
**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION**

Washington, D.C. 20549

FORM F-3
REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933

XORTX THERAPEUTICS INC.

(Exact name of Registrant as specified in its charter)

Not applicable
(Translation of Registrant's name into English)

British Columbia
(State or other jurisdiction of
incorporation or organization)

Not Applicable
(I.R.S. Employer Identification
Number (if applicable))

3710 — 33rd Street NW
Calgary, Alberta, Canada
T2L 2M1
(403) 455-7727

(Address and telephone number of Registrant's principal executive offices)

CT Corporation System
1015 15th Street N.W., Suite 1000
Washington, D.C., 20005
(202) 572-3133

(Name, address, and telephone number of agent for service)

Copies of all communications, including communications sent to agent for service, should be sent to:

Thomas M. Rose
Troutman Pepper Hamilton
Sanders LLP
401 9th Street, NW, Suite 1000
Washington, DC 20004
Telephone: (757) 687-7715

Rick W. Pawluk
Fasken Martineau
DuMoulin LLP
350 7th Avenue SW, Suite 3400
Calgary AB T2P 3N9
(587) 233-4063

**Approximate date of commencement of proposed sale of the securities to the public:
From time to time after the effective date of this Registration Statement**

If only securities being registered on this Form are being offered pursuant to dividend or interest reinvestment plans, please check the following box.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, check the following box.

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a registration statement pursuant to General Instruction I.C. or a post-effective amendment thereto that shall become effective upon filing with the Commission pursuant to Rule 462(e) under the Securities Act, check the following box.

If this Form is a post-effective amendment to a registration statement filed pursuant to General Instruction I.C. filed to register additional securities or additional classes of securities pursuant to Rule 413(b) under the Securities Act, check the following box.

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933.

Emerging growth company

If an emerging growth company that prepares its financial statements in accordance with U.S. GAAP, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards[†] provided pursuant to Section 7(a)(2)(B) of the Securities Act.

The Registrant hereby amends this Registration Statement on such date or dates as may be necessary to delay its effective date until the Registration Statement shall become effective as provided in Rule 467 under the Securities Act or on such date as the Commission, acting pursuant to Section 8(a) of the Securities Act, may determine.

[†] The term "new or revised financial accounting standard" refers to any update issued by the Financial Accounting Standards Board to its Accounting Standards Codification after April 5, 2012.

PART I
INFORMATION REQUIRED IN PROSPECTUS

No securities regulatory authority, including without limitation the SEC or any state securities commission, has expressed an opinion about, or approved or disapproved, these securities and it is a criminal offence to claim otherwise. This prospectus constitutes an offering of these securities only in those jurisdictions where they may be lawfully offered for sale and therein only by persons permitted to sell such securities.

SUBJECT TO COMPLETION, DATED JANUARY 27, 2023

Preliminary Prospectus



XORTX Therapeutics Inc.

US\$50,000,000

**Common Shares
Warrants
Units**

XORTX Therapeutics Inc. (“we”, “us”, “our”, “XORTX” or the “Company”) may offer and issue from time to time common shares (“Common Shares”), warrants (“Warrants”) and units comprised of Common Shares and Warrants (“Units”) of the Company or any combination thereof (collectively, the “Securities”) up to an aggregate initial offering price of US\$50,000,000 (or the equivalent thereof if the Securities are denominated in any other currency or currency unit) during the period that this registration statement (the “Prospectus”), including any amendments hereto, remains effective. Securities may be offered separately or together, in amounts, at prices and on terms to be determined based on market conditions at the time of sale and set forth in one or more prospectus supplements (each, a “Prospectus Supplement” and together, the “Prospectus Supplements”).

The specific terms of the Securities with respect to a particular offering will be set out in the applicable Prospectus Supplement and may include, where applicable (i) in the case of Common Shares, the number of Common Shares offered, the offering price, and any other terms specific to the Common Shares being offered, (ii) in the case of Warrants, the offering price, the designation, the number and the terms of the Common Shares purchasable upon exercise of the Warrants, any procedures that will result in the adjustment of these numbers, the exercise price, the dates and periods of exercise and any other terms specific to the Warrants being offered, and (iii) in the case of Units, the number of Units offered, the offering price of the Units, the number, designation and terms of the Common Shares and Warrants comprising the Units and any procedures that will result in the adjustment of those numbers and any other specific terms applicable to the offering of Units. Where required by statute, regulation or policy, and where Securities are offered in currencies other than United States dollars, appropriate disclosure of foreign exchange rates applicable to the Securities will be included in the Prospectus Supplement describing the Securities.

All shelf information permitted under applicable law to be omitted from this Prospectus will be contained in one or more Prospectus Supplements that will be delivered to purchasers together with this Prospectus. Each Prospectus Supplement will be incorporated by reference into this Prospectus for the purposes of securities legislation as of the date of the Prospectus Supplement and only for the purposes of the distribution of the Securities to which the Prospectus Supplement pertains.

This Prospectus constitutes a public offering of the Securities only in those jurisdictions where they may be lawfully offered for sale and only by persons permitted to sell the Securities in those jurisdictions. We may offer and sell Securities to, or through, underwriters or dealers and also may offer and sell certain Securities directly to other purchasers or through agents pursuant to exemptions from registration or qualification under applicable securities laws. A Prospectus Supplement relating to each issue of Securities offered thereby will set forth the names of any underwriters, dealers, or agents involved in the offering and sale of the Securities and will set forth the terms of the offering of the Securities, the method of distribution of the Securities including, to the extent applicable, the proceeds we will receive and any fees, discounts or any other compensation payable to underwriters, dealers or agents and any other material terms of the plan of distribution.

Our Common Shares are currently traded under the symbol “XRTX” on the TSX Venture Exchange (the “TSXV”) and on the Nasdaq Capital Market (“Nasdaq”). On January 26, 2023 (the last trading day prior to the date of this Prospectus), the closing price of the Common Shares on: (i) the TSXV was \$0.91; and (ii) the Nasdaq

The information in this prospectus is not complete and may be changed. We may not sell these securities until the registration statement the U.S. Securities and Exchange Commission (“SEC”) is effective. This prospectus is not an offer to sell these securities and is not an offer to buy these securities in any state where the offer or sale is not permitted.

was US\$0.692. We will apply to have any Common Shares distributed under this Prospectus listed on the TSXV and the Nasdaq provided the Common Shares are currently listed or traded on such exchanges. Any listing and admission will be subject to XORTX fulfilling all of the listing requirements of the TSXV and the Nasdaq, respectively. Unless otherwise specified in the applicable Prospectus Supplement, any offering of Warrants or Units will be a new issue of Securities with no established trading market and, accordingly, such Securities will not be listed on any securities or stock exchange or on any automated dealer quotation system. Pursuant to General Instruction I.B.5. of Form F-3, in no event will we sell our 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 US\$75 million. During the 12 calendar months prior to and including the date of this prospectus, we have not offered or sold any securities pursuant to General Instruction I.B.5. of Form F-3.

We are an “emerging growth company” as defined by the Jumpstart Our Business Startups Act of 2012 (the “**JOBS Act**”) and, as such, we have elected to comply with certain reduced public company reporting requirements for this prospectus and future filings. However, we have elected not to take advantage of the extended transition period allowed for emerging growth companies for complying with new or revised accounting guidance as allowed by Section 107 of the JOBS Act and Section 7(a)(2)(B) of the Securities Act of 1933, as amended, (the “**Securities Act**”).

There is no market through which the Warrants or Units may be sold and purchasers may not be able to resell such Securities purchased under this Prospectus and any applicable Prospectus Supplement. This may affect the pricing of such Securities in the secondary market, the transparency and availability of trading prices, the liquidity of the Securities, and the extent of issuer regulation. See “Risk Factors”.

We express all amounts in this prospectus in Canadian dollars, except where otherwise indicated. References to “\$” are to Canadian dollars and references to “US\$” are to U.S. dollars.

Our principal executive offices are located at 3710 — 33rd Street NW, Calgary, Alberta, Canada T2L 2M1, Telephone: (403) 455-7727.

We have prepared this Prospectus in accordance with United States disclosure requirements. Our financial statements are prepared in accordance with International Financial Reporting Standards as issued by the International Accounting Standards Board (“IFRS”) and thus may not be comparable to financial statements of United States companies.

Purchasers of the Securities should be aware that the acquisition of the Securities may have tax consequences in the United States and in Canada. Such consequences for purchasers who are resident in, or citizens of, the United States, or who are resident in Canada may not be described fully herein or in any applicable Prospectus Supplement. Purchasers of the Securities should read the tax discussion contained in the applicable Prospectus Supplement with respect to a particular offering of Securities.

The enforcement by investors of civil liabilities under United States federal securities laws may be affected adversely by the fact that XORTX is incorporated and governed under the laws of the Province of British Columbia, Canada, that a number of our officers and directors are residents of countries other than the United States, that some or all of the underwriters, if any, may be residents of a foreign country, and a substantial portion of our assets and some of said persons are located outside the United States.

No underwriter has been involved in the preparation of this Prospectus nor has any underwriter performed any review of the contents of this Prospectus.

