duration and Exercise Price

Each Pre-funded Warrant offered hereby will have an initial exercise price per share equal to \$0.0001. The Pre-funded Warrants will be immediately exercisable and may be exercised at any time until the Pre-funded Warrants are exercised in full. The exercise price and number of shares of common stock issuable upon exercise is subject to appropriate adjustment in the event of stock dividends, stock splits, reclassifications or similar events affecting our common stock and the exercise price.

Exercisability

The Pre-funded Warrants will be exercisable, at the option of each holder, in whole or in part, by delivering to us a duly executed exercise notice accompanied by payment in full for the number of shares of our common stock purchased upon such exercise (except in the case of a cashless exercise as discussed below). A holder (together with its affiliates) may not exercise any portion of a Pre-funded Warrant to the extent that the holder would own more than 4.99% of the outstanding common stock immediately after exercise, except that upon at least 61 days' prior notice from the holder to us, the holder may increase the amount of ownership of outstanding stock after exercising the holder's Pre-funded Warrants up to 9.99% of the number of shares of our common stock outstanding immediately after giving effect to the exercise, as such percentage ownership is determined in accordance with the terms of the Pre-funded Warrants. Purchasers of Pre-funded Warrants in this offering may also elect prior to the issuance of the Pre-funded Warrants to have the initial exercise limitation set at 9.99% of our outstanding common stock.

Cashless Exercise

In lieu of making the cash payment otherwise contemplated to be made to us upon exercise in payment of the aggregate exercise price, the holder may elect instead to receive upon such exercise (either in whole or in part) the net number of shares of common stock determined according to a formula set forth in the Pre-funded Warrants.

S-15

Transferability

Subject to applicable laws, a Pre-funded Warrant may be transferred at the option of the holder upon surrender of the Pre-funded Warrant to us together with the appropriate instruments of transfer.

Fractional Shares

No fractional shares of common stock will be issued upon the exercise of the Pre-funded Warrants. Rather, the Company shall, at its election, either pay a cash adjustment in respect of such final fraction in an amount equal to such fraction multiplied by the exercise price or round up to the next whole share.

Trading Market

There is no established trading market for the Pre-funded Warrants on any securities exchange or nationally recognized trading system.

Right as a Stockholder

Except as otherwise provided in the Pre-funded Warrants or by virtue of such holder's ownership of shares of our common stock, the holders of the Pre-funded Warrants do not have the rights or privileges of holders of our common stock, including any voting rights, until they exercise their Pre-funded Warrants.

Fundamental Transaction

In the event of a fundamental transaction, as described in the Pre-funded Warrants and generally including any merger or consolidation with or into another entity, sale of all or substantially all of our assets, tender offer or exchange offer that have been accepted by the holders of 50% or more of our outstanding common stock, reclassification, reorganization or recapitalization of our shares of common stock, or purchase of more than 50% or more of our outstanding shares of common stock, then upon any subsequent exercise of a Pre-funded Warrant, the holder will have the right to receive as alternative consideration, for each share of common stock that would have been issuable upon such exercise immediately prior to the occurrence of such fundamental transaction, the number of shares of common stock of the successor or acquiring corporation of our company, if it is the surviving corporation, and any additional consideration receivable upon or as a result of such transaction by a holder of the number of shares of common stock for which the Pre-funded Warrant is exercisable immediately prior to such event.

PLAN OF DISTRIBUTION

Roth Capital Partners, LLC has agreed to act as our sole placement agent in connection with this offering subject to the terms and conditions of a placement agency agreement, dated March 30, 2023 by and between Roth Capital Partners, LLC and us. The placement agent is not purchasing or selling any securities offered by this prospectus supplement and the accompanying base prospectus but has arranged for the sale of certain of the securities offered hereby through a securities purchase agreement entered into between the investor and us. The offering price of the shares and/or the Pre-funded Warrants offered by this prospectus supplement and the accompanying base prospectus has

been determined based upon arm's-length negotiations between the investor and us.

We have entered into a securities purchase agreement directly with the investor in this offering. A form of the securities purchase agreement will be included as Exhibit 10.2 to our Current Report on Form 8-K to be filed with the SEC in connection with this offering. The securities purchase agreement provides such investor with certain representations, warranties and covenants, including indemnifications, from us. Our obligation to issue and sell the securities to the investor who is party to the securities purchase agreement is subject to the closing conditions set forth in the securities purchase agreement, including the absence of any material adverse change in our business and the receipt of certain opinions, letters and certificates from us or our counsel, which may be waived by the respective parties. All of the securities will be sold at the offering price specified in this prospectus supplement and, we expect, at a single closing.

Commissions and Expenses

We have agreed to pay the placement agent an aggregate cash placement fee equal to 7.0% of the gross proceeds in this offering from sales arranged for by the placement agent. Subject to certain conditions, we also have agreed to reimburse all reasonable travel and other out-of-pocket expenses of the placement agent in connection with this offering, including but not limited to the reasonable fees of legal counsel, not to exceed \$50,000.

We currently anticipate that the delivery of the securities will occur on or about April 3, 2023. At the closing, The Depository Trust Company will credit the shares of common stock to the account of the investor or the transfer agent will issue the shares to the investor in book-entry form, as elected by the investor in the purchase agreement.

Other Terms

Under the securities purchase agreement, and subject to certain exceptions, we have agreed not to (i) enter into any agreement to issue or announce the issuance or proposed issuance of any common stock or common stock equivalents, or (ii) file any registration statement or amendment or supplement thereto, subject to certain exceptions, for a period of 60 days following the closing of the offering. We have also agreed not to effect or enter into an agreement to effect any issuance of common Stock or common Stock equivalents involving a Variable Rate Transaction, as defined in the Securities Purchase Agreement for a period of one year following the closing of the offering, except that we may enter into an "at-the-market offering" six months after the closing of this offering.

Lock-Up Agreements.

In connection with this offering, each of our executive officers and directors has agreed, subject to certain exceptions set forth in the lock-up agreements, not to offer, sell, contract to sell, hypothecate, pledge, make any short sale of, or otherwise dispose of, directly or indirectly, any shares of our common stock, or any securities convertible into or exercisable or exchangeable for shares of our common stock, for 60 days following the closing of the offering.

S-1	1

Determination of Offering Price

The offering price of the securities we are offering was negotiated between us and the investor, in consultation with the placement agent based on the trading of our common stock prior to the offering, among other things. Other factors considered in determining the offering price of our securities we are offering include our history and prospects, the stage of development of our business, our business plans for the future and the extent to which they have been implemented, an assessment of our management, general conditions of the securities markets at the time of the offering and such other factors as were deemed relevant.

Regulation M Restrictions

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 resale of any shares of common stock sold by it while acting as a principal might be deemed to be underwriting discounts or commissions under the Securities Act. As an underwriter, the placement agent would be required to comply with the requirements of the Securities Act and the Exchange Act including Rule 415(a)(4) under the Securities Act and Rule 10b-5 and Regulation M promulgated under the Exchange Act. These rules and regulations may limit the timing of purchases and sales of shares offered hereby by the placement agent acting as a principal. Under these rules and regulations, the placement agent:

- must not engage in any stabilization activity in connection with our securities; and
- must not 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 it has completed its participation in the distribution.

Passive Market Making

In connection with this offering, the placement agent may engage in passive market making transactions in our common stock on the Nasdaq Stock Market in accordance with Rule 103 of Regulation M promulgated under the Exchange Act during a period before the commencement of offers or sales of shares of our common stock and extending through the completion of the distribution. A passive market maker must display its bid at a price not in excess of the highest independent bid of that security. If all independent bids are lowered below the passive market maker's bid, however, that bid must then be lowered when specified purchase limits are exceeded.

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 the placement agency agreement, or to contribute to payments that the placement agent may be required to make in respect of those liabilities.

Other Relationships

The placement agent and its affiliates may in the future engage in investment banking transactions and other commercial dealings in the ordinary course of business with us or our affiliates. The placement agent has received, or may in the future receive, customary fees and commissions for these transactions.

Electronic Distribution

This prospectus supplement and the accompanying base prospectus may be made available in electronic format on websites or through other online services maintained by the placement agent or by an affiliate. Other than this prospectus supplement and the accompanying base prospectus, the information on the placement agent's website and any information contained in any other website maintained by the placement agent is not part of this prospectus supplement and the accompanying base prospectus supplement and the accompanying base prospectus or the registration statement of which this prospectus supplement and the accompanying base prospectus forms a part, has not been approved and/or endorsed by us or the placement agent, and should not be relied upon by investors.

Listing

Nasdaq Capital Market was \$3.90 per share. There is no established public trading market for the Common Warrants or the Pre-funded Warrants and we do not intend to list them on any national securities exchange or nationally recognized trading system.

S-18

LEGAL MATTERS

The validity of the issuance of the securities offered hereby will be passed upon for us by Wilson Sonsini Goodrich & Rosati, P.C., Palo Alto, California. Ellenoff Grossman & Schole LLP, New York, New York, is acting as counsel for the placement agent in this offering.

