

## PRESS RELEASE

# OneChain Immunotherapeutics participates in a consortium receiving a €3.8 million grant for the design of in vivo targeted viral particles for in vivo CAR-T using AI.

The Ministry of Science, Innovation and Universities in collaboration with the Center for Technological Development and Innovation (CDTI) have selected it as one of the 40 projects that address a challenge that is at the forefront of society and the economy, and which will be funded by €3.8 million.

The project will be undertaken by a public-private consortium formed by VIVEbiotech, Integra Therapeutics and OneChain Immunotherapeutics, the UPF, the IBMB-CSIC and the CIEMAT over the next four years.



San Sebastián/Barcelona/Madrid, Spain, 4 March 2024. Researchers from the companies VIVEbiotech, Integra Therapeutics and OneChain Immunotherapeutics, the Department of Medicine and Life Sciences of the Pompeu Fabra University (UPF), the Institute of Molecular Biology of Barcelona (IBMB-CSIC) and the Center for Energy, Environmental and Technological Research (CIEMAT) have joined forces to **design using artificial intelligence and produce next-generation viral particles** to be applied in advanced therapies. These particles can be used in immunotherapies, such as CAR-T therapy, to treat a variety of **cancers and rare diseases** including hereditary anemia due to pyruvate kinase deficiency.

The project has been selected by the Ministry of Science, Innovation and Universities in collaboration with the Center for Technological Development and Innovation (CDTI) following an assessment of the impact it could have on health; it will be carried out between 2024 and 2027 and will receive **€3.8 million** in funding through the TransMisiones program.

“We are pleased to announce this partnership between Spanish companies and research centers that have extensive knowledge and experience throughout the entire value chain of research, development, and manufacture of advanced therapies for treating rare diseases and oncology” said **Dr. Gurutz Linazasoro**, CEO of VIVEbiotech. VIVEbiotech, with headquarters in San Sebastián, is a company specializing in the development and manufacture of lentiviral vectors.

**Dr. Avencia Sánchez-Mejías**, CEO and co-founder of Integra Therapeutics, a company that develops gene writing tools in Barcelona, explains that incorporating AI into cell therapy holds great potential: “AI algorithms that are used for word processing, for example ChatGPT, can also be applied to biology. The tool we will create will allow us to design new DNA sequences and new protein functions that were not feasible before, in addition to obtain a universal therapeutic product for a specific disease more quickly.”

**Cell therapy** is an important technique for treating complex diseases or those with a poor prognosis. Cell therapy was traditionally carried out in cells extracted from patients that are readministered to the patient once they have been modified in the laboratory.

“The development we are proposing will allow CAR-T therapy to be carried out directly within the patient by administering these new viral vectors, which has a significant advantage over ex vivo manufacturing in terms of time and cost savings and ease for the patient since they do not have to undergo apheresis, or in other words, cell extraction” explains **Dr. Víctor Manuel Díaz**, Scientific director of OneChain Immunotherapeutics. OneChain Immunotherapeutics is a spin-off of the Josep Carreras Leukaemia Research Institute, which develops CAR-T therapies for oncological diseases.

“Applying AI with directed evolution techniques means we can optimize the efficiency and accuracy of the identification, direction and delivery process of the new viral particles to specific cells of the patient’s organism in order for them to only act in the cells requiring treatment” **Dr. Marc Güell** states, who directs the Translational Synthetic Biology Laboratory at the UPF.

As for **Dr Noelia Ferruz’s** group working on Artificial Intelligence for Protein Design at the IBMB-CSIC, it will focus on implementing language models to generate proteins with customizable properties. Ferruz notes that “these models will improve by being given feedback from the results obtained by the rest of the consortium members, thus becoming increasingly efficient.”



Harnessing gene therapy and gene editing tools is undoubtedly the most important challenge in the development of effective therapeutic alternatives when the target cell to be modified is the **hematopoietic stem cell**. “Generating effective vectors to genetically modify hematopoietic stem cells will allow us to tackle a large number of rare diseases that do not currently have an effective cure, and that are devastating for the affected patients and their friends and family” says **Dr. José-Carlos Segovia**, head of the Cellular Technology Department of the CIEMAT.