Investing in the Securities involves a high degree of risk. Prospective purchasers of the Securities should carefully consider all the information in this Prospectus and in the documents incorporated by reference in this Prospectus. See “Risk Factors” beginning on page 4 of this Prospectus.

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

The date of this Prospectus is _____, 2023.

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You should rely only on the information contained in or incorporated by reference into this Prospectus or any Prospectus Supplement. References to this “Prospectus” include documents incorporated by reference therein. See “Documents Incorporated by Reference”. The information in or incorporated by reference into this Prospectus is current only as of its date. We have not authorized anyone to provide you with information that is different. This document may only be used where it is legal to offer these Securities.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This Prospectus contains forward-looking statements that are subject to risks and uncertainties. These forward-looking statements include information about possible or assumed future results of our business, financial condition, results of operations, liquidity, plans and objectives. In some cases, you can identify forward-looking statements by terminology such as “believe,” “may,” “estimate,” “continue,” “anticipate,” “intend,” “should,” “plan,” “expect,” “predict,” “potential,” or the negative of these terms or other similar expressions. The statements we make regarding the following matters are forward-looking by their nature and are based on certain of the assumptions noted below:

- the intentions, plans and future actions of the Company;
- statements relating to the business and future activities of the Company;
- anticipated developments in operations of the Company;
- market position, ability to compete and future financial or operating performance of the Company;
- the timing and amount of funding required to execute the Company’s business plans;
- capital expenditures;
- the effect on the Company of any changes to existing or new legislation or policy or government regulation;
- the availability of labor;
- requirements for and availability to us of additional capital;
- goals, strategies and future growth;
- the adequacy of financial resources;
- expectations regarding revenues, expenses and anticipated cash needs;
- the impact of the COVID-19 pandemic on the business and operations of the Company; and
- general market conditions and macroeconomic trends driven by the COVID-19 pandemic and/or geopolitical conflicts, including supply chain disruptions, market volatility, inflation, and labor challenges, among other factors.

The preceding list is not intended to be an exhaustive list of all of our forward-looking statements. The forward-looking statements are based on our beliefs, assumptions and expectations of future performance, taking into account the information currently available to us. These statements are only predictions based upon our current expectations and projections about future events. There are important factors that could cause our actual results, levels of activity, performance or achievements to differ materially from the results, levels of activity, performance or achievements expressed or implied by the forward-looking statements, including, but not limited to, those factors identified under the “*Risk Factors*” in this Prospectus. Furthermore, unless otherwise stated, the forward-looking statements contained in this Prospectus are made as of the date hereof, and we have no intention and undertake no obligation to update or revise any forward-looking statements, whether as a result of new information, future events, changes or otherwise, except as required by law.

PUBLICLY AVAILABLE INFORMATION ON XORTX

We file reports and other information with the securities commissions and similar regulatory authorities in the provinces of Canada (collectively, the “**Commissions**”). These reports and information are available to the public free of charge on SEDAR at www.sedar.com.

We are subject to the information requirements of the U.S. Securities Exchange Act of 1934, as amended (the “**Exchange Act**”), relating to foreign private issuers and applicable Canadian securities legislation and, in accordance therewith, file reports and other information with the SEC and securities regulatory authorities in Canada. Investors may read and download documents we have filed with the SEC’s Electronic Data Gathering and Retrieval system at www.sec.gov.

Readers should rely only on information contained or incorporated by reference in this Prospectus and any applicable Prospectus Supplement. We have not authorized anyone to provide the reader with different information. We are not making an offer of the Securities in any jurisdiction where the offer is not permitted. Readers should not assume that the information contained in this Prospectus is accurate as of any date other than the date on the front of this Prospectus, unless otherwise noted herein or as required by law. It should be assumed that the information appearing in this Prospectus and the documents incorporated herein by reference are accurate only as of their respective dates. Our business, financial condition, results of operations and prospects may have changed since those dates.

DOCUMENTS INCORPORATED BY REFERENCE

Information has been incorporated by reference in this Prospectus from documents filed with the Commissions and filed with, or furnished to, the SEC. Copies of the documents incorporated herein by reference may be obtained on request without charge upon written or oral request from our Corporate Secretary at 3710 — 33rd Street NW, Calgary, Alberta, Canada T2L 2M1, Telephone: (403) 455-7727. Copies of these documents are also available through the Internet on the System for Electronic Document Analysis and Retrieval, which can be accessed online at www.sedar.com and on the SEC's Electronic Data Gathering and Retrieval System, which can be accessed online at www.sec.gov and at our website at www.xortx.com.

The following documents, which we filed or furnished with the Commissions and the SEC, as applicable, are specifically incorporated by reference into, and form an integral part of, this Prospectus:

- (a) [Our Annual Report on Form 20-F for the year ended December 31, 2021 filed with the SEC on May 3, 2022, as amended January 27, 2023 \(together, the "Form 20-F"\)](#);
- (b) Our Reports on Form 6-K filed with the SEC on [May 16, June 30](#) (with respect to the Company's [July 20, 2022](#) Annual and Special Meeting of Shareholders), [July 22, August 11, November 14, and November 28, 2022](#) and [January 19, 2023](#); and
- (c) The description of our securities included in our Registration Statement on [Form 8-A filed with the SEC on September 29, 2021](#), including any subsequent amendments or reports filed for the purpose of updating such description.

All documents filed by us pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act, and any document of the type referred to in the preceding paragraph, subsequent to the date of this Prospectus and prior to the termination of the offering of the Securities offered by this Prospectus are incorporated by reference into this Prospectus and form part of this Prospectus from the date of filing or furnishing of these documents. We may incorporate by reference into this Prospectus any Form 6-K that is submitted to the SEC after the date of the filing of the registration statement of which this Prospectus forms a part and before the date of termination of this offering. Any such Form 6-K that we intend to so incorporate shall state in such form that it is being incorporated by reference into this Prospectus. The documents incorporated or deemed to be incorporated herein by reference contain meaningful and material information relating to us and the readers should review all information contained in this Prospectus and the documents incorporated or deemed to be incorporated herein by reference.

A Prospectus Supplement containing the specific terms of an offering of Securities and other information relating to the Securities will be delivered to prospective purchasers of such Securities together with this Prospectus and will be deemed to be incorporated into this Prospectus as of the date of such Prospectus Supplement only for the purpose of the offering of the Securities covered by that Prospectus Supplement.

Any statement contained in a document incorporated or deemed to be incorporated by reference herein shall be deemed to be modified or superseded for the purposes of this Prospectus, to the extent that a statement contained herein or in any other subsequently filed document which also is or is deemed to be incorporated by reference herein modifies or supersedes such statement. Any statement so modified or superseded shall not constitute a part of this Prospectus, except as so modified or superseded. The modifying or superseding statement need not state that it has modified or superseded a prior statement or include any other information set forth in the document that it modifies or supersedes. The making of such a modifying or superseding statement shall not be deemed an admission for any purposes that the modified or superseded statement, when made, constituted a misrepresentation, an untrue statement of a material fact or an omission to state a material fact that is required to be stated or that is necessary to make a statement not misleading in light of the circumstances in which it was made.

RISK FACTORS

Prospective investors in a particular offering of Securities should carefully consider the risks presented in this Prospectus, as well as the information and risk factors contained in the Prospectus Supplement relating to that offering and any and all other information incorporated by reference in this Prospectus. Discussions of certain risks affecting the Company are generally provided and described in, among other documents, the Company's annual and interim reports filed from time to time, which are incorporated by reference into this Prospectus and include the Company's annual information form, annual management's discussion and analysis and interim management's discussion and analysis. In particular, see the "Risk Factors" heading in the Company's latest annual information form and interim or annual management's discussion and analysis, as the case may be.

An investment in the Securities offered hereunder is speculative and involves a high degree of risk. The risks and uncertainties described or incorporated by reference herein are not the only ones the Company may face. Additional risks and uncertainties, including those that the Company is unaware of or that are currently deemed immaterial, may also become important factors that affect the Company and its business. If any such risks actually occur, the Company's business, financial condition and results of operations could be materially adversely affected.

In addition to the risks set out in our Form 20-F and Forms 6-K filed May 16, August 11, and November 14, 2022 and the other risk factors presented in a Prospectus Supplement or other reports that may, from time to time, be incorporated by reference into this Prospectus, prospective investors should also carefully consider the risks set out below.

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 Common Shares or other securities convertible into or exchangeable for Common Shares at prices that may not be the same as the price per share paid by any investor in an offering in a subsequent Prospectus Supplement. We may sell Common Shares or other securities in any other offering at a price per share that is less than the price per share or other security paid by any investor in an offering in a subsequent Prospectus Supplement, and investors purchasing Common Shares or other securities in the future could have rights superior to you. The price per share at which we sell additional Common Shares or securities convertible or exchangeable into Common Shares, in future transactions may be higher or lower than the price per share paid by any investor in an offering under a subsequent Prospectus Supplement.

There can be no assurance as to the liquidity of the trading market for certain Securities or that a trading market for certain Securities will develop.

There is no public market for our warrants, and unless otherwise specified in the applicable Prospectus Supplement, the Company does not intend to apply for listing of Warrants. If these securities are traded after their initial issue, they may trade at a discount from their initial offering prices depending on the market for similar securities, prevailing interest rates and other factors, including general economic conditions and the Company's financial condition. There can be no assurance as to the liquidity of the trading market for any Warrants or that a trading market for these securities will develop.

