

Fecha del CVA

30/10/2020

Parte A. DATOS PERSONALES

Nombre y Apellidos	Maria Mittelbrum Herrero		
DNI/NIE/Pasaporte		Edad	
Núm. identificación del investigador	Researcher ID	I-5882-2015	
	Scopus Author ID	6603194849	
	* Código ORCID	0000-0003-3487-8762	

* Obligatorio

A.1. Situación profesional actual

Organismo	FUNDACION PARA LA INVEST. BIOMEDICA DEL HOSPITAL UNIV. DOCE DE OCTUBRE		
Dpto. / Centro	Rare Diseases / Hospital 12 de Octubre Rare Diseases		
Dirección			
Teléfono		Correo electrónico	
Categoría profesional	Contrato Miguel Servet Tipo II	Fecha inicio	2020
Palabras clave			

A.2. Formación académica (título, institución, fecha)

Licenciatura/Grado/Doctorado	Universidad	Año
Doctor en Biología Molecular, Bioquímica y Biomedicina	Universidad Autónoma de Madrid	2006
Licenciado en Bioquímica	Universidad Autónoma de Madrid	2000

A.3. Indicadores generales de calidad de la producción científica

Total number of scientific articles: 52

Citations: 8,500

Average citations per article: 110.07

Main author in 40% publications

4 highly cited articles (top 1% in its category, according to WoS)

Index H: 36

Since she was a principal investigator, María has participated as "guest speaker" on more than 20 International Symposia and Institutions, among them: Institute of Inflammation and Aging, University of Birmingham, 2020; University of Warwick, BSCB / BSDB Spring Meeting 2019; Institute Pasteur, Paris, France 2018; University of Lausanne, Ludwig Center for Cancer Research, Switzerland October 2017; NIH, Office for Strategic Coordination, National Cancer Institute, Rockville, USA 2017; Mitochondria Biology Unit, Medical Research Council, Cambridge, UK, 2015; National Institute of Aging, NIA, Baltimore, USA, 2015; University of Edinburgh, Edinburgh, UK, 2015. María occupies position 3810 out of 67189 Spanish scientists both inside and outside Spain, ranking within the **5% of the most cited Spanish Researchers according to webometrics.**

Parte B. RESUMEN LIBRE DEL CURRÍCULUM

MARIA MITTELBRUNN is the Head of the "**Immunometabolism and Inflammation**" lab at the Centro de Biología Molecular (CBMSO, UAM-CSIC). María obtained her doctorate, with an **Extraordinary Prize** in Molecular Biology and Biomedicine in 2006. During her post-doctorate in Prof. Sánchez-Madrid's laboratory at the National Center for Cardiovascular Research (CNIC, Madrid, Spain), María studied the role of exosomes and exosomal RNA in cell-to-cell communication. His research was pioneering in the field of cellular communication through exosomes (Mittelbrunn et al. Nature Commun. 2011, more than 1500 citations), and the identification of the mechanism that controls the load of miRNAs in exosomes (Villarroya-Beltri et al. Nature Commun. 2013, co-lead author, more than 800 citations). Three of his articles published at this stage have been revolutionary and their impact is reflected in that they have

been rated within the **1% of the most cited articles** in the field of Molecular Biology. The relevance of these articles is reflected in 6 invited reviews (eg Mittelbrunn et al. Nature Rev. Mol Cell Biol, 2012). She completed her postdoctoral training with a stay at the Curie Institute (Paris) and at the University of Oviedo, where he acquired knowledge about molecular characteristics of aging and contributed to a work on the loss of proteostasis in cancer (Nature Med., 2016). As group leader, she has already made important contributions that have led to two original scientific articles published in high-impact journals (Baixauli, **Cell Metabolism**, 2015; Desdín-Mico, 2019 **Science**) as well as several opinion or review articles (Desdín-Mico, 2018 Mitochondrion, Desdín Mico, 2017 Cell Adh Migr, Soto-Herederó 2018, Front Cell Dev Biol, Gabande, Cells, 2020, Soto-Herederó Febs Journal 2020). Since 2015, María has been the principal investigator of four funded projects, which accumulate almost **2,000,000 €**. Its laboratory is currently composed of four postdoctoral researchers, four PhD students, and a laboratory technician.

In general, her scientific work is summarized in 52 articles published in international journals that represent more than **8,500 citations** with an **H index of 36**.

