

## **RESEARCH ASSISTANT / PROSPECTIVE PhD CANDIDATE FOR THE FRAUNHOFER CENTER FOR APPLIED TERAGNOSTICS (RA03-FCAT)**

### **1. Introduction to the position:**

The Fraunhofer Spain Research foundation is looking for a RESEARCH ASSISTANT / PROSPECTIVE PhD CANDIDATE to join the Fraunhofer Center for Applied Theragnostics in Catalonia (Fraunhofer CAT) and contribute to a research project focused on the development on the microfluidic-based fabrication of nanoparticles for drug delivery.

The position is intended to develop into a PhD project, providing the successful candidate with interdisciplinary training at the interface of nanomedicine, bioengineering, microfluidics and drug delivery.

The contract will be within the framework of the Fraunhofer CAT project, whose objective is the development of new diagnostic, prognostic and therapeutic tools in the field of precision medicine.

This project is funded by: Ministerio de Ciencia, Innovación y Universidades, Generalitat de Catalunya and Ajuntament de Barcelona.

### **2. Description of the position:**

Nanoparticle-based drug delivery systems have emerged as a powerful strategy to improve the efficacy, specificity and safety of therapeutic agents. However, the reproducible production of nanoparticles with precise physicochemical properties remains a major challenge for their translation into clinical applications. Microfluidic technologies offer unprecedented control over nanoparticle synthesis, enabling the scalable and highly reproducible production of advanced nanomedicines.

We are seeking a highly motivated and enthusiastic candidate to join an interdisciplinary research project focused on the development and optimization of microfluidic platforms for the production of nanoparticles for biomedical applications. This project offers an exciting opportunity to work at the interface of nanotechnology, bioengineering and translational medicine while contributing to the development of next-generation drug delivery systems.

The successful candidate will work with state-of-the-art microfluidic technologies to produce and characterize a wide range of nanoparticles, including lipid- and polymer-based formulations. By combining microfluidic engineering, nanoparticle characterization and biological evaluation, the project aims to establish robust manufacturing strategies for nanomedicines with controlled size, composition and functional performance.

Under the supervision of the Fraunhofer CAT research staff, the applicant will carry out the following research activities:

- Design, fabrication and optimization of microfluidic systems for nanoparticle synthesis.
- Production and characterization of nanoparticles for drug delivery and other biomedical applications.
- Development of experimental protocols to investigate the impact of microfluidic parameters on nanoparticle size, stability, encapsulation efficiency and functional performance.

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- Physicochemical characterization of nanoparticles using advanced analytical techniques, including dynamic light scattering (DLS), nanoparticle tracking analysis (NTA), electron microscopy and related methods.
- Evaluation of nanoparticle performance through in vitro biological assays and interaction studies with relevant cellular models.
- Analysis, interpretation and presentation of experimental data, including statistical analysis and visualization of results.
- Contribution to scientific publications, project reports and dissemination activities.
- Collaboration with multidisciplinary teams working in the fields of nanomedicine, microfluidics and advanced cell models for therapeutics.

### 3. Requirements for candidates

#### Essential

- Master's degree in Bioengineering, Biomedical Engineering, Biophysics, Biotechnology, Biomedicine, Chemical Engineering, Pharmaceutical Biotechnologies, Materials Science or a closely related discipline.
- Strong interest in nanomedicine, drug delivery systems, microfluidics and/or bioengineering.
- Motivation to pursue a PhD in an interdisciplinary research environment.
- Hands-on laboratory experience in nanoparticle synthesis, formulation development or related experimental techniques.
- Knowledge of nanoparticle characterization methods (e.g., DLS, NTA, zeta potential measurements, microscopy techniques) and drug encapsulation efficiency determination.
- Ability to independently plan, execute and analyze experiments.
- Excellent organizational and problem-solving skills.
- Strong written and verbal communication skills in English.
- Ability to work effectively in an interdisciplinary and international research environment.

#### Advantageous

- Previous experience with microfluidic device design, fabrication or operation.
- Experience in lipid nanoparticles, polymeric nanoparticles, extracellular vesicles or related nanosystems for drug delivery.
- Experience in cell culture and in vitro biological assays.
- Previous experience in scientific writing and dissemination of research results.
- Motivation to pursue a PhD degree within the framework of the project.