There will be no market for the Units.

We have not applied and do not intend to apply to list the Units on any securities exchange. There will be no market through which Units may be sold and purchasers may not be able to resell Units purchased in any offering. If the Units are traded after their initial issue, they may trade at a discount from their initial offering prices depending on the market conditions, prevailing interest rates and other factors, including general economic conditions and our financial condition. There can be no assurance as to the liquidity of the trading market for the Units or that a trading market for such Units will develop.

MATERIAL CHANGES

Except as otherwise disclosed in this Prospectus there have been no material changes to our operations that have occurred since September 30, 2022, and that have not been described in a report on Form 6-K furnished under the Exchange Act and incorporated by reference into this Prospectus.

CAPITALIZATION AND INDEBTEDNESS

Our capitalization will be set forth in the applicable prospectus supplement or in a report on Form 6-K subsequently furnished to the SEC and specifically incorporated by reference into this prospectus.

DESCRIPTION OF SHARE CAPITAL**General**

The following is a summary of the material rights of our share capital as contained in our notice of articles and articles and any amendments thereto. This summary is not a complete description of the share rights associated with our capital stock. For more detailed information, please see our notice of articles and articles, which are filed as exhibits to the registration statement of which this prospectus forms a part.

Common Shares***Outstanding Shares***

Our authorized share capital consists of an unlimited number of Common Shares, each without par value.

As of January 27, 2023, we had 1,167,095 Common Shares issuable pursuant to exercisable outstanding stock options, 583,899 Common Shares issuable pursuant to outstanding options that are not currently exercisable, 10,579,796 Common Shares issuable upon the exercise of outstanding common share warrants, and we had approximately 15 holders of record of our Common Shares.

Voting Rights

Under our articles, the holders of our Common Shares are entitled to one vote for each common share held on all matters submitted to a vote of the shareholders, including the election of directors. Our notice of articles and articles do not provide for cumulative voting rights. Because of this, the holders of a plurality of the Common Shares entitled to vote in any election of directors can elect all of the directors standing for election, if they so choose.

Dividends

Subject to priority rights that may be applicable to any then outstanding Common Shares, and the applicable provisions of the Business Corporation Act British Columbia (“BCBCA”), holders of our Common Shares are entitled to receive dividends, as and when declared by our Board, in their sole discretion as they see fit. For more information, see the section titled “*Dividend Policy*.”

Liquidation

In the event of our liquidation, dissolution or winding up, holders of our Common Shares are entitled to share ratably in the net assets legally available for distribution to shareholders after the payment of all of our debts and other liabilities and the satisfaction of any liquidation preference granted to the holders of any then outstanding preferred shares.

Rights and Preferences

Our Common Shares contain no pre-emptive or conversion rights and have no provisions for redemption or repurchase for cancellation, surrender or sinking or purchase funds. There are no provisions in our notice of articles and articles requiring holders of Common Shares to contribute additional capital. The rights, preferences and privileges of the holders of our Common Shares are subject to and may be adversely affected by the rights of the holders of any series of new preferred shares that may be created, authorized, designated, and issued in the future.

Fully Paid and Non-assessable

All of our outstanding Common Shares are, and the Common Shares to be issued pursuant to this Prospectus, when paid for, will be fully paid and non-assessable.

DESCRIPTION OF THE WARRANTS

Warrants will typically be offered with Common Shares, with such securities often referred to collectively as a “Unit”, but may be offered separately. The Warrants either will be issued under a warrant indenture or agreement that will be entered into by the Company and a trustee at the time of issuance of the Warrants or will be represented by warrant certificates issued by the Company.

Warrants will entitle the holder thereof to receive Common Shares and/or other Securities upon the exercise thereof and payment of the applicable exercise price. A Warrant will be exercisable for a specific period of time at the end of which time it will expire and cease to be exercisable.

Holders of Warrants are not shareholders of the Company. The particular terms and provisions of Warrants offered by this Prospectus and any applicable Prospectus Supplement will be described in the Prospectus Supplement filed in respect of such Warrants. This description may include, without limitation and as applicable: (i) the title or designation of the Warrants; (ii) the number of Warrants offered; (iii) the number of Common Shares and/or other Securities purchasable upon exercise of the Warrants and the procedures for exercise; (iv) the exercise price of the Warrants; (v) the dates or periods during which the Warrants are exercisable and when they expire; (vi) the designation and terms of any other Securities with which the Warrants will be offered, if any, and the number of Warrants that will be offered with each such Security; and (vii) any other material terms and conditions of the Warrants including, without limitation, transferability and adjustment terms and whether the Warrants will be listed on a securities exchange.

DESCRIPTION OF THE UNITS

Units are securities consisting of one or more of the other Securities described in this Prospectus offered together as a “Unit”. A Unit is typically issued such that the holder thereof is also the holder of each Security included in the Unit. Thus, the holder of a Unit will have the rights and obligations of a holder of each Security comprising the Unit. The unit agreement under which a Unit is issued may provide that the Securities comprising the Unit may not be held or transferred separately at any time or before a specified date.

The particular terms and provisions of Units offered by this Prospectus and any applicable Prospectus Supplement will be described in the Prospectus Supplement filed in respect of such Units. This description may include, without limitation and as applicable: (i) the designation and terms of the Units and of the Securities comprising the Units, including whether and under what circumstances those Securities may be held or transferred separately; (ii) any provisions for the issuance, payment, settlement, transfer or exchange of the Units or of the Securities comprising the Units; (iii) whether the Units will be issued in fully registered or global form; and (iv) any other material terms and conditions of the Units.

CORPORATE GOVERNANCE

Under the BCBCA, we are required to hold a general meeting of our shareholders at least once every year at a time and place determined by our Board, provided that the meeting must not be held later than 15 months after the preceding annual general meeting. A notice to convene a meeting, specifying the date, time and location of the meeting must be sent to shareholders, to each director and the auditor not less than 21 days prior to the meeting or such other minimum period as required by the applicable securities laws. Under the BCBCA, shareholders entitled to notice of a meeting may waive or reduce the period of notice for that meeting, provided applicable securities laws requirements are met.

Pursuant to our articles, all business transacted at a special meeting of shareholders (except business relating to the conduct of or voting at the meeting) and all business transacted at an annual meeting of shareholders (except business relating to the conduct of or voting at the meeting, consideration of our financial statements presented at the meeting, consideration of any director or auditor’s report, setting or changing of the number of directors, election or appointment of directors, appointment of the auditor, remuneration of the auditor, business arising out of a report of the directors not requiring the passage of a special or exceptional resolution, and any other business which, under the articles or BCBCA, may be transacted at a meeting of shareholders without prior notice of the business being given to the shareholders) is deemed to be special business. Notice of a meeting of shareholders at which special business is to be

transacted shall (a) state the general nature of that business; and (b) if the special business includes considering, ratifying, adopting or authorizing any document, or the signing of any document, have attached to it the document or state that such document is available for inspection.

Under our articles, our Board has the power at any time to call a meeting of our shareholders where special business is to be considered.

Those entitled to vote at a meeting are entitled to attend meetings of our shareholders. Every shareholder entitled to vote may appoint one or more (but not to exceed five) proxyholders to attend the meeting in the manner and to the extent authorized and with the authority conferred by the proxy. Directors, auditors, legal counsels, secretaries (if any), and any other persons invited by the directors are entitled to attend any meeting of our shareholders but will not be counted in quorum or be entitled to vote at the meeting unless he or she or it is a shareholder or proxyholder entitled to vote at the meeting.

Material Differences Between the BCBCA and the DGCL

The material differences between the BCBCA and the DGCL that may have the greatest such effect include, but are not limited to, the following: (i) for material corporate transactions (such as mergers and amalgamations, other extraordinary corporate transactions or amendments to our articles) the BCBCA generally requires a two-thirds majority vote by shareholders (including, in some circumstances, shareholders that otherwise do not have the right to vote), whereas the DGCL generally requires only a majority vote; (ii) under the BCBCA, holders of 5% or more of our shares that carry the right to vote at a meeting of shareholders can requisition a general meeting of shareholders at which special matters may be conducted, whereas such right does not exist under the DGCL; and (iii) unlike the DGCL which does not provide for any oppression remedy for shareholders of Delaware entities, the BCBCA provides an oppression remedy that enables a court to make an order, whether interim or final, if an application is made to the court by a shareholder in a timely manner and it appears to the court that there are reasonable grounds for believing (A) that the affairs of the corporation are being or have been conducted, or the powers of the directors are being or have been exercised, in a manner that is oppressive to one or more shareholders, or (B) that some act of the corporation has been done or is threatened, or that some resolution of the shareholders or of the shareholders holding shares of a class or series of shares has been passed or is proposed, that is unfairly prejudicial to one or more of the shareholders including the applicant.

