

Research Project

Name of Institution and department:

UOC of Abdominal and Pelvic Imaging,
Department of Imaging, Radiotherapy and Hematology,
Fondazione Policlinico Universitario Agostino Gemelli IRCCS

Link to website: <https://policlinicogemelli.it>

City and Country of Institution: Rome, Italy

RESEARCH GROUP

Brief description of the research group and of its mission:

The research group is a multidisciplinary team focused on abdominal imaging, in particular hepato-biliary and pancreatic imaging, quantitative MRI analysis, radiomics and clinically oriented artificial intelligence. The main aim is to translate advanced image-analysis methods into robust and reproducible tools that support earlier diagnosis, risk stratification and personalized management of patients. The group collaborates with clinicians and data scientists to integrate imaging biomarkers with clinical, laboratory and therapeutic-response data.

TITLE OF PROPOSED RESEARCH PROJECT

Identification of AI-based Imaging Biomarkers for Diagnosis and Prognostic Stratification in Primary Biliary Cholangitis

OBJECTIVES

- To identify MRI-based imaging biomarkers associated with the presence and severity of Primary Biliary Cholangitis.
- To assess the association between imaging biomarkers and key clinical, laboratory and treatment-response parameters.
- To develop and internally validate artificial intelligence models to support diagnosis and prognostic stratification of PBC.

APPLICANT'S DUTIES

- To anonymize a retrospective collected data base of liver MRI examinations together with relevant clinical and laboratory data
- To perform image quality control, segmentation and preprocessing

- To extract quantitative imaging/radiomics features, select the most informative variables and correlate them with clinical endpoints
- To develop and train machine-learning models for diagnostic support and prognostic stratification
- To carry out internal validation, compare model performance and assess robustness/reproducibility
- To prepare the final report and contribute to dissemination of results through abstracts, presentations and manuscripts

APPLICANT'S BENEFITS

- To acquire knowledge on quantitative liver MRI analysis, segmentation, radiomics and machine-learning workflows
 - To learn processes to integrate imaging biomarkers with clinical, laboratory and therapeutic-response data in a translational research setting.
 - To participate to scientific outcomes of the project i.e. abstract submission and presentations to congresses or publications of papers
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- Project Leader:
Prof. Maria Antonietta Bali
 - Members:
Dr. Giulia de Rosa
Dr. Eliana Rubino
Dr. Luca Boldrini