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 24, 2024

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

EXHIBIT INDEX

99.1	News release dated October 24, 2024

EXHIBIT 99.1

XORTX Sponsored Study Presented at the American Society of Nephrology – Kidney Week 2024

• Health consequences of chronically high uric acid and xanthine oxidase
in polycystic kidney disease in rats, mice and humans •

CALGARY, Alberta, Oct. 24, 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 acceptance of an abstract submitted to the American Society of Nephrology (the "ASN"). The abstract entitled **"Xanthine oxidase in rats, mice and humans with polycystic kidney disease"** was reviewed by the ASN review panel for scientific merit and novel discoveries. The study was conducted at the University of Colorado in the independent laboratory of Dr. Charles Edelstein and was sponsored by XORTX and will be presented during the Session Title: Genetic Diseases: Cystic - Therapeutic Investigations and Prognosis. Selected results from the study include:

In both Rat or Mouse models of Polycystic Kidney Disease ("PKD")

i) Use of a uricase inhibitor to increase uric acid resulted in increased cyst growth
ii) Xanthine oxidase ("XO") inhibitor – Oxypurinol – decreased serum uric acid and cyst growth
iii) Increased XO staining in kidney and liver was abundant

Prospective / Retrospective Clinical Results of the Halt Clinical Trial - Group A - Early PKD patients

iv) Patients with increased serum uric acid had increased total kidney volume
v) Patients with increased serum uric acid had faster PKD progression
vi) Increase serum XO activity was associated with an earlier onset of high blood pressure

About this Study

The XO enzyme is an essential enzyme within the uric acid pathway, and is required for the breakdown of purine nucleotides. Uric acid as well as reactive oxygen species released during the enzymatic reaction may also play a detrimental role in the circulatory system and within tissue during disease. Recent pioneering discoveries in rodent models of PKD implicate over expression or over activity of XO. It is currently unknown if XO over expression or over activity in humans is associated with PKD or more rapid progression of disease. The aim of the study was to gain insight into whether increased XO activity results in cyst growth, XO activity was measured in PCK^{1} rats, $PKD1^{RC/RC}$ (RC) mice and 34 patients from the HALT-PKD Clinical study.

The abstract outlines study results from rat, mice and human studies of PKD. The purpose of the study was to gain and understanding of serum xanthine oxidase activity (XOa) in PKD during varied stages of disease and further to relate that activity to total kidney volume, and decline of glomerular filtration rate (GFR). The results of the study provide understanding of where aberrant purine metabolism in PKD tissue due to sources XO enzyme may contribute to circulating uric acid levels, expansion rate of kidney and cyst and functional GFR decline. Prior study results suggested over expression of XO in PKD kidney tissue may be a feature of cystic disease.

Dr. Allen Davidoff, CEO of XORTX commented, "Exploring and understanding the contribution of chronically increased serum uric acid and/or the effect of too much or too active XO enzyme in the circulation or tissue on PKD disease progression was a goal of this study. The study results presented today are another pioneering first step towards characterizing how and when to treat individuals with PKD as well as how they might benefit from the Company's XRx-008 program, and our upcoming registration clinical trial. This study was a preliminary investigation of individuals with early stage PKD, and provided information regarding the health consequences of hyperuricemia and XO. The Company will continue to add to this exciting discovery with future exploration of later stage PKD, assessment of genetic factors contributing to aberrant purine metabolism, including XO overexpression, and this precision medicine opportunity."

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 health of kidney disease 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

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.