Certain Takeover Bid Requirements

Unless such offer constitutes an exempt transaction, an offer made by a person, an “offeror”, to acquire outstanding shares of a Canadian entity that, when aggregated with the offeror’s holdings (and those of persons or companies acting jointly with the offeror), would constitute 20% or more of the outstanding shares in a class, would be subject to the take-over provisions of Canadian securities laws. The foregoing is a limited and general summary of certain aspects of applicable securities law in the provinces and territories of Canada, all in effect as of the date hereof.

In addition to those takeover bid requirements noted above, the acquisition of our shares may trigger the application of statutory regimes including among others, the Investment Canada Act (Canada) and the Competition Act (Canada).

Limitations on the ability to acquire and hold our shares may be imposed by the Competition Act (Canada). This legislation permits the Commissioner of Competition (the “**Commissioner**”), to review any acquisition of control over or of a significant interest in us. This legislation grants the Commissioner jurisdiction, for up to one year after closing, to challenge this type of acquisition before the Canadian Competition Tribunal on the basis that it would, or would be likely to, substantially prevent or lessen competition in any market in Canada.

Since we are a publicly-traded corporation, this legislation also requires any person who intends to acquire our voting shares to file a notification with the Canadian Competition Bureau if certain financial thresholds are exceeded and if that person (and their affiliates) would hold more than 20% of our voting shares as a result of such acquisition. If a person already owns more than 20% of our voting shares, a notification must be filed before the acquisition of additional voting shares that would bring that person’s

holdings to over 50%. Where a notification is required, the legislation prohibits completion of the acquisition until the expiration of a statutory waiting period or, if applicable, a second statutory waiting period, unless the Commissioner provides written notice that he does not intend to challenge the acquisition. A common closing condition of acquisitions subject to notification under the Competition Act (Canada) is clearance from the Commissioner, even if the applicable statutory waiting period has expired and the parties are in a legal position to close.

The Investment Canada Act (Canada) requires any person that is a “non-Canadian” (as defined in the Investment Canada Act (Canada)) who acquires control of an existing Canadian business, where the acquisition of control is not a reviewable transaction, to file a notification with Innovation, Science and Economic Development. The Investment Canada Act (Canada) generally prohibits the implementation of a reviewable transaction unless, after review, the relevant minister is satisfied that the investment is likely to be of net benefit to Canada. Under the Investment Canada Act (Canada), the acquisition of control of us (either through the acquisition of our shares or all or substantially all our assets) by a non-Canadian would be reviewable under the “net benefit” standard only if the applicable specified financial threshold is met or exceeded and no exemption applied.

The acquisition of a majority of the voting interests of an entity is deemed to be acquisition of control of that entity. The acquisition of less than a majority but one-third or more of the voting shares of a corporation or an equivalent undivided ownership interest in the voting shares of a corporation is presumed to be an acquisition of control of that corporation unless it can be established that, on the acquisition, the corporation is not controlled in fact by the acquirer through the ownership of voting shares. The acquisition of less than one-third of the voting shares of a corporation is deemed not to be an acquisition of control of that corporation.

Under the national security regime in the Investment Canada Act (Canada), a national security review on a discretionary basis may also be undertaken by the federal government in respect of a much broader range of investments by a non-Canadian to “acquire, in whole or in part, or to establish an entity carrying on all or any part of its operations in Canada”, provided that the entity has a specified nexus to Canada. The relevant test is whether such an investment by a non-Canadian could be “injurious to national security.” The relevant minister has broad discretion to determine whether an investor is a non-Canadian and may be subject to national security review. Review on national security grounds is at the discretion of the federal government and, depending on the facts, may occur on a pre- or post-closing basis and includes the ability to block a transaction or, for a completed transaction, order divestiture.

There is no law, governmental decree or regulation in Canada that restricts the export or import of capital or which would affect the remittance of dividends or other payments by us to non-Canadian holders of our Common Shares or preferred shares, other than withholding tax requirements.

Neither our notice of articles to be in effect upon the completion of this offering nor articles to be in effect upon the completion of this offering contain any change of control limitations with respect to a merger, acquisition or corporate restructuring that involves us.

This summary above is not a comprehensive description of relevant or applicable considerations regarding such requirements and, accordingly, is not intended to be, and should not be interpreted as, legal advice to any prospective purchaser and no representation with respect to such requirements to any prospective purchaser is made. Prospective investors should consult their own Canadian legal advisors with respect to any questions regarding the foregoing and securities law in the provinces and territories of Canada.

Actions Requiring a Special Majority

Under our articles, the number of votes required for the corporation to pass a special resolution at a meeting of shareholders is two-third of the votes cast on the resolution. Special resolutions include resolutions to: (i) create special rights or restrictions for, and attach such special rights or restrictions to, any class or series of shares; (ii) vary or delete any special rights or restrictions attached to any class or series of shares; and (iii) remove a director before the expiration of his or her term of office.

Advance Notice Procedures and Shareholder Proposals

Under the BCBCA, shareholders may make proposals for matters to be considered at the annual general meeting of shareholders. Such proposals must be sent to us in advance of any proposed meeting by delivering a timely written notice in proper form to our registered office in accordance with the requirements of the BCBCA. The notice must include information on the business the shareholder intends to bring before the meeting. In addition, our articles require that shareholders must give advance notice to nominate directors or to submit proposals for consideration at shareholders' meetings.

These provisions could have the effect of delaying until the next shareholder meeting the nomination of certain persons for director that are favored by the holders of a majority of our outstanding voting securities.

Ownership and Exchange Controls

There is currently no law, governmental decree or regulation in Canada that restricts the export or import of capital, or which would affect the remittance of dividends, interest or other payments by us to non-resident holders of our Common Shares, other than withholding tax requirements.

There is currently no limitation, imposed by Canadian law or our articles that will be in effect prior to closing, on the right of non-residents to acquire, hold or vote our Common Shares, other than those imposed by applicable securities laws and the Investment Canada Act (Canada). The Investment Canada Act (Canada) will generally not apply except in respect of national security and where control of a Canadian business, which has an enterprise value or assets at or over a certain threshold, is acquired and will not generally apply to trading of securities listed on a stock exchange.

USE OF PROCEEDS

The net proceeds to be derived from the sale of Securities will be the issue price thereof less any commission paid in connection therewith and the expenses relating to the particular offering of Securities. The net proceeds to us from any offering of Securities, the proposed use of those proceeds and the specific business objectives that we wish to accomplish with such proceeds will be set out in the applicable Prospectus Supplement. There may be circumstances where, on the basis of results obtained or for other sound business reasons, a re-allocation of funds may be necessary or prudent. Accordingly, management of the Company will have broad discretion in the application of the proceeds of an offering of Securities. The actual amount that the Company spends in connection with each intended use of proceeds may vary from the amounts specified in the applicable Prospectus Supplement and will depend on a number of factors, including those referred to under "Risk Factors" and any other factors set out in the applicable Prospectus Supplement. We may invest funds which we do not immediately use. Such investments may include short-term marketable investment grade securities.

We may, from time to time, issue securities (including debt securities) other than pursuant to this Prospectus. The Company had negative cash flow from operating activities of \$6,062,510 and \$6,811,510 for the year ended December 31, 2021 and for the nine-month period ended September 30, 2022, respectively. The Company cannot guarantee that positive cash flow from operating activities will be obtained. The Company may continue to have negative cash flow from operating activities until sufficient levels of sales are achieved.

PLAN OF DISTRIBUTION

We may sell the Securities, separately or together, to or through underwriters or dealers purchasing as principals for public offering and sale by them, and also may sell Securities to one or more other purchasers directly or through agents. Each Prospectus Supplement will set forth the terms of the offering, including the name or names of any underwriters or agents, if any, the purchase price or prices of the Securities and the proceeds we will receive from the sale of the Securities.

The Securities may be sold from time to time in one or more transactions at a fixed price or prices which may be changed or at market prices prevailing at the time of sale, at prices related to such prevailing market prices or at negotiated prices including sales in transactions that are deemed to be “at-the-market” distributions, including sales made directly on the TSXV, Nasdaq or other existing trading markets for the securities. The prices at which the Securities may be offered may vary as between purchasers and during the period of distribution. If, in connection with the offering of Securities at a fixed price or prices, the underwriters, if any, have made a bona fide effort to sell all of the Securities at the initial offering price fixed in the applicable Prospectus Supplement, the public offering price may be decreased and thereafter further changed, from time to time, to an amount not greater than the initial public offering price fixed in such Prospectus Supplement, in which case the compensation realized by the underwriters will be decreased by the amount that the aggregate price paid by purchasers for the Securities is less than the gross proceeds paid to us by the underwriters.

Underwriters, dealers and agents who participate in the distribution of the Securities may be entitled under agreements to be entered into with us to indemnification by us against certain liabilities, including liabilities under the Securities Act and Canadian securities legislation, or to contribution with respect to payments which such underwriters, dealers or agents may be required to make in respect thereof. Such underwriters, dealers and agents may be customers of, engage in transactions with, or perform services for, us in the ordinary course of business.

In connection with any offering of Securities, except as otherwise set out in a Prospectus Supplement relating to a particular offering of Securities, the underwriters may over-allot or effect transactions intended to maintain or stabilize the market price of the Securities offered at a level above that which might otherwise prevail in the open market. Such transactions, if commenced, may be discontinued at any time.

