



3.2.3 Vascular Physiology and Pharmacology Group

Publications: **18**

Q1: **12**

COMPOSITION

Mercedes Salaires Sánchez. Catedrática. Departamento de Farmacología. Facultad de Medicina. Universidad Autónoma de Madrid

María Jesús Alonso Gordo. Catedrática. Departamento de Ciencias Básicas de la Salud. Facultad de Ciencias de la Salud. Universidad Rey Juan Carlos

Constanza Ballesteros Martínez. Investigadora Predoctoral. Universidad Autónoma de Madrid

María Teresa Barrús Ortiz. Profesora Contratada doctor. Departamento de Ciencias de la Salud. Facultad de Ciencias de la Salud. Universidad Rey Juan Carlos

Javier Blanco Rivero. Profesor Contratado Doctor. Departamento de Fisiología. Facultad de Medicina. Universidad Autónoma de Madrid

Ana María Briones Alonso. Profesora Titular. Departamento Farmacología, Facultad de Medicina. Universidad Autónoma de Madrid

Ana Belén García Redondo. Profesora Ayudante Doctor.

Departamento de Fisiología. Facultad de Medicina. Universidad Autónoma de Madrid

Naoual Boukich El Houari. Investigadora Predoctoral. Universidad Autónoma de Madrid

María González Amor. Investigadora Postdoctoral. Centro Nacional de Investigaciones Cardiovasculares

Raquel González Blázquez. Investigadora Postdoctoral. Universidad Autónoma de Madrid

Zoe González Carnicero. Investigadora Predoctoral. Universidad Autónoma de Madrid

Raquel Hernanz Martín. Profesora Titular. Departamento de Ciencias Básicas de la Salud. Facultad de Ciencias de la Salud. Universidad Rey Juan Carlos

Ángela Martín Cortes. Profesora Contratada Doctor. Departamento de Ciencias de la Salud. Facultad de ciencias de la Salud. Universidad Rey Juan Carlos

Marta Martínez Casales. Investigadora Predoctoral. Universidad Rey Juan Carlos



Abraham Merino López. Ayudante de Investigación. Universidad Autónoma de Madrid

Marta Miguel Castro. Científico Titular. Instituto de Investigación en Ciencias de la Alimentación Consejo Superior de Investigaciones Científicas

Roberto Palacios Ramírez. Investigador Postdoctoral.

Universidad de Valladolid

Raquel Rodríguez Díez. Profesora Ayudante Doctor. Departamento de Fisiología. Facultad de Medicina. Universidad Complutense

Lucía Serrano Díaz del Campo. Investigadora predoctoral. Universidad Autónoma de Madrid

STRATEGIC OBJECTIVE

Our group is a well-established research group with more than 30 years of experience in the study of the mechanisms involved in the functional, structural and mechanical alterations of the vasculature in various cardiovascular pathologies such as ageing, diabetes and, in particular, hypertension.

The group is located at the Faculty of Medicine (UAM) and maintains research collaborations

with investigators at various universities in Spain and in other countries. Our main objective is to gain further insight into the physiological and molecular mechanisms involved in alterations of resistance and conductance arteries in cardiovascular pathologies. To conduct our research, we generally use various experimental approaches including in vivo animal models, ex vivo experiments and in vitro cellbased studies combined with physiological, pharmacological and



molecular biology techniques. In addition, we have begun to translate this knowledge into human studies. In terms of the mediators involved, we have a particular interest in proinflammatory prostanooids, reactive oxygen species (and their interaction among each other or with

other mediators such as nitric oxide) and proresolvin lipid mediators. This research is important given the essential role these mediators play in the control of vascular smooth muscle tone and vascular structure.

RESEARCH LINES

- Inflammation and vascular function and remodelling. Changes with hypertension and other cardiovascular pathologies.
- Adipose tissue and vascular alterations in cardiovascular pathologies.
- Neural control of vascular tone.

