Cardiovascular Biochemistry

Group leader

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Researchers

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DESCRIPTION

The group is made up of personnel from the Research Institute of the Hospital de Sant Pau (IR-HSP) and the Biochemistry Department of the Hospital de la Santa Creu i Sant Pau (HSCSP). The group's primary lines of research focus on the study of molecular mechanisms underlying the development of cardiovascular diseases, specifically those resulting from alterations in lipoprotein metabolism or inflammatory processes. Our objective is to transfer the knowledge obtained from the lines of translational research to clinical application in a Clinical Biochemistry Laboratory of a University Hospital.

MAIN LINES OF RESEARCH

- Mechanisms leading to lipoprotein aggregation and cholesterol accumulation in the arterial wall. (Benítez González, Sonia).
- Mimetic peptides derived from apoJ as therapeutic tools. (Sánchez Quesada, José Luis).
- Inflammatory, apoptotic and lipid accumulation-related pathways induced by modified LDL in monocytes, endothelial cells and cardiomyocytes, in the context of diabetes, obesity, heart failure and ischemic stroke. (Benítez González, Sonia; Sánchez Quesada, José Luis).
- Analysis of the secretome of epicardial adipose tissue from cardiac surgery patients with diabetes or obesity. (Benítez González, Sonia; Sánchez Quesada, José Luis).

- Analysis of apolipoprotein J (apoJ) as a marker of CVR. (Sánchez Quesada, José Luis).
- Assessment of new biomarkers of acute and chronic cardiovascular disease. (García Osuna, Álvaro).
- Biomarkers of epicardial fat accumulation. (Benítez González, Sonia; Sánchez Quesada, José Luis).
- Development of algorithms for ruling-out acute coronary disease. (García Osuna, Álvaro).
- Development of methods for point-of-care biomarker measurement. 8 García Osuna, Álvaro).
- Vulnerability markers to assess carotid plaque inflammation in ischemic stroke. (Benítez González, Sonia).

SCIENTIFIC CHALLENGES

- Determine the intracellular mechanisms involved in the inflammatory response induced by LDL(-) and the components of the particle that entail atherogenicity.
- Analyse the therapeutic potential of mimetic peptides derived from apoJ to delay the development of atherosclerosis in animal models.
- Find new markers of cardiovascular risk in diseases such as diabetes, obesity, HIV or cardiac failure.
- Strengthen international collaborations to set up future applications for International funding and participation in multidisciplinary international research projects.

ACTIVE & AWARDED GRANTS

- Almendra Pegueros, Rafael Antonio. Contractes predoctorals PFIS 2021. FI21/00125. Instituto de Salud Carlos III (ISCIII). Duration: 2022-2024.
- Benítez González, Sonia. LRP1 como mediador de los efectos proinflamatoRíos de la LDL modificada electronegativa en la arteRíosclerosis. Sociedad Española de ArteRíosclerosis (SEA). Duration: 2021-2024. 15.000,00 €
- Benítez González, Sonia. Lipoproteínas modificadas y marcadores inflamatoRíos asociados con vulnerabilidad de placa carotídea e ictus isquémico. PI19/00421. Instituto de Salud Carlos III (ISCIII). Duration: 2020-2024. 130.680,00 €
- Puig Grifol, Nuria. Contractes Predoctorals PFIS 2020. FI20/00252. Instituto de Salud Carlos III (ISCIII). Duration: 2021-2024. 82.400,00 €
- Sánchez Quesada, José Luis. Tejido adiposo epicárdico en obesidad y diabetes. Mecanismos moleculares de riesgo cardiovascular y búsqueda de nuevos biomarcadores. PI20/00334. Instituto de Salud Carlos III (ISCIII). Duration: 2021-2025. 147.620,00 €
- Sánchez Quesada, José Luis. Papel de las glicoformas de clusterina/apolipoproteina J en la dislipemia diabética. PI23/00888. Instituto de Salud Carlos III (ISCIII). Duration: 2024-2026. 127.500,00€
- Rives Jiménez, José. Contractes Río Hortega 2024. CM24/00077. Instituto de Salud Carlos III (ISCIII). Duration: 2025-2027. 65.000,00 €

SCIENTIFIC PRODUCTION

- Benítez S, Puig N, Camps P, Sánchez JL. Atherogenic circulating lipoproteins in ischemic stroke. Frontiers in Cardiovascular Medicine. 2024; 11:1470364. DOI:10.3389/fcvm.2024.1470364. PMID:39713216. IF:2,800 (Q2/4D). Document type: Review.
- Genua I, Miñambres I, Puig R, Sardà H, Fernández S, Sánchez JL, Pérez A. Weight loss benefits on HDL cholesterol persist even after weight regaining. SURGICAL ENDOSCOPY AND OTHER INTERVENTIONAL TECHNIQUES. 2024; 38(6). DOI:10.1007/s00464-024-10826-7. PMID:38684527. IF:2,400 (Q2/3D). Document type: Article.
- Illana FJ, García A, Sospedra M, Ferrer R, Martínez C, Guiñón L. Quality assurance of add-on testing in plasma samples: stability limit for 29 biochemical analytes. Biochemia Medica. 2024; 34(2):020704. DOI:10.11613/BM.2024.020704. PMID:38665870. IF:3,800 (Q1/2D). Document type: Article.

- Laghi L, Ortiz MA, Rossi G, Román E, Mengucci C, Cantó E, Biagini L, Sánchez E, Mulet M, García A, Urgell E, Kaur N, Poca M, Padrós J, Nadal MJ, Cuyàs B, Alvarado E, Vidal S, Juanes E, Ferrero A, Escorsell A, Soriano G. Biomarkers of Frailty in Patients with Advanced Chronic Liver Disease Undergoing a Multifactorial Intervention Consisting of Home Exercise, Branched-Chain Amino Acids, and Probiotics. Biomolecules. 2024; 14(11):1410. DOI:10.3390/biom14111410. PMID:39595586. IF:4,800 (Q1/3D). Document type: Article.
- Puertas L, Puig N, Camacho M, Dantas AP, Marín R, Martí J, Jiménez E, Benítez S, Camps P, Jiménez F. Serum from Stroke Patients with High-Grade Carotid Stenosis Promotes Cyclooxygenase-Dependent Endothelial Dysfunction in Non-ischemic Mice Carotid Arteries. Translational Stroke Research. 2024; 15(1)DOI:10.1007/s12975-022-01117-1. PMID:36536168. IF:3,800 (Q1/3D). Document type: Article.
- Puig N, Rives J, Gil P, Miñambres I, Ginel A, Tauron M, Bonaterra A, Hernández M, Pérez A, Sánchez L, Benítez S. Apolipoprotein J protects cardiomyocytes from lipid-mediated inflammation and cytotoxicity induced by the epicardial adipose tissue of diabetic patients. BIOMEDICINE & PHARMACOTHERAPY. 2024; 175:116779. DOI:10.1016/j.biopha.2024.116779. PMID:38776681. IF:6,900 (Q1/1D). Document type: Article.
- Sardà H, Colom C, Benítez S, Carreras G, Amigó J, Miñambres I, Viladés D, Blanco F, Sánchez JL, Pérez A. PCSK9 plasma concentration is associated with epicardial adipose tissue volume and metabolic control in patients with type 1 diabetes. Scientific Reports. 2024; 14(1):7195. DOI:10.1038/s41598-024-57708-5. PMID:38532033. IF:3,800 (Q1/2D). Document type: Article.