TRADING PRICE AND VOLUME

Our Common Shares are listed on Nasdaq and the TSXV under the symbol “XRTX”. Trading price and volume of the Common Shares will be provided in each Prospectus Supplement.

DIVIDEND POLICY

We have never paid any dividends on our Common Shares or any of our other securities. We currently intend to retain any future earnings to finance the growth and development of our business, and we do not anticipate that we will declare or pay any cash dividends in the foreseeable future. Any future determination to pay cash dividends will be at the discretion of our Board and will be dependent upon our financial condition, results of operations, capital requirements, restrictions under any future indebtedness and other factors the Board deems relevant.

DILUTION

Purchasers of Securities in an offering may suffer immediate and substantial dilution in the net tangible book value per share of Common Shares. Dilution in net tangible book value per share represents the difference between the amount per Share paid by purchasers in an offering and the net tangible book value per share of Common Shares immediately after an offering.

LEGAL MATTERS

Unless otherwise specified in the Prospectus Supplement relating to an offering of Securities, certain Canadian and United States legal matters relating to the offering of such Securities will be passed upon for us by Fasken Martineau DuMoulin LLP as to matters relating to Canadian law and by Troutman Pepper

Hamilton Sanders LLP as to matters relating to United States federal securities law. In addition, certain legal matters in connection with any offering of Securities may be passed upon for any underwriters, dealers or agents by counsel to be designated at the time of the offering by such underwriters, dealers or agents with respect to matters of Canadian and United States law.

EXPENSES OF ISSUANCE AND DISTRIBUTION

The following is a statement of the expenses (all of which are estimated), other than any underwriting discounts and commissions and expenses reimbursed by us, if any, to be incurred in connection with a distribution of an assumed amount of US\$50,000,000 of Securities under the offering.

SEC registration fees	US\$5,510
Nasdaq Listing fees	(1)
TSXV Listing fees	(1)
Printing Expenses	(1)
Legal fees and expenses	(1)
Accountants' fees and expenses	(1)
Transfer agent fees and expenses	(1)
Miscellaneous	(1)
Total	US\$5,510

Notes:

- (1) To be provided by a Prospectus Supplement, or as an exhibit to a Report on Form 6-K that is incorporated by reference into this Prospectus.

EXPERTS

The consolidated financial statements of XORTX as of and for the year ended December 31, 2021, have been audited by Smythe LLP, independent registered public accounting firm, as set forth in their report thereon. Smythe LLP is independent with respect to us within the meaning of the Code of Professional Conduct of the Chartered Professional Accountants of British Columbia and under all relevant U.S. professional and regulatory standards, including Public Company Accounting Oversight Board Rule 3520. We have included our financial statements in this prospectus and in this registration statement in reliance on the report of Smythe LLP given on their authority as experts in accounting and auditing.

TRANSFER AGENT, REGISTRAR AND AUDITOR

The transfer agent and registrar for our Common Shares is TSX Trust Company at its principal office in Toronto, Canada. Our co-transfer agent is Continental Stock Transfer & Trust Company.

Smythe LLP, located at 1700 — 475 Howe Street, Vancouver, British Columbia, Canada V6C 2B3 is our independent registered public accounting firm and has been appointed as our independent auditor.

DISCLOSURE OF COMMISSION POSITION ON INDEMNIFICATION FOR SECURITIES ACT LIABILITIES

Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers or persons controlling the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or person controlling the registrant in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been

settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act and will be governed by the final adjudication of such issue.

MATERIAL CONTRACTS

Our material contracts are described in the documents incorporated by reference into this prospectus. See “Publicly Available Information on XORTX” and “Documents Incorporated by Reference” above.

CERTAIN INCOME TAX CONSIDERATIONS

Material income tax consequences relating to the purchase, ownership and disposition of any of the Securities offered by this Prospectus will be set forth in the applicable Prospectus Supplement relating to the offering of those Securities. You are urged to consult your own tax advisors prior to any acquisition of our Securities.



XORTX Therapeutics Inc.

US\$50,000,000

**Common Shares
Warrants
Units**

PROSPECTUS

, 2023

PART II — INFORMATION NOT REQUIRED TO BE DELIVERED TO OFFEREES OR PURCHASERS**Item 6. Indemnification of Directors and Officers**

XORTX is subject to the provisions of Part 5, Division 5 of the Business Corporations Act (British Columbia) (the “BCBCA”). Under Section 160 of the BCBCA, XORTX may, subject to Section 163 of the BCBCA do one or both of the following:

- (a) indemnify an eligible party against all eligible penalties to which the eligible party is or may be liable; or
- (b) after final disposition of an eligible proceeding, pay the expenses actually and reasonably incurred by an eligible party in respect of that proceeding,

where:

- (i) “eligible party” means, in relation to XORTX, means an individual who
 - i. is or was a director or officer of XORTX,
 - ii. is or was a director or officer of another corporation
 - 1. at a time when the corporation is or was an affiliate of XORTX, or
 - 2. at the request of XORTX, or
 - iii. at the request of XORTX, is or was, or holds or held a position equivalent to that of, a director or officer of a partnership, trust, joint venture or other unincorporated entity,

and includes, except in the definition of “eligible proceeding” and except in sections 163(1)(c) and (d) and 165 of the BCBCA, the heirs and personal or other legal representatives of that individual;

- (ii) “eligible penalty” means a judgment, penalty or fine awarded or imposed in, or an amount paid in settlement of, an eligible proceeding,
- (iii) “eligible proceeding” means a proceeding in which an eligible party or any of the heirs and personal or other legal representatives of the eligible party, by reason of the eligible party being or having been a director or officer of, or holding or having held a position equivalent to that of a director or officer of, XORTX or an associated corporation
 - i. is or may be joined as a party, or
 - ii. is or may be liable for or in respect of a judgment, penalty or fine in, or expenses related to, the proceeding,
- (iv) “expenses” includes costs, charges and expenses, including legal and other fees, but does not include judgments, penalties, fines or amounts paid in settlement of a proceeding, and
- (v) “proceeding” includes any legal proceeding or investigative action, whether current, threatened, pending or completed.

Under Section 161 of the BCBCA, and subject to Section 163 of the BCBCA, XORTX must, after the final disposition of an eligible proceeding, pay the expenses actually and reasonably incurred by an eligible party in respect of that proceeding if the eligible party (a) has not been reimbursed for those expenses and (b) is wholly successful, on the merits or otherwise, in the outcome of the proceeding or is substantially successful on the merits in the outcome of the proceeding.

Under Section 162 of the BCBCA, and subject to Section 163 of the BCBCA, XORTX may pay, as they are incurred in advance of the final disposition of an eligible proceeding, the expenses actually and reasonably incurred by an eligible party in respect of the proceeding, provided that XORTX must not make such payments unless it first receives from the eligible party a written undertaking that, if it is ultimately

determined that the payment of expenses is prohibited under Section 163 of the BCBCA, the eligible party will repay the amounts advanced.

Under Section 163 of the BCBCA, XORTX must not indemnify an eligible party against eligible penalties to which the eligible party is or may be liable or pay the expenses of an eligible party under Sections 160(b), 161 or 162 of the BCBCA, as the case may be, if any of the following circumstances apply:

- (a) if the indemnity or payment is made under an earlier agreement to indemnify or pay expenses and, at the time that the agreement to indemnify or pay expenses was made, XORTX was prohibited from giving the indemnity or paying the expenses by XORTX's memorandum or Articles;
- (b) if the indemnity or payment is made otherwise than under an earlier agreement to indemnify or pay expenses and, at the time that the indemnity or payment is made, XORTX is prohibited from giving the indemnity or paying the expenses by XORTX's memorandum or Articles;
- (c) if, in relation to the subject matter of the eligible proceeding, the eligible party did not act honestly and in good faith with a view to the best interests of XORTX or the associated corporation, as the case may be; or
- (d) in the case of an eligible proceeding other than a civil proceeding, if the eligible party did not have reasonable grounds for believing that the eligible party's conduct in respect of which the proceeding was brought was lawful.

If an eligible proceeding is brought against an eligible party by or on behalf of XORTX or by or on behalf of an associated corporation, XORTX must not either (a) indemnify the eligible party under Section 160(a) of the BCBCA against eligible penalties to which the eligible party is or may be liable in respect of the proceeding, or pay the expenses of the eligible party under Sections 160(b), 161 or 162 of the BCBCA, as the case may be, in respect of the proceeding.

Under Section 164 of the BCBCA, despite any other provision of Part 5, Division 5 of the BCBCA and whether or not payment of expenses or indemnification has been sought, authorized or declined under Part 5, Division 5 of the BCBCA, on application of XORTX or an eligible party, the court may do one or more of the following:

- (a) order XORTX to indemnify an eligible party against any liability incurred by the eligible party in respect of an eligible proceeding;
- (b) order XORTX to pay some or all of the expenses incurred by an eligible party in respect of an eligible proceeding;
- (c) order the enforcement of, or any payment under, an agreement of indemnification entered into by XORTX;
- (d) order XORTX to pay some or all of the expenses actually and reasonably incurred by any person in obtaining an order under Section 164 of the BCBCA; or
- (e) make any other order the court considers appropriate.