In 2015, she was awarded by **L'Oréal - UNESCO Women for Science**. She has collaborated as an expert reviewer and as project manager with the Spanish Research Agency (AEI) and with the Health Research Fund (FIS) since 2017, and regularly serves on both national and international project selection committees. She has been invited to give more than 20 talks at international conferences and institutions in the last 5 years, including Gordon Conferences and EMBO Meetings, and is a founding member of the Spanish Research Group on Extracellular Vesicles (GEIVEX). In 2017 she was awarded a **Starting Grant** from the **European Research Council (ERC)** with the purpose of elucidating the role of immunometabolism in chronic inflammation and aging.

In 2019, María has been appointed to the Scientific Advisory Council of the Gadea Ciencia Foundation (www.gadeaciencia.org) and President of the Scientific Advisory Committee of the Spanish Association of Alstrom Syndrome. In the last 5 years, María has managed to consolidate a leading line of research that has already acquired great visibility at both a national and international scientific level.

Parte C. MÉRITOS MÁS RELEVANTES (ordenados por tipología)

C.1. Publicaciones

AC: Autor de correspondencia; (nº x / nº y): posición firma solicitante / total autores

- 1 Artículo científico.** Desdín-Mico G; Soto-Herrero G; Aranda JF; et al; Mittelbrunn M. (AC). (14/14). 2020. T cells with dysfunctional mitochondria induce multimorbidity and premature senescence *Science*. 368-6497, pp.1371-1376.
- 2 Artículo científico.** Soto-Herederó; Montero; Gabande-Rodríguez; Oller; Mittelbrunn. 2020. Glycolysis - a key player in the inflammatory response *The FEBS Journal*. 287-16, pp.3350-3369.
- 3 Artículo científico.** Gabande-Rodríguez; M. Gómez de las Heras M; Mittelbrunn. 2019. Control of Inflammation by Calorie Restriction Mimetics: On the Crossroad of Autophagy and Mitochondria. *Cells*. Dec 28;9(1). ISSN 2073-4409.
- 4 Artículo científico.** Carrasco; Soto-Herederó; Mittelbrunn. 2019. The Role of Extracellular Vesicles in Cutaneous Remodeling and Hair Follicle Dynamics. *Int J Mol Sci*.
- 5 Artículo científico.** Caravia XM; Fanjul V; Oliver E; et al; López-Otín C. 2018. The microRNA-29/PGC1a regulatory axis is critical for metabolic control of cardiac function. *PLoS Biol*. 16-10.
- 6 Artículo científico.** Torralba D; Baixauli F; Villarroya-Beltri C; et al; Sánchez-Madrid F. 2018. Priming of dendritic cells by DNA-containing extracellular vesicles from activated T cells through antigen-driven contacts *Nat Commun*. 9-1, pp.2658-2659.
- 7 Artículo científico.** Desdín-Micó, G; Soto-Herederó, G; Mittelbrunn, M. 2018. Mitochondrial activity in T Cells *Mitochondrion*. Elsevier.

