Promising therapy to treat an aggressive type of leukemia receives 2.5 million euros from the EU to reach patients

- **A consortium led by the Spanish company OneChain Immunotherapeutics has received €2.5 M from the European Commission to bring an innovative CAR-T therapy to the bedside.**
- **The therapy is directed against T-type acute lymphoblastic leukemia, an aggressive and mainly pediatric subtype of leukemia, which has few therapeutic options.**
- **La The novelty of the treatment lies in the fact that it does not depend on extraction of the patient's own cells, and it simultaneously attacks two cancer cell targets.**

Barcelona, February 23, 2023. An ambitious project led by **OneChain Immunotherapeutics** (OCI) has received **2.5 million euros** from the European Innovation Council (EIC) for the development of a **new CAR-T therapy** that does not require extraction of the patient's own cells and simultaneously attacks two cancer cell targets. The therapy could treat up to **80% of patients with T-type acute lymphoblastic leukemia** (T-ALL), a subtype of leukemia, mainly pediatric, that has few therapeutic options and accounts for 25% of all leukemia cases.

The **project**, which will last three years, **aims to develop this therapy to bring it into clinical practice**, and will involve the Josep Carreras Institute, the Severo Ochoa Center for Molecular Biology (CBMSO, a joint research institute of the Spanish National Research Council and the Autonomous University of Madrid) and the Portuguese company iBET.

Personalized therapy for more patients

CAR-T therapy consists of extracting the patient's own lymphocytes (autologous), genetically modifying them to recognize and attack tumor cells, and reintroducing them into the body. Although this is an effective strategy that has revolutionized the treatment of many hematological cancers, the **manufacturing process is long and costly**. Moreover, in many cases, patients' immune systems are impaired, and it is not possible to collect **enough lymphocytes** for the generation of CAR-T cells.

The therapy to be developed by **OCI will use a subtype of T cells**, called gamma-delta, which are produced in the laboratory and are **allogeneic**, meaning they will serve for any patient and eliminate donor dependency. "Our approach is based on the use of a type of T-cell that is not recognized by the patient's immune system as foreign, making it a **universal therapy**," explains **Dr. Victor M. Diaz**, OneChain's research director and leader of the project. OCI already has a protocol for generating these cells and will now focus on refining it to **scale up this process to an industrial level**, a task that will be undertaken by the Portuguese company iBET.

"Generating these T cells in large quantities is going to be a challenge, but these types of therapies are the future," explains Díaz. "Treatments as personalized as CAR-Ts, which only work for one person, are unfeasible in a public healthcare system. On the other hand, **if you have a universal therapy applicable to all types of patients, you reduce costs, the process is simpler and you can treat the patient on**

demand," he adds.

Attacking the same cell from different sites

Another innovative feature of the therapy is that it will **simultaneously attack two targets** present in cancer cells, making it more effective and **broadening its therapeutic spectrum**. CAR-T therapy is not yet an established option against T-cell leukemias, such as T-ALL, since tumor T cells and healthy T cells have the same molecules on their surface. Therefore, CAR-Ts targeting T-ALL destroy both types of cells, causing severe immunosuppression in patients.

OCI has already developed a CAR-T directed at the CD1a protein, a safe target which is hardly present in healthy tissues. However, this molecule is present in only 30% of T-ALL patients. "Our laboratory has determined **another marker, which will be combined with CD1a** to increase the treatment spectrum. **We hope to be able to treat up to 80% of patients** affected by this disease, **preserving their healthy cells**," explains Dr. Pablo Menéndez, founder of OCI and director of the Stem Cell Biology, Developmental Leukemia, and Immunotherapy Group at the Josep Carreras Institute.

Attainment of his project is the result of a demanding selection process that has evaluated more than 180 proposals. The EIC has selected 34 of them with the aim of fostering transfer of scientific results to society. "**EIC Transition projects seek to mature and validate technologies** already proven in the lab to develop a business case and **bring them to the market**," concludes Diaz.

About OneChain Immunotherapeutics (OCI)

OCI was founded by the Josep Carreras Leukemia Research Institute, ICREA and Dr. Pablo Menéndez in Barcelona in June 2020, with a first round of funding led by Invivo Ventures with CDTI-Innvierte (Ministry of Industry) and the Josep Carreras Foundation.

OCI aims to develop immunotherapy-based treatments for malignant neoplasms, based on the research results of the group led by Dr. Pablo Menéndez, ICREA research professor and researcher at the Josep Carreras Leukemia Research Institute.

In addition to the above, OCI will develop four projects: 1) the first and most advanced, already in the clinical phase, is a CAR-T CD1a (OC-1) for the treatment of cortical T-precursor acute lymphoblastic leukemia (coT-ALL), a subtype of leukemia that is mostly pediatric and has a poor prognosis if patients do not respond to standard treatment. 2) The next product OC-2 is a CAR-T to be used to treat patients with B-cell acute lymphoblastic leukemia. 3) The third, consists of a platform in development of Vδ1 cells for allogeneic application, which will enable ready-to-use treatments to be available immediately at a lower cost than current autologous CAR-T treatments. And 4) Finally, a dual CAR-T is being developed for the treatment of Glioblastoma, a highly aggressive brain tumor with a fatal prognosis.

The company has opened a financing round, in which the current partners and other specialized funds in this field will participate.

Contact
Email | press@scienseed.com (gabinete de prensa y comunicación de OneChain)
Teléfono | +34 913766458

@onechaintxn
https://www.onechaintx.com/