- Cardiovascular effects of heavy metals.
- Antioxidant and antihypertensive properties of food bioactive compounds.
- Resolution of inflammation as a therapeutic approach for cardiovascular diseases.

RESEARCH ACTIVITY

● Doctoral theses

Elópez Moreno M. Obtención de hidrolizados de quinua con actividad antioxidante y su efecto sobre el estrés oxidativo asociado a la hipertensión arterial[dissertation]. Madrid: UAM: 2022(12/09/2022).

Director: Miguel Castro M.

Martínez Casales M. RF2 y KV1.3 nuevos mediadores de la inflamación y el daño cardiovascular asociado a hipertensión[dissertation]. Madrid: URJC: 2022(22/12/2022).

Directors: Alonso Gordo MJ, Hernanz Martín R.

Parada Peña S. Hidrólisis de clara de huevo: obtención de un ingrediente a escala semi-industrial y su utilización como sustituto en la elaboración de productos o derivados lácteos. [dissertation]. La Coruña: Universidad de Santiago de Compostela: 2022(27/06/2022).

Director: Miguel Castro M.

● Final Degree Theses

Búrdalo López C. Aplicación de enfermería en la administración de trastuzumab subcutáneo en el tratamiento de cáncer de mama

HER2 positivo[dissertation]. Madrid: URJC: 2022(28/06/2022).

Director: Hernanz Martín R.

Mínguez Navas L. Papel de la hipocretina en la narcolepsia[dissertation]. Madrid: URJC: 2022(26/06/2022). Director: Hernanz Martín R.

Director: Hernanz Martín R.

● Publications

- Abreu ED, Moro CR, Kanaan SHH, de Paula RB, Herrera CT, Costa PHD, Pecanha FM, Vassallo DV, Rossoni LV, Miguel-Castro M, Wiggers GA. ROS suppression by egg white hydrolysate in DOCA-salt rats-an alternative tool against vascular dysfunction in severe hypertension. *Antioxidants*. 2022; 11(9): 1713. Article. IF: 7; D1
- Ballesteros-Martínez C, Rodríguez-Díez R, Beltrán LM, Moreno-Carriles R, Martínez-Martínez E, González-Amor M, Martínez-González J, Rodríguez C, Cachofeiro V, Saldaña M, Briones AM. Microsomal prostaglandin E synthase-1 is involved in the metabolic and cardiovascular alterations associated with obesity. *Brit J Pharmacol*. 2022; 179(11): 2733-53. Article. IF: 7.3; D1
- Bruna-García E, Redondo BI, Castro MM. New method for obtaining a bioactive essence extracted from iberian ham fat rich in mufa and antioxidants. *Molecules*. 2022; 27(2): 428. Article. IF: 4.6; Q2

- de la Fuente-Fernández M, de la Fuente-Muñoz M, Román-Carmena M, Amor S, García-Redondo AB, Blanco-Rivero J, González-Hedstrom D, Espinel AE, García-Villalón AL, Granada M. Carob Extract supplementation together with caloric restriction and aerobic training accelerates the recovery of cardiometabolic health in mice with metabolic syndrome. *Antioxidants*. 2022; 11(9): 1803. Article. IF: 7; D1
- del Campo LSD, Rodríguez-Díez R, Saldaña M, Briones AM, García-Redondo AB. Specialized pro-resolving lipid mediators: new therapeutic approaches for vascular remodeling. *Int J Mol Sci*. 2022; 23(7): 3592. Review. IF: 5.6; Q1
- Garcés-Rimón M, Morales D, Miguel-Castro M. Potential role of bioactive proteins and peptides derived from legumes towards metabolic syndrome. *Nutrients*. 2022; 14(24): 5271. Review. IF: 5.9; Q1
- Heredia-Soto V, Escudero J, Miguel M, Ruiz P, Gallego A, Berjón A, Hernández A, Martínez-Díez M, Zheng SY, Tang J, Hardisson D, Feliu J, Redondo A, Mendiola M. Antitumor effect of plocabulin in high grade serous ovarian carcinoma cell line models. *Front Oncol*. 2022; 12: 862321. Article. IF: 4.7; Q2
- Jijménez-Castilla L, Opazo-Ríos L, Marín-Royo G, Orejudo M, Rodríguez-Díez R, Ballesteros-Martínez C, Soto-Catalán M, Caro-Ordieres T, Artaza I, Suárez-Cortes T, Zazpe A, Hernández G, Cortes M, Tuñón J, Briones AM, Egido J, Gómez-Guerrero C. The synthetic flavonoid hidrosmin improves endothelial dysfunction and atherosclerotic le-

