

6,974,248 Shares of Common Stock



This prospectus supplement is being filed to update and supplement the information contained in the prospectus dated April 12, 2024 (as supplemented from time to time, the "Prospectus"), which forms a part of our registration statement on Form S-1 (No. 333-278566), with the information contained in our Current Report on Form 8-K filed with the Securities and Exchange Commission on April 16, 2024 (the "Current Report"). Accordingly, we have attached the Current Report to this prospectus supplement. This prospectus relates to the offer and resale from time to time of up to 6,974,248 shares (the "Shares") of common stock, par value \$0.0001 per share ("Common Stock"), of Lexeo Therapeutics, Inc., a Delaware corporation (the "Company"), by the selling stockholders identified in this prospectus, including their transferees, pledgees or donees or their respective successors (the "Selling Stockholders"). The Shares consist of (i) 6,278,905 shares which were issued and sold to the Selling Stockholders on March 13, 2024 (the "Closing Date") in a private placement (the "Private Placement") pursuant to a common stock purchase agreement among us and such Selling Stockholders dated March 11, 2024 (the "Purchase Agreement") and (ii) 695,343 shares of Common Stock held by the Selling Stockholders as of March 11, 2024. Concurrently with the Purchase Agreement, we entered into a registration rights agreement (the "Registration Rights Agreement") with the Selling Stockholders, and we are registering the Shares being offered hereunder pursuant to such registration rights agreement on behalf of the Selling Stockholders, to be offered and sold by them from time to time.

This prospectus supplement updates and supplements the information in the Prospectus and is not complete without, and may not be delivered or utilized except in combination with, the Prospectus, including any amendments or supplements thereto. This prospectus supplement should be read in conjunction with the Prospectus and if there is any inconsistency between the information in the Prospectus and this prospectus supplement, you should rely on the information in this prospectus supplement.

Our Common Stock is listed on The Nasdaq Global Market ("Nasdaq") under the symbol "LXEO". On April 19, 2024, the last quoted sale price for our Common Stock as reported on Nasdaq was \$12.09 per share.

We are an "emerging growth company" and a "smaller reporting company" as defined under the federal securities laws, and, as such, may elect to comply with certain reduced public company reporting requirements for this prospectus and for future filings.

Investing in our securities involves a high degree of risk. Before buying any securities, you should carefully read the discussion of the risks of investing in our securities in "*Risk Factors*" beginning on page 13 of the 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.

Prospectus supplement dated April 22, 2024

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

FORM 8-K

CURRENT REPORT

Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934

Date of Report (Date of earliest event reported): April 22, 2024

Lexeo Therapeutics, Inc.

(Exact name of Registrant as Specified in Its Charter)

Delaware
(State or Other Jurisdiction
of Incorporation)

001-41855
(Commission File Number)

85-4012572
(IRS Employer
Identification No.)

345 Park Avenue South, Floor 6
New York, New York
(Address of Principal Executive Offices)

10010
(Zip Code)

Registrant's Telephone Number, Including Area Code: 212 547-9879

N/A

(Former Name or Former Address, if Changed Since Last Report)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions:

- Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
- Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)
- Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
- Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, \$0.0001 par value per share	LXEO	Nasdaq Global Market

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (§ 230.405 of this chapter) or Rule 12b-2 of the Securities Exchange Act of 1934 (§ 240.12b-2 of this chapter).

Emerging growth company

If an emerging growth company, 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 13(a) of the Exchange Act.

Item 1.01 Entry into a Material Definitive Agreement.

On April 21, 2024, Lexeo Therapeutics, Inc. (the “Company”) entered into the Third License Agreement (the “License Agreement”) with Cornell University, a New York education corporation (“Cornell”). Pursuant to the License Agreement, Cornell has granted the Company an exclusive license to practice under certain patent rights generated in animal studies conducted by Cornell on behalf of the Company and a non-exclusive license to know-how concerning a gene therapy for Friedreich’s ataxia (“FA”) cardiomyopathy and current and future data generated in an ongoing investigator-initiated Phase 1A trial of AAVrh.10hFXN to treat FA cardiomyopathy. Both licenses are worldwide and cover products with human and non-human prophylactic and therapeutic uses. Cornell has also granted the Company a right of reference to Cornell’s Investigation New Drug application for a gene therapy for FA cardiomyopathy.

The License Agreement provides that Company will pay a license issue fee and an initial data transfer fee to Cornell totaling \$600,000 and thereafter pay an annual data transfer fee of \$50,000 until data is no longer being gathered. The Company has agreed to pay annual license maintenance fees ranging from \$2,500 to \$25,000 until such time Company commercializes a licensed product. In addition, the Company will pay Cornell up to an aggregate of \$2.1 million in regulatory milestones and up to an aggregate of \$100 million in commercial milestones, plus low single digit royalties on net sales.

The License Agreement contains other customary license terms including terms related to sublicensing, development, commercialization, milestones, royalties, intellectual property, and termination. Upon expiration of the applicable royalty term for a product in a given country, the Company shall retain a non-exclusive, royalty free license to the data and know-how, including to continue selling such product in that country.

Cornell may terminate the License Agreement if the Company (a) breaches the License Agreement (subject to a cure period), (b) participates in any proceeding challenging the validity of the licensed patents, (c) publishes the licensed data without Cornell’s prior written consent, or (d) does not reach certain milestones. Cornell may also terminate the License Agreement in part on product-by-product basis if the Company does not diligently develop and sale a product. The Company may terminate the License Agreement, in whole or in part with respect to the right of reference, or the licensed data, know-how, or patent rights, with 90 days’ prior written notice to Cornell.

The foregoing summary of the material terms of the License Agreement is qualified in its entirety by the terms of the License Agreement, a copy of which will be filed as an exhibit in a subsequent periodic report to be filed under the Securities Exchange Act of 1934, as amended.

Item 8.01 Other Events.

On April 22, 2024, the Company issued a press release announcing the Company’s entry into the License Agreement. A copy of the press release is attached as Exhibit 99.1 to this Current Report on Form 8-K and is incorporated by reference herein.

Item 9.01 Financial Statements and Exhibits.

(d) Exhibits.

Exhibit Number	Description
99.1	Press Release
104	Cover Page Interactive Data File (embedded within the Inline XBRL document)

SIGNATURES

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 hereunto duly authorized.

Lexeo Therapeutics, Inc.

Date: April 22, 2024

By: /s/ R. Nolan Townsend
R. Nolan Townsend, Chief Executive Officer



Lexeo Therapeutics Announces License Agreement to Accelerate Development of LX2006 for the Treatment of Friedreich Ataxia Cardiomyopathy

Lexeo Therapeutics gains intellectual property rights including current and future clinical data from ongoing Weill Cornell Medicine investigator-initiated trial of gene therapy candidate AAVrh.10hFXN (LX2006) to support regulatory discussions

Together with Lexeo Therapeutics' ongoing study of LX2006, a total of 11 participants have been treated to date; includes patients at treatment durations out to 18-months with no treatment-related serious adverse events observed across either study

Interim readout of combined data set at multiple doses expected mid-year 2024

NEW YORK – April 22, 2024 (GLOBE NEWSWIRE) – Lexeo Therapeutics, Inc. (Nasdaq: LXEO), a clinical stage genetic medicine company, today announced an in-license agreement with Cornell University to expedite development of the investigational gene therapy candidate LX2006 for the treatment of Friedreich ataxia (FA) cardiomyopathy.

Under the license agreement, Lexeo has acquired certain rights¹ including rights to current and future data generated in an ongoing investigator-initiated Phase 1A trial of AAVrh.10hFXN to treat FA cardiomyopathy ([NCT05302271](#)). The agreement will support Lexeo's efforts to develop a potentially life-changing therapy for this unmet need.

The investigator-initiated trial is being conducted by Weill Cornell Medicine, which has pioneered groundbreaking research on the potential of gene therapy in FA, published preclinical data that supported the first ever gene therapy IND clearance for FA, and sponsored a natural history study for almost a decade to better characterize the condition and its progression. Lexeo previously licensed know-how relating to AAVrh.10hFXN from Weill Cornell Medicine and collaborated with researchers there to further study the candidate, which Lexeo refers to as LX2006. Lexeo is studying LX2006 in the company-sponsored, open label, dose-ascending, multicenter SUNRISE-FA Phase 1/2 trial ([NCT05445323](#)), in which four patients have been dosed to date across cohorts 1 & 2. Weill Cornell Medicine has dosed seven patients to date with LX2006 across dose cohorts 1 & 2 and is collecting biomarker, structural, and functional cardiac data akin to SUNRISE-FA.

“The larger aggregate data set, combined with Orphan Drug, Rare Pediatric Disease, and Fast Track designations from FDA, is anticipated to facilitate an accelerated path to regulatory engagements for LX2006,” said R. Nolan Townsend, Chief Executive Officer of Lexeo Therapeutics. “We are excited about the opportunity to advance research in FA cardiomyopathy, which is the leading cause of death in FA and has no approved treatment options today.”

The interim clinical data readout of LX2006 is expected mid-year 2024. With the newly-licensed data, the readout will now include participants across the two studies, approximately doubling the number of evaluable patients and including patients with a treatment duration out to 18-months. Lexeo also expects to provide an analysis of natural history data and baseline characteristics for study participants from both studies to characterize the cardiovascular disease phenotype seen in FA cardiomyopathy ahead of the interim readout.

“This agreement with Lexeo Therapeutics builds upon years of collaboration between Weill Cornell Medicine and Lexeo to benefit patients with FA cardiomyopathy. It is our intention that this license agreement will accelerate the clinical investigation and development of LX2006 as a potential life-saving therapy for patients with FA,” said Dr. Lisa Placanica, Senior Managing Director, Center for Technology Licensing at Weill Cornell Medicine.

Patients Treated with LX2006 Across Clinical Trials, as of April 22, 2024

Dose	Combined Enrollment Update and Months of Follow-Up		
	>12 months	6-12 months	<6 months
Dose Cohort 1 1.8x10 ¹¹ vg/kg	3	3	-
Dose Cohort 2 5.6x10 ¹¹ vg/kg	-	2	3

Note: Cardiac biopsies are performed only in the SUNRISE-FA trial; one patient in dose cohort 1 and three patients in dose cohort 2 have undergone cardiac biopsies.

The Phase 1A study of AAVrh.10hFXN conducted by investigators at Weill Cornell Medicine is a single-site, 52-week, dose-ascending, open-label trial evaluating the safety and preliminary efficacy of AAVrh.10hFXN in patients who have FA cardiomyopathy. AAVrh.10hFXN is administered as a one-time intravenous infusion to patients in two ascending-dose cohorts with five participants per cohort. While cardiac biopsies are not collected in this study, key cardiac disease measures are collected at 3, 6 and 12-month intervals and complement data collected in SUNRISE-FA.

SUNRISE-FA is a multicenter, 52-week, dose-ascending, open-label trial evaluating the safety and preliminary efficacy of LX2006 in patients who have FA cardiomyopathy. LX2006 is administered as a one-time intravenous infusion to patients in at least two ascending-dose cohorts with the potential to escalate to a third cohort at a dose of 1.2x10¹² vg/kg. Long-term safety and efficacy will be evaluated for five years following dosing in both trials.

About LX2006

LX2006 is an AAV-based gene therapy candidate delivered intravenously for the treatment of FA cardiomyopathy, the most common cause of mortality in patients with FA affecting approximately 5,000 patients in the United States. LX2006 is designed to target the cardiac manifestations of FA by delivering a functional frataxin gene to promote the expression of the frataxin protein and restore mitochondrial function in myocardial cells. In preclinical studies, LX2006 reversed the cardiac abnormalities in FA disease models and showed improvement in cardiac function and survival while demonstrating a favorable safety profile. The FDA has granted Rare Pediatric Disease designation, Fast Track designation, and Orphan Drug designation to LX2006 for the treatment of FA cardiomyopathy.

About Lexeo Therapeutics

Lexeo Therapeutics is a New York City-based, clinical stage genetic medicine company dedicated to transforming healthcare by applying pioneering science to fundamentally change how genetically defined cardiovascular diseases and APOE4-associated Alzheimer’s disease are treated. Using a stepwise development approach, Lexeo is leveraging early proof-of-concept functional and biomarker data to advance a pipeline of cardiovascular and APOE4-associated Alzheimer’s disease programs.

Cautionary Note Regarding Forward-Looking Statements

Certain statements in this press release may constitute “forward-looking statements” within the meaning of the federal securities laws, including, but not limited to, our expectations and plans regarding our current product candidates and programs, including statements regarding the anticipated benefits of the license agreement between Lexeo Therapeutics and Cornell University and the data to be provided

thereunder, including the acceleration of the development of our product candidates and the timing of approvals, if any. Words such as “may,” “might,” “will,” “objective,” “intend,” “should,” “could,” “can,” “would,” “expect,” “believe,” “design,” “estimate,” “predict,” “potential,” “develop,” “plan” or the negative of these terms, and similar expressions, or statements regarding intent, belief, or current expectations, are forward-looking statements. While Lexeo believes these forward-looking statements are reasonable, undue reliance should not be placed on any such forward-looking statements. These forward-looking statements are based upon current information available to the company as well as certain estimates and assumptions and are subject to various risks and uncertainties (including, without limitation, those set forth in Lexeo’s filings with the U.S. Securities and Exchange Commission (SEC)), many of which are beyond the company’s control and subject to change. Actual results could be materially different from those indicated by such forward looking statements as a result of many factors, including but not limited to: risks and uncertainties related to global macroeconomic conditions and related volatility; expectations regarding the initiation, progress, and expected results of Lexeo’s preclinical studies, clinical trials and research and development programs; the unpredictable relationship between preclinical study results and clinical study results; delays in submission of regulatory filings or failure to receive regulatory approval; liquidity and capital resources; and other risks and uncertainties identified in Lexeo’s Annual Report on Form 10-K for the annual period ended December 31, 2023, filed with the SEC on March 11, 2024, and subsequent future filings Lexeo may make with the SEC. New risks and uncertainties may emerge from time to time, and it is not possible to predict all risks and uncertainties. Lexeo claims the protection of the Safe Harbor contained in the Private Securities Litigation Reform Act of 1995 for forward-looking statements. Lexeo expressly disclaims any obligation to update or alter any statements whether as a result of new information, future events or otherwise, except as required by law.

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