EXPERTS

The financial statements of RenovoRx, Inc. as of and for the year ended December 31, 2021 incorporated by reference in this registration statement, have been audited by Baker Tilly US, LLP, an independent registered public accounting firm, as set forth in their report thereon incorporated by reference in this registration statement, in reliance upon such report and upon the authority of said firm as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We have filed with the SEC a registration statement on Form S-3 (File No. 333- 268302), of which this prospectus supplement and the accompanying base prospectus are a part, under the Securities Act, to register the shares of common stock offered by this prospectus supplement. In addition, we file annual, quarterly and current reports, proxy statements and other information with the SEC. Our SEC filings are available to the public over the Internet at the SEC's website at http://www.sec.gov. We also maintain a website at www.renovorx.com where these materials are available. You may access these materials free of charge as soon as reasonably practicable after they are electronically filed with, or furnished to, the SEC. Information contained on or accessible through our website is not a part of this prospectus supplement and is not incorporated by reference herein, and the inclusion of our website address in this prospectus supplement is an inactive textual reference only. This prospectus supplement and the accompanying base prospectus are part of a registration statement that we filed with the SEC and do not contain all of the information in the registration statement. The full registration statement may be obtained from the SEC or us, as provided below. Statements in this prospectus or any prospectus supplement about these documents are summaries and each statement is qualified in all respects by reference to the document to which it refers. You should refer to the actual documents for a more complete description of the relevant matters. You may inspect a copy of the registration statement through the SEC's website, as provided above.

S-19

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC's rules allow us to "incorporate by reference" information into this prospectus, which means that we can disclose important information to you by referring you to another document filed separately with the SEC. The information incorporated by reference is deemed to be part of this prospectus supplement, and subsequent information that we file with the SEC will automatically update and supersede that information. Any statement contained in a previously filed document incorporated by reference will be deemed to be modified or superseded for purposes of this prospectus supplement to the extent that a statement contained in this prospectus supplement modifies or replaces that statement.

This prospectus supplement and the accompanying base prospectus incorporate by reference the documents set forth below that have previously been filed with the SEC:

- our Annual Report on Form 10-K for the year ended December 31, 2021, filed with the SEC on March 30, 2022;
- our Quarterly Reports on Form 10-Q for the quarter ended March 31, 2022, filed with the SEC on May 13, 2022, for the quarter ended June 30, 2022, filed with the SEC on August 12, 2022, and for the third quarter ended September 30, 2022, filed with the SEC on November 14, 2022;
- our Current Reports on Form 8-K, which were filed with the SEC on June 9, 2022, July 19, 2022, September 19, 2022, January 18, 2023, and March 2, 2023; and
- the description of our common stock set forth in our registration statement on Form 8-A, filed with the SEC on August 11, 2021, including any amendments thereto
 or reports filed for the purposes of updating this description.

Any documents we file with the SEC pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act after the date of this prospectus supplement and prior to the termination of this offering, will automatically be deemed to be incorporated by reference into this prospectus supplement and to be part hereof from the date of filing those documents. We are not, however, incorporating by reference any documents or portions thereof that are not deemed "filed" with the SEC, including any information furnished pursuant to Item 2.02 or Item 7.01 of Form 8-K or related exhibits furnished pursuant to Item 9.01 of Form 8-K. Any statements in any such future filings will automatically be deemed to modify and supersede any information in any document we previously filed with the SEC that is incorporated or deemed to be incorporated herein by reference to the extent that statements in the later filed document modify or replace such earlier statements.

You can request a copy of these filings, at no cost, by writing or telephoning us at the following address or telephone number:

RenovoRx, Inc. Attn: Investor Relations 4546 El Camino Real, Suite B1 Los Altos, California 94022 650-284-4433

The information accessible through any website referred to in this prospectus supplement or any document incorporated herein is not, and should not be deemed to be, a part of this prospectus supplement.

PROSPECTUS

RENOVORX

\$50,000,000 Common Stock

Preferred Stock Debt Securities Purchase Contracts Units

We may offer and sell the securities identified above from time to time in one or more offerings. This prospectus provides you with a general description of the securities.

Each time we offer and sell securities, we will provide a supplement to this prospectus that contains specific information about the offering and the amounts, prices and terms of the securities. The supplement may also add, update or change information contained in this prospectus with respect to that offering. You should carefully read this prospectus and the applicable prospectus supplement, together with any documents we incorporated by reference, before you invest in any of our securities. The aggregate offering price of the securities we sell pursuant to this prospectus will not exceed \$50,000,000.

We may offer and sell the securities described in this prospectus and any prospectus supplement to or through one or more underwriters, dealers and agents, or directly to purchasers, or through a combination of these methods. If any underwriters, dealers or agents are involved in the sale of any of the securities, their names and any applicable purchase price, fee, commission or discount arrangement between or among them will be set forth, or will be calculable from the information set forth, in the applicable prospectus supplement. See the sections of this prospectus entitled "About this Prospectus" and "Plan of Distribution" for more information. No securities may be sold without delivery of this prospectus and the applicable prospectus supplement describing the method and terms of the offering of such securities.

Our common stock is listed on The Nasdaq Capital Market under the symbol "RNXT." On November 9, 2022, the last reported sale price of our common stock on The Nasdaq Capital Market was \$1.93 per share.

Pursuant to General Instruction I.B.6 of Form S-3, in no event will we sell our common stock in a public primary offering with a value exceeding more than one-third of the aggregate market value of our voting and non-voting common equity held by non-affiliates in any 12-month period as long as the aggregate market value of our outstanding voting and non-voting common equity held by non-affiliates in any 12-month period as long as the aggregate market value of our outstanding voting and non-voting common stock held by non-affiliates, or the public float, was approximately \$23.8 million based upon 8,819,411 shares of our outstanding stock held by non-affiliates, or the public float, was approximately \$23.8 million based upon 8,819,411 shares of our outstanding stock held by non-affiliates at the per share price of \$2.70 on September 12, 2022, which was the highest closing price within the last 60 days prior to the date of this filing. One-third of our public float, calculated in accordance with General Instruction I.B.6 of Form S-3 during the 12 calendar months prior to and including the date of this prospectus.

INVESTING IN OUR SECURITIES INVOLVES RISKS. SEE "<u>RISK FACTORS</u>" BEGINNING ON PAGE 4 OF THIS PROSPECTUS AND IN ANY SIMILAR SECTION CONTAINED IN OR INCORPORATED BY REFERENCE HEREIN OR IN THE APPLICABLE PROSPECTUS SUPPLEMENT CONCERNING FACTORS YOU SHOULD CONSIDER BEFORE INVESTING IN OUR SECURITIES.

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

The date of this prospectus is November 21, 2022.

Table of Contents

	Page
ABOUT THIS PROSPECTUS	1
PROSPECTUS SUMMARY	2
<u>RISK FACTORS</u>	4
FORWARD-LOOKING STATEMENTS	4
USE OF PROCEEDS	6
DESCRIPTION OF SECURITIES	7
DESCRIPTION OF CAPITAL STOCK	8
DESCRIPTION OF DEBT SECURITIES	14
DESCRIPTION OF PURCHASE CONTRACTS	21
DESCRIPTION OF UNITS	22
PLAN OF DISTRIBUTION	23
LEGAL MATTERS	23
<u>EXPERTS</u>	23
WHERE YOU CAN FIND MORE INFORMATION	24
INCORPORATION OF CERTAIN INFORMATION BY REFERENCE	25

ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we filed with the U.S. Securities and Exchange Commission (the "SEC") using a "shelf" registration process. By using a shelf registration statement, we may sell securities from time to time and in one or more offerings as described in this prospectus. Each time that we offer and sell securities, we will provide a prospectus supplement to this prospectus that contains specific information about the securities being offered and sold and the specific terms of that offering and, to the extent appropriate, any updates to the information about us contained in this prospectus. We may also authorize one or more free writing prospectuses to be provided to you that may contain material information relating to these offerings. The prospectus supplement may also add, update or change information contained in this prospectus with respect to that offering. If there is any inconsistency between the information in this prospectus and the applicable prospectus supplement, you should rely on the prospectus supplement. Pursuant to General Instruction I.B.6 of Form S-3, in no event will we sell our common stock in a public primary offering with a value exceeding more than one-third of the aggregate market value of our voting and non-voting common equity held by non-affiliates is less than \$75.0 million. Before purchasing any securities, you should carefully read both this prospectus and the applicable prospectus supplement, together with the additional information described under the headings "Where You Can Find More Information" and "Incorporation of Certain Information by Reference."

We have not authorized anyone to provide you with any information or to make any representations other than those contained in this prospectus, any applicable prospectus supplement or any free writing prospectuses prepared by or on behalf of us or to which we have referred you. We take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. We will not make an offer to sell these securities in any jurisdiction where the offer or sale is not permitted. You should assume that the information appearing in this prospectus and the applicable prospectus supplement to this prospectus is accurate as of the date on its respective.

cover or as otherwise specified therein and that any information incorporated by reference is accurate only as of the date of the document incorporated by reference unless we indicate otherwise. Our business, financial condition, results of operations and prospects may have changed since those dates. This prospectus incorporates by reference, and any prospectus supplement or free writing prospectus may contain and incorporate by reference, market data and industry statistics and forecasts that are based on independent industry publications and other publicly available information. Although we believe these sources are reliable, we do not guarantee the accuracy or completeness of this information and we have not independently verified this information. Although we are not aware of any misstatements regarding the market and industry data presented in this prospectus and the documents incorporated herein by reference, these estimates involve risks and uncertainties and are subject to change based on various factors, including those discussed under the heading "Risk Factors" contained or incorporated by reference in this prospectus, the applicable prospectus supplement and any related free writing information.

We own or have rights to use a number of 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. Solely for convenience, the trademarks, service marks, logos and trade names referred to in this prospectus are without the ® and TM symbols, but such references are 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 licensors 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 companies. We have trademarks for the names RENOVORX, RENOVOGEM, RENOVOCATH, TAMP and DELIVERING THERAPY WHERE IT MATTERS. We have a trademark pending for RenovOTAMP.

PROSPECTUS SUMMARY

The following summary highlights information contained elsewhere in this prospectus. It does not contain all of the information you need to consider in making your investment decision. Before making an investment decision, you should read this entire prospectus carefully and you should consider, among other things, the matters set forth under "Risk Factors" and our financial statements and related notes thereto appearing elsewhere in this prospectus. In this prospectus, except as otherwise indicated, "RenovoRx," the "Company," "we," "our," and "us" refer to RenovoRx, Inc., a Delaware corporation, and its subsidiaries.

