

## **CIC bioGUNE, only Spanish research centre selected in the latest call for applications of the International Human Frontier Science Program Organization**

**The centre will research into the metabolism of hummingbirds, capable of storing and burning fat very rapidly**

**The HFSP will provide over one million euros in funds for the project**

(Bilbao, 12 April 2016). CIC bioGUNE, the Centre for Cooperative Research in Biosciences, is the only Spanish scientific organisation selected in the 2016 call for applications of the Research Grant Program of the International Human Frontier Science Program Organization (HFSP). CIC bioGUNE will conduct a study on the physiology and metabolism of hummingbirds, designed to provide a greater insight into the metabolic enzymes which enable this small bird to develop so much energy. This 3-year project, entitled ‘Optimisation of the metabolic flow in the hummingbird: from enzymes to ecology’, will receive 1,055,000 euros in funding from the HFSP.

The scientific interest of the research project lies in discovering exactly how the metabolism of hummingbirds works. The metabolism of these birds works at a very fast rate and has a high capacity for storing and burning fat very rapidly. Mikel Valle, PhD in Molecular Biology and project leader, believes this bird to be a metabolic athlete. “The origin of its energy can be put down to certain metabolic enzymes common to all animals but adapted to working in a different way in hummingbirds”, he explains.

The enzymes to be analysed within the project can be found at the core of the metabolism and are involved in energy regulation. Their functions are related to the production and burning of fat and sugars, so the research in question may provide data of interest on certain metabolic enzymes related to human diseases such as obesity, diabetes and cancer.

### **Consortium with universities from the United States and Canada**

The HFSP-funded research will be conducted by a consortium comprising CIC bioGUNE, the University of Toronto Scarborough (Canada) and Johns Hopkins University (Baltimore, U.S.). The project leader for the Basque Centre for Cooperative Research will be Mikel Valle, an investigator of the Molecular Recognition and Host-Pathogen Interactions Program of CIC bioGUNE.

The particular work of the Basque Centre for Cooperative Research will be focused on studying the structure of the enzymes using cryo-electron microscopy. Essentially, this will consist of freezing samples at very low temperatures, observing them under the microscope and using computing techniques to obtain their structure. Comparison of hummingbird enzymes and those of other organisms will contribute to a better

understanding of the special characteristics of the metabolism of this bird, which is capable of reaching up to 70 flaps per second in flight and of migrating long distances despite its diminutive size (5 to 6 cm.).

The hummingbird metabolism project was selected from among another 672 research proposals submitted in the 2016 call for applications of the Research Grant Program of the International HFSP. Special mention should be made of the fact that, within a very rigorous selection process featuring highly competitive proposals, the project was selected in fifth place overall.

Awardees of the 2016 call for applications are drawn from 20 different countries, including 53 laboratories in Europe, 32 in North America and 11 in Asia and the Pacific region, as well as research centres from Israel and Panama.

#### **HFSP, at the frontier of life sciences**

The International Human Frontier Science Program Organization (HFSP) is an organisation of renowned international prestige at the frontier of life sciences. The organization's Human Frontier Science Program funds research into life sciences. Every year, as part of this program, the HFSP announces an international call for applications for research grants grouped under the theme of "complex mechanisms of living organisms", with an overall budget of 34 million dollars.

The HFSP, founded in 1986, gives priority to collaborative projects involving researchers and research centres from different countries. The awardees receive a grant of between 110,000 and 125,000 dollars per year, for three years. The organization is funded by the European Union and the governments of the United States, Canada, Japan, the Republic of Korea, New Zealand, Norway and Switzerland.