

Marie Skłodowska Curie Action –Postdoctoral Fellowship 2024
(MSCA-PF-2024)

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Department /Institute /Centre	Name	Laboratory for Bioinstrumentation and Nanomedicine / Center for Biomedical Technology
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	Province	Madrid
Research Area		Information Science and Engineering (ENG) Life Sciences (LIF) Chemistry (CHE)
Brief description of the Centre/Research Group		<p>The research lines of the Bioinstrumentation and Nanomedicine Laboratory (LBN) of the Center for Biomedical Technology (CTB) are: i) development of technologies for nanomedicine, especially against cancer, ii) biosensors and bioinstruments for non-invasive diagnosis, and iii) applications for the inclusion of people with sensory disabilities. It has six permanent research professors with backgrounds in electronic, software and data engineering, biomedical, biological, chemical and physical sciences. Currently eight doctoral students are carrying out their doctoral thesis in the laboratory itself, and seven combining it with professional activities, in a different degree of progress. Other doctoral and postdoctoral researchers who carry out short research stays also collaborate with the LBN. It has material resources for research that include equipment for the development of electronic systems, creation of prototypes (several 3D printers, integration of commercial sensors), development of nanomaterials and in vitro tests with cell cultures and in vivo with small animals, as well as intangibles such as experience in artificial intelligence software development, augmented and virtual reality, serious games, signal processing and database management.</p> <p>CTB is made up of fourteen laboratories where a total of 180 researchers, including seniors and trainees, carry out their research in a multicultural environment since they come from more than twenty different nationalities. The center contains numerous common resources for cellular, animal and nanotechnology research.</p>



Expression of Interest – UPM Supervisor

Project description	<p>Title: <i>Development of a methodology to investigate the abscopal effect induced by hyperthermia for new cancer treatments.</i></p> <p>Hypothesis: The abscopal effect is a clinical observation that occurs in some cancer patients treated with radiotherapy or hyperthermia: in very rare cases, after treating the primary tumor, the rest of the tumors disappear due to the action of the immune system. It is believed that, although still for unknown reasons, the treatment induces a modification of the immune system so that it attacks tumor cells that it did not previously recognize as targets, which is also called autoimmunization. In collaboration with an international consortium of research groups, we will investigate and hopefully uncover the causes of nanoparticle-mediated hyperthermia-induced autoimmunization. It would be the first step to develop a new cancer therapy.</p> <p>Objectives: Depending on the specific profile of the candidate, attention will focus on the development of instrumentation, or specialized nanoparticles for this application, or the biological methodology of using the immune system in combination with hyperthermia.</p> <p>Methodology: The starting point is a functional experimental prototype and extensive experience in the use of different types of nanoparticles and applications in cell culture and mice for glioblastoma multiforme and melanoma cancer. The aim is to advance this experience by optimizing the hyperthermia methodology and introducing cell lines of the immune system in our experimental set-up and techniques for characterizing cell death. The work is carried out within a multidisciplinary team, so depending on the specific objectives assigned, other researchers will carry out the tasks to achieve the other objectives.</p>
Applications: documents to be submitted and deadlines	CV and Letter of motivation. Deadline: 30th April 2024