Company Overview

We are a clinical-stage biopharmaceutical company focused on developing therapies for the local treatment of solid tumors. We are currently conducting a Phase 3 registrational trial for our lead product candidate RenovoGemTM. Our therapy platform, RenovoRx Trans-Arterial Micro-Perfusion, or RenovoTAMPTM, utilizes approved chemotherapeutics with validated mechanisms of action and well-established safety and side effect profiles, with the goal of increasing their efficacy, improving their safety, and widening their therapeutic window by combining such chemotherapeutics with our proprietary drug delivery system. RenovoTAMP combines our patented Food and Drug Administration ("FDA") cleared delivery system, RenovoCath®, with small molecule chemotherapeutic agents that can be forced across the vessel wall using pressure, targeting these anti-cancer drugs locally to the solid tumors. While we anticipate investigating other chemotherapeutic agents for intra-arterial delivery via RenovoTAMP, our clinical work to date has focused on gemcitabine, which is a generic small molecule drug. Our first product candidate, RenovoGem, is a drug /device combination consisting of intra-arterial gemcitabine and RenovoCath. FDA has determined that RenovoGem will be regulated as, and if approved we expect will be reimbursed as, a new oncology drug product. We have secured FDA Orphan Drug Designation for RenovoGem in two indications: pancreatic cancer and cholangiocarcinoma (bile duct cancer, or CCA). We have completed our RR1 Phase 1/2 and RR2 observational registry studies, with 20 and 25 patients respectively, in locally advanced pancreatic cancer, or LAPC. These studies demonstrated a median overall survival of LAPC patients is 12 - 15 months in patients receiving only intravenous (IV) systemic chemotherapy plus radiation (which are both considered standard of care). Unlike the randomized trials that established these standard-of-care results, our RR1 and RR2 clinical trials did not prospectively control the standard of care ther

In December 2021 we amended the protocol for this clinical trial to only allow for stereotactic body radiation therapy (SBRT) during the induction phase of the study (prior to randomization). We had previously permitted both SBRT and intensity-modulated radiation therapy (IMRT). Patients receiving IMRT, must complete 25 radiation treatments in combination with oral chemotherapy during the induction phase of the study, which takes between 35 and 56 days to complete. In comparison, patients receiving SBRT during the induction phase are only required to complete 5 treatments, over 5 consecutive days, and do not receive oral chemotherapy. The decision to modify the study population was based on the observation in the Phase 3 TIGeR-PaC study that IMRT patients had a higher dropout rate during the induction phase of the study due to the high frequency of hospital visits and side effects from the required concurrent chemotherapy. As part of the pre-randomization, induction phase change made to the protocol, we initiated a review of the statistical considerations for the study and in June 2022, submitted a modified Statistical Analysis Plan (the "Modified SAP") to FDA. As part of the Modified SAP, we now plan to (i) analyze only patients receiving SBRT, consistent with the protocol change made in December 2021, (ii) include a second interim analysis, (iii) change the total number of SBRT patients randomized in the study to 114 (a reduction from the original 200 patients) with a total of 86 deaths from SBRT patients, including all deaths from SBRT patients enrolled in the study before the submission of the Modified SAP, and (iv) repower the study from 90% to 80%, which is commonly used in clinical trials. We believe these changes will shorten the timeframe needed to complete the study and also significantly decrease our costs. We have not discussed the protocol amendment or the Modified SAP with the FDA, and we cannot provide any assurance that the FDA will agree with these modifications. The first planned interim analysis is triggered when 30%, or 26 of 86, of the total number of deaths have occurred, and the second interim analysis at 60%, or 52 of 86, of the total number of deaths have occurred. Given that the timing of the interim analysis is predicated on a specific number of deaths, it is difficult to predict the exact timing of the interim analysis or when we will be able to complete the study. As of September 21, 2022, the Phase 3 TIGeR-PaC trial has randomized 43 patients out of the 114 total needed under the Modified SAP. At this rate, we anticipate that all patients will be enrolled and randomized in 2024, with the final study readout in 2025. We plan to submit a protocol amendment to FDA in the second half of 2022 to reflect the changes in the Modified SAP.

2

We are also planning to evaluate RenovoGem in a second indication in a Phase 2/3 trial in extrahepatic (or outside the liver) cholangiocarcinoma (or eCCA), cancer that occurs in the bile ducts that lead out of the liver and join with the gallbladder. After significant input from key opinion leaders across the spectrum of relevant medical specialties and feedback from the FDA, we submitted the protocol for a Phase 2/3 eCCA clinical trial to FDA. If FDA does not object to our study protocol, we anticipate launching the eCCA trial and enrolling the first patient in the fourth quarter of 2022. In addition, we may evaluate RenovoGem in other indications, potentially including locally advanced lung cancer, locally advanced uterine tumors, and glioblastoma (an aggressive type of cancer that can occur in the brain or spinal cord). To date, we are focused on developing drug/device candidates with gemcitabine, but in the future, we may develop other product candidates with other chemotherapeutic agents for intra-arterial delivery via our RenovoTAMP therapy platform.

Our RenovoTAMP therapy platform is focused on optimizing drug concentration in solid tumors using approved small molecule chemotherapeutics. Our platform enables physicians to isolate segments of the vascular anatomy closest to tumors and force chemotherapy across the blood vessel wall to bathe these difficult-to-reach tumors in chemotherapy. Specifically, our patented approach allows physicians to combine, on the one hand, pre-treatment of the local blood vessels and tissue with standard-of-care radiation therapy to decrease chemotherapy washout and, on the other hand, local delivery via our patented RenovoCath delivery system which utilizes pressure to force

small molecule chemotherapy into the tumor tissue. We believe there are many advantages to our RenovoTAMP therapy platform:

• Application of Approved Small Molecule Chemotherapeutic Agents: We use approved small molecule chemotherapeutic agents, such as gemcitabine, with well-known safety and efficacy profiles.

• Targeted Approach: In a preclinical study using our therapy platform, we demonstrated up to 100 times higher local drug concentration compared to systemic chemotherapy. We believe our RenovoTAMP therapy platform allows for a targeted approach that can decrease systemic exposure and improve patient outcomes.

• Delivery Method Independent of Tumor Vascularity: Our therapy platform is designed to deliver small molecule chemotherapeutic agents to solid tumors resistant to systemic chemotherapy due to lack of tumor feeder blood vessels. If approved, our product candidates have the potential to treat tumors that are not directly supported by blood vessels.

• Broad Application for Solid Tumor Indications: Our therapy platform is not restricted to a single small molecule chemotherapeutic agent or solid tumor type. As such, it may be applied for use in additional solid tumor indications, including in solid tumors without identifiable tumor feeder blood vessels.

Corporate Information

We were incorporated in the State of Delaware on December 17, 2012. Our principal executive offices are located at 4546 El Camino Real, Suite B1, Los Altos, CA 94022. Our telephone number is (650) 284-4433. Our website address is https://renovorx.com. Information contained in our website does not constitute any part of, and is not incorporated into, this prospectus.

3

RISK FACTORS

Investing in our securities involves a high degree of risk. Before making a decision to invest in our securities, in addition to carefully considering the Risk Factors noted below and the other information contained in this prospectus and incorporated by reference herein, you should carefully consider the risks described under the caption "Risk Factors" contained in our most recent annual report on Form 10-K and in our most recent quarterly report on Form 10-Q, as well as any amendments thereto, which are incorporated by reference into this prospectus in their entirety. See "Where You Can Find More Information" and "Incorporation of Certain Information by Reference."

FORWARD-LOOKING STATEMENTS

This prospectus, each prospectus supplement and the information incorporated by reference herein contain forward-looking statements. All statements other than statements of historical facts contained in this prospectus and the information incorporated by reference herein, including statements regarding our future results of operations and financial position, business strategy, product candidates, planned preclinical studies and clinical trials, results of clinical trials, research and development costs, regulatory approvals, timing and likelihood of success, as well as plans and objectives of management for future operations, are forward-looking statements. These statements involve known and unknown risks, uncertainties and other important factors that are in some cases beyond our control and may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements.

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

- the sufficiency of our existing cash, cash equivalents, and investments to fund our future operating expenses and capital expenditure requirements;
- our estimates regarding expenses, future revenue, anticipated capital requirements to fund our future operating expenses, and our need for additional financing;
- our financial performance;
- our anticipated use of our existing cash, cash equivalents, and investments;
- the ability of our clinical trials to demonstrate safety and efficacy of our product candidates, and other positive results;
- the progress and focus of our current and future clinical trials, and the timing of reporting of data from those trials;
- our continued reliance on third parties to conduct clinical trials of our product candidates, and for the manufacture of our product candidates;
- the beneficial characteristics, safety, efficacy, and therapeutic effects of our product candidates;
- our ability to advance product candidates into and successfully complete clinical trials;
- our ability to further develop and expand our therapy platform, both to use different chemotherapeutic agents and to include new indications;

expectations relating to the timing of the provision of updates on, data readouts for, and completion of our clinical trials;

- our ability to obtain and maintain regulatory approval of our product candidates and the timing or likelihood of regulatory filings and approvals, including our
 expectation to seek special designations, such as orphan drug designation, for our product candidates for various diseases;
- existing regulations and regulatory developments in the United States and other jurisdictions;
- our plans relating to commercializing our product candidates, if approved, including the geographic areas of focus and our potential and ability to successfully
 commercialize our product candidates and generate revenue;
- the implementation of our strategic plans for our business and product candidates;
- the expected potential benefits of strategic collaborations with third parties and our ability to attract collaborators with relevant and complementary expertise;
- our estimates of the number of patients in the United States who suffer from the diseases we target, and enrollment timing and projections for our clinical trials;

- our estimates of potential market opportunities and our ability to successfully realize these opportunities;
- the success of competing therapies that are or may become available;
- developments relating to our competitors and our industry, including competing product candidates and therapies;
- our plans relating to the further development and manufacturing of our product candidates, including for additional indications which we may pursue;
- our plans and ability to obtain or protect intellectual property rights, including extensions of existing patent terms where available;
- the scope of protection we are able to establish and maintain for intellectual property rights, including our therapy platform and product candidates;
- our ability to successfully negotiate and enter into agreements with distribution, strategic and corporate partners;
- our potential and ability to successfully manufacture and supply our product candidates for clinical trials and for commercial use, if approved;
- our ability to retain the continued service of our key personnel and to identify, hire, and then retain additional qualified personnel; and
- our expectations regarding the impact of the ongoing COVID-19 pandemic and geopolitical events on our business.

