

# **BRACCO FELLOWSHIPS EDUCATION IN RESEARCH ENROLMENT FORM**

**Name of Institution: Biomedical Imaging Research Group – La Fe Health**

**Research Institute**

**City and Country of Institution: Valencia - Spain**

## **RESEARCH GROUP**

La Fe University and Polytechnic Hospital is the reference center for advanced treatments in the Valencian Community, serving a population of over 5 million inhabitants. The Medical Imaging Department encompasses Radiology, Nuclear Medicine, Medical Physics, Radiopharmacy, and Radioprotection units. Situated on the ground level, this department spans 6,000 square meters and conducts over 1,100 studies daily.

In 2014, the Biomedical Research Group in Medical Imaging (GIBI230) was established within the La Fe Health Research Institute. This multidisciplinary group comprises more than 39 researchers with a keen interest in medical imaging, radiomics, artificial intelligence, biobanks, and data integration.

The Biomedical Imaging Research Group aims to enhance the use of imaging techniques and biomarkers, and to develop Artificial Intelligence algorithms that can predict relevant clinical outcomes through conceptual and mechanical trials. With a multidisciplinary and multimodal approach to both clinical care research and animal experimentation, the group seeks to optimize the diagnostic and therapeutic efficiency of medical imaging.

The research group also strives to promote clinical trials where medical imaging and imaging biomarkers play a significant role. Additionally, it aims to advance and implement 'evidence-based medical imaging' for healthcare technology assessment and the establishment of innovative clinical guidelines.

Moreover, the group provides access to technical resources for other groups and researchers in both academia and industry, openly facilitating the enhancement of their research quality to efficiently achieve their objectives.

These are some of the main research lines of the Biomedical Imaging Research Group:

- Development and validation of imaging biomarkers and Artificial Intelligence models

- Definition and implementation of parametric images with multimodal and multidimensional information
- Implementation of advanced techniques for precision image-based diagnosis and therapy
- Creation of structured repositories of imaging data integrated with patients' clinical, pathological, and molecular information (Real World Data)
- Development and implementation of structured reports and their extensive utilization
- Management of biosafety aspects related to ionizing radiation

## **TITLE OF PROPOSED RESEARCH PROJECT**

### **Radiomics, Artificial Intelligence and Predictive Models in Medical Imaging**

#### **OBJECTIVES**

- Collaborate in a multidisciplinary research environment
- Understand, develop, and validate radiomics techniques
- Design, optimize, and evaluate predictive models for clinical outcomes
- Enhance AI-driven Clinical Decision Support Systems (CDSS)
- Participate in data integration and interoperability for the creation of standardized imaging repositories

#### **APPLICANT'S DUTIES**

- Extract and validate imaging biomarkers in cancer to address unmet clinical needs
- Create structured repositories of imaging data integrated with clinical, pathological, and molecular information (Real World Data)
- Design, train, fine-tune, and validate predictive models to forecast disease progression, treatment response, and patient prognosis based on imaging data and associated clinical data
- Correlate radiomics of tumor regions with molecular and genomic variables (radiogenomics)
- Participate in the implementation and evaluation of AI-driven CDSS to assist clinicians in their daily routine practice

#### **APPLICANT'S BENEFITS**

- Participation in the scientific outcomes of the project, including presentations at national and international congresses and publication of scientific papers

- An engaging and stimulating work environment with a multidisciplinary team (radiologists, data scientists, engineers, statisticians, physicists, AI developers, oncologists, etc.)
- A wide range of opportunities in medical imaging research to pursue a career in our research group
- A chance to expand your network of contacts with top-level researchers from European centres and institutions with which the group collaborates
  
- Project Leader:
  - Luis Marti-Bonmatí: Head of the Medical Imaging Department and the Biomedical Imaging Research Group
  - Leonor Cerdá Alberich: Scientific and Technical Director of the Biomedical Imaging Research Group
  
- Members:
  - Serena Pisoni: Data Scientist specializing in HCC
  - Silvia Flor Arnal: Data Scientist specializing in oncological diseases
  - María Beser Robles: Biomedical engineer specializing in imaging biomarkers and brain tumours
  - Matías Fernández Patón: Biomedical engineer specializing in image processing and oncological diseases