



The AXA Research Fund gives Spain resources of more than ten million euro distributed among 18 projects

Neuroscience applied to spinal cord injuries, new chair from the AXA Research Fund for BiomaGUNE

The center will receive 800.000€ for the team of Maurizio Prato, one of the world's leading experts in graphene and carbon nanotubes, to perform research on the application of these materials in the treatment of spinal cord injuries

October 31, Madrid, – AXA Research Fund has awarded the Center for Cooperative Research in Biomaterials, Biomagune, in San Sebastian, a permanent chair to the team led by Professor Maurizio Prato. The funding amounts to 800,000 euros and will help us understand the practical applications of new materials, such as carbon nanotubes and graphene, in the field of neuroscience and spinal cord injuries.

Jean-Paul Rignault, CEO of AXA Spain and spokesperson of the AXA Research Fund in Spain, has said he is "very proud to have new outstanding and innovative projects carried out in Spain", and has added that "supporting the scientific community is essential not only to help spread knowledge, but to contribute to the understanding of risks affecting our society and thereby preventing it".

The main objective of this project is to provide a new understanding of this type of injuries, which are a major social challenge as they may end up in a partial or a complete paralysis of the individual, having devastating consequences on life quality and care needs of the people who suffer them.

These research results will allow significant progress on treatments based on carbon nanomaterials, which help in neuronal regeneration thanks to their ability to reconnect whole pieces of spinal cord. Carbon nanotubes are cylindrical structures, 15,000 times smaller than a human hair, which have an extremely efficient to transport electricity. These carbon materials help neurons to exchange electrical signals without causing rejection from the tissues but allow nerve cells to grow along their structure.

The idea is to restore the connections of a severed spinal cord using nanotubes as 'scaffold' enabling nerve cells to grow through them. "This is a work of basic science, and it must pass a long time to reach its application on patients, but we hope that this work will serve to treat spinal cord injuries," Prato said.

In turn, within the European macro-project called "Graphene Flagship", researchers will develop a series of sensors and electrodes for brain stimulation based on graphene. This material will be deposited on substrates such as silicon or other similar semiconductors to develop the aforementioned biological applications.

This funding of 800,000 euros is added to the amount that AXA Research Fund has recently awarded to other Spanish projects, including two permanent chairs: the AXA chair on quantum cryptography by

Professor [Antonio Acín](#) at the Institute of photonic sciences and the AXA Chair on sand and duststorms at Barcelona Supercomputing Center that analyzes sand- and dust storm predictions, led by the environmental engineer [Carlos Pérez García-Pando](#).

Ten million euro to support the research in Spain

With the new chair of Prato, AXA Research Fund continues to support initiatives of innovative researchers with high potential to introduce in the public opinion, thus, with their proposals, trying to raise the awareness about the prevention risks, and develop participatory scientific methods to better understand global challenges.

The AXA Research Fund was created in 2007 to accelerate knowledge on socio eco,.. ... risks, by giving financial support to innovative research projects, and encourage researchers to share their findings to help anticipate, prevent or mitigate risks. It has financed Spanish initiatives since its inception with more than ten million euro. Prato joins the scientific community AXA Research Fund in Spain, which counts already with the participation of internationally renowned researchers as Mariano Barbacid, Joan Esteban, Albert Marcet, Carlos Pérez García-Pando, Antonio Acín or [David Rios](#).

During these nine years, the AXA Research Fund has assigned more than 149 million euro to 492 research projects in 33 different countries. 27% of these projects are related to environmental risks, 38% to health risks and 35% to socio-economic risks. Until 2018, it has committed an investment of 200 million euro.

Maurizio Prato

The Italian scientist, [Maurizio Prato](#), has opened new borders in his career in the field of organic chemistry and nanoscience. In 2014, Thompson-Reuters included him in its list of the most influential scientists in the world. Up to now, Prato has been a Professor of organic chemistry at the University of Trieste (Italy), and his works have applications in different fields such as neuroscience, medicine, nanosafety or energy production. Prato has won numerous awards such as the González-Ciamician Prize Spanish Royal Society of Chemistry, the Ree-Natta Lectureship Award of the Korean Chemical Society, the EuCheMS Lecture Award in 2013, the medal Blaise Pascal of the European Academy of Sciences or Natta gold medal of the Italian Chemical Society. He is an Honorary Professor at Xi'an Jiaotong University China and Honoris Causa at the University Tor Vergata of Rome and at the University of Castilla-La Mancha. He is also a member of the Academy of Italian Sciences, the European Academy of Sciences and Academia Europaea.

Furthermore, a chemical process was denominated in his honor as 'Prato reaction', which allows modifying materials at the nanoscale level. It is a very useful tool for producing carbon nanosurfaces that has resulted highly efficient and versatile. Nanomaterials are extremely difficult to handle, so the discovery of this reaction has important implications as it has opened the possibility of developing applications in different fields such as electrochemistry, photophysical, and medicinal chemistry.

CIC biomaGUNE

At the Center for Research in Biomaterials, CIC biomaGUNE, located in the Technology Park of Donostia-San Sebastián, it is carried out cutting-edge research at the interface between chemistry, biology and physics with special focus on the study of the properties of biological nanostructures at a molecular scale and their biomedical applications.