5

We have based these forward-looking statements largely on our current expectations and projections about our business, the industry in which we operate and financial trends that we believe may affect our business, financial condition, results of operations and prospects, and these forward-looking statements are not guarantees of future performance or development. These forward-looking statements speak only as of the date of this prospectus and are subject to a number of risks, uncertainties and assumptions described in the section titled "Risk Factors" and elsewhere in this prospectus, each accompanying prospectus supplement, and the information incorporated by reference herein and therein. Because forward-looking statements are inherently subject to risks and uncertainties, some of which cannot be predicted or quantified, you should not rely on these forward-looking statements as predictions of future events. The events and circumstances reflected in our forward-looking statements may not be achieved or occur and actual results could differ materially from those projected in the forward-looking statements. Except as required by applicable law, we do not plan to publicly update or revise any forward-looking statements contained herein until after we distribute this prospectus, whether as a result of any new information, future events or otherwise.

In addition, statements that "we believe" and similar statements reflect our beliefs and opinions on the relevant subject. These statements are based upon information available to us as of the date of this prospectus, and while we believe such information forms a reasonable basis for such statements, such information may be limited or incomplete, and our statements should not be read to indicate that we have conducted an exhaustive inquiry into, or review of, all potentially available relevant information. These statements are inherently uncertain, and you are cautioned not to unduly rely upon these statements.

USE OF PROCEEDS

We will retain broad discretion over the use of the net proceeds to us from the sale of our securities under this prospectus. Unless otherwise provided in the applicable prospectus supplement, we currently expect to use the net proceeds that we receive from this offering for working capital and other general corporate purposes. We may also use a portion of the net proceeds to acquire, license or invest in complementary products, technologies or businesses; however, we currently have no agreements or commitments to complete any such transaction. The expected use of net proceeds to be received upon the closing of this offering. Pending these uses, we plan to invest the net proceeds to be received upon the closing of this offering. Pending these uses, we plan to invest the net proceeds of the U.S. government.

6

DESCRIPTION OF SECURITIES

We may issue from time to time, in one or more offerings, the following securities:

- shares of common stock, par value \$0.0001 per share, of the Company;
- shares of preferred stock, par value \$0.0001 per share, of the Company;
- debt securities, which may be senior or subordinated, and which may be convertible into our common stock or be non-convertible;
- purchase contracts; and
- units representing two or more of the foregoing securities.

We will set forth in the applicable prospectus supplement and/or free writing prospectus a description of any debt securities, purchase contracts or units issued by us that may be offered or sold pursuant to this prospectus. The terms of the offering of securities, the initial offering price and the net proceeds to us will be contained in the prospectus supplement, and other offering material, relating to such offer.

7

DESCRIPTION OF CAPITAL STOCK

The following descriptions of our capital stock and certain provisions of our amended and restated certificate of incorporation and amended and restated bylaws are summaries and are qualified by reference to our amended and restated certificate of incorporation and the amended and restated bylaws, copies of which are filed with the SEC as exhibits to our registration statement, of which this prospectus forms a part.

General

Our amended and restated certificate of incorporation authorizes common stock and preferred stock. Our authorized capital stock consists of 265,000,000 shares, \$0.0001 par value per share, of which:

- 250,000,000 shares are designated as common stock; and
- 15,000,000 shares are designated as preferred stock.

Common Stock

Subject to preferences that may be applicable to any then outstanding preferred stock, holders of our common stock are entitled to receive ratably those dividends, if any, as may be declared by the board of directors out of legally available funds. In the event of our liquidation, dissolution or winding up, the holders of our common stock will be entitled to share ratably in the assets legally available for distribution to stockholders after the payment of or provision for all of our debts and other liabilities, subject to the prior rights of any preferred stock then outstanding. Holders of our common stock have no preemptive, conversion or other subscription rights and there are no redemption or sinking funds provisions applicable to our common stock. All outstanding shares of our common stock are duly authorized, validly issued, fully paid and nonassessable. The rights, preferences and privileges of holders of our common stock are subject to and may be adversely affected by the rights of the holders of shares of any series of preferred stock that we may designate and issue in the future.

Voting Rights

Each holder of our common stock is entitled to one vote per share on matters to be voted on by stockholders and also are entitled to receive such dividends, if any, as may be declared from time to time by our board of directors in its discretion out of funds legally available therefor. Holders of our common stock have exclusive voting rights for the election of our directors and all other matters requiring stockholder action, except with respect to amendments to our certificate of incorporation that alter or change the powers, preferences, rights or other terms of any outstanding preferred stock if the holders of such affected series of preferred stock are entitled to vote on such an amendment or filling vacancies on the board of directors. The presence at meetings of the stockholders, in person, by remote communication or by proxy, of the holders of our common stock will constitute a quorum for the transaction of business at such meetings.

Dividends

Holders of common stock are entitled to share ratably in any dividends declared by our board of directors, if any, subject to any preferential dividend rights of any outstanding preferred stock. Dividends consisting of shares of common stock may be paid to holders of shares of common stock.

8	

Liquidation

Upon our liquidation or dissolution, the holders of our common stock will be entitled to receive pro rata all assets remaining available for distribution to stockholders after payment of all liabilities and provision for the liquidation of any shares of preferred stock at the time outstanding.

Rights and Preferences

Holders of our common stock have no preemptive, conversion, subscription, or other rights, and there are no redemption or sinking fund provisions applicable to our common stock. The rights, preferences, and privileges of the holders of our common stock are subject to and may be adversely affected by the rights of the holders of shares of any series of our convertible preferred stock that we may designate in the future.

Fully Paid and Nonassessable

All of our outstanding shares of common stock are fully paid and nonassessable.

Preferred Stock

Our board of directors will have the authority, without further action by the stockholders, to issue up to 15,000,000 shares of preferred stock in one or more series and to fix the designations, powers, preferences, privileges, and relative participating, optional, or special rights as well as the qualifications, limitations, or restrictions of the preferred stock, including dividend rights, conversion rights, voting rights, terms of redemption, and liquidation preferences, any or all of which may be greater than the rights of the common stock. Our board of directors, without stockholder approval, will be able to issue convertible preferred stock with voting, conversion, or other rights that could adversely affect the voting power and other rights of the holders of common stock. Preferred stock could be issued quickly with terms calculated to delay or prevent a change of control or make removal of management more difficult. Additionally, the issuance of preferred stock may have the effect of decreasing the market price of our common stock, and may adversely affect the voting and other rights of the holders of common stock. We have no present plans to issue any shares of preferred stock.

Public Warrants

On August 25, 2021, our Registration Statement on Form S-1/A relating to the initial public offering ("IPO") of units of securities, or Units, was declared effective by the SEC. In connection with the IPO, we issued and sold an aggregate of 1,850,000 units at a price of \$9.00 per unit. Each unit consisted of (a) one share of common stock and (b) one warrant to purchase one share of common stock at an exercise price equal to \$10.80 per share, which is exercisable for a period of five years after the issuance date ("Warrant(s)"). We also granted the underwriters an over-allotment option, exercisable for 45 days after August 25, 2021, to purchase any combination of up to 277,500 shares of our common stock and/or common stock warrants to purchase 277,500 shares of common stock with an exercise price of \$10.80 per share. The underwriters exercised their over-allotment option to purchase 277,500 common stock warrants on August 30, 2021. In connection with the IPO, the underwriter's were issued a five-year warrant, exerciseble on or after February 25, 2022, to purchase up to 198,875 shares of the Company's common stock at an exercise price of \$10.80 (the "Underwriter's Warrant").

Warrant Agent

The Warrants were issued in registered form under a warrant agent agreement (the "Warrant Agent Agreement") between us and our warrant agent, Pacific Stock Transfer Co. (the "Warrant Agent"). The material provisions of the warrants are set forth herein and a copy of the Warrant Agent Agreement has been filed as an exhibit to the Registration Statement on Form S-1/A. The Company and the Warrant Agent may amend or supplement the Warrant Agent Agreement without the consent of any holder for the purpose of curing any ambiguity, or curing, correcting or supplementing any defective provision contained therein or adding or changing any other provisions with respect to matters or questions arising under the Warrant Agent Agreement as the parties thereto may deem necessary or desirable and that the parties determine, in good faith, shall not adversely affect the interest of the Warrant holders. All other amendments and supplements to the Warrant Agent Agreement shall require the vote or written consent of holders of at least 50.1% of the Warrants.

Warrant Terms

The Warrants entitle the registered holder to purchase one share of our common stock at a price equal to 10.80 per share, subject to adjustment as discussed below, terminating at 5:00 p.m., New York City time, on the fifth (5th) anniversary of the date of issuance.