Although this project focuses on making immunotherapies used to treat cancer and edit hematopoietic stem cells safer and more effective, which will **allow rare diseases like hereditary anemia to be treated**, in future, this technique could be applied to the treatment of autoimmune diseases and aging.

### The Government’s TransMisiones Program

The TransMisiones program is a new public-private collaborative model, which is promoted by the Ministry of Science, Innovation and Universities to improve the impact that R&D&I has on society and steer research towards priority challenges.

The new program builds bridges between research centers and companies, promoting better coordination among the bids from the different agencies funding R&D (CDTI, AEI and ISCIII). The 2023 TransMisiones call for bids saw 40 projects approved, with a budget of €186.5 million.

### About VIVEbiotech

VIVEbiotech is a GMP CDMO specialized exclusively in lentiviral vectors, experienced in early-stage through to commercial scale manufacturing for both ex vivo and in vivo administration. VIVEbiotech has a flexible plug-and-play manufacturing platform that allows productive, cost-effective lentiviral vectors to be offered that meet the regulations and are manufactured according to the EMA and FDA standards. VIVEbiotech always provides a custom operation for its partners and currently collaborates with 45 international collaborators that are developing diverse pipelines, from rare diseases to cancer. More information: [vivebiotech.com](http://vivebiotech.com)

### About Integra Therapeutics

Integra Therapeutics is a biotech company that is creating next-generation gene writing tools to boost the efficiency and safety of advanced therapies. Integra was founded in 2020 as a spin-off of the Pompeu Fabra University (UPF) and is headquartered at Barcelona Biomedical Research Park (PRBB). It is backed by international investors (AdBio Partners, Columbus Venture Partners, Invivo Capital and Takeda Ventures) and organizations from the health and biomedical sector. More information: [integra-tx.com](http://integra-tx.com)

### About OneChain Immunotherapeutics

OneChain Immunotherapeutics was founded in June 2020 by the Josep Carreras Leukaemia



Research Institute, ICREA, and Dr. Pablo Menéndez. It is currently supported by a group of partners including the Josep Carreras Leukemia Foundation, venture capital entities Invivo Partners, Nara Capital, and Clave Capital, and the Center for Technological Development and Innovation (CDTI). The company, with headquarters at the Barcelona Science Park, focuses on developing treatments based on immunotherapy for malignant neoplasms. More information: [onechaintx.com](http://onechaintx.com)

### **About UPF**

The Department of Medicine and Life Sciences (MELIS) is an intensive research department of the Pompeu Fabra University that has been recognized with two María de Maeztu awards (2014 and 2018). It is located in the Barcelona Biomedical Research Park (PRBB), which is home to several of the most important biomedical research facilities in Barcelona. With over 250 researchers working in 40 research groups, MELIS covers a wide range of biological research topics and has strong productivity metrics. It has also filed 35 priority patent applications, received 25 funding grants, created 4 spin-offs, and organized numerous outreach activities. These achievements have allowed MELIS to broaden its reach within society and global scientific visibility. More information: [upf.edu](http://upf.edu)

### **About IBMB-CSIC**

The Institute of Molecular Biology of Barcelona (IBMB) belongs to the Spanish National Research Council (CSIC) and is located in the Barcelona Science Park (PCB). IBMB is committed to the generation of knowledge, at the forefront of life sciences, to provide understanding on the architecture of life at all levels, integrating it from molecule to organism, and to transfer the acquired knowledge to societal biomedical and biotechnological challenges. More information: [ibmb.csic.es](http://ibmb.csic.es)

### **About CIEMAT**

The CIEMAT (Center for Energy, Environmental and Technological Research) is a public research organization attached to the Ministry of Science and Innovation through the General Secretariat of Research, which focuses on energy and environmental research and the related technological fields. With over seven decades of history, the mission of the Center for Energy, Environmental and Technological Research is to contribute to the sustainable development of Spain by generating and applying scientific and technological knowledge. More information: [ciemat.es](http://ciemat.es)

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