

Research Project

Name of Institution and department:

Department of Cardiothoracic Radiology

Heart and Lung Institute, CHU Lille, University of Lille France

Link to website:

City and Country of Institution:

Lille F-59000, France

RESEARCH GROUP

Brief description of the research group and of its mission:

Since 2021, the Cardiothoracic Imaging Department of Lille has been at the forefront of photon-counting CT technology and its application in cardiovascular imaging. The research group is dedicated to evaluating and expanding the potential of this cutting-edge technique through standardized and comprehensive research protocols, with systematic comparison and validation against cardiovascular magnetic resonance imaging.

TITLE OF PROPOSED RESEARCH PROJECT

Advanced Quantitative Imaging and Biomarker Characterisation with Photon-Counting CT and Cardiovascular Magnetic Resonance

OBJECTIVES

- To evaluate the diagnostic and prognostic role of non-invasive myocardial imaging biomarkers, particularly in non-ischaemic cardiomyopathies (hypertrophic, infiltrative, inflammatory, and systemic diseases).
- To explore the added value of quantitative cardiac CT imaging, including plaque analysis and peri-coronary tissue assessment.
- To develop, test, and validate advanced prototype research tools for quantitative imaging, with the aim of assessing their robustness, reproducibility, and clinical applicability, and facilitating their integration into routine cardiovascular imaging practice.

APPLICANT'S DUTIES

The applicant will participate in cardiac CT and CMR-related activities, with particular focus on acquisition protocols, image interpretation, quantitative analysis, and advanced biomarker characterization (ECV, LIE quantification).

Throughout the fellowship, the fellow will be expected to comply with institutional standards for ethics, anonymization, patient confidentiality, and research integrity.

Following completion of the fellowship, the applicant may continue to collaborate remotely with the research group on ongoing projects, manuscript preparation, conference submissions, and future publications.

APPLICANT'S BENEFITS

Upon completion of the fellowship, the applicant will be expected to have acquired the necessary skills to contribute to original research in advanced cardiovascular imaging.

According to the fellow's contribution and in accordance with standard authorship criteria, the applicant may have the opportunity to submit original work as first author or co-author.

The research group will support the fellow in preparing abstracts, scientific presentations, and manuscripts derived from the projects conducted during the fellowship. Emphasis will be placed on dissemination of the research at leading congresses, including JFR, ECR, ESCR, SCCT & RSNA, where the department is actively represented.

The fellow will have the opportunity to participate in multidisciplinary clinical and research groups at CHU Lille, including those dedicated to congenital heart disease, valvular heart disease, and rare cardiovascular diseases.

After returning to their home institution, fellows may continue to work remotely with the Lille Cardiothoracic Imaging Department on ongoing projects, manuscript preparation, conference submissions, and future publications.

- Project Leader: Prof. Francois Pontana
- Members: Dr Christos Gkizas, Dr Benjamin Longere