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

The Warrants may be exercised upon surrender of the warrant certificate on or prior to the expiration date at the offices of the Warrant Agent, with the exercise form attached to the warrant certificate completed and executed as indicated, accompanied by full payment of the exercise price, by certified or official bank check payable to us, for the number of warrants being exercised. The Warrant holders do not have the rights or privileges of holders of common stock or any voting rights until they exercise their Warrants and receive shares of common stock, except as set forth in the Warrants. After the issuance of shares of common stock upon exercise of the Warrants, each holder will be entitled to one vote for each share held of record on all matters to be voted on by stockholders.

No Warrants will be exercisable for cash unless at the time of the exercise a prospectus or prospectus relating to common stock issuable upon exercise of the Warrants is current and the common stock has been registered or qualified or deemed to be exempt under the securities laws of the state of residence of the holder of the warrants. Under the terms of the Warrant Agent Agreement, we have agreed to use our best efforts to maintain a current prospectus or prospectus relating to common stock issuable upon exercise of the Warrants until the expiration of the Warrants. Additionally, the market for the Warrants may be limited if the prospectus or prospectus relating to the common stock issuable upon exercise of the Warrants is not current or if the common stock is not qualified or exempt from qualification in the jurisdictions in which the holders of such Warrants reside. In no event will the registered holders of a Warrant be entitled to receive a net-cash settlement in lieu of physical settlement in shares of our common stock.

No fractional shares of common stock will be issued upon exercise of the Warrants. If, upon exercise of the Warrants, a holder would be entitled to receive a fractional interest in a share, we will, upon exercise, round down to the nearest whole number the number of shares of common stock to be issued to the Warrant holder. If multiple Warrants are exercised by the holder at the same time, we will aggregate the number of whole shares issuable upon exercise of all the Warrants.

Private Warrants

In the IPO, we triggered the automatic conversion of certain outstanding convertible notes plus accrued interest into an aggregate of 708,820 private units, each unit consisting of one share of common stock and one five-year warrant to purchase one share of common stock at an exercise price equal to \$10.80 per share. The private warrants have substantially the same terms as the public Warrants except that the private warrants were issued in a transaction exempt from the registration requirements of the Securities Act.

Registration Rights

We are party to that certain Underwriter's Warrant dated August 30, 2021, that provides that certain holders of our common stock have certain registration rights as set forth below. The registration of shares of our common stock by the exercise of registration rights would enable the holders to sell these shares without restriction under the Securities Act when the applicable registration statement is declared effective. Generally, in an underwritten offering, the managing underwriter, if any, has the right, subject to specified conditions, to limit the number of shares such holders may include.

10

Demand Registration Rights

The Underwriter's Warrant will provide for one demand registration right at our expense and an additional demand registration right at the holder's expense for a period of five years following the date of commencement of the IPO.

Piggyback Registration Rights

The Underwriter's Warrant will provide for unlimited piggyback registration rights at our expense for a period of five years following the date of commencement of the IPO.

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

Certain provisions of Delaware law and certain provisions included in our Sixth Amended and Restated Certificate of Incorporation and our Amended and Restated Bylaws summarized below may be deemed to have an anti-takeover effect and may delay, deter, or prevent a tender offer or takeover attempt that a stockholder might consider to be in its best interests, including attempts that might result in a premium being paid over the market price for the shares held by stockholders.

Board of Directors Vacancies

Our Sixth Amended and Restated Certificate of Incorporation and Amended and Restated Bylaws authorize only our board of directors to fill vacant directorships. In addition, the number of directors constituting our board of directors may be set only by resolution of the majority of the incumbent directors.

Removal of Directors

Our Sixth Amended and Restated Certificate of Incorporation provides that stockholders may only remove a director for cause by the affirmative vote of the holders of at least two-thirds in voting power of the outstanding shares of capital stock of the Company entitled to vote at an election of directors.

No Cumulative Voting

Our Sixth Amended and Restated Certificate of Incorporation provides that stockholders do not have the right to cumulate votes in the election of directors.

Stockholder Action; Special Meeting of Stockholders

Our Sixth Amended and Restated Certificate of Incorporation and Amended and Restated Bylaws provide that our stockholders may not take action by written consent. Our Sixth Amended and Restated Certificate of Incorporation and Amended and Restated Bylaws further provide that special meetings of our stockholders may be called by a majority of the board of directors, the Chief Executive Officer, or the Chairman of the board of directors.

Advance Notice Requirements for Stockholder Proposals and Director Nominations

Our Amended and Restated Bylaws provide that stockholders seeking to bring business before our annual meeting of stockholders, or to nominate candidates for election as directors at our annual meeting of stockholders, must provide timely notice of their intent in writing. To be timely, a stockholder's notice must be delivered to the secretary at our principal executive offices not later than 5 p.m., local time, on the 90th day nor earlier than the close of business on the 120th day prior to the first anniversary of the preceding year's annual meeting; provided, however, that in the event the date of the annual meeting is more than 30 days before or more than 60 days after such anniversary date, or if no annual meeting and not later than 5 p.m., local time, on the later of the 90th day prior to such annual meeting or the 10th day following the day on which a public announcement of the date of such meeting is first made by us. These provisions may preclude our stockholders from bringing matters before our annual meeting of stockholders.

Authorized but Unissued Shares

Our authorized but unissued shares of common stock and preferred stock are available for future issuance without stockholder approval and may be utilized for a variety of corporate purposes, including future public offerings to raise additional capital, corporate acquisitions and employee benefit plans. The existence of authorized but unissued and unreserved common stock and preferred stock could render more difficult or discourage an attempt to obtain control of us by means of a proxy contest, tender offer, merger or otherwise. If we issue such shares without stockholder approval and in violation of limitations imposed by the Nasdaq Capital Market or any stock exchange on which our stock may then be trading, our stock could be delisted.

Exclusive Forum

Our Sixth Amended and Restated Certificate of Incorporation provides that unless we consent in writing to the selection of an alternative forum, the State of Delaware is the sole and exclusive forum for: (i) any derivative action or proceeding brought on behalf of us, (ii) any action asserting a claim of breach of a fiduciary duty owed by any director, officer or other employee of our Company to us or our stockholders, (iii) any action asserting a claim against us, our directors, officers or employees arising pursuant to any provision of the DGCL or our Sixth Amended and Restated Certificate of Incorporation or our Amended and Restated Bylaws, or (iv) any action asserting a claim against us, our directors, officers, employees or agents governed by the internal affairs doctrine, except for, as to each of (i) through (iv) above, any claim as to which the Court of Chancery determines that there is an indispensable party not subject to the jurisdiction of the Court of Chancery within ten days following such determination), which is vested in the exclusive jurisdiction of a court or forum other than the Court of Chancery does not have subject matter jurisdiction.

Additionally, our Sixth Amended and Restated Certificate of Incorporation provides that unless we consent in writing to the selection of an alternative forum, the federal district courts of the United States of America will be the exclusive forum for the resolution of any complaint asserting a cause of action arising under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended. Any person or entity purchasing or otherwise acquiring any interest in shares of our capital stock are deemed to have notice of and consented to this provision.

Business Combinations with Interested Stockholders

We are governed by Section 203 of the DGCL. Subject to certain exceptions, Section 203 of the DGCL prohibits a public Delaware corporation from engaging in a business combination (as defined in such section) with an "interested stockholder" (defined generally as any person who beneficially owns 15% or more of the outstanding voting stock of such corporation or any person affiliated with such person) for a period of three years following the time that such stockholder became an interested stockholder, unless (i) prior to such time the board of directors of such corporation approved either the business combination or the transaction that resulted in the stockholder becoming an interested stockholder; (ii) upon consummation of the transaction that resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of such corporation at the time the transaction commenced (excluding for purposes of determining the voting stock of such corporation and (B) by employee stock plans in which employee participants do not have the right to determine confidentially whether shares held subject to the plan will be tendered in a tender or exchange offer); or (iii) at or subsequent to such time the business combination is approved by the board of directors of such corporation and uthorized at a meeting of stockholders (and not by written consent) by the affirmative vote of at least 66 2/3% of the outstanding voting stock of such corporation not owned by the interested stockholder.

12

Limitation of Liability and Indemnification of Officers and Directors

Our Sixth Amended and Restated Certificate of Incorporation and Amended and Restated Bylaws provide that we must indemnify our directors and officers to the fullest extent authorized by the DGCL. We are expressly authorized to, and do, carry directors' and officers' insurance providing coverage for our directors, officers and certain employees for some liabilities. We believe that these indemnification provisions and insurance are useful to attract and retain qualified directors and executive officers.

The limitation on liability and indemnification provisions in our certificate of incorporation and bylaws may discourage stockholders from bringing a lawsuit against directors for breach of their fiduciary duty. These provisions may also have the effect of reducing the likelihood of derivative litigation against directors and officers, even though such an action, if successful, might otherwise benefit us and our stockholders. Investors may be adversely affected to the extent we pay the costs of settlement and damage awards against directors and officers pursuant to these indemnification provisions.

Listing

Our common stock is listed on The Nasdaq Capital Market under the trading symbol "RNXT."

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is Pacific Stock Transfer Co. The transfer agent and registrar's address is 6725 Via Austi Parkway #300, Las Vegas, NV 89119.

	2

DESCRIPTION OF DEBT SECURITIES

The following description, together with the additional information we include in any applicable prospectus supplement, summarizes certain general terms and provisions of the debt securities that we may offer under this prospectus. When we offer to sell a particular series of debt securities, we will describe the specific terms of the series in a supplement to this prospectus. We will also indicate in the supplement to what extent the general terms and provisions described in this prospectus apply to a particular series of debt securities.