Section 165 of the BCBCA provides that XORTX may purchase and maintain insurance for the benefit of an eligible party or the heirs and personal or other legal representatives of the eligible party against any liability that may be incurred by reason of the eligible party being or having been a director or officer of, or holding or having held a position equivalent to that of a director or officer of, XORTX or an associated corporation.

Under XORTX's articles, and subject to the BCBCA, XORTX must indemnify a director, former director or alternate director and his or her heirs and legal personal representatives against all eligible penalties to which such person is or may be liable, and XORTX must, after the final disposition of an eligible proceeding, pay the expenses actually and reasonably incurred by such person in respect of that proceeding. Each director and alternate director is deemed to have contracted with XORTX on the terms of the indemnity contained in XORTX's articles.

Under XORTX's articles, and subject to the BCBCA, XORTX may agree to indemnify and may indemnify any person (including an eligible party). XORTX has not entered into indemnity agreements with its directors and officers.

Pursuant to XORTX's articles, the failure of a director, alternate director or officer of XORTX to comply with the BCBCA or XORTX's articles does not invalidate any indemnity to which he or she is entitled under XORTX's articles.

Under XORTX's articles, XORTX may purchase and maintain insurance for the benefit of any person (or his or her heirs or legal personal representatives) who:

- is or was a director, alternate director, officer, employee or agent of XORTX;
- is or was a director, alternate director, officer, employee or agent of another corporation at a time when such corporation is or was an affiliate of XORTX;
- at XORTX's request, is or was, a director, alternate director, officer, employee or agent of a corporation or of a partnership, trust, joint venture or other unincorporated entity; or
- at XORTX's request, holds or held a position equivalent to that of, a director, alternate director or officer of a partnership, trust, joint venture or other unincorporated entity,

against any liability incurred by him or her as a director, alternate director, officer, employee or agent or person who holds or held such equivalent position.

XORTX maintains directors' and officers' liability insurance which insures directors and officers for losses as a result of claims against the directors and officers of XORTX in their capacity as directors and officers.

At present, we are not aware of any pending or threatened litigation or proceeding involving any of our directors, officers, employees or agents in which indemnification would be required or permitted.

Item 7. Recent Sales of Unregistered Securities

Set forth below is information regarding all securities issued by us without registration under the Securities Act during the past three years after giving effect to the Share Consolidation. The information presented below does not give effect to our corporate reorganization as described in the prospectus forming part of this Registration Statement. We believe that each of such issuances was exempt from registration under the Securities Act in reliance on Section 4(a)(2) of the Securities Act, Rule 701 and/or Regulation S under the Securities Act. No underwriter or underwriting discount or commission was involved in any of the transactions set forth in this Item 7.

Common Share Issuances

- On February 28, 2020, we issued 1,555,317 of our Common Shares in a private placement, at a price of \$1.64 per share, for an aggregate offering price of \$2,556,320.
- On February 9, 2021, we issued 2,085,687 of our Common Shares in a private placement, at a price of \$2.935 per share, for an aggregate offering price of \$6,121,572.
- Since January 1, 2019, we have issued 651,566 of our Common Shares pursuant to the exercise of warrants, with exercise prices ranging from \$1.64 to \$4.70 per share, for aggregate consideration of \$2,430,083.
- On February 1, March 1, and March 31, 2021, we issued an aggregate of 25,551 of our Common Shares at a price of \$3.35 per share, in exchange for services performed.
- On October 15, 2021 and November 8, 2021, we issued 3,261,000 of our Common Shares in connection with the underwritten US IPO Offering (the "**US IPO Offering**"). 2,906,000 Common Shares were issued at closing on October 15, 2021 and 355,000 were issued in connection with a partial over-allotment exercise on November 8, 2021) at \$5.11 a price per unit (US\$4.13 at the October 15, 2021 Bank of Canada Daily Exchange Rate of US\$1.00 = \$1.2379), with each unit consisting of one

common and one common share purchase warrant (“**IPO Common Share Purchase Warrant**”) for aggregate gross proceeds of \$16,663,710. A.G.P./Alliance Global Partners acted as the representative of the underwriter and the sole book-running manager for the US IPO Offering.

- On October 7, 2022, we closed an underwritten offering (the “**2022 US Offering**”) of (i) 1,400,000 Common Share units (“**Common Share Units**”), with each Common Share Unit consisting of one Common Share, no par value, and one warrant (“**Warrant**”) to purchase one Common Share at a public offering price of US\$1.00 per Common Share Unit, and (ii) 3,600,000 pre-funded warrant units (“**Pre-Funded Units**”) and together with the Common Share Units, the “**Units**”), with each Pre-Funded Unit consisting of one pre-funded warrant (“**Pre-Funded Warrant**”) to purchase one Common Share and one Warrant to purchase one Common Share at a public offering price of US\$0.9999 per Pre-Funded Unit, for aggregate gross proceeds of US\$4,999,640 (US\$0.9999 at the October 7, 2022 Bank of Canada Daily Exchange Rate of US\$1.00 = \$1.3712). The Warrants have an initial exercise price of US\$1.22 per share, are immediately exercisable, and may be exercised for five years from the date of issuance. The Pre-Funded Warrants have an exercise price of US\$0.0001 per share, are immediately exercisable, and will terminate once exercised in full. A.G.P./Alliance Global Partners acted as the representative of the underwriter and the sole book-running manager for the 2022 US Offering.
- On December 29, 2022, we issued 641,000 of our Common Shares pursuant to the exercise of Pre-Funded Warrants, with an exercise price of \$0.0001, for \$64.
- On January 19, 2023, we issued 2,959,000 of our Common Shares pursuant to the exercise of Pre-Funded Warrants, with exercise price of \$0.0001, for \$296.

Stock Option Grants

- Since January 1, 2019, we have granted our employees, consultants and advisors options to purchase an aggregate of 1,167,095 options to acquire Common Shares under our equity compensation plans at exercise prices ranging from \$1.64 to \$3.29 per share.

Warrants

- On February 28, 2020, we issued warrants to purchase an aggregate of 1,567,213 Common Shares for exercise prices ranging between \$1.64 to \$2.94 per share, in connection with the common share issuance of the same date referenced above. As of the date of this registration statement, all of the warrants have either been exercised or have expired.
- On February 9, 2021, we issued warrants to purchase an aggregate of 2,144,005 Common Shares for an exercise price of \$4.70 per share, in connection with the common share issuance of the same date referenced above. As of the date of this registration statement, none of the warrants have been exercised.
- On October 15, 2021, we issued IPO Common Share Purchase Warrants to purchase an aggregate of 3,341,900 Common Shares for an exercise price of \$5.90 (U.S. \$4.77 at the October 15, 2021 Bank of Canada Daily Exchange Rate) per share, in connection with the underwritten US IPO Offering. We issued 2,906,000 IPO Common Share Purchase Warrants in connection with the U.S. IPO Offering units and an additional 435,900 Common Share Purchase Warrants in connection with A.G.P./Alliance Global Partners’ exercise of its option for the purchase of up to 435,900 additional Common Share Purchase Warrants that same day.
- On October 7, 2022, we issued 3,600,000 Pre-Funded Warrants to purchase 3,600,000 Common Shares at an exercise price of \$0.0001 per share, 5,250,000 Warrants to purchase 5,250,000 Common Shares at an exercise price of \$1.67 (US\$1.22 at the October 7, 2022 Bank of Canada Daily Exchange Rate of US\$1.00 = \$1.3712⁵) per share, in connection with the 2022 US Offering.
- On October 7, 2022, in connection with the 2022 US Offering, we amended the exercise price of 910,000 IPO Common Share Purchase Warrants from \$5.90 (U.S. \$4.77 at the October 15, 2021 Bank

⁵ NTD: It appears this Oct 7 exchange rate differs from the one noted above and immediately below.

of Canada Daily Exchange Rate) to \$1.45 (U.S. \$1.17 at the October 7, 2022 Bank of Canada Daily Exchange Rate of US\$1.00 = \$1.2379).

Other than the issuances in connection with the U.S. IPO Offering on October 15, 2021 and 2022 US Offering on October 7, 2022, none of the foregoing transactions involved any underwriters, underwriting discounts or commissions or any public offering. All recipients had adequate access, through their relationships with us, to information about us. The sales of these securities were made without any general solicitation or advertising.

Item 8. Exhibits and Financial Statement Schedules

The exhibits listed in the exhibits index, appearing elsewhere in this Registration Statement, have been filed as part of this Registration Statement.

All schedules have been omitted because they are not required, are not applicable or the information is otherwise set forth in the financial statements and related notes thereto.

EXHIBITS

The following exhibits have been filed as part of this registration statement.