#### We Offer:

- Number of available positions: 1
- Starting date: As soon as possible
- Working conditions:
  - Full time open-ended contract due to technical and scientific activities linked to the project and budget duration. Presential. Attractive salary.
  - Measures to reconcile work and family life (maternity and paternity leave, flexible schedule working hours, 23 working days of paid holidays, 6 leave days for personal matters, among others).
- A stimulating and highly interdisciplinary research project combining advanced cell culture, organoid technology, microengineering, quantitative imaging and computational modelling.

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- Access to advanced research infrastructure and interaction with a multidisciplinary network of researchers in bioengineering, cell biology, cancer research and computational modelling.
- Opportunities for scientific training, participation in international conferences and research collaborations.
- Fraunhofer Spain Research ensures equality of access to professional development opportunities irrespective of employment status or other factors.
- Stimulating, interdisciplinary research and high-quality international scientific environment.
- Induction programme to facilitate incorporation at Fraunhofer Spain Research and additional support is provided for foreigners to obtain Visa-working permit and to install in Barcelona.

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### How to apply:

**Until the 20<sup>th</sup> of September**, by sending a CV and motivation letter to [info@fraunhofer.es](mailto:info@fraunhofer.es) with the reference “RA03-FCAT” as subject of the email.

Only those applications submitted before the deadline will be evaluated.

### Reference: RA03-FCAT

If you have any further questions regarding your application or the application process, please get in touch with us at [info@fraunhofer.es](mailto:info@fraunhofer.es)

### Principles of the selection process:

Fraunhofer Research Spain Foundation is committed to the principles of the Code of Conduct for the Recruitment of Researchers of the European Commission and the Open, Transparent and Merit based Recruitment principles (OTM-R).

Fraunhofer Research Spain Foundation’s commitment on equal opportunity: our strength and excellence as an international transdisciplinary research institute are based on diversity. Being an equal opportunity employer, we are committed to diversity and inclusion, so that we support employees irrespective of their gender, nationality, religion, disabilities, age, sexual identity or cultural and socioeconomic background.

Fraunhofer Research Spain Foundation aims for a representative gender balance at all levels of staff, so we strongly encourage women to apply. At least 40% of shortlisted applicants invited to interview have to be women with comparable level of CVs as the male candidates.

### Protection of personal data:

Fraunhofer Spain Research Foundation guarantees that candidates’ personal data are processed in accordance with the requirements of the EU General Data Protection Regulation (GDPR) and Law 3/2018 on Data Protection.

Personal data will be processed solely for the purposes of the selection process.

### Who we are?

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The Fundación Fraunhofer Spain Research (Fraunhofer Spain) is a non-profit private Spanish Foundation, established in Barcelona in 2025 as an affiliate of Fraunhofer-Gesellschaft, Europe's leading organization for applied research (<https://www.fraunhofer.es/>).

Our mission is to conduct independent research activities, including training, knowledge dissemination, and technology transfer. These activities range from basic research to prototype development and small-scale production, strengthening the internationalization of applied research and connecting academia with productive sectors.

Fraunhofer Spain Research has launched its first program in applied bioengineering for health: the Fraunhofer Center for Applied Theragnostics (Fraunhofer CAT). This initiative is dedicated to developing innovative diagnostic, prognostic, and therapeutic tools within the field of precision medicine. The program aims to generate significant academic, industrial, and healthcare impact, ultimately contributing to societal well-being.

Fraunhofer Spain was founded by Fraunhofer-Gesellschaft, the largest organisation for applied research in Europe with the economic support of the Spanish Government (Ministerio de Ciencia, Innovación y Universidades), the Barcelona City Council (Ajuntament de Barcelona), and the Catalan Government (Generalitat de Catalunya), as well as the academic collaboration of Barcelona University, the Institute for Bioengineering of Catalonia (IBEC) and Fraunhofer Institute for Biomedical Engineering (Fraunhofer IBMT).

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