We may issue debt securities either separately, or together with, or upon the conversion or exercise of or in exchange for, other securities described in this prospectus. Debt securities may be our senior, senior subordinated or subordinated obligations and, unless otherwise specified in a supplement to this prospectus, the debt securities will be our direct, unsecured obligations and may be issued in one or more series.

The debt securities will be issued under an indenture between us and a trustee to be identified in an accompanying prospectus supplement. We have summarized select portions of the indenture below. The summary is not complete. The form of the indenture has been filed as an exhibit to the registration statement of which this prospectus forms a part and you should read the indenture for provisions that may be important to you. In the summary below, we have included references to the section numbers of the indenture so that you can easily locate these provisions. Capitalized terms used in the summary and not defined herein have the meanings specified in the indenture.

The terms of each series of debt securities will be established by or pursuant to a resolution of our board of directors and set forth or determined in the manner provided in a resolution of our board of directors, in an officer's certificate or by a supplemental indenture. The particular terms of each series of debt securities will be described in a prospectus supplement relating to such series (including any pricing supplement or term sheet).

We can issue an unlimited amount of debt securities under the indenture that may be in one or more series with the same or various maturities, at par, at a premium, or at a discount. We will set forth in a prospectus supplement (including any pricing supplement or term sheet) relating to any series of debt securities being offered the aggregate principal amount and the following terms of the debt securities, if applicable:

- the title and ranking of the debt securities (including the terms of any subordination provisions);
- the price or prices (expressed as a percentage of the principal amount) at which we will sell the debt securities;
- any limit upon the aggregate principal amount of the debt securities;
- the date or dates on which the principal of the securities of the series is payable;
- the rate or rates (which may be fixed or variable) per annum or the method used to determine the rate or rates (including any commodity, commodity index, stock exchange index or financial index) at which the debt securities will bear interest, the date or dates from which interest will accrue, the date or dates on which interest will commence and be payable and any regular record date for the interest payable on any interest payment date;
- the place or places where principal of, and interest, if any, on the debt securities will be payable (and the method of such payment), where the securities of such series
 may be surrendered for registration of transfer or exchange, and where notices and demands to us in respect of the debt securities may be delivered;
- the period or periods within which, the price or prices at which and the terms and conditions upon which we may redeem the debt securities;

14

- any obligation we have to redeem or purchase the debt securities pursuant to any sinking fund or analogous provisions or at the option of a holder of debt securities and the period or periods within which, the price or prices at which and the terms and conditions upon which securities of the series shall be redeemed or purchased, in whole or in part, pursuant to such obligation;
- the dates on which and the price or prices at which we will repurchase debt securities at the option of the holders of debt securities and other detailed terms and provisions of these repurchase obligations;
- the denominations in which the debt securities will be issued, if other than denominations of \$1,000 and any integral multiple thereof;
- whether the debt securities will be issued in the form of certificated debt securities or global debt securities;
- the portion of principal amount of the debt securities payable upon declaration of acceleration of the maturity date, if other than the principal amount;
- the currency of denomination of the debt securities, which may be United States dollars or any foreign currency, and if such currency of denomination is a composite currency, the agency or organization, if any, responsible for overseeing such composite currency;
- the designation of the currency, currencies or currency units in which payment of principal of, premium and interest on the debt securities will be made;
- if payments of principal of, premium or interest on the debt securities will be made in one or more currencies or currency units other than that or those in which the debt securities are denominated, the manner in which the exchange rate with respect to these payments will be determined;
- the manner in which the amounts of payment of principal of, premium, if any, or interest on the debt securities will be determined, if these amounts may be determined by reference to an index based on a currency or currencies or by reference to a commodity, commodity index, stock exchange index or financial index;
- any provisions relating to any security provided for the debt securities;
- any addition to, deletion of or change in the Events of Default described in this prospectus or in the indenture with respect to the debt securities and any change in the
 acceleration provisions described in this prospectus or in the indenture with respect to the debt securities;
- any addition to, deletion of or change in the covenants described in this prospectus or in the indenture with respect to the debt securities;
- any depositaries, interest rate calculation agents, exchange rate calculation agents or other agents with respect to the debt securities;
- any other terms of the debt securities, which may supplement, modify or delete any provision of the indenture as it applies to that series, including any terms that may be required under applicable law or regulations or advisable in connection with the marketing of the securities; and
- whether any of our direct or indirect subsidiaries will guarantee the debt securities of that series, including the terms of subordination, if any, of such guarantees.

We may issue debt securities that provide for an amount less than their stated principal amount to be due and payable upon declaration of acceleration of their maturity pursuant to the terms of the indenture. We will provide you with information on the federal income tax considerations and other special considerations applicable to any of these debt securities in the applicable prospectus supplement.

If we denominate the purchase price of any of the debt securities in a foreign currency or currencies or a foreign currency unit or units, or if the principal of and any premium and interest on any series of debt securities is payable in a foreign currency or currencies or a foreign currency unit or units, we will provide you with information on the restrictions, elections, general tax considerations, specific terms and other information with respect to that issue of debt securities and such foreign currency or currencies or foreign currency unit or units in the applicable prospectus supplement.

Transfer and Exchange

Each debt security will be represented by either one or more global securities registered in the name of a clearing agency registered under the Exchange Act, which we refer to as the depositary, or a nominee of the depositary (we will refer to any debt security represented by a global debt security as a "book-entry debt security"), or a certificate issued in

definitive registered form (we will refer to any debt security represented by a certificated security as a "certificated debt security") as set forth in the applicable prospectus supplement. Except as set forth under the heading "Global Debt Securities and Book-Entry System" below, book-entry debt securities will not be issuable in certificated form.

Certificated Debt Securities

You may transfer or exchange certificated debt securities at any office we maintain for this purpose in accordance with the terms of the indenture. No service charge will be made for any transfer or exchange of certificated debt securities, but we may require payment of a sum sufficient to cover any tax or other governmental charge payable in connection with a transfer or exchange.

You may effect the transfer of certificated debt securities and the right to receive the principal of, premium and interest on certificated debt securities only by surrendering the certificate representing those certificated debt securities and either reissuance by us or the trustee of the certificate to the new holder or the issuance by us or the trustee of a new certificate to the new holder.

Global Debt Securities and Book-Entry System

Each global debt security representing book-entry debt securities will be deposited with, or on behalf of, the depositary, and registered in the name of the depositary or a nominee of the depositary.

Covenants

We will set forth in the applicable prospectus supplement any restrictive covenants applicable to any issue of debt securities.

No Protection in the Event of a Change of Control

Unless we state otherwise in the applicable prospectus supplement, the debt securities will not contain any provisions which may afford holders of the debt securities protection in the event we have a change in control or in the event of a highly leveraged transaction (whether or not such transaction results in a change in control) which could adversely affect holders of debt securities.

Consolidation, Merger and Sale of Assets

We may not consolidate with or merge with or into, or convey, transfer or lease all or substantially all of our properties and assets to any person, which we refer to as a successor person, unless:

- we are the surviving corporation or the successor person (if other than us) is a corporation organized and validly existing under the laws of any U.S. domestic jurisdiction and expressly assumes our obligations on the debt securities and under the indenture; and
- immediately after giving effect to the transaction, no Default or Event of Default, shall have occurred and be continuing.

Notwithstanding the above, any of our subsidiaries may consolidate with, merge into or transfer all or part of its properties to us.

Events of Default

"Event of Default" means with respect to any series of debt securities, any of the following:

- default in the payment of any interest upon any debt security of that series when it becomes due and payable, and continuance of such default for a period of 30 days (unless the entire amount of the payment is deposited by us with the trustee or with a paying agent prior to the expiration of the 30-day period);
- default in the payment of principal of any security of that series at its maturity;
- default in the performance or breach of any other covenant or warranty by us in the indenture (other than a covenant or warranty that has been included in the indenture solely for the benefit of a series of debt securities other than that series), which default continues uncured for a period of 60 days after we receive written notice from the trustee, or we and the trustee receive written notice from the holders of not less than 25% in principal amount of the outstanding debt securities of that series as provided in the indenture;
- · certain voluntary or involuntary events of bankruptcy, insolvency or reorganization of us; and
- any other Event of Default provided with respect to debt securities of that series that is described in the applicable prospectus supplement.

No Event of Default with respect to a particular series of debt securities (except as to certain events of bankruptcy, insolvency or reorganization) necessarily constitutes an Event of Default with respect to any other series of debt securities. The occurrence of certain Events of Default or an acceleration under the indenture may constitute an event of default under certain indebtedness of ours or our subsidiaries outstanding from time to time.

We will provide the trustee written notice of any Default or Event of Default within 30 days of becoming aware of the occurrence of such Default or Event of Default, which notice will describe in reasonable detail the status of such Default or Event of Default and what action we are taking or propose to take in respect thereof.

If an Event of Default with respect to debt securities of any series at the time outstanding occurs and is continuing, then the trustee or the holders of not less than 25% in principal amount of the outstanding debt securities of that series may, by a notice in writing to us (and to the trustee if given by the holders), declare to be due and payable immediately the principal of (or, if the debt securities of that series are discount securities, that portion of the principal amount as may be specified in the terms of that series) and accrued and unpaid interest, if any, on all debt securities of that series. In the case of an Event of Default resulting from certain events of bankruptcy, insolvency or reorganization, the principal (or such specified amount) of and accrued and unpaid interest, if any, on all outstanding debt securities will become and be immediately due and payable without any declaration or other act on the part of the trustee or any holder of outstanding debt securities. At any time after a declaration of acceleration with respect to debt securities of that series may rescind and annul the acceleration if all Events of Default, other than the non-payment of accelerated principal and interest, if any, with respect to debt securities of that series, have been cured or waived as provided in the indenture. We refer you to the prospectus supplement relating to any series of debt securities that are discount securities for the particular provisions relating to acceleration of a portion of the principal amount of such discount securities for the particular provisions relating to acceleration of a portion of such discount securities upon the occurrence of an Event of Default.

