PRESS RELEASE

Iproteos, IBEC and VHIR to develop an innovative therapy against solid tumors sòlids

- **The biotechnology company Iproteos, IBEC and the Vall d'Hebron Research Institute (VHIR) are set to develop an innovative treatment to slow down, stop and even reverse the growth of solid tumors, which represent more than 90% of cancer cases.**

- **It's a family of peptidomimetic drugs based on a totally new anti-tumor action mechanism, the result of several years of research by Pere Roca-Cusachs' group at IBEC.**

- **The Translational Research Group on Cancer in Children and Teenagers at VHIR will evaluate candidate drugs, developed with Iproteos' IPROTech technology, in pediatric tumours *in vitro* and *in vivo*.**

- **The project, which received €935,000 from the Ministry of Science, Innovation and Universitie,s through of the call Retos Colaboración, will focus in its first phase on two of the most common solid tumors in children and adolescents, rhabdomyosarcoma and neuroblastoma, as well as in lung and colon cancer, which have the highest mortality rate in adults.**

Barcelona, 3 December 2018. A public-private consortium, led by biotechnology Iproteos, based at the Barcelona Science Park (PCB), has launched a project to develop an innovative therapeutic strategy, designed by the Institute of Bioengineering of Catalonia (IBEC), for the treatment of tumors Solids, which account for 90% - 95% of cancer cases. The consortium also participates in the Vall d'Hebron Research Institute (VHIR).

The ultimate goal is to validate a family of peptidomimetic compounds (new generation drugs able to cross the cell membrane) with a totally new mechanism for cancer treatment, in order to carry out preclinical regulatory trials.

In a first phase, the consortium members will focus on rhabdomyosarcoma and neuroblastoma - two of the most common solid tumors in children and adolescents - and in lung and colon cancer, the types of cancer with higher incidence and mortality in adults, with 1,8 million and 881,000 deaths per year respectively, according to the International Agency for Research on Cancer (IARC) of the World Health Organization (WHO).

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An innovative anti-tumour action mechanism

Researchers from IBEC's Cellular and Molecular Mechanobiology group, led by Pere Roca-Cusachs, discovered that the binding of proteins talin and vinculin – triggered by mechanical forces exerted by cells in response to an increase in rigidity of the surrounding tissue – triggers the activation of an important oncogen called YAP, present in most solid tumors. The results of the research – published in *Nature Cell Biology* in 2016 (DOI: 10.1038/ncb3336)– revealed that the inhibition of the interaction of both proteins prevents activation of YAP, and has the potential to slow down, stop or even reverse tumor growth.

"Instead of focusing on genetic mutations or biochemical factors, we intend to attack tumors based on their mechanical properties, which undergo major changes," explains Pere. "This represents a completely new strategy in cancer therapy that could potentially be revolutionary, and be used in combination with other more conventional therapies."

The biotechnology company Iproteos will address the design, synthesis and characterization of molecules that inhibit the interaction of talin and vinculin using its IPROTech platform, a state-of-the-art technology that combines computational (*in silico*) chemistry tools with biotechnology (*in vitro*) to accelerate the design of a new generation of peptide-based drugs.

"The new mechanism discovered by Pere's group is of great relevance, given its prevalence in the majority of malignant solid tumors, the most frequent in cancer," says Teresa Tarragó, co-founder and CEO of Iproteos. "This project has great potential, since it encompasses a broad market that calls for new innovative drugs that can help improve current survival rates. Our IPROTech platform will play a fundamental role, as it allows us to obtain drugs for complicated targets, such as protein-protein interactions."

The Translational Research Group on Cancer in Children and Teenagers at the VHIR, led by Dr. Josep Sánchez de Toledo and Dr. Soledad Gallego, will evaluate the anti-oncogenic effects of the drug candidates in pediatric tumors *in vitro* and *in vivo*, a study that will be led by Dr. Josep Roma. Obtaining results on bioavailability, pharmacokinetics and pharmacodynamics will be key to the development of the project, as well as being crucial for initiating the concept tests at the optimum dose.

"This project opens a new promising avenue for the development of new drugs based on highly innovative biological mechanisms for the fight against cancer," says Dr. Roma. "Research to develop new drugs often focuses exclusively on adult tumors and ignores tumors in children, so that's even more added value for the project. The solid infant tumors included in this study still show a clearer survival below the average for children's cancers, and therefore, it is very necessary to study new ways of treatment in order to improve their survival rates."

The year-long project, "Development of an innovative therapy for the treatment of solid tumors by means of the inhibition of the mecanotransduction", has received a grant of € 935,000 euros from the Ministry of Science, Innovation and Universities through of the call *Retos-Colaboración 2017* of the 'Programa Estatal de I+D+i Orientada a los Retos de la Sociedad' (Exp. RTC-2017-6505-1).

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About Iproteos

Iproteos, based at the Barcelona Science Park, is a biotechnology company created in 2011 by two Catalan leading scientists in the field of therapeutic peptides, Teresa Tarragó and Ernest Giralt, based on the technology transfer from IRB Barcelona and the University of Barcelona.

The company focuses its activity on the discovery of new therapeutic strategies based on the modulation of protein-protein or protein-ligand interactions through permeable peptide derivatives. Specifically, its portfolio of projects focuses on the search for drugs for unmet medical needs, such as schizophrenia, epilepsy or cancer. More information: http://www.iproteos.com

About IBEC

The Institute of Bioengineering of Catalonia, is a research centre whose purpose is to carry out interdisciplinary research at the highest international quality level which, by creating knowledge, helps to improve health and quality of life and generate wealth.

IBEC was established in 2005 by the Ministries of Innovation, Universities and Enterprises and Health of the Generalitat de Catalunya (Autonomous Government of Catalonia), the University of Barcelona (UB) and the Technical University of Catalonia (UPC).

The Institute conducts excellent interdisciplinary research at the frontiers of engineering and life sciences in order to generate new knowledge by putting together fields like nanomedicine, biophysics, biotechnology, tissue engineering and the applications of health information Technology. Beneficiaries of the Institute for Bioengineering of Catalonia include the universities, research centres, the scientific community, the business sector that drives research in the bioengineering field, and society in general. More information: http://www.ibecbarcelona.eu/

About VHIR

The Vall d'Hebron Research Institute (VHIR is a public sector institution that promotes and develops the biomedical research, innovation and teaching at Vall d'Hebron University Hospital (HUVH), the hospital of Barcelona and the largest of Catalan Institute of Health (ICS).

The members of our Board of Trustees are the Catalan Ministry of Health, the Catalan Ministry of Economy and Knowledge (we are a CERCA center), HUVH, Bank of blood and tissues, the Autonomous University of Barcelona (UAB), of which we are an accredited research institute, and the Vall d'Hebron Institute of Oncology (VHIO), which together with VHIR is part of Accredited Institute of Campus Vall d'Hebron Institute by the Institute of Health Carlos III (ISCIII).
More information: http://en.vhir.org/portal1/homepage.asp

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