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 April 2024

Commission File Number: 001-36891

Cellectis S.A.
(Exact Name of registrant as specified in its charter)

8, rue de la Croix Jarry
75013 Paris, France
+33 1 81 69 16 00
(Address of principal executive office)

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 [X] Form 40-F [ ]

EXHIBIT INDEX

Exhibit	Title
99.1	Press Release dated April 10, 2024

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.

Cellectis S.A.
(Registrant)

Date: April 10, 2024

/s/ André Choulika
André Choulika
Chief Executive Officer

Cellectis Publishes a Novel Intronic Gene Editing Approach For the Treatment of Inborn Metabolic Diseases by Edited HSPCs

NEW YORK, April 10, 2024 (GLOBE NEWSWIRE) -- Cellectis (the "Company") (Euronext Growth: ALCLS - NASDAQ: CLLS), a clinical-stage biotechnology company using its pioneering gene-editing platform to develop life-saving cell and gene therapies, announced today the publication of a new research paper in *Molecular Therapy*, demonstrating that TALEN-mediated intron editing of hematopoietic stem and progenitor cells (HSPCs) enables transgene expression restricted to the myeloid lineage. This approach could unlock new therapeutic avenues for the treatment of inborn metabolic diseases as well as neurological diseases that require delivery of therapeutics to the brain.

About HSPCs

Gene editing in hematopoietic stem and progenitor cells (HSPCs) has enabled the treatment of multiple previously uncurable genetic diseases. Edited therapeutic HSPCs can engraft in the patient's bone marrow, self-replicate, differentiate and populate other organs, propagating the therapeutic effects systemically and indefinitely after a single intervention.

In this paper, Cellectis developed an intron-specific gene insertion strategy for HSPC, that restricts the expression of a therapeutic protein named IDUA to the myeloid lineage. Edited myeloid cells then act as a Trojan horse to vectorize IDUA across the blood brain barrier and thus, its delivery to the brain. This gene insertion strategy displays minimal genomic footprint and prevents the expression of IDUA by stem cells or other non-myeloid differentiated cells. It could potentially enable the development of efficient therapies for both metabolic and neurological disorders.

"This novel TALEN® mediated-intron editing approach rewires the natural ability of myeloid cells to cross the blood brain barrier to efficiently vectorize a genetically encoded-therapeutic protein to the brain. In addition, by inserting the therapeutic transgene in an intronic region of the targeted gene, this approach preserves endogenous gene expression and thus, mitigates the common adverse events observed after gene insertion. This approach is, by essence, versatile and could be used to vectorize an array of therapeutic proteins to the brain and potentially address multiple neurological disorders," commented Julien Valton, Ph.D., Vice President of Gene Therapy at Cellectis.

Research data showed that:

- The *CD11b* intron-specific gene insertion approach efficiently restricts the expression of a desired transgene to the myeloid lineage, preventing its overexpression by stem cells or by other differentiated lineages.
- The insertion of an IDUA transgene in the first intron of the *CD11b* gene enables to express IDUA (the enzyme missing in Mucopolysaccharidosis type I patients), in a myeloid-specific manner without affecting *CD11b* endogenous expression.
- Edited HSPC exhibited robust engraftment in the bone marrow of immunodeficient mice, displayed multi-lineage differentiation in various hematopoietic tissues and showed significant presence in the brain as myeloid cells.

The article is available on Molecular Therapy website by clicking on this link:
https://doi.org/10.1016/j.ymthe.2024.04.001

About Cellectis

Cellectis is a clinical-stage biotechnology company using its pioneering gene-editing platform to develop life-saving cell and gene therapies. Cellectis utilizes an allogeneic approach for CAR-T immunotherapies in oncology, pioneering the concept of off-the-shelf and ready-to-use gene-edited CAR T-cells to treat cancer patients, and a platform to make therapeutic gene editing in hemopoietic stem cells for various diseases. As a clinical-stage biopharmaceutical company with over 24 years of experience and expertise in gene editing, Cellectis is developing life-changing product candidates utilizing TALEN®, its gene editing technology, and PulseAgile, its pioneering electroporation system to harness the power of the immune system in order to treat diseases with unmet medical needs. Cellectis' headquarters are in Paris, France, with locations in New York, New York and Raleigh, North Carolina. Cellectis is listed on the Nasdaq Global Market (ticker: CLLS) and on Euronext Growth (ticker: ALCLS).

Forward-looking Statements

This press release contains "forward-looking" statements within the meaning of applicable securities laws, including the Private Securities Litigation Reform Act of 1995. Forward-looking statements may be identified by words such as "could," "potentially," "can," and "may," or the negative of these and similar expressions. These forward-looking statements, which are based on our management's current expectations and assumptions and on information currently available to management, include statements about the potential benefit and potential development of the Company's research and development programs. These forward-looking statements are made in light of information currently available to us and are subject to numerous risks and uncertainties, including with respect to the numerous risks associated with biopharmaceutical product candidate development. Furthermore, many other important factors, including those described in our Annual Report on Form 20-F and the financial report (including the management report) for the year ended December 31, 2022 and subsequent filings Cellectis makes with the Securities Exchange Commission from time to time, as well as other known and unknown risks and uncertainties may adversely affect such

forward-looking statements and cause our actual results, performance or achievements to be materially different from those expressed or implied by the forward-looking statements. Except as required by law, we assume no obligation to update these forward-looking statements publicly, or to update the reasons why actual results could differ materially from those anticipated in the forward-looking statements, even if new information becomes available in the future.

For further information on Cellectis, please contact:

Media contacts:

Pascalyne Wilson, Director, Communication, + 33 (0)7 76 99 14 33, media@cellectis.com
Patricia Sosa Navarro, Chief of Staff to the CEO, +33 (0)7 76 77 46 93, media@cellectis.com

Investor Relations contacts:

Arthur Stril, Chief Business Officer, +1 (347) 809 5980, investors@cellectis.com
Ashley R. Robinson, LifeSci Advisors, +1 617 430 7577

Attachment

- scientific article HSPC_PR_ENGLISH(1) (https://ml.globenewswire.com/Resource/Download/d7b3fae9-4df2-462e-b6eb-6802355fa194)