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 Number	Title
99.1	Press Release dated April 22, 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 22, 2024

/s/ André Choulika
André Choulika
Chief Executive Officer

EXHIBIT 99.1

Cellectis Presents Novel TALEN® Editing Processes Enabling Highly Efficient Gene Correction and Gene Insertion in HSPCs

- *This novel editing approach might unlock new strategies for the treatment of metabolic and neurological diseases*
- *Non-viral circular ssDNA delivery associated to TALEN® gene editing allows high levels of gene insertion in long-term repopulating HSPCs*

NEW YORK, April 22, 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, will present first data exploring novel TALEN® editing processes in hematopoietic stem and progenitor cells (HSPCs) at the American Society of Gene and Cell Therapy (ASGCT) being held on May 7-11, 2024.

"These two posters showcase the potential and versatility of the TALEN® technology to promote efficient gene insertion in HSPCs. We show that circular single strand DNA templates can be efficiently delivered to HSPCs and enable unprecedented efficiency of gene insertion without compromising the viability, fitness and differentiation capacity of edited cells" commented Julien Valton, Ph.D., Vice President of Gene Therapy at Cellectis.

"We also illustrate a novel TALEN® mediated-DNA template insertion approach that rewires the natural ability of myeloid cells to cross the blood brain barrier to efficiently vectorize a genetically encoded-therapeutic protein to the brain. 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."

Poster presentation: Intron Editing of HSPC Enables Lineage-Specific Expression of Therapeutics

Gene therapy using edited hematopoietic and progenitor stem cells (HSPCs) has the potential to provide a lifelong supply of genetically encoded therapeutics.

Today, most therapies are impacted with the difficulty to cross the blood-brain barrier (BBB). The BBB is a continuous endothelial membrane that, along with pericytes and other components of the neurovascular unit, limits the entry of toxins, pathogens, protein and small molecules to the brain.

Cellectis has developed a TALEN® mediated promoter-less intron editing technology that enables the expression of a therapeutic transgene exclusively by monocyte derived from edited HSPCs.

The edited cells containing genetically encoded therapeutic proteins have the capacity to cross the blood-brain barrier and secrete the corresponding therapeutic within the brain.

This novel editing approach is an important addition to the HSPC gene editing toolbox that might unlock new strategies for the treatment of metabolic and neurological diseases.

Research data showed that:

- Intron editing can be performed within B-cell, T-cell, Monocyte-specific endogenous genes (*CD20*, *CD4* and *CD11b*, respectively)
- Intron editing allows expression of transgenes in a lineage-specific manner without markedly impacting the expression of the endogenous gene targeted
- Editing of *CD11b* intron using a therapeutic transgene encoding IDUA (the enzyme missing in Type-1 Mucopolysaccharidosis patients) enables to restrict the expression of IDUA to the myeloid lineage.
- Edited HSPCs efficiently engraft in the bone-marrow of immunodeficient mice and differentiate into edited myeloid cells that can cross the BBB and populate the brain.
- The intron editing strategy described in this work is versatile and could be potentially used to vectorize multiple genetically encoded-therapeutic proteins to the brain and thus address multiple metabolic and neurological disorders.

Title: Intron Editing of HSPC Enables Lineage-Specific Expression of Therapeutics

Presenter: Julien Valton, Ph.D., Vice President Gene Therapy at Cellectis
Session Date/Time: May 5, 2024 at 12PM ET
Session Title: Gene Targeting and Gene Correction New Technologies

Presentation Room: Exhibit Hall
Final Abstract Number: 721

Poster presentation: Circularization of Non-Viral Single-Strand DNA Template for Gene Correction and Gene Insertion Improves Editing Outcomes in HSPCs

Today, most of the gene insertion approaches used to edit HSPCs *ex vivo* are hampered by the low efficiency of DNA template delivery into their nucleus.

Cellectis has developed and optimized a novel gene editing process, leveraging the TALEN® technology and circular single strand DNA template delivery, enabling highly efficient gene insertion in HSPCs.

Research data showed that:

- Non-viral single strand DNA delivery associated to TALEN® technology allows gene insertion in long-term repopulating hematopoietic stem cells
- Circularization of the single strand DNA further increases the rates of gene insertion without impacting cellular viability and fitness of HSPCs, facilitating the development of next generation of *ex vivo* cell therapies

Title: Circularization of Non-Viral Single-Strand DNA Template for Gene Correction and Gene Insertion Improves Editing Outcomes in HSPCs

Presenter: Alex Boyne, Gene Editing Platform Manager at Cellectis
Session Date/Time: May 9, 2024 at 12PM ET
Session Title: Nonviral Therapeutic Gene Delivery and Synthetic/Molecular Conjugates
Presentation Room: Exhibit Hall
Final Abstract Number: 1235

Full abstracts and poster presentations will be available on Cellectis' website following the event:
https://www.cellectis.com/en/investors/scientific-presentations/

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 Statement

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 "might," "could," "has the potential," and "potentially," 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. Forward-looking statements include statements about the potential of our R&D 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.

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Attachment

- PRESS RELEASE_ASGCT 2024(1) (https://ml.globenewswire.com/Resource/Download/3c09917a-4da5-45c6-9766-dc2ea13c670c)