Exhibit Number	Description
1.1*	Form of Underwriting Agreement
3.1	Articles and Notice of Articles of the Company (incorporated by reference to Exhibit 3.1 to the Company's Draft Registration Statement on Form F-1 filed on May 26, 2021)
4.1	Specimen common share certificate (incorporated by reference to Exhibit 2.1 to the Company's Annual Report on Form 20-F filed on May 3, 2022)
4.2*	Form of Warrant
4.5	Form of Private Placement Warrant (incorporated by reference to Exhibit 4.4 to the Company's Amendment No. 1 to the Registration Statement on Form F-1 filed on September 16, 2021).
4.6	Form of IPO Common Share Purchase Warrant (incorporated by reference to Exhibit 4.1 to the Company's Amendment No. 1 to the Registration Statement on Form F-1 filed on September 16, 2021).
4.7	Form of IPO Compensation Warrant (incorporated by reference to Exhibit 4.4 to the Company's Amendment No. 1 to the Registration Statement on Form F-1 filed on September 12, 2021).
5.1	Opinion of Fasken Martineau DuMoulin LLP
23.1	Consent of independent registered public accounting firm (Smythe LLP)
23.2	Consent of Fasken Martineau DuMoulin LLP (included in Exhibit 5.1)
107	Filing Fee Table

* To be filed by amendment or as an exhibit to a report pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, including any Report of Foreign Private Issuer on Form 6-K, and incorporated herein by reference if necessary or required by the transaction.

UNDERTAKING AND CONSENT TO SERVICE OF PROCESS

The undersigned registrant hereby undertakes:

- (1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:
- (i) To include any prospectus required by Section 10(a)(3) of the Securities Act of 1933;
 - (ii) To reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than a 20 percent change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement; and
 - (iii) To include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material change to such information in the registration statement;

Provided, however, that paragraphs (a)(1)(i), (a)(1)(ii) and (a)(1)(iii) of this section do not apply if the registration statement is on Form S-3 or Form F-3 and the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the Commission by the registrant pursuant to section 13 or section 15(d) of the Securities Exchange Act of 1934 that are incorporated by reference in the registration statement, or is contained in a form of prospectus filed pursuant to Rule 424(b) that is part of the registration statement.

(2) That, for the purpose of determining any liability under the Securities Act of 1933, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

(4) To file a post-effective amendment to the registration statement to include any financial statements required by Item 8.A. of Form 20-F at the start of any delayed offering or throughout a continuous offering. Financial statements and information otherwise required by Section 10(a)(3) of the Securities Act of 1933 need not be furnished, provided, that the registrant includes in the prospectus, by means of a post-effective amendment, financial statements required pursuant to this paragraph (a)(4) and other information necessary to ensure that all other information in the prospectus is at least as current as the date of those financial statements. Notwithstanding the foregoing, with respect to registration statements on Form F-3, a post-effective amendment need not be filed to include financial statements and information required by Section 10(a)(3) of the Securities Act of 1933 or Rule 3-19 of Regulation S-X if such financial statements and information are contained in periodic reports filed with or furnished to the Commission by the registrant pursuant to section 13 or section 15(d) of the Securities Exchange Act of 1934 that are incorporated by reference in the Form F-3.

- (5) That, for the purpose of determining liability under the Securities Act of 1933 to any purchaser:
- (i) Each prospectus filed by the registrant pursuant to Rule 424(b)(3) shall be deemed to be part of the registration statement as of the date the filed prospectus was deemed part of and included in the registration statement; and
 - (ii) Each prospectus required to be filed pursuant to Rule 424(b)(2), (b)(5), or (b)(7) as part of a registration statement in reliance on Rule 430B relating to an offering made pursuant to

Rule 415(a)(1)(i), (vii), or (x) for the purpose of providing the information required by Section 10(a) of the Securities Act of 1933 shall be deemed to be part of and included in the registration statement as of the earlier of the date such form of prospectus is first used after effectiveness or the date of the first contract of sale of securities in the offering described in the prospectus. As provided in Rule 430B, for liability purposes of the issuer and any person that is at that date an underwriter, such date shall be deemed to be a new effective date of the registration statement relating to the securities in the registration statement to which that prospectus relates, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof. Provided, however, that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such effective date, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such effective date.

- (6) That, for the purpose of determining liability of the registrant under the Securities Act of 1933 to any purchaser in the initial distribution of the securities:
- (a) The undersigned registrant undertakes that in a primary offering of securities of the undersigned registrant pursuant to this registration statement, regardless of the underwriting method used to sell the securities to the purchaser, if the securities are offered or sold to such purchaser by means of any of the following communications, the undersigned registrant will be a seller to the purchaser and will be considered to offer or sell such securities to such purchaser:
 - (i) Any preliminary prospectus or prospectus of the undersigned registrant relating to the offering required to be filed pursuant to Rule 424;
 - (ii) Any free writing prospectus relating to the offering prepared by or on behalf of the undersigned registrant or used or referred to by the undersigned registrant;
 - (iii) The portion of any other free writing prospectus relating to the offering containing material information about the undersigned registrant or its securities provided by or on behalf of the undersigned registrant; and
 - (iv) Any other communication that is an offer in the offering made by the undersigned registrant to the purchaser.
 - (b) The undersigned registrant hereby undertakes that, for purposes of determining any liability under the Securities Act of 1933, each filing of the registrant's annual report pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934 (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Securities Exchange Act of 1934) that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.
 - (c) The undersigned registrant hereby undertakes to supplement the prospectus, after the expiration of the subscription period, to set forth the results of the subscription offer, the transactions by the underwriters during the subscription period, the amount of unsubscribed securities to be purchased by the underwriters, and the terms of any subsequent reoffering thereof. If any public offering by the underwriters is to be made on terms differing from those set forth on the cover page of the prospectus, a post-effective amendment will be filed to set forth the terms of such offering.
 - (d) Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the

Securities and Exchange Commission such indemnification is against public policy as expressed in the Securities Act of 1933 and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act of 1933 and will be governed by the final adjudication of such issue.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form F-3 and has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the city of Calgary, Province of Alberta, Canada, on January 27, 2023.

XORTX Therapeutics Inc.By: /s/ Allen Davidoff

Name: Allen Davidoff

Title: President and Chief Executive Officer

POWERS OF ATTORNEY

Each person whose signature appears below constitutes and appoints each of Allen Davidoff, Amar Keshri and Charlotte May as his/her true and lawful attorney-in-fact and agent, each acting alone, with full power of substitution and resubstitution, for him and in his name, place and stead, in any and all capacities, to sign any or all amendments (including post-effective amendments) to this Registration Statement and to sign any related registration statement that is to be effective upon filing pursuant to Rule 462(b) under the Securities Act of 1933, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, each acting alone, full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, each action alone, or his substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, this Registration Statement has been signed by the following persons in the capacities and on the dates indicated.

<u>Signatures</u>	<u>Title</u>
<u>/s/ Allen Davidoff</u> Allen Davidoff	President and Chief Executive Officer and Director (Principal Executive Officer)
<u>/s/ Amar Keshri</u> Amar Keshri	Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer)
<u>/s/ William Farley</u> William Farley	Director
<u>/s/ Anthony Giovinazzo</u> Anthony Giovinazzo	Director
<u>/s/ Ian Klassen</u> Ian Klassen	Director
<u>/s/ Jacqueline Le Saux</u> Jacqueline Le Saux	Director
<u>/s/ Raymond Pratt</u> Raymond Pratt	Director
<u>/s/ Paul Van Damme</u> Paul Van Damme	Director

AUTHORIZED REPRESENTATIVE

Pursuant to the requirements of the Securities Act of 1933, as amended, the undersigned certifies that it is the duly authorized United States representative of the registrant and has duly caused this Registration Statement on Form F-3 to be signed by the undersigned, thereunto duly authorized, on January 27, 2023.

PUGLISI & ASSOCIATES

By: /s/ Donald J. Puglisi

Name: Donald J. Puglisi

Title: Managing Director

FASKEN

Fasken Martineau DuMoulin LLP
Barristers and Solicitors
Patent and Trade-mark Agents

350 7th Avenue SW, Suite 3400
Calgary, Alberta T2P 3N9
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fasken.com

January 27, 2023

XORTX Therapeutics Inc.
3710 – 33rd Street NW
Calgary, Alberta T2L 2M1
Canada

Dear Sirs/Mesdames:

Re: XORTX Therapeutics Inc. – Registration Statement on Form F-3

We have acted as Canadian counsel to XORTX Therapeutics Inc., a corporation existing under the laws of British Columbia, Canada (the “**Company**”), in connection with preparation of a Shelf Registration Statement on Form F-3, including the prospectus constituting a part thereof (the “**Registration Statement**”), being filed by the Company with the Securities and Exchange Commission (the “**Commission**”) under the Securities Act of 1933, as amended (the “**Securities Act**”), relating to the Company’s offering of up to an aggregate of USD \$50,000,000 of any combination of: (i) common shares in the capital of the Company (“**Common Shares**”); (ii) warrants to purchase Common Shares (“**Warrants**”); (iii) units consisting of Common Shares and Warrants (“**Units**”); and (iv) the Common Shares that may be issued upon the exercise of the Warrants (“**Warrant Shares**”) or in connection with the Units, as applicable. The Common Shares, Warrants and Units are referred to herein collectively as the “**Securities**”. We understand that the Securities may be issued and sold or delivered from time to time as set forth in the Registration Statement, any amendment thereto, the prospectus contained therein (the “**Prospectus**”) and supplements to the prospectus (the “**Prospectus Supplements**”) and pursuant to Rule 415 under the Securities Act.

1. Materials Reviewed

We have examined originals or copies, certified or otherwise identified to our satisfaction, of the Registration Statement and the Prospectus.

