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

FORM 6-K

REPORT OF FOREIGN PRIVATE ISSUER PURSUANT TO RULE 13a-16 OR 15d-16
UNDER THE SECURITIES EXCHANGE ACT OF 1934

For the month of October 2024

Commission File Number: 001-40858

XORTX Therapeutics Inc.

3710 – 33rd Street NW, Calgary, Alberta, T2L 2M1

Indicate by check mark whether the registrant files or will file annual reports under cover Form 20-F or Form 40-F.
Form 20-F [X] Form 40-F [ ]

SIGNATURE

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

XORTX Therapeutics Inc.
(Registrant)

Date: October 9, 2024

By: */s/ Allen Davidoff*
Name: Allen Davidoff
Title: Chief Executive Officer

EXHIBIT INDEX

99.1	News release dated October 9, 2024

EXHIBIT 99.1

XORTX Initiates Precision Medicine Program

Pioneering Research Indicating a Role for Genetic Regulation of Xanthine Oxidase and Therapeutic Targeting of Aberrant Purine Metabolism

CALGARY, Alberta, Oct. 09, 2024 (GLOBE NEWSWIRE) -- XORTX Therapeutics Inc. ("**XORTX**" or the "**Company**") (NASDAQ: XRTX | TSXV: XRTX | Frankfurt: ANU), a late-stage clinical pharmaceutical company focused on developing innovative therapies to treat progressive kidney disease, is pleased to announce the Company has initiated a precision medicine program. On August 29, 2024, XORTX announced that independent peer-reviewed research reported that genetic factors are linked to the over-expression of xanthine oxidase ("XO") and play a role in several diseases, including kidney disease. These ground-breaking findings provide an opportunity to expand the Company's programs and approach by combining genetic diagnostics focused on treating kidney and diseases such as sepsis by inhibiting XO with xanthine oxidase inhibition targeting individuals most in need.

Recent pioneering discoveries provide XORTX with the opportunity to develop diagnostics that identify specific genetic factors. These diagnostic tools alongside XORTX's expertise at developing unique formulations of uric acid lowering agents and XO inhibitors will permit XORTX to tailor treatments to subpopulations of individuals that have common susceptibility or similar response to a particular drug.

Dr. Allen Davidoff, PhD., Chief Executive Officer of XORTX commented, "The application of genetic diagnostic tools and recent pioneering discoveries in autosomal dominant polycystic kidney disease ("ADPKD"), diabetic kidney and non-diabetic kidney disease provide a unique opportunity that XORTX is ideally positioned to address. The new opportunity to specifically identify a series of genetic factors, then targeting XO has enormous therapeutic potential for treating the health consequences associated with these alleles. The Company will begin evaluating individuals as early as our planned registration clinical trial in patients with ADPKD providing XORTX with an opportunity to better understand the role these genetic factors play in progressive kidney disease."

About Xanthine Oxidase:

Xanthine oxidase is an essential enzyme within the uric acid metabolic pathway and is required for the breakdown of purine nucleotides. The breakdown products of XO, uric acid (UA) and reactive oxygen species (ROS), are released during the enzymatic reaction and may play a detrimental role in the circulatory system and within tissue during disease. XORTX sponsored discoveries in rodent models of polycystic kidney disease ("PKD") implicate over-expression or over-activity of XO as a potentially important target in treating this disease.

Recent evidence for the over expression of Xanthine Oxidase in Disease:

Evidence for over-expression of XO in human PKD has not been reported to date, although work by Wang *et al.* suggests linkage of genetic factors to PKD[(1)]. Recently, new emerging discoveries link genetic factors to specific populations and show that higher XO expression is associated with a variety of conditions including hyperuricemia[(2)], sepsis, organ failure and sepsis associated acute respiratory distress syndrome (ARDS)[(3,4)], kidney dysfunction[(3, 4)], diabetes[(5)], polycystic kidney disease[(1,5)] and kidney failure[(6,7)]. From a mechanistic standpoint, these studies advocate for a precision-medicine approach in which genetic risk variants would guide treatment decisions[(1)].

