

PRESS RELEASE

Europe entrusts CIC biomaGUNE with the leadership of "Marie Curie" projects to train new scientists

- *IMMUNOSHAPE and HYMADE promote training and exchange of young researchers specialising in autoimmune diseases, cancer, hybrid materials, nanomanufacturing and molecular imaging.*
- *The projects have more than 8 million euros in funding, of which more than 1.8 million has been allocated to the research centre in San Sebastian.*
- *Niels Reichardt, researcher at CIC biomaGUNE: "There is no better training for a PhD student than the 'Marie Curie' projects".*

(San Sebastian, xx February 2015).- The Center for Cooperative Research in Biosciences, CIC biomaGUNE, is leading two "Marie Curie" projects, which are European training and professional development projects for researchers in highly scientific fields such as glycoscience, which studies carbohydrates, and the development of hybrid materials for controlled drug release. The centre is also taking part actively in another project linked to a molecule called TLR4.

These European training and exchange projects for researchers aim to find new ways of scientifically approaching autoimmune diseases, allergies, cancer and the new developments in materials and nanomanufacturing.

The three projects have secured more than 8 million euros in funding, of which just over 1.8 million will be allocated to the San Sebastian research centre. The projects are being developed as part of the Marie Skłodowska-Curie actions, the EU Framework Programme for Research and Innovation, which is considered to be the most important EU training programme for PhD students.

➤ **IMMUNOSHAPE**

Niels-Christian Reichardt, researcher at the Basque centre, specialising in carbohydrate chemistry and immunoglycobiology, is leading the IMMUNOSHAPE project. This project aims to

train a new generation of researchers in scientific and biomedical practice of glycoscience, which is a highly complex field of knowledge and includes the disciplines that study carbohydrates and how they interact with proteins and lipids.

The project has 3.8 million euros in funding, of which 781,922 will be allocated to the Basque research centre. It aims to train researchers in the combined use of cutting-edge technologies to develop immunotherapies based on new glycan structures that may prove useful in treatments for cancer, autoimmune diseases and allergies.

“This is a training project that has a scientific approach, combining several technologies with the aim of developing immunotherapeutic structures to treat allergies, cancer and autoimmune diseases, and to help to develop vaccines,” says Reichardt.

The pathogens that enter the body and cause diseases are surrounded by a dense layer of carbohydrates. The immune system is able to identify fragments of these carbohydrates as exogenous elements and prepare a response.

“We want to selectively guide the antigens linked to the disease towards receptors that specifically recognise carbohydrates, internalise the associated antigen and present it to the immune system to trigger the desired response. In the case of allergies and autoimmune diseases, it must respond with tolerance towards the antigen, while in the case of cancer and viral or bacterial infections, it should respond by attacking the foreign structures. The strategy involves working with the body to help it recognise pathogens and tumours better, and to trigger the correct immune response,” explains Reichardt.

According to Reichardt, the fact that the project belongs to the Marie Skłodowska-Curie actions programme is important because it promotes international mobility of researchers and is an extremely useful tool in order to train human capital.

“There is no better training for a PhD student than the Marie Curie projects”, he adds.

As well as CIC biomaGUNE, there are another 13 partners: the Spanish National Research Council (CSIC), the University of Amsterdam, a Max-Planck Institute in Berlin, the University of Milan, Joseph-Fourier University in Grenoble, the German Cancer Research Centre, nanomedicine company Midatech in Derio, and the pharmaceutical company Novartis, amongst others.

➤ **HYMADE**

The second project led by CIC biomaGUNE is called HYMADE. It aims to develop controlled release systems based on porous materials, polymers and virus particles, and assess their possible application in the treatment for cancer and chronic diseases like rheumatoid arthritis and uveitis.

As the materials used are porous; the drugs can be inserted and are released gradually by modifying the surface of the porous particles by means of polymers and virus particles. This enables a better control of the release and the direction of the materials. The project, coordinated by researcher Sergio Moya, is a global approach to the study of these systems

based on their synthesis, physical and chemical characterisation, modelling, and in-vitro and in-vivo studies.

“The aim of the study is not only to manufacture a product, but to try to understand how these systems work, to analyse how to encapsulate drugs, and to see how these substances are released into the body,” Moya explains.

The project involves the exchange of professionals and will give PhD students the chance to carry out placements outside Europe, and “this experience will benefit them personally and professionally”.

In order to meet its goals, HYMADE is working with eight bodies, four of which are European, and will have a multi-disciplinary team of leading scientists in the fields of materials science, chemistry, physics and biophysics, from Germany, Austria, France, Spain, US, Argentina and Armenia.

The project has 1.2 million euros in funding, of which 772,000 will be allocated to CIC biomaGUNE.

➤ **TOLLERANT**

The research centre in San Sebastian is also taking part in a third project called TOLLERANT, also part of the Marie Skłodowska-Curie actions programme. It will gather ten European partners in an international research network in the therapeutic field.

This action, on which Juan Mareque (Ikerbasque professor) is working, aims to discover more about the behaviour of the molecule TLR4, which is linked to a large spectrum of diseases that are not targeted by specific drugs, such as chronic inflammation, asthma and cancer.

In the long term, the objective is to develop a new generation of TLR4-based therapies, to be used as adjuvant vaccines and anti-inflammatory drugs.

The consortium is led by the University of Milan and also has other participants, such as Bielefeld University (Germany), Diomune centre (Spain), CIC bioGUNE and Kemijski Institute (Slovakia). The total budget is 3.12 million euros.