We have also examined originals or copies, certified or otherwise identified to our satisfaction, of such public and corporate records, certificates, instruments and other documents and have considered such questions of law as we have deemed relevant and necessary as a basis for the opinions hereinafter expressed below.

2. Assumptions and Fact Reliance

We have assumed that at all relevant times:

- (a) all information contained in all documents reviewed by us is true and correct;
 - (b) the genuineness of all signatures on all documents examined by us and the legal capacity of all natural persons;
 - (c) the authenticity of all documents submitted to us as originals;
-
- (d) the conformity to original documents of all documents submitted to us as copies, whether facsimile, electronic, photostatic, certified or otherwise, and the authenticity of the originals of such copies;
 - (e) each natural person signing any document reviewed by us had the legal capacity to do so, none of which facts we have independently verified;
 - (f) no order, ruling or decision of any court or regulatory or administrative body is in effect at any relevant time that restricts the issuance of the Securities;
 - (g) there is no foreign law that would affect the opinion expressed herein;
 - (h) at the time of the execution and delivery of any documents relating to the Securities or the offering thereof, to the extent such documents purport to constitute agreements, such documents constitute valid and binding obligations of such parties;
 - (i) the due authorization, execution and delivery of all documents where authorization, execution and delivery are prerequisites to the effectiveness of such documents;
 - (j) the Company has the necessary corporate power and capacity to execute, deliver and perform its obligations under the terms and conditions of any purchase, underwriting or other agreement, indenture or instrument relating to the Company's creation, authentication, issuance, sale and/or delivery of the Securities to which the Company is party (any such agreement, the “**Agreement**”);
 - (k) the Company has the necessary corporate power and capacity to authorize, create, authenticate, validly issue, sell and deliver the Securities and perform its obligations under the terms and conditions of the Securities;
 - (l) all necessary corporate action has been taken by the Company to duly authorize the execution and delivery by the Company of the Agreement and the performance of its obligations under the terms and conditions thereof;
 - (m) all necessary corporate action has been taken by the Company to duly authorize, create, authenticate, sell, deliver and validly issue the Securities and to perform its obligations under the terms and conditions of the Securities, and all of the terms and conditions relevant to the execution, delivery and issuance of the Securities in the applicable Agreement have been complied with;
 - (n) all necessary corporate action has been taken by the Company to duly authorize the terms of the offering of the Securities and related matters;

- (o) the Agreement (i) has been duly authorized, executed and delivered by all parties thereto and such parties had the capacity to do so; (ii) constitutes a legal, valid and binding obligation of all parties thereto; (iii) is enforceable in accordance with its terms against all parties thereto; and (iv) is governed by the laws of the Province of British Columbia;
-
- (p) the Securities have been duly authorized, created, authenticated, sold and delivered and validly issued by the Company and any other person signing or authenticating the Securities, as applicable;
- (q) the terms of the offering of the Securities and related matters have been duly authorized by the Company;
- (r) the Company has complied, and will comply, with Division 8 of the Business Corporations Act (British Columbia).
- (s) the execution and delivery of the Agreement and the performance by the Company of its obligations under the terms and conditions thereunder do not and will not conflict with and do not and will not result in a breach of or default under, and do not and will not create a state of facts which, after notice or lapse of time or both, will conflict with or result in a breach of or default under any of the terms or conditions of the notice of articles or articles of the Company, any resolutions of the board of directors or shareholders of the Company, any agreement or obligation of the Company, or applicable law;
- (t) the authorization, creation, authentication, sale, delivery and issuance of the Securities and the Company's performance of its obligations under the terms and conditions of the Securities do not and will not conflict with and do not and will not result in a breach of or default under, and do not and will not create a state of facts which, after notice or lapse of time or both, will conflict with or result in a breach of or default under any of the terms or conditions of the notice of articles or articles of the Company, any resolutions of the board of directors or shareholders of the Company, any agreement or obligation of the Company, or applicable law; and
- (u) the terms of the offering of the Securities and related matters do not and will not conflict with and do not and will not result in a breach of or default under, and do not and will not create a state of facts which, after notice or lapse of time or both, will conflict with or result in a breach of or default under any of the terms or conditions of the notice of articles or articles of the Company, any resolutions of the board of directors or shareholders of the Company, any agreement or obligation of the Company, or applicable law;

Where our opinions expressed herein refer to any of the Offered Securities having been issued as being "fully-paid and non-assessable", such opinion assumes that all required consideration (in whatever form) has been paid for such shares. No opinion is expressed as to the adequacy of any consideration received.

We have no responsibility or obligation to (i) update this opinion, (ii) take into account or inform the addressee or any other person of any changes in law, facts or other developments subsequent to this date that do or may affect the opinions we express, or (iii) advise the addressee or any other person of any other change in any matter addressed in this opinion. Nor do we have any responsibility or obligation to consider the applicability or correctness of this opinion to any person other than the addressee.

3. Applicable Laws

We are qualified to carry on the practice of law in the Province of British Columbia. The opinions expressed below are restricted to the laws of the Province of British Columbia and the laws of Canada applicable therein, in each case, in effect on the date hereof. We express no opinion with respect to the laws of any other jurisdiction.

4. Opinions

Based upon and relying on the foregoing, and subject to the qualifications hereinafter expressed, we are of the opinion that, on the date hereof:

- (a) Shares will be validly issued, fully paid and non-assessable shares in the capital of the Company;
- (b) Warrants and Units will be validly issued by, and will be binding obligations of, the Company; and
- (c) upon full payment therefor and the issue thereof in accordance with the terms of the applicable warrant, the Warrant Shares, which have been validly authorized and allotted for issuance, will be validly issued as fully paid and non-assessable common shares in the capital of the Company and will, when sold and paid for as contemplated by the Registration Statement, continue to be validly issued, fully paid and nonassessable; and upon payment for the applicable Securities provided for in the applicable Agreement and when issued, sold and delivered and in accordance with such Agreement.

5. Qualifications

This opinion letter has been prepared for your use in connection with the Registration Statement and is expressed as of the date hereof. Our opinion is expressly limited to the matters set forth above and we render no opinion, whether by implication or otherwise, as to any other matters relating to the Company, the Prospectus, the Registration Statement or the Securities.

We hereby consent to the filing of this opinion letter as an exhibit to the Registration Statement and to the reference to this firm on the cover page and under the caption "Legal Matters" in the Prospectus. In giving this consent, we do not hereby agree that we are within the category of persons whose consent is required under Section 7 of the Act or the rules and regulations of the SEC promulgated thereunder.

Very truly yours,

/s/ Fasken Martineau DuMoulin LLP

Fasken Martineau DuMoulin LLP

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the reference to our firm under the caption “Experts” and to the incorporation by reference in this Registration Statement on Form F-3 of XORTX Therapeutics Inc. (the “**Company**”), of our report dated April 7, 2022, on the consolidated statements of financial position of the Company as of December 31, 2021 and 2020, and the related consolidated statements of comprehensive loss, changes in shareholders’ equity and cash flows for the years ended December 31, 2021, 2020 and 2019, and the related notes, included in the Company’s Amended Annual Report on Form 20-F for the year ended December 31, 2021 filed with the Securities and Exchange Commission.

/s/ Smythe LLP

Chartered Professional Accountants

Vancouver, Canada

January 27, 2023

Calculation of Filing Fee Tables

FORM F-3

(Form Type)

XORTX THERAPEUTICS INC.

(Exact Name of Registrant as Specified in its Charter)

N/A

(Translation of Registrant's Name into English)

Table 1: Newly Registered and Carry Forward Securities

	Security Type	Security Class Title	Fee Calculation or Carry Forward Rule	Amount Registered ⁽¹⁾	Proposed Maximum Offering Price Per Unit	Maximum Aggregate Offering Price ⁽²⁾⁽³⁾	Fee Rate	Amount of Registration Fee
Newly Registered Securities								
Fees to Be Paid	Equity	Common Shares, no par value						
Fees to be Paid	Other	Warrants						
Fees to be Paid	Other	Units						
Fees to be Paid	Unallocated (Universal) Shelf	Unallocated (Universal) Shelf ⁹	Rule 457(o)			\$ 50,000,000	\$110.20 per \$1,000,000	\$ 5,510
Fees Previously Paid	-	-	-	-	-	-	-	-
Total Offering Amounts						<u>\$ 50,000,000</u>		<u>\$ 5,510</u>
Total Fees Previously Paid								<u>\$ 0.00</u>
Total Fee Offsets								<u>\$ 0.00</u>
Net Fee Due								<u>\$ 5,510</u>

- (1) There are being registered hereunder such indeterminate number of the securities of each identified class being registered as may be sold by the registrant from time to time at indeterminate prices, with the maximum aggregate public offering price not to exceed \$50,000,000.
- (2) The proposed maximum aggregate offering price per class of security will be determined from time to time by the registrant in connection with the issuance by the registrant of the securities registered hereunder and is not specified as to each class of security pursuant to instructions to Form F-3 under the Securities Act of 1933 (the "Securities Act").
- (3) The registration fee is calculated in accordance with Rule 457(o) under the Securities Act, based on an estimate of the proposed maximum aggregate offering price.