

Advanced Medical Imaging, Artificial Intelligence, and Imaging-Guided Therapy

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DESCRIPTION

Our group addresses different aspects of vascular biology, thrombosis and myocardial pathophysiology aimed at studying the mechanisms underlying the onset, progression and complications of cardiovascular diseases (CVDs) with high morbidity and mortality, such as atherosclerosis, aortic aneurysms, cardiac hypertrophy and myocardial infarction. Our ultimate goal is to develop tools for early diagnosis and new therapeutic strategies for these diseases.

MAIN LINES OF RESEARCH

- Artificial Intelligence.
- Quantitative Medical Imaging Advances and Radiomics.
- Innovative Imaging Technologies.
- Image-Guided Therapy 3D Imaging and Surgical Planning.
- Design and Testing of Medical Devices

SCIENTIFIC CHALLENGES

- Increasing knowledge in the implementation of digital technologies in healthcare through the design and testing of tools supporting clinical and radiological decision-making, based on Artificial Intelligence and Robotics.
- Promoting the development and use of advanced biomarkers in medical imaging,

including new acquisition methods, techniques, or procedures, especially quantitative and omics biomarkers.

- Encouraging the use of advanced imaging technologies and 3D printing for the enhancement of educational resources and clinical-surgical planning.
- Enhancing participation in national and international research networks focused on diagnostic imaging, as well as fostering collaboration in multidisciplinary research teams.

SCIENTIFIC PRODUCTION

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- Bendszus M, Laghi A, Munuera J, Tanenbaum LN, Taouli B, Thoeny HC. MRI Gadolinium-Based Contrast Media: Meeting Radiological, Clinical, and Environmental Needs. *JOURNAL OF MAGNETIC RESONANCE IMAGING*. 2024; 60(5). DOI:10.1002/jmri.29181. PMID:38226697. IF:3,300 (Q1/3D). Document type: Review.
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- Valls A, Tejo A, Adell N, Lustig P, Fenollosa F, Buj I, Rubio J, Munuera J, Krauel L. Advanced Strategies for the Fabrication of Multi-Material Anatomical Models of Complex Pediatric Oncologic Cases. *Bioengineering-Basel*. 2024; 11(1):31. DOI:10.3390/bioengineering11010031. PMID:38247908. IF:3,800 (Q2/4D). Document type: Article.