The indenture provides that the trustee may refuse to perform any duty or exercise any of its rights or powers under the indenture unless the trustee receives indemnity satisfactory to it against any cost, liability or expense which might be incurred by it in performing such duty or exercising such right or power. Subject to certain rights of the trustee, the holders of a majority in principal amount of the outstanding debt securities of any series will have the right to direct the time, method and place of conducting any proceeding for any remedy available to the trustee or exercising any trust or power conferred on the trustee with respect to the debt securities of that series.

No holder of any debt security of any series will have any right to institute any proceeding, judicial or otherwise, with respect to the indenture or for the appointment of a receiver or trustee, or for any remedy under the indenture, unless:

17

- that holder has previously given to the trustee written notice of a continuing Event of Default with respect to debt securities of that series; and
- the holders of not less than 25% in principal amount of the outstanding debt securities of that series have made written request, and offered indemnity or security
 satisfactory to the trustee, to the trustee to institute the proceeding as trustee, and the trustee has not received from the holders of not less than a majority in principal
 amount of the outstanding debt securities of that series a direction inconsistent with that request and has failed to institute the proceeding within 60 days.

Notwithstanding any other provision in the indenture, the holder of any debt security will have an absolute and unconditional right to receive payment of the principal of, premium and any interest on that debt security on or after the due dates expressed in that debt security and to institute suit for the enforcement of payment.

The indenture requires us, within 120 days after the end of our fiscal year, to furnish to the trustee a statement as to compliance with the indenture. If a Default or Event of Default occurs and is continuing with respect to the securities of any series and if it is known to a responsible officer of the trustee, the trustee shall send to each securityholder of the securities of that series notice of a Default or Event of Default within 90 days after it occurs or, if later, after a responsible officer of the trustee has knowledge of such Default or Event of Default. The indenture provides that the trustee may withhold notice to the holders of debt securities of any series of any Default or Event of Default (except in payment on any debt securities) with respect to debt securities of that series if the trustee determines in good faith that withholding notice is in the interest of the holders of those debt securities.

Modification and Waiver

We and the trustee may modify, amend or supplement the indenture or the debt securities of any series without the consent of any holder of any debt security:

- to cure any ambiguity, defect or inconsistency;
- to comply with covenants in the indenture described above under the heading "Consolidation, Merger and Sale of Assets";
- to provide for uncertificated securities in addition to or in place of certificated securities;
- to add guarantees with respect to debt securities of any series or secure debt securities of any series;
- to surrender any of our rights or powers under the indenture;
- to add covenants or events of default for the benefit of the holders of debt securities of any series;
- to comply with the applicable procedures of the applicable depositary;
- to make any change that does not adversely affect the rights of any holder of debt securities;
- to provide for the issuance of and establish the form and terms and conditions of debt securities of any series as permitted by the indenture;
- to effect the appointment of a successor trustee with respect to the debt securities of any series and to add to or change any of the provisions of the indenture to provide for or facilitate administration by more than one trustee; or
- to comply with requirements of the SEC in order to effect or maintain the qualification of the indenture under the Trust Indenture Act.

We may also modify and amend the indenture with the consent of the holders of at least a majority in principal amount of the outstanding debt securities of each series affected by the modifications or amendments. We may not make any modification or amendment without the consent of the holders of each affected debt security then outstanding if that amendment will:

18

reduce the amount of debt securities whose holders must consent to an amendment, supplement or waiver;

- reduce the rate of or extend the time for payment of interest (including default interest) on any debt security;
- reduce the principal of or premium on or change the fixed maturity of any debt security or reduce the amount of, or postpone the date fixed for, the payment of any sinking fund or analogous obligation with respect to any series of debt securities;
- reduce the principal amount of discount securities payable upon acceleration of maturity;
- waive a default in the payment of the principal of, premium or interest on any debt security (except a rescission of acceleration of the debt securities of any series by the holders of at least a majority in aggregate principal amount of the then outstanding debt securities of that series and a waiver of the payment default that resulted from such acceleration);
- make the principal of or premium or interest on any debt security payable in currency other than that stated in the debt security;
- make any change to certain provisions of the indenture relating to, among other things, the right of holders of debt securities to receive payment of the principal of, premium and interest on those debt securities and to institute suit for the enforcement of any such payment and to waivers or amendments; or
- waive a redemption payment with respect to any debt security.

Except for certain specified provisions, the holders of at least a majority in principal amount of the outstanding debt securities of any series may on behalf of the holders of all debt securities of that series waive our compliance with provisions of the indenture. The holders of a majority in principal amount of the outstanding debt securities of any series may on behalf of the holders of all the debt securities of such series waive any past default under the indenture with respect to that series and its consequences, except a default in the payment of the principal of, premium or any interest on any debt security of that series; provided, however, that the holders of a majority in principal amount of the outstanding debt securities of any series may rescind an acceleration and its consequences, including any related payment default that resulted from the acceleration.

Defeasance of Debt Securities and Certain Covenants in Certain Circumstances

Legal Defeasance

The indenture provides that, unless otherwise provided by the terms of the applicable series of debt securities, we may be discharged from any and all obligations in respect of the debt securities of any series (subject to certain exceptions). We will be so discharged upon the irrevocable deposit with the trustee, in trust, of money and/or U.S. government obligations or, in the case of debt securities denominated in a single currency other than U.S. dollars, government obligations of the government that issued or caused to be issued such currency, that, through the payment of interest and principal in accordance with their terms, will provide money or U.S. government obligations in an amount sufficient in the opinion of a nationally recognized firm of independent public accountants or investment bank to pay and discharge each installment of principal, premium and interest on and any mandatory sinking fund payments in respect of the debt securities of that series on the stated maturity of those payments in accordance with the terms of the indenture and those debt securities.

This discharge may occur only if, among other things, we have delivered to the trustee an opinion of counsel stating that we have received from, or there has been published by, the United States Internal Revenue Service a ruling or, since the date of execution of the indenture, there has been a change in the applicable United States federal income tax law, in either case to the effect that, and based thereon such opinion shall confirm that, the holders of the debt securities of that series will not recognize income, gain or loss for United States federal income tax purposes as a result of the deposit, defeasance and discharge and will be subject to United States federal income tax on the same amounts and in the same times as would have been the case if the deposit, defeasance and discharge had not occurred.

19

Defeasance of Certain Covenants

The indenture provides that, unless otherwise provided by the terms of the applicable series of debt securities, upon compliance with certain conditions:

- we may omit to comply with the covenant described under the heading "Consolidation, Merger and Sale of Assets" and certain other covenants set forth in the indenture, as well as any additional covenants which may be set forth in the applicable prospectus supplement; and
- any omission to comply with those covenants will not constitute a Default or an Event of Default with respect to the debt securities of that series.

We refer to this as covenant defeasance. The conditions include:

- depositing with the trustee money and/or U.S. government obligations or, in the case of debt securities denominated in a single currency other than U.S. dollars, government obligations of the government that issued or caused to be issued such currency, that, through the payment of interest and principal in accordance with their terms, will provide money in an amount sufficient in the opinion of a nationally recognized firm of independent public accountants or investment bank to pay and discharge each installment of principal of, premium and interest on and any mandatory sinking fund payments in respect of the debt securities of that series on the stated maturity of those payments in accordance with the terms of the indenture and those debt securities;
- such deposit will not result in a breach or violation of, or constitute a default under the indenture or any other agreement to which we are a party;
- no Default or Event of Default with respect to the applicable series of debt securities shall have occurred or is continuing on the date of such deposit; and
- delivering to the trustee an opinion of counsel to the effect that we have received from, or there has been published by, the United States Internal Revenue Service a
 ruling or, since the date of execution of the indenture, there has been a change in the applicable United States federal income tax law, in either case to the effect that, and
 based thereon such opinion shall confirm that, the holders of the debt securities of that series will not recognize income, gain or loss for United States federal income tax
 purposes as a result of the deposit and related covenant defeasance and will be subject to United States federal income tax on the same amounts and in the same manner
 and at the same times as would have been the case if the deposit and related covenant defeasance had not occurred.

No Personal Liability of Directors, Officers, Employees or Stockholders

None of our past, present or future directors, officers, employees or stockholders, as such, will have any liability for any of our obligations under the debt securities or the indenture or for any claim based on, or in respect or by reason of, such obligations or their creation. By accepting a debt security, each holder waives and release all such liability. This waiver and release is part of the consideration for the issue of the debt securities. However, this waiver and release may not be effective to waive liabilities under U.S. federal securities laws, and it is the view of the SEC that such a waiver is against public policy.

Governing Law

The indenture and the debt securities, including any claim or controversy arising out of or relating to the indenture or the securities, will be governed by the laws of the State of New York.

The indenture will provide that we, the trustee and the holders of the debt securities (by their acceptance of the debt securities) irrevocably waive, to the fullest extent permitted by applicable law, any and all right to trial by jury in any legal proceeding arising out of or relating to the indenture, the debt securities or the transactions contemplated thereby.

The indenture will provide that any legal suit, action or proceeding arising out of or based upon the indenture or the transactions contemplated thereby may be instituted in the federal courts of the United States of America located in the City of New York or the courts of the State of New York in each case located in the City of New York, and we, the trustee and the holder of the debt securities (by their acceptance of the debt securities) irrevocably submit to the non-exclusive jurisdiction of such courts in any such suit, action or proceeding. The indenture will further provide that service of any process, summons, notice or document by mail (to the extent allowed under any applicable statute or rule of court) to such party's address set forth in the indenture will be effective service of process for any suit, action or other proceeding brought in any such court. The indenture will further provide that we, the trustee and the holders of the debt securities (by their acceptance of the debt securities) irrevocably and unconditionally waive any objection to the laying of venue of any suit, action or other proceeding in the courts specified above and irrevocably and unconditionally waive and agree not to plead or claim any such suit, action or other proceeding has been brought in an inconvenient forum.

