

Clinical and Translational Cardiology

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DESCRIPTION

The Clinical and Translational Cardiology research group is a multidisciplinary research group focused on cardiovascular research. Our areas of work include basic and clinical electrophysiology, heart failure and heart transplantation, ischemic heart disease, valvular heart disease, diseases of the aorta, cardiac imaging, cardiac modelling, 3D printing, bioengineering and innovation in healthcare management. The research group has access to all patient and clinical facilities at Hospital de la Santa Creu i Sant Pau, as well as the research facilities of the research institute. The group maintains multiple research collaborations at both the national and international levels.

MAIN LINES OF RESEARCH

- Basic and clinical electrophysiology. (Guerra Ramos, José María).
- Biomarkers of cardiovascular disease. (Mirabet Pérez, Sonia; Sionis, Alessandro).
- Heart failure and heart transplantation. (Mirabet Pérez, Sonia).
- Ischemic heart disease. (Arzamendi Aizpurua, Dabit; Sionis, Alessandro).
- Valvular heart disease. (Li Li, Chi Hion).
- Diseases of the Aorta. (Barros Membrilla, Antonio José).
- Cardiac Imaging. (Vilades Medel, David).
- Cardiovascular genetics. (Guerra Ramos, José María).

- Cardiac modelling and 3D Printing. (Moustafa, Abdel Hakim).
- Bioengineering applied to cardiovascular disease. (Amorós Figueras, Gerard).
- Innovation in health care management. (Viñolas Prat, Xavier).

SCIENTIFIC CHALLENGES

Electrophysiology:

Mechanisms of tachycardia-induced cardiomyopathy.

Mechanisms of lesion formation in Pulsed Field Ablation. New applications.

Use of bioimpedance for tissue characterisation in arrhythmia procedures.

Heart failure:

Mechanisms of vascular disease in heart transplant patients.

New treatments for the management of heart failure patients.

Biomarkers of disease prognosis in heart failure patients.

Markers for early detection of cardiac graft rejection in transplanted patients.

Palliative care programs for patients with advanced heart failure.

Ischemic heart disease:

Multidisciplinary treatment of cardiac sudden death.

Tako-Tsubo syndrome.

Cardiogenic shock.

Valvular heart disease:

Implement new percutaneous techniques for the treatment of mitral and tricuspid valve regurgitation and degenerative aortic stenosis.

Implement novel devices for treating prosthetic valve leaks.

Cardiac imaging:

Implement new imaging software analysis to detect structural abnormalities of the myocardium (fibrosis, necrosis).

ACTIVE & AWARDED GRANTS

- Guerra Ramos, José María. Estudio traslacional para caracterizar las alteraciones estructurales y moleculares subyacentes a la reversibilidad de la miocardiopatía inducida por taquicardia. PI20/01702. Instituto de Salud Carlos III (ISCIII). Duration: 2021-2025. 187.550,00 €
- Guerra Ramos, José María. Optimización del tratamiento con amiodarona de la fibrilación auricular persistente mediante una estrategia terapéutica personalizada. Ensayo clínico aleatorizado. PI23/ 01768. Instituto de Salud Carlos III. Duration: 2024-2026. 152.500,00 €
- Guerra Ramos, José María. Electroporation in cardiac tissue: from safe and efficient cardiac arrhythmias ablation to new therapeutic indications. MARATO 202320-30 Fundació La Marató de TV3. Duration: 2024-2027. 199.995,00 €
- Guerra Ramos, José María. Centro de Investigación Biomédica en Red de Enfermedades Cardiovasculares (CIBERCV). CB16/11/00276. Ministerio de Ciencia e Innovación. ISCIII.
- Guerra Ramos, José María. Cardiologia Sant Pau. Grup de Recerca Reconegut 2021 SGR 00834. Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2022-2025.
- Guerra Ramos, José María. Efectos de la contaminación atmosférica sobre el desarrollo de arritmias, e impacto de estrategias poblacionales destinadas a disminuir la exposición a contaminantes. PR(AG)15/2022. Ajuntament de Barcelona. Duration: 2023-2024. 15.340,00 €
- Mirabet Pérez, Sonia. Genómica de la insuficiencia cardíaca de diferente etiología en 3600 casos y 36.000 controles. Proyecto REDAMCOR. PI24/01108. Instituto de Salud Carlos III. Duration: 2025-2027. 27.500,00 €
- Viñolas Prat, Xavier. TIQUE - 965356 - InnovaTive care services, enhanced with technology, to deliver quick responses for individuals with advanced heart failure and complex care needs through integrated care. Horizon 2020. European Commission. Duration: 2020 - 2026. 4.548.678,70 € (FGS)

DOCTORAL THESES DEFENDED

- Armario Bel, Xavier. New Devices and Global Trends in Transcatheter Aortic Valve Implantation. 29/11/2024. Universitat Autònoma de Barcelona. Supervisors: Arzamendi Aizpurua, Dabit; Mylotte, Darren. <https://hdl.handle.net/10803/693046>
- Fernández Peregrina, Estefanía. Estudio para la caracterización de pacientes con beneficio optimo en el tratamiento de la insuficiencia mitral mediante el dispositivo MitraClip. 28/02/2024. Universitat Autònoma de Barcelona. Supervisors: Arzamendi Aizpurua, Dabit; Cinca Cusculola, Joan. <https://hdl.handle.net/10803/691598>
- Li Li, Chi Hion. Estudio de Predictores en REparación MItral (PREMIT): Impacto de la valoración ecocardiográfica en la predicción de resultados agudos y a medio plazo en la reparación mitral transcáteter con técnica borde-borde. 07/05/2024. Universitat Autònoma de Barcelona. Supervisors: Arzamendi Aizpurua, Dabit; Carreras Costa, Francesc; Cinca Cusculola, Juan Maria. <https://hdl.handle.net/10803/691859>
- Aceituno C, Revuelta D, Jiménez V, Ginel A, Molina CE, Hove L. Impact of Overnight Storage of Human Atrial Myocytes on Intracellular Calcium Homeostasis and Electrophysiological Utility. *Biomolecules*. 2024; 14(11):1415. DOI:10.3390/biom14111415. PMID:39595591. IF:4,800 (Q1/3D). Document type: Article.
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