References:

1. Korsmo HW, Emerging roles of xanthine oxidoreductase in chronic kidney disease, Antioxidants, June 2024
2. Major TJ, et all, Evaluation of the diet wide contribution to serum urate levels: Met-analysis of population based cohorts, BMJ, 363, k3952, 2018
3. Gao, Li et al., Xanthine oxidoreductase gene polymorphism are associated with high risk of sepsis and organ failure, Respir. Res, 24, 177_2023
4. Liu H, et al., Genetic variants in XDH are associated with prognosis off gastric cancer in a Chines population, 663, 196, 2013
5. Wang et al., Genetic susceptibility to diabetic kidney disease is linked to promoter variants of XOR, "The authors identified an expression quantitative trait loci (QTL) in the *cis*-acting regulatory region of the xanthine dehydrogenase, or xanthine oxidoreductase (XO), a binding site for C/EBPβ, to be associated with diabetes-induced podocyte loss in diabetic kidney disease in male mice. They concluded that certain types of alleles of a gene that controls the expression of xanthine oxidase can be over expressed in CKD, diabetic kidney disease and polycystic kidney disease.
6. Kudo M et al., Functional Characterization of Genetic Polymorphisms Identified In the Promotor Region of the Xanthine Oxidase Gene, Drug Metab. Pharmacokinet., 25, 599, 2010
7. Boban M, et al., Circulating purine compound, uric acid, and xanthine oxidase/dehydrogenate relationship in essential hypertension and end stage renal disease., Ren. Fail., 36, 613, 2014

About XORTX Therapeutics Inc.

XORTX is a pharmaceutical company with two clinically advanced products in development: 1) our lead, XRx-008 program for ADPKD; and 2) our secondary program in XRx-101 for acute kidney and other acute organ injury associated with Coronavirus / COVID-19 infection. In addition, XRx-225 is a pre-clinical stage program for Type 2 Diabetic Nephropathy. XORTX is working to advance its clinical development stage products that target aberrant purine metabolism and xanthine oxidase to decrease or inhibit production of uric acid. At XORTX, we are dedicated to developing medications to improve the quality of life and future health of patients. Additional information on XORTX is available at www.xortx.com.

For more information, please contact:

Allen Davidoff, CEO
adavidoff@xortx.com or +1 403 455 7727

Nick Rigopulos, Director of Communications
nick@alpineequityadv.com or +1 617 901 0785

Neither the TSX Venture Exchange nor Nasdaq has approved or disapproved the contents of this news release. No stock exchange, securities commission or other regulatory authority has approved or disapproved the information contained herein.

Forward Looking Statements

This press release contains express or implied forward-looking statements pursuant to applicable securities laws. These forward-looking statements include, but are not limited to, the Company's beliefs, plans, goals, objectives, expectations, assumptions, estimates, intentions, future performance, other statements that are not historical facts and statements identified by words such as "expects", "anticipates", "intends", "plans", "believes", "seeks", "estimates" or words of similar meaning. These forward-looking statements and their implications are based on the current expectations of the management of XORTX only, and are subject to a number of factors and uncertainties that could cause actual results to differ materially from those described in the forward-looking statements. Such risks, uncertainties, and other factors include, but are not limited to, our ability to obtain additional financing; the accuracy of our estimates regarding expenses, future revenues and capital requirements; the success and timing of our preclinical studies and clinical trials; the performance of third-party manufacturers and contract research organizations; our plans to develop and commercialize our product candidates; our plans to advance research in other kidney disease applications; and, our ability to obtain and maintain intellectual property protection for our product candidates. Except as otherwise required by applicable law and stock exchange rules, XORTX undertakes no obligation to publicly release any revisions to these forward-looking statements to reflect events or circumstances after the date hereof or to reflect the occurrence of unanticipated events. More detailed information about the risks and uncertainties affecting XORTX is contained under the heading “Risk Factors” in XORTX’s Annual Report on Form 20-F filed with the SEC, which is available on the SEC's website, www.sec.gov (including any documents forming a part thereof or incorporated by reference therein), as well as in our reports, public disclosure documents and other filings with the securities commissions and other regulatory bodies in Canada, which are available on www.sedarplus.ca.