

Paris, September 25, 2026

PhD Position

Development and Validation of a Multimodal Imaging System Combining RETIMAGER PET and 4D Ultrafast Ultrasound

Acronym: ULTRAPET

Host laboratory: PARCC, Inserm U970, Université Paris Cité

Team: In Vivo Imaging Team

PhD advisor: Professor Bertrand Tavitian

Duration: [36 months]

Start date: [to be specified]

Funding: [to be specified]

Doctoral school: [to be specified]

Work location: Paris, France

The Project

Positron emission tomography (PET) is a highly sensitive molecular imaging technique that enables the in vivo measurement of various metabolic processes. Ultrafast 4D ultrasound, in turn, provides high-temporal-resolution anatomical, functional, and hemodynamic information.

The ULTRAPET project aims to combine these two modalities in a single imaging system to simultaneously obtain information on metabolism, structure, and vascular function in living biological models.

Our team developed the PETRUS concept—PET Registered Ultrasound—which enables the simultaneous acquisition of PET and ultrasound images. The objective of this PhD project is to integrate the new RETIMAGER PET technology into this device in order to develop and validate the first RETIMAGER-PETRUS system.

PhD Project Objectives

The successful candidate will contribute to:

- developing multimodal PET–ultrasound reconstruction and registration methods;
- developing motion- and attenuation-correction methods for PET;
- characterizing system performance using anatomically realistic phantoms;
- validating the device according to NEMA recommendations and standards;
- jointly analyzing quantitative parameters obtained from PET and ultrasound;
- applying the system to preclinical models in oncology, cardiology, and neuroscience.

Candidate Profile

We are seeking a candidate with a master's degree or engineering degree in:

- physics;
- applied mathematics;
- computer science;
- signal or image processing;
- biomedical imaging;

- or a related field.

Proficiency in Python and an interest in scientific computing, 3D imaging, and quantitative methods are required.

Experience in PET, ultrasound, multimodal image registration, biomedical instrumentation, or the design of imaging phantoms would be an advantage but is not required.

The successful candidate should be independent, rigorous, and strongly interested in working within a multidisciplinary and international team. Collaborations and research stays at European laboratories may be arranged.

Application

The application should include:

- a curriculum vitae;
- a cover letter;
- master's degree or engineering degree transcripts;
- contact information for two individuals who may provide letters of recommendation.

Application deadline: [to be specified]

Contact: Professor Bertrand Tavitian

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For more information about the scientific project: [link to the [detailed description](#) or laboratory website].