sions in diabetic mice. *Antioxidants*. 2022; 11(12): 2499. Article. IF: 7; D1

- López-Martínez MI, Miguel M, Garcés-Rimón M. Protein and sport: Alternative sources and strategies for bioactive and sustainable sports nutrition. *Front Nutr*. 2022; 9: 926043. Review. IF: 5; Q2
- López-Moreno M, Garcés-Rimón M, Miguel M. Antinutrients: Lectins, goitrogens, phytates and oxalates, friends or foe? *J Funct Foods*. 2022; 89: 104938. Article. IF: 5.6; Q1
- Martínez CS, Uranga-Ocio JA, Pecanha FM, Vassallo DV, Exley C, Miguel-Castro M, Wiggers GA. Dietary egg white hydrolysate prevents male reproductive dysfunction after long-term exposure to aluminum in rats. *Metabolites*. 2022; 12(12): 1188. Article. IF: 4.1; Q2
- Méndez-Albiñana P, Martínez-González A, Camacho-Rodríguez L, Ferreira-Lazarte A, Villamiel M, Rodríguez-Díez R, Balfagón G, García-Redondo AB, Prieto-Nieto MI, Blanco-Rivero J. Supplementation with the symbiotic formulation prodefen(r) increases neuronal nitric oxide synthase and decreases oxidative stress in superior mesenteric artery from spontaneously hypertensive rats. *Antioxidants*. 2022; 11(4): 680. Article. IF: 7; D1
- Moraes PZ, Pinheiro JEG, Martínez CS, Moro CR, da Silva GC, Rodríguez MD, Simoes MR, Barbosa F, Pecanha FM, Vassallo DV, Miguel M, Wiggers GA. Multi-functional egg white hydrolysate prevent hypertension and vascular dysfunction induced by cadmium in rats. *J Funct Foods*. 2022; 94: 105131. Article. IF: 5.6; Q1



1 Introduction

2 Executive Summary

3 Information Groups by Area

4 Associated Clinicians

- Ramón-Patino JL, Ruz-Caracuel I, Heredia-Soto V, de la Calle LEG, Zagidullin B, Wang YY, Berjon A, López-Janeiro A, Miguel M, Escudero J, Gallego A, Castelo B, Yebenes L, Hernández A, Feliu J, Pelaez-García A, Tang J, Hardisson D, Mendiola M, Redondo A. Prognosis stratification tools in early-stage endometrial cancer: could we improve their accuracy?. *Cancers (Basel)*. 2022; 14(4): 912. Article. IF: 5.2; Q2
- Rizzetti DA, Corrales P, Uranga-Ocio JA, Medina-Gómez G, Pecanha FM, Vassallo DV, Miguel M, Wiggers GA. Potential benefits of egg white hydrolysate in the prevention of Hg-induced dysfunction in adipose tissue. *Food Funct*. 2022; 13(11): 5996-6007. Article. IF: 6.1; Q1
- Rodríguez-Díez RR, Tejera-Muñoz A, Esteban V, Steffensen LB, Rodríguez-Díez R, Orejudo M, Rayego-Mateos S, Falke LL, Cannata-Ortiz P, Ortiz A, Egido J, Mallat Z, Ana MB, Bajo MA, Goldschmieding R, Ruiz-Ortega M. CCN2 (Cellular Communication Network Factor 2) Deletion alters vascular integrity and function predisposing to aneurysm formation. *Hypertension*. 2022; 79(3): e42-55. Article. IF: 8.3; Q1
- Rodríguez-Muñoz D, Sánchez A, Pérez-Benavente S, Contreras-Jurado C, Montero-Pedrazuela A, Toledo-Castillo M, Gutiérrez-Hernández M, Rodríguez-Díez R, Folgueira C, Briones AM, Sabio G, Monedero-Cobeta I, Chávez-Coira I, Castejón D, Fernández-Valle E, Regadera J, Bautista JM, Aranda A, Alemany S. Hypothyroidism confers tolerance to cerebral malaria. *SCI Adv*. 2022; 8(14): eabj7110. Article. IF: 13.6; D1
- Trilla-Fuertes L, Gamez-Pozo A, Lumbreras-Herrera MI, López-Vacas R, Heredia-Soto V, Ghanem I, López-Camacho E, Zapater-Moros A, Miguel M, Pena-Burgos EM, Palacios E, de Uribe M, Guerra L, Dittmann A, Mendiola M, Vara JAF, Feliu J. Identification of carcinogenesis and tumor progression processes in pancreatic ductal adenocarcinoma using high-throughput proteomics. *Cancers (Basel)*. 2022; 14(10): 2414. Article. IF: 5.2; Q2

● Research projects

Briones Alonso AM. Deciphering the role of novel inflammatory mediators derived from interferon and the inefficient resolution of inflammation in the cardiovascular dama-

ge associated to hypertension (PID2020-116498RB-I00). AEI. 2021-2024.

Management centre: UAM

Briones Alonso AM. General Coordinator: Thomas Unger (University of Maastricht). Mechanistic Integration of vascular and endocrine pathways for Subtyping Hypertension: an Innovative network approach for Future generation research Training-MINDS-HIFT (Grant agreement 954798). Marie Skłodowska-Curie actions. Innovative Training Networks (ITN)-European Joint Doctorates. 2021-2024.

Management centre: UAM

Briones Alonso AM. Papel del gen 15 estimulado por interferon (ISG15) en el remodelado vascular patológico. *Sociedad Española de Arterioesclerosis*. 2022-2023.

Management centre: UAM

García-Redondo AB. Interferon stimulated gene 15 (ISG15) as a new mediator of aortic aneurysms (SI1-PJI-2019-321). *CAM*. 2020-2022.

Management centre: UAM

Miguel Castro M. Hidrólisis de proteínas vegetales de alto valor biológico: obtención de péptidos antioxidantes y nuevas texturas culinarias para la elaboración de productos sin gluten (AGL-2017-89213). *MICINN*. 2018-2022.

Management centre: CIAL (CSIC)

Miguel Castro M. Hidrolizado de clara de huevo y salud cardiovascular. Estudio del efecto antihipertensivo y de los mecanismos de acción en ratas DOCA-sal. (COOPA20453). *CSIC*. 2021-2022.

Management centre: CIAL (CSIC)

● Cibers and Retics

Salaices Sánchez M. Networked Biomedical

Research Center for Cardiovascular Diseases (CIBERCV). ISCIII. (31/12/2022). Management centre: UAM

● Patents and trademarks

Garcés Rimón M, Miguel Castro M, López-Alonso Fandiño R, López-Miranda González V, Uranga Ocio J, inventors; CSIC, Univer-

sidad Rey Juan Carlos, assignees; Use of multifunctional bioactive products derived from the enzymatic hydrolysis of egg white proteins for treating metabolic syndrome. P201331767, PCT/ES2014/070880; 2013 December 04.

González-Muñiz R, Miguel Castro M, Pérez de Vega MJ, Balsera-Paredes B, S Moreno, inventors; CSIC, assignee. Compounds





with antioxidant activity and uses thereof. P201630362; 2016 March 29.

