

# Position Offered: PREDOCTORAL RESEARCHER

Project: *Development of PET-US imaging for monitoring cellular processes in organ analogs*

**Technological and scientific fields:** medical imaging; medical devices

**Location:** Madrid, Madrid, Instituto de Tecnologías Físicas y de la Información "Leonardo Torres Quevedo" <https://www.itefi.csic.es/es>

**Research Group/PI:** Multichannel ultrasonic signal processing group, Oscar Martínez Graullera, <https://www.itefi.csic.es/en/dtic/musp/presentacion>

## PROJECT SUMMARY

This project proposes the development of imaging techniques that merge high-frequency ultrasound imaging with positron emission tomography (PET) to study complex biological models such as organoids, organs-on-chip, bioprinted tissues. The combination of these techniques will allow a more accurate and complete evaluation of the functionality of the models studied, using advanced signal processing techniques and artificial intelligence.

Objective 1: Design and develop imaging instrumentation (US and PET) specifically adapted to the unique geometries and dimensions of organoids, artificial organs and bioprinted tissues, non-invasive and compatible with their survival systems.

Objective 2: Combined multimodal PET and ultrasound imaging for active and non-invasive monitoring of cellular processes.

## PROFESSIONAL PROFILE

### Minimum requirements:

- University degree in Physics or Engineering.
- Master degree.
- Knowledge of programming and signal processing

### Merits to be considered:

- Knowledge of biomedical imaging techniques.
- Master's degree in Biomedical Physics, Nuclear Physics or similar is an asset.
- Knowledge of computing and artificial intelligence techniques
- Experience with Python would be welcome.
- Scientific publications and presentations at conferences would be an asset.

## WHAT IS OFFERED

The work will allow the candidate to develop a doctoral thesis, covering very broad aspects of the technologies under study such as instrumentation, signal processing, image reconstruction and the use of artificial intelligence techniques. Training activities will be funded by the project and include a university master's degree related to bioengineering or computing technologies applied to health as well as several internal CSIC training courses for a total of 62 ECTS credits. Three training stays in expert groups in ultrasound and PET imaging are planned, including one national and two international stays.

### Contract conditions:

Predoctoral Researcher contract of 4 years' duration. Gross annual salary of 23,871.33 €.

**Start of contract: before 31 December 2024**

## PRINCIPAL INVESTIGATOR CONTACT

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