- 8 **Artículo científico.** Soto-Herederó, G; Baixauli, F; Mittelbrunn, M. 2017. Interorganelle communication between mitochondria and the endolysosomal system *Frontiers in Cell Developmental Biology.* 5-95, pp.1-8.
- 9 **Artículo científico.** Gutierrez-Vazquez, Cristina; Rodriguez-Galan, Ana; Fernandez-Alfara, Marcos; et al; Sanchez-Madrid, Francisco. 2017. miRNA profiling during antigen-dependent T cell activation: A role for miR-132-3p *SCIENTIFIC REPORTS.* 7. ISSN 2045-2322.
- 10 **Artículo científico.** Gutierrez-Vazquez, Cristina; Enright, Anton J.; Rodriguez-Galan, Ana; et al; Sanchez-Madrid, Francisco. 2017. 3' Uridylation controls mature microRNA turnover during CD4 T-cell activation *RNA.* 23-6, pp.882-891. ISSN 1355-8382.
- 11 **Artículo científico.** Mateescu, Bogdan; Kowal, Emma J. K.; van Balkom, Bas W. M.; et al; Nolte-'t Hoen, Esther N. M. 2017. Obstacles and opportunities in the functional analysis of extracellular vesicle RNA - an ISEV position paper *JOURNAL OF EXTRACELLULAR VESICLES.* 6. ISSN 2001-3078.
- 12 **Artículo científico.** Desdin-Mico, Gabriela; Mittelbrunn, Maria. 2017. Role of exosomes in the protection of cellular homeostasis *CELL ADHESION & MIGRATION.* 11-2, pp.127-134. ISSN 1933-6918.
- 13 **Artículo científico.** Villarroya-Beltri, Carolina; Baixauli, Francesc; Mittelbrunn, Maria; et al; Sanchez-Madrid, Francisco. 2016. ISGylation controls exosome secretion by promoting lysosomal degradation of MVB proteins *NAT COMMUN.* 7. ISSN 2041-1723.
- 14 **Artículo científico.** Osorio, Fernando G.; Soria-Valles, Clara; Santiago-Fernandez, Olaya; et al; Lopez-Otin, Carlos. 2016. Loss of the proteostasis factor AIRAPL causes myeloid transformation by deregulating IGF-1 signaling *NATURE MEDICINE.* 22-1, pp.91-+. ISSN 1078-8956.
- 15 **Artículo científico.** Saenz-Cuesta, Matas; Mittelbrunn, Maria; Otaegui, David. 2015. Editorial: Novel clinical applications of extracellular vesicles *FRONTIERS IN IMMUNOLOGY.* 6, pp.1-2. ISSN 1664-3224.
- 16 **Artículo científico.** Mazzeo, Carla; Antonio Canas, Jose; Paz Zafra, Maria; et al; del Pozo, Victoria. 2015. Exosome secretion by eosinophils: A possible role in asthma pathogenesis *JOURNAL OF ALLERGY AND CLINICAL IMMUNOLOGY.* 135-6, pp.1603-1613. ISSN 0091-6749.
- 17 **Artículo científico.** Mittelbrunn, Maria; Vicente-Manzanares, Miguel; Sanchez-Madrid, Francisco. 2015. Organizing Polarized Delivery of Exosomes at Synapses *TRAFFIC.* 16-4, pp.327-337. ISSN 1398-9219.
- 18 **Artículo científico.** Yanez-Mo, Maria; Siljander, Pia R. -M.; Andreu, Zoraida; et al; De Wever, Olivier. 2015. Biological properties of extracellular vesicles and their physiological functions *JOURNAL OF EXTRACELLULAR VESICLES.* 4. ISSN 2001-3078.
- 19 **Artículo científico.** Baixauli, F.; Acin-Perez, R.; Villarroya-Beltri, C.; et al; Mittelbrunn, M. 2015. Mitochondrial respiration controls lysosomal function during inflammatory T cell responses *Cell Metab.* 22-3, pp.485-498.
- 20 **Artículo científico.** Villarroya-Beltri, Carolina; Baixauli, Francesc; Gutierrez-Vazquez, Cristina; Sanchez-Madrid, Francisco; Mittelbrunn, Maria. 2014. Sorting it out: Regulation of exosome loading *SEMINARS IN CANCER BIOLOGY.* 28, pp.3-13. ISSN 1044-579X.
- 21 **Artículo científico.** Baixauli, Francesc; Lopez-Otin, Carlos; Mittelbrunn, Maria. 2014. Exosomes and autophagy: coordinated mechanisms for the maintenance of cellular fitness *FRONTIERS IN IMMUNOLOGY.* 5. ISSN 1664-3224.
- 22 **Artículo científico.** Acin-Perez, Rebeca; Carrascoso, Isabel; Baixauli, Francesc; et al; Antonio Enriquez, Jose. 2014. ROS-Triggered Phosphorylation of Complex II by Fgr Kinase Regulates Cellular Adaptation to Fuel Use *CELL METAB.* 19-6, pp.1020-1033. ISSN 1550-4131.
- 23 **Artículo científico.** Villarroya-Beltri, Carolina; Gutierrez-Vazquez, Cristina; Sanchez-Cabo, Fatima; et al; Sanchez-Madrid, Francisco. 2013. Sumoylated hnRNP2B1 controls the sorting of miRNAs into exosomes through binding to specific motifs *NATURE COMMUNICATIONS.* 4. ISSN 2041-1723.
- 24 **Artículo científico.** Gutierrez-Vazquez, Cristina; Villarroya-Beltri, Carolina; Mittelbrunn, Maria; Sanchez-Madrid, Francisco. 2013. Transfer of extracellular vesicles during immune cell-cell interactions *IMMUNOLOGICAL REVIEWS.* 251, pp.125-142. ISSN 0105-2896.

- 25 **Artículo científico.** Villarroya-Beltri, Carolina; Gutierrez-Vazquez, Cristina; