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

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# FORM 6-K

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

**For the Month of June 2023**

**Commission File Number: 001-39431**

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# Freeline Therapeutics Holdings plc

**(Translation of registrant's name into English)**

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**Sycamore House**
**Gunnels Wood Road**
**Stevenage, Hertfordshire SG1 2BP**
**United Kingdom**

**(Address of principal executive office)**

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Indicate by check mark whether the registrant files or will file annual reports under cover of Form 20-F or Form 40-F:

☒ Form 20-F ☐ Form 40-F

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Freeline Announces First Patient Dosed with Its Novel Gene Therapy Candidate for Gaucher Disease and Unveils Research Program in GBA1-linked Parkinson's Disease

On June 26, 2023, Freeline Therapeutics Holdings plc ("Freeline" or the "Company") issued a press release, a copy of which is furnished as Exhibit 99.1 to this Report on Form 6-K, announcing that the first patient has been dosed in the Phase 1/2 GALILEO-1 clinical trial evaluating FLT201, its adeno-associated virus gene therapy candidate, in Gaucher disease type 1. Additionally, Freeline unveiled its research program in GBA1-linked Parkinson's disease.

*The information contained in this "Freeline Announces First Patient Dosed with Its Novel Gene Therapy Candidate for Gaucher Disease and Unveils Research Program in GBA1-linked Parkinson's Disease" section of this Report on Form 6-K and the press release furnished as Exhibit 99.1 shall not be deemed "filed" for the purposes of Section 18 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and is not incorporated by reference into any of the Company's filings under the Securities Act of 1933, as amended, or the Exchange Act, whether made before or after the date hereof, except as shall be expressly set forth by specific reference in any such filing.*

## EXHIBIT LIST

| Exhibit | Description |
|---|---|
| 99.1 | Press Release dated June 26, 2023, "Freeline Announces First Patient Dosed with Its Novel Gene Therapy Candidate for Gaucher Disease and Unveils Research Program in GBA1-linked Parkinson's Disease" |

**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, thereunto duly authorized.

**FREELINE THERAPEUTICS HOLDINGS PLC**

Date: June 26, 2023

By: /s/ Chip McCorkle
Name: Chip McCorkle
Title: Vice President, Legal & Company Secretary

FREELINE

**Freeline Announces First Patient Dosed with Its Novel Gene Therapy Candidate for Gaucher Disease and Unveils Research Program in GBA1-linked Parkinson's Disease**

*FLT201 is a highly differentiated AAV gene therapy candidate that delivers a longer-acting engineered variant of GCase, the enzyme missing in people with Gaucher disease*

*Company expects to report initial clinical data for FLT201 in third quarter of 2023*

*Parkinson's disease program leverages same longer-acting GCase enzyme as FLT201, with aim of developing a gene therapy for genetically defined patient subset with GBA1 mutations*

LONDON, June 26, 2023 – Freeline Therapeutics Holdings plc (Nasdaq: FRLN) today announced that the first patient has been dosed in the Phase 1/2 GALILEO-1 clinical trial evaluating FLT201, its adeno-associated virus (AAV) gene therapy candidate, in Gaucher disease type 1. Gaucher disease is a debilitating genetic disorder in which a deficiency of the GCase enzyme leads to a buildup of fatty substances in the organs, causing symptoms including enlarged spleen and liver, low blood counts, bone pain and reduced lung function.

"We believe that FLT201 has life-changing potential for people with the most common type of Gaucher disease," said Pamela Foulds, M.D., Chief Medical Officer at Freeline. "Existing therapies do not sufficiently penetrate deeper tissues, and enzyme levels wane in between infusions, giving harmful substrates the opportunity to build back up in all disease-affected organs. FLT201 is a highly differentiated gene therapy candidate for Gaucher disease type 1 that delivers a longer-acting, rationally engineered enzyme. Preclinically, FLT201 has been shown to produce sustained levels of enzyme and penetrate deeper tissues, including bone and lung, giving us reason to believe it has the opportunity to stop disease progression and improve outcomes with a one-time treatment."

"The dosing of the first patient in the GALILEO-1 trial of FLT201 marks an important step forward for the Gaucher community," said Dr. Ozlem Goker-Alpan, founder and CEO of the Lysosomal and Rare Disorder Research and Treatment Center (LDRTC) and an investigator in GALILEO-1. "There is a clear need for better treatment options. Existing therapies come with a heavy lifelong treatment burden, and many patients continue to experience serious symptoms. FLT201 represents a promising approach for addressing the underlying cause of Gaucher disease with a one-time gene therapy, potentially providing a more effective and less burdensome option for patients. I look forward to further evaluating FLT201 in this clinical trial."

GALILEO-1 is a first-in-human, international, multicenter Phase 1/2 dose-escalation study. The trial will assess safety, tolerability and efficacy of a single intravenous dose of FLT201 in up to four cohorts of escalating doses, with the aim of identifying a dose for further development in a Phase 3 clinical trial. Visit clinicaltrials.gov to learn more about GALILEO-1.

Freeline expects to report initial data, with a focus on safety and enzyme activity, from the first cohort of GALILEO-1 in the third quarter of this year.

**Extending Innovation into GBA1-linked Parkinson's Disease**
Freeline unveiled its research program in GBA1-linked Parkinson's disease. The program builds on its work with Gaucher disease, leveraging its rationally engineered longer-acting GCase variant to extend the impact of its innovation to develop a gene therapy candidate for a subset of Parkinson's disease patients with mutations in the *GBA1* gene, which encodes for GCase. As in Gaucher disease, the *GBA1* mutations lead to a deficiency of GCase and the accumulation of pathological substrates. *GBA1* mutations increase the risk of developing Parkinson's disease by up to 30-fold and are associated with earlier onset of disease, more severe symptoms and increased likelihood of progression to dementia.

"Our GBA1-linked Parkinson's disease program is a natural extension of our work in Gaucher disease and an opportunity to extend the therapeutic potential of our longer-acting GCase variant into a genetically defined patient population with a serious unmet need," said Michael Parini, Chief Executive Officer at Freeline. "There are no approved disease modifying therapies for Parkinson's disease, and symptomatic treatments become less effective as the disease progresses. Preclinically, our GCase variant has demonstrated at least 20-fold greater activity levels compared to wildtype enzyme in various cell lines, including brain epithelial and neuroblastoma cells, and our goal is to leverage our longer-acting GCase variant to create a life-changing gene therapy for this patient population."

**About Gaucher Disease**
Gaucher disease is caused by a mutation in the *GBA1* gene that results in abnormally low levels of glucocerebrosidase (GCase), an enzyme needed to metabolize a certain type of lipid. As a result, harmful substrates glucosylceramide (Gb-1) and glucosylsphingosine (lyso-Gb1) build up in cells that then accumulate in various organs, causing inflammation and dysfunction. Gaucher disease is hereditary and presents in various subtypes. Freeline is currently focused on Gaucher disease type 1, the most common form of the disease, which affects the health of the spleen, liver, bone and lungs. Despite treatment with existing therapies, many people with Gaucher disease continue to experience symptoms and disease progression. Gaucher disease affects approximately 18,000 people in the United States, United Kingdom, France, Germany, Spain, Italy and Israel.

**About GBA1-linked Parkinson's Disease**
Parkinson's disease (PD) is a progressive neurodegenerative disorder that results in tremors, muscle rigidity, difficulty walking, anxiety, depression and cognitive impairments. Approximately 5-15% of PD patients have mutations in the *GBA1* gene, which encodes for the glucocerebrosidase (GCase) enzyme. The most common genetic risk factor for PD, *GBA1* mutations increase the risk of developing PD by 5- to 30-fold. *GBA1* mutations are also associated with earlier onset and more severe disease. There are no approved disease-modifying therapies for PD, and current treatments, which focus on managing symptoms, become less effective over time. Freeline estimates GBA1-linked PD affects approximately 190,000 patients in the United States, United Kingdom, France, Germany, Spain and Italy.

**About FLT201**
FLT201 is an adeno-associated virus (AAV) gene therapy candidate that is currently being investigated in the GALILEO-1 Phase 1/2 clinical trial in adults with Gaucher disease type 1. FLT201 is designed to generate durable increases in glucocerebrosidase (GCase) and reduce the accumulation of harmful substrates, with the aim of providing a one-time treatment that can stop disease progression, improve outcomes and free people from lifelong treatment. FLT201 uses Freeline's proprietary AAVS3 capsid to introduce a novel transgene into liver cells to produce a rationally engineered GCase variant. In preclinical studies, the GCase variant has demonstrated a 20-fold increase in half-life at lysosomal pH conditions compared to wildtype human GCase. Preclinically, FLT201 has shown robust GCase expression, as well as significant GCase uptake and substrate reduction in key tissues.

**About Freeline Therapeutics**
Freeline is a clinical-stage biotechnology company focused on developing transformative gene therapies for chronic debilitating diseases. Freeline uses its proprietary, rationally designed AAV vector and capsid (AAVS3), along with novel promoters and transgenes, to deliver a functional copy of a therapeutic gene into human liver cells, thereby expressing a persistent functional level of the missing or dysfunctional protein into a patient's bloodstream. The company is currently advancing FLT201, a highly differentiated gene therapy candidate that delivers a novel transgene, in a Phase 1/2 clinical trial in people with Gaucher disease type 1. Freeline has additional programs in research, including one focused on GBA1-linked Parkinson's disease that leverages the same novel transgene as FLT201. Freeline is headquartered in the UK and has operations in the United States. For more information, visit www.freeline.life or connect with Freeline on LinkedIn and Twitter.

**Forward-Looking Statements**
This press release contains statements that constitute "forward-looking statements" as that term is defined in the United States Private Securities Litigation Reform Act of 1995, including statements that express the opinions, expectations, beliefs, plans, objectives, assumptions or projections of Freeline Therapeutics Holdings plc (the "Company") regarding future events or future results, in contrast with statements that reflect historical facts. All statements, other than historical facts, including statements regarding FLT201's potential to be a first- and best-in-class gene therapy, stop disease progression and improve outcomes with a one-time treatment, that the Company expects to report initial data from the first cohort of the GALILEO-1 Phase 1/2 clinical trial of FLT201 in the third quarter of this year, and regarding the potential to extend the Company's GCase variant into GBA1-linked Parkinson's disease and create a life-changing gene therapy for this patient population are forward-looking statements. In some cases, you can identify such forward-looking statements by terminology such as "anticipate," "intend," "believe," "estimate," "plan," "seek," "project," "expect," "may," "will," "would," "could" or "should," the negative of these terms or similar expressions. Forward-looking statements are based on management's current beliefs and assumptions and on information currently available to the Company, and you should not place undue reliance on such statements. Forward-looking statements are subject to many risks and uncertainties, including the Company's recurring losses from operations; the uncertainties inherent in research and development of the Company's product candidates, including statements regarding the timing of initiation, enrollment, continuation, completion and the outcome of clinical studies or trials and related preparatory work and regulatory review, regulatory submission dates, regulatory approval dates and/or launch dates, as well as risks associated with preclinical and clinical data, including the possibility of unfavorable new preclinical, clinical or safety data and further analyses of existing preclinical, clinical or safety data; the Company's ability to design and implement successful clinical trials for its product candidates; whether the Company's cash resources will be sufficient to fund the Company's foreseeable and unforeseeable operating expenses and capital expenditure requirements for the Company's expected timeline in light of management's substantial doubt regarding the Company's ability to continue as a going concern for at least 12 months from the issuance date of its most recent quarterly financial statements; the Company's failure to demonstrate the safety and efficacy of its product candidates; the fact that results obtained in earlier stage clinical testing may not be indicative of results in future clinical trials; the Company's ability to enroll patients in clinical trials for its product candidates; the possibility that one or more of the Company's product candidates may cause serious adverse, undesirable or unacceptable side effects or have other properties that could delay or prevent their regulatory approval or limit their commercial potential; the Company's ability to obtain and maintain regulatory approval of its product candidates; the Company's limited manufacturing history, which could result in delays in the development, regulatory approval or

commercialization of its product candidates; and the Company's ability to identify or discover additional product candidates, or failure to capitalize on programs or product candidates. Such risks and uncertainties may cause the statements to be inaccurate and readers are cautioned not to place undue reliance on such statements. The Company cannot guarantee that any forward-looking statement will be realized. Should known or unknown risks or uncertainties materialize or should underlying assumptions prove inaccurate, actual results could vary materially from past results and those anticipated, estimated, or projected. Investors are cautioned not to put undue reliance on forward-looking statements. A further list and description of risks, uncertainties, and other matters can be found in the Company's Annual Report on Form 20-F for the fiscal year ended December 31, 2022, and in subsequent reports on Form 6-K, in each case including in the sections thereof captioned "Cautionary Statement Regarding Forward-Looking Statements" and "Item 3.D. Risk factors." Many of these risks are outside of the Company's control and could cause its actual results to differ materially from those it thought would occur. The forward-looking statements included in this press release are made only as of the date hereof. The Company does not undertake, and specifically declines, any obligation to update any such statements or to publicly announce the results of any revisions to any such statements to reflect future events or developments, except as required by law. For further information, please reference the Company's reports and documents filed with the U.S. Securities and Exchange Commission (the "SEC"). You may review these documents by visiting EDGAR on the SEC website at www.sec.gov.

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