Fundación Biofisica Bizkaia
Biofisika Bizkaia Fundazioa

FUNDACIÓN BIOFÍSICA BIZKAIA / BIOFISIKA BIZKAIA FUNDAZIOA

OFFER – 2 Predoctoral Positions
Publication date: July 29, 2021

Fundacion Biofisika Bizkaia (FBB) is a center of excellence on an international level with the main aim of promoting a multidisciplinary program in the field of Biophysics and its application in the areas of Biotechnology and Health, focusing all its resources in Instituto Biofisika Institutua (UPV/EHU, CSIC).

We are seeking 2 candidates to apply for the Basque Government Predoctoral Grants in the area of Neutron Scattering.

Neutron scattering is a technique that seeks to understand the properties of matter at a structural and dynamic level. Neutron scattering techniques are only available in large-scale facilities, as they can only be produced in nuclear reactors or spallation sources. In Europe, the Laue-Langevin Institute in Grenoble (France, by nuclear reactor) and the Rutherford Appleton Laboratory in Didcot (England, by spallation) stand out. The European Spallation Source (ESS) is currently being built in Lund, Sweden, and the Basque country has contributed significantly by building key components. Once completed, it will be of the utmost importance to ensure that there are trained users capable of exploiting the full potential of the ESS in order to drive advances in science and technology in the Basque country. Are you the next ambassador for the use of neutron scattering in the Basque Country?

Currently, there is a specific call to train doctoral students in the area of neutron scattering. The Instituto Biofisika offers the following projects which will involve travelling to and carrying out measurements at the different European neutron sources:

Project 1.- Optimising the structure of fluorinated nanoparticles and their in vivo behaviour for applications in nanomedicine:

In this project we will apply low angle neutron scattering accompanied by selective deuteration to determine the dependence of nanoparticle structure on composition. Nanoparticles are known to be coated by a "protein corona" when they come into contact with proteins present in the bloodstream. It was recently shown that the adsorption of plasma proteins on lipid-based nanoparticles (of the same type as those used in the Pfizer and Moderna vaccines against Covid19) alters the structure of said nanoparticles, and that this restructuring is correlated with the ability to express proteins within the cell. Here we will investigate whether this effect is generic and also applicable in fluorinated polymeric and metallic nanoparticles.

The ideal candidate is a physicist or physical chemist with an interest in chemical and biological applications. For more information, please contact Mónica Carril (monica.carrilg@ehu.es) and/or Marité Cárdenas (marite.cardenas@mau.se).

Fundación Biofisica Bizkaia
Biofisika Bizkaia Fundazioa

Project 2.- Characterisation of the effect of deep eutectic liquids from natural sources on biomembranes

During the last decade it has been proposed that certain metabolites that exist in abundant quantities in plants constitute a new liquid phase in biology. Equimolar mixtures of these compounds have a much lower melting point than the individual components, turning these compounds into liquids that would otherwise be solid at room temperature. It is known that these liquids are able to preserve the structure of proteins and DNA, stabilising the components against decomposition. However, little is known about the effect of these liquids on cell membranes. In this project we will apply a combination of techniques to structurally characterise (neutron reflectance) the bio-membranes as a function of the concentration of the deep eutectic liquids. Likewise, we will characterise the elastic properties of the membranes with techniques based on fluorescence, Atomic Force Microscopy, and inelastic neutron scattering.

The ideal candidate is a physicist or physical chemist with an interest in chemistry and biology. For more information, please contact Adai Colom (Adai.colom@ehu.es) and/or Marité Cárdenas (marite.cardenas@mau.se).

Minimum requirements of candidates:
1. Good academic record.
2. Must possess an official bachelor's and master's degree (300 ECTS)
3. Be registered as resident in the Basque Country since at least 01/01/2021, or a usual resident currently away for undergraduate or graduate studies.

***IMPORTANT for applicants**
Contact: We are an equal opportunity employer committed to diversity and encourage women candidates to apply. Applicants are encouraged to send the documentation through the Biofisika website contact page (http://biofisika.org/contact/), adding the following subject: [***Job Application: 84Project1***] or [***Job Application: 84Project2***].

For more details about the application process, visit this link: https://www.euskadi.eus/informacion/ayudas-al-personal-investigador-programa-predoctoral/web01-a3predoc/es/

Deadline: Until position is filled

* Please note that due to the large number of applicants expected, it will not be possible to communicate the evaluation results to all the candidates.