

INPhINIT is a new doctoral fellowship programme devoted to attracting international Early-Stage Researchers to the top Spanish research centres in the areas of Bio and Health Sciences, Physics, Technology, Engineering and Mathematics. **INPhINIT** is promoted by the "la Caixa" Foundation with the aim of supporting the best scientific talent and fostering innovative and high-quality research in Spain by recruiting outstanding international students and offering them an attractive and competitive environment for conducting research of excellence. **INPhINIT** relies on the European Commission's support through the Horizon 2020 Marie Skłodowska-Curie Actions - COFUND programme to recruit a larger number of researchers and achieve a broader impact, as well as to further pursue the highest standards for research training.

INPhINIT recruits per call 57 Early-Stage Researchers of any nationality, who enjoy a 3-year employment contract at the Research Centre of their choice among those selected and awarded by the Spanish Ministry of Economy and Competitiveness ("Severo Ochoa" centres of excellence and "Maria de Maeztu" units of excellence) and the Spanish Ministry of Health ("Carlos III centres of excellence"). In addition, researchers establish a personal career development plan including transnational, intersectoral and interdisciplinary mobility opportunities, and attend a full range of complementary training courses and workshops.

IIS La Fe has been selected as Host Organization. Please, complete the information below if your research group is interested in recruiting **INPhINIT** fellowships. Please, fill this document for each research project offered:

Project title/Job position title:

Analysis of T1 mapping methods and their associated bias in Oncology Imaging Biomarkers from Magnetic Resonance

Research project/Research group description (2000 characters without space): *Please describe the research project in which the fellow would work trying to be as specific as possible. Alternatively, highlight the main focus of the research line of the research group in which the fellow would join.*

The aim of this project is to research and develop in the different methodologies for T1 mapping with Magnetic Resonance (MR) imaging. Most of the Imaging Biomarkers analysed in Oncology from MR images, like diffusion and perfusion parameters have a clear influence on the T1 properties of the tissue. Therefore, measurements can be importantly biased by the T1 effect in the signal being analysed. The project will consist on acquiring a deep knowledge on T1 relaxation phenomena of the MR signal and their influence on Imaging Biomarkers extracted from solid tumors in MR. The outcome of the project will allow to add insight into the standardization of oncology imaging biomarkers from MR, that today still present a high variability due to the existing uncertainties in the analysis processes produced, among others, by T1 effects.

The Experimental Radiology Platform is an open research centre that provides image

resources (from acquisition to processing and quantification) and personalized collaborative research projects with animals in which imaging is relevant.

The Experimental Radiology platform provides support in project definition; optimizing the acquisition of MR images (3 Tesla with multiple coils, with high spatial and temporal resolution), digital radiography and fluoroscopy for evaluation of devices and interventional procedures (angiography in real time with high-level detector resolution), digital ultrasound (with multi-probes); image processing (extraction of imaging biomarkers, distribution and quantification); data analysis (biostatistics and data mining); and qualified technical personnel.

The Biomedical Imaging Research Group (GIBI 230) is a multidisciplinary platform of research in Medical Imaging, which involves an important number of recognized specialists. The group has the certification of the Carlos III Research Institute from the Spanish Ministry of Health. The group's mission is to promote and develop the use of imaging biomarkers extracted from medical images, to optimize diagnostic and therapeutic applications of medical imaging through a multidisciplinary and multimodality approach, both in clinical and animal research.

The main research lines of the group are the following:

- Development and validation of biomarkers based on imaging processing and analysis, in order to add new valuable information to differentiate and characterize relevant clinical features of human diseases
- Design of standard operating procedures and protocols to analyse biomedical images to provide biological, functional and anatomic information
- Visualization and monitoring of stem cells in different organs by means of functional imaging
- Development of emerging percutaneous techniques for the development of new local treatments via endovascular and percutaneous procedures, for instance as vehicle for angiogenic and antitumoral factors in oncology
- New techniques and diagnostic procedures based in molecular imaging
- Optimization of processing and analysis of biomedical images
- Control and safety of ionizing radiation

Job position description (2000 characters without space): *Please include all the relevant information about the position role, responsibilities and skills required within the project/group.*

The Biomedical Imaging Research Group (GIBI 230) searches a Biomedical Engineer. The requirements of the candidate are the following:



- University Degree in Biomedical Engineering or Engineer with master in Biomedical Imaging

Other skills to value:

- Training in animal research
- Justified experience in Medical Imaging and analysing data
- Proven track record in Matlab, Python, and other languages like C++.
- Experience setting priorities and planning
- Experience coordinating work across different partner institutions/organisations
- Communication and exploitation of results
- Fluent English
- Teamwork capability

Group leader information: *Full name, e-mail and research project/research group website.*

Dr. Luís Martí Bonmatí leads GIBI230, after his graduation in Medicine with the Extraordinary Graduation Prize, he focus his career specially in imaging biomarkers, image processing, imaging biobanks, abdominal imaging and clinical management in radiology.

He has been the Director of 28 Doctoral Thesis and 13 end of career projects. Dr. Luis Martí-Bonmatí is the author of over 450 publications (233 of which are indexed in Medline), the Editor of 9 books, and the author of 55 book chapters. Most of his publications focus on Magnetic Resonance, Clinical Radiology, the development of Imaging Biomarkers, and Engineering-supported Biomedical Research. He holds 10 patents and software registries, with two more in process.

Dr. Luis Martí-Bonmati has actively participated in 33 financed research projects, with a global budget of 41,824,195€. He has been the Principal Investigator in 14 of these projects, with a total financial support of 32,104,324€.

He is currently Head of Imaging Department of La Fe Hospital.

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