DESCRIPTION OF PURCHASE CONTRACTS

The following description summarizes the general features of the purchase contracts that we may offer under this prospectus. Although the features we have summarized below will generally apply to any future purchase contracts we may offer under this prospectus, we will describe the particular terms of any purchase contracts that we may offer in more detail in the applicable prospectus supplement. The specific terms of any purchase contracts may differ from the description provided below as a result of negotiations with third parties in connection with the issuance of those purchase contracts, as well as for other reasons. Because the terms of any purchase contracts we offer under a prospectus supplement may differ from the terms we describe below, you should rely solely on information in the applicable prospectus supplement if that summary is different from the summary in this prospectus.

We will incorporate by reference into the registration statement of which this prospectus is a part any purchase contract that we may offer under this prospectus before the sale of the related purchase contract. We urge you to read any applicable prospectus supplement related to specific purchase contracts being offered, as well as the complete instruments that contain the terms of the securities that are subject to those purchase contracts. Certain of those instruments, or forms of those instruments, have been filed as exhibits to the registration statement of which this prospectus is a part, and supplements to those instruments or forms may be incorporated by reference into the registration statement of which this prospectus is a part, from reports we file with the SEC.

We may issue purchase contracts, including contracts obligating holders to purchase from us, and for us to sell to holders, a specific or variable number of our securities at a future date or dates. Alternatively, the purchase contracts may obligate us to purchase from holders, and obligate holders to sell to us, a specific or varying number of our securities.

If we offer any purchase contracts, certain terms of that series of purchase contracts will be described in the applicable prospectus supplement, including, without limitation, the following:

- the price of the securities or other property subject to the purchase contracts (which may be determined by reference to a specific formula described in the purchase contracts);
- whether the purchase contracts are issued separately, or as a part of units each consisting of a purchase contract and one or more of our other securities, including U.S. Treasury securities, securing the holder's obligations under the purchase contract;
- · any requirement for us to make periodic payments to holders or vice versa, and whether the payments are unsecured or pre-funded;
- any provisions relating to any security provided for the purchase contracts;
- whether the purchase contracts obligate the holder or us to purchase or sell, or both purchase and sell, the securities subject to purchase under the purchase contract, and the nature and amount of each of those securities, or the method of determining those amounts;
- whether the purchase contracts are to be prepaid or not;
- whether the purchase contracts are to be settled by delivery, or by reference or linkage to the value, performance or level of the securities subject to purchase under the
 purchase contract;
- any acceleration, cancellation, termination or other provisions relating to the settlement of the purchase contracts;
- a discussion of certain U.S. federal income tax considerations applicable to the purchase contracts;
- whether the purchase contracts will be issued in fully registered or global form; and
- any other terms of the purchase contracts and any securities subject to such purchase contracts.

21

DESCRIPTION OF UNITS

We may issue units comprising two or more securities described in this prospectus in any combination. For example, we might issue units consisting of a combination of common stock and warrants to purchase preferred stock. The following description sets forth certain general terms and provisions of the units that we may offer pursuant to this prospectus. The particular terms of the units and the extent, if any, to which the general terms and provisions may apply to the units so offered will be described in the applicable prospectus supplement.

Each unit will be issued so that the holder of the unit also is the holder of each security included in the unit. Thus, the unit will have the rights and obligations of a holder of each included security. Units will be issued pursuant to the terms of a unit agreement, which may provide that the securities included in the unit may not be held or transferred separately at any time or at any time before a specified date. A copy of the forms of the unit agreement and the unit certificate relating to any particular issue of units will be filed with the SEC each time we issue units, and you should read those documents for provisions that may be important to you. For more information on how you can obtain copies of the forms of the unit agreement and the related unit certificate, see the section of this prospectus captioned "Where You Can Find More Information."

The prospectus supplement relating to any particular issuance of units will describe the terms of those units, including, to the extent applicable, the following:

- the designation and terms of the units and the securities included in the units, including whether and under what circumstances those securities may be held or transferred separately;
- any provision for the issuance, payment, settlement, transfer or exchange of the units or of the securities comprising the units; and
- whether the units will be issued in fully registered or global form.

22

PLAN OF DISTRIBUTION

We may sell the securities from time to time pursuant to underwritten public offerings, direct sales to the public, "at the market" offerings, negotiated transactions, block trades or a combination of these methods. We may sell the offered securities from time to time:

- through underwriters or dealers;
- through agents;
- directly to one or more purchasers; or
- through a combination of any of these methods of sale.

We will identify the specific plan of distribution, including any underwriters, dealers, agents or direct purchasers and their compensation in the applicable prospectus

LEGAL MATTERS

Wilson Sonsini Goodrich & Rosati, Professional Corporation, Palo Alto, California, will pass upon certain legal matters relating to the issuance and sale of the securities offered hereby on behalf of RenovoRx, Inc. Additional legal matters may be passed upon for us or any underwriters, dealers or agents, by counsel that we will name in the applicable prospectus supplement.

EXPERTS

The financial statements of RenovoRX, Inc. as of and for the year ended December 31, 2021 incorporated by reference in this registration statement, have been audited by Baker Tilly US, LLP, an independent registered public accounting firm, as set forth in their report thereon incorporated by reference in this registration statement, in reliance upon such report and upon the authority of said firm as experts in accounting and auditing.

The financial statements as of December 31, 2020 and for the year then ended included in this prospectus and in the registration statement have been so included in reliance on the report of Frank, Rimerman & Co. LLP, an independent registered public accounting firm, (the report on the financial statements contains an explanatory paragraph regarding the Company's ability to continue as a going concern) appearing elsewhere herein and in the registration statement, given on the authority of said firm as experts in auditing and accounting.

23

WHERE YOU CAN FIND MORE INFORMATION

Because we are subject to the information and reporting requirements of the Exchange Act, we file annual, quarterly and current reports, proxy statements and other information with the SEC. Our SEC filings are available to the public over the Internet at the SEC's website at http://www.sec.gov. We also maintain a website at www.renovorx.com where these materials are available. You may access these materials free of charge as soon as reasonably practicable after they are electronically filed with, or furnished to, the SEC. Information contained on or accessible through our website is not a part of this prospectus and is not incorporated by reference herein, and the inclusion of our website address in this prospectus is an inactive textual reference only. This prospectus supplement are part of a registration statement that we filed with the SEC and do not contain all of the information in the registration statement. The full registration statement may be obtained from the SEC or us, as provided below. Forms of the indenture and other documents establishing the terms of the offered securities are or may be filed as exhibits to the registration statement. Statements in this prospectus supplement about these documents establishing the terms of the offered securities are or may be filed as exhibits to the registration statement to which it refers. You should refer to the actual documents for a more complete description of the relevant matters. You may inspect a copy of the registration statement through the SEC's website, as provided above.

24

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC's rules allow us to "incorporate by reference" information into this prospectus, which means that we can disclose important information to you by referring you to another document filed separately with the SEC. The information incorporated by reference is deemed to be part of this prospectus, and subsequent information that we file with the SEC will automatically update and supersede that information. Any statement contained in a previously filed document incorporated by reference will be deemed to be modified or superseded for purposes of this prospectus to the extent that a statement contained in this prospectus modifies or replaces that statement. This prospectus and any accompanying prospectus supplement incorporate by reference the documents set forth below that have previously been filed with the SEC:

- our Annual Report on Form 10-K for the year ended <u>December 31, 2021</u>, filed with the SEC on March 30, 2022;
- our Quarterly Reports on Form 10-Q for the quarter ended March 31, 2022, filed with the SEC on May 13, 2022, and for the quarter ended June 30, 2022, filed with the SEC on August 12, 2022;
- our Current Reports on Form 8-K, which were filed with the SEC on June 9, 2022, July 19, 2022 and September 19, 2022; and
- the description of our common stock set forth in our registration statement on <u>Form 8-A</u>, filed with the SEC on August 11, 2021, including any amendments thereto or reports filed for the purposes of updating this description.

Any documents we file with the SEC pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act after the date of the initial registration statement of which this prospectus forms a part and prior to effectiveness of the registration statement, as well as subsequent to the effectiveness of the registration statement and prior to the termination of the offering of our securities to which this prospectus relates, will automatically be deemed to be incorporated by reference into this prospectus and to be part hereof from the date of filing those documents. We are not, however, incorporating by reference any documents or portions thereof that are not deemed "filed" with the SEC, including any information furnished pursuant to Item 2.02 or Item 7.01 of Form 8-K or related exhibits furnished pursuant to Item 9.01 of Form 8-K. Any statements in any such future filings will automatically be deemed to modify and supersede any information in any document we previously filed with the SEC that is incorporated or deemed to be incorporated herein by reference to the extent that statements in the later filed document modify or replace such earlier statements.

You can request a copy of these filings, at no cost, by writing or telephoning us at the following address or telephone number:

RenovoRx, Inc. Attn: Investor Relations 4546 El Camino Real, Suite B1 Los Altos, California 94022 650-284-4433

The information accessible through any website referred to in this prospectus or any document incorporated herein is not, and should not be deemed to be, a part of this prospectus.

RENOVO RX

1,000,000 SHARES OF COMMON STOCK PRE-FUNDED WARRANTS TO PURCHASE UP TO 557,632 SHARES OF COMMON STOCK

PROSPECTUS SUPPLEMENT

Roth Capital Partners

March 30, 2023