González-Muñiz R, Pérez de Vega MJ, Miguel M, Balsera-Paredes B, Moreno S, inventors; CSIC, assignee. Triazolyl polyphenols with antioxidant activity and uses thereof. P201531450; 2015 November 08.

León Martínez R, Abril Comesaña S, Duarte Flórez P, Crisman Vigil E, Michalska P, Salaiques Sánchez M, Menéndez Ramos JC, inventors; Fundación para la Investigación Biomédica del Hospital Universitario de la Princesa, UAM, UCM, assignees. Compuestos agonistas nicotínicos y antioxidantes para el tratamiento de enfermedades neurodegenerativas. P201930908. 2019 October 14.

León Martínez R, Abril Comesaña S, Michalska P, Buendía Abaitua I, Salaiques Sánchez M, Menéndez Ramos JC, García López M, inventors; Fundación para la Investigación Biomédi-

ca del Hospital Universitario de la Princesa, UAM, UCM, assignees. Compuestos derivados de 2-iodo-7-((2-(5-metoxi-1H-indol-3-il)etil)amino)metil)-1-alkil/aryl-6,7,7a,8-tetrahidro-3H-pirrol[2,1-j]quinolina-3,9(5H)-diona como agentes antioxidantes, inductores de NRF2 y moduladores nicotínicos para el tratamiento de enfermedades neurodegenerativas. P201930190. 2019 March 01.

Miguel Castro M, Garcés Rimón M, López-Alonso Fandiño R, Sandoval Huertas M, inventors; CSIC, Mario Sandoval Huertas, assignees. Healthy food compositions having gel or foam textures and comprising hydrolyzed egg products. P201331886, PCT/ES2014/070902, EP3106042, US9648897, AR098685, JP2015130856, MX2014015135; 2013 December 20.

Miguel Castro M, López-Alonso Fandiño R, Ramos González MM, Aleixandre de Artiñano A, inventors; CSIC, assignee. Production of

and antihypertensive properties of peptides derived from egg white proteins. P200501246 PCT/ES2006/070067; 2005 May 23.

Miguel Castro M, Garcés Rimón M, authors; Miguel Castro M, Garcés Rimón M, assignees. Brand name: leggie. ESM4044711; 2019 November 22. Concesión 8 Junio 2020.

Miguel Castro M, López-Alonso Fandiño R, Recio Sánchez MI, Ramos González MM, Aleixandre de Artiñano A, inventors; CSIC, assignee. Bioactive peptides derived from the proteins of egg white by means of enzymatic hydrolysis. P200301829, PCT/ES2004/070059, EP1661913, US8227207, AT388166, DE602004012289, DK1661913, JP2007523045; 2003 July 31.

Pérez Girón JV, Ruiz-Castellanos MJ, de Luis Jiménez O, Pérez Boto V, Sanz González R, Hernández Vélez MC, Mas Gutiérrez JA, Alonso Gordo MJ, Salaiques Sánchez M, Ros Pérez M, Coloma Jerez A, Asenjo Barahona A, Sanz Montaña JL, Puente Prieto J, Jensen J, inventors; NANOATE, S.L., assignee. Method for producing biosensors. P201031224, PCT/ES2011/070536; 2010 August 05.

Recio Sánchez MI, Quirós del Bosque A, Hernández Ledesma B, Gómez Ruiz JA, Miguel Castro M, Amigo Garrido L, López Expósito I, Ramos González MM, Aleixandre de Artiñano A, (Contreras Gómez M), inventors; CSIC, assignee. Bioactive peptides identified in enzymatic hydrolyzates of milk caseins and method of obtaining same. P200501373, PCT/ES2006/070079, EP1905779, EP2495250, US8354502, AU2006256720, BRPI0611729, CA2611416, CN101305017, CN103254278, JP2008545774, KR20080045108, MX2007015528, NO20080103; 2005 June 08.