

Europe furthers the excellence of CIC biomaGUNE

PRESS RELEASE

CIC biomaGUNE secures funding to the tune of 1.2 million euros for three projects
selected in the European FET Open Call

The European Commission has selected only 58 projects out the 902 evaluated

(Donostia-San Sebastian. 3 November, 2020). Three of CIC biomaGUNE's research projects in which the Ikerbasque professors Luis Liz-Marzán and Aitziber López-Cortajarena and Dr. Valery Pavlov have been selected in the European FET Open (Future and Emerging Technologies) call, through which the European Commission supports major, high-risk scientific research projects carried out in collaboration. FET Open projects are characterized by being based on groundbreaking ideas with the potential to generate new technology, by including a highly interdisciplinary scientific approach and by encouraging the participation of young researchers and high-tech SMEs. Prestigious universities and international R&D centers are participating in the projects.

The European Commission has funded 58 out of a total of 902 proposals evaluated which constitutes a success rate of only 6.6 %. The funding for these three projects amounts to nearly 1.2 million euros, of which € 526,791 corresponds to the **e-Prot** project coordinated by Aitziber López-Cortajarena; € 353,750 to the **DNA-FAIRYLIGHTS** Project in which Luis Liz-Marzán and Aitziber López-Cortajarena are participating; and € 314,001 goes to the **DeDNAed** project in which Luis Liz-Marzán, Aitziber López-Cortajarena and Valery Pavlov are participating. Luis Liz-Marzán, scientific director of CIC biomaGUNE, welcomed this saying, "It is tremendously exciting to see that we continue to get economic support enabling us to tackle high-risk scientific and technological challenges, and also to see the possibility of achieving results of great importance and use."

The CIC biomaGUNE researchers pointed out that these projects have emerged out of technologies they have been developing at CIC biomaGUNE over many years. "There are shared elements in the three projects awarded, but the aims are very different and this highlights the importance of the work being done at CIC biomaGUNE and the excellent reputation the Center has acquired in this context."

e-Prot Project

The main aim of the e-Prot (*Engineered conductive proteins for bioelectronics / A protein-based platform for bioelectronics*) project, coordinated by Aitziber López-Cortajarena, is to develop a technology platform for bio-electronics systems based on bio-inspired, sustainable, efficient proteins as an alternative to the traditional technologies used in the electronics industry. López-Cortajarena explained that this Project "emerges out of our group's research focusing on generating protein-based tools and biomaterials for a range of applications, including bioelectronics".

Besides coordinating, CIC biomaGUNE's role in the project is crucial "as it will be responsible for the research during the initial tasks in the project: to design and produce the protein molecules with optimum properties of conductivity and stability so that the rest of the project can be carried out", she added. CIC biomaGUNE will be making these biomolecules available to the various collaborators so that they can be characterized, and once the proteins with the optimum properties have been selected, to enable the companies participating in the project to incorporate them into bio-electronic devices.

DNA-FAIRYLIGHTS Project

DNA-FAIRYLIGHTS (*DNA-flash light driven data technology with multiplexed optical encoding and read-out*) seeks to develop a platform for mass data storage and the rapid handling of information using biological (not artificial) DNA molecules. Gold nanoparticles of different geometries and sizes will be coupled with the DNA chains so that the DNA sequences can be identified and the data thus encoded by means optical signals that are a feature of nanoparticles.

CIC biomaGUNE's role in this project will mainly be to develop a library of metal nanoparticles and ultra-small light emitting nanoclusters as well as to assemble them on DNA templates in a controlled way. The specific optical properties of each nanomaterial will be used for the marking, reading and identification of the specific DNA sequences that encode the information, which will allow fast electro-optical reading of the encoded information. "It is possible to estimate an information storage capacity that is 100 times bigger than that available using current techniques," said Liz-Martin. "It is easy to imagine the impact that this technology could have on the electronic components industry."

DeDNAed Project

The DeDNAed (*Cluster decorated recognition elements on DNA origami for enhanced Raman spectroscopic detection methods*) project seeks to develop a new analytical platform based on the assembly of sensor elements by using DNA origami, which allows these sensors to be accurately located with the necessary nanometric resolution for better surface-enhanced detection via Raman spectroscopy. The anticipated benefits of the proposed technology would be translated into greater sensitivity, versatility and detection speed.

In this project, CIC biomaGUNE would be responsible for designing and synthesizing the sensor elements in the system. These sensors are based on biomolecular recognition hybrids to detect the analyte of interest with nanomaterials needed for optical detection.

About CIC biomaGUNE

The Center for Cooperative Research in Biomaterials, CIC biomaGUNE, member of the Basque Research and Technology Alliance (BRTA), conducts state-of-the-art research at the interface between Chemistry, Biology and Physics devoting particular attention to studying the properties of biological nanostructures on a molecular scale and their biomedical applications. It was recognized in 2018 as a "María de Maeztu" Unit of Excellence for meeting requirements of excellence, which are characterized by a high impact and level of competitiveness in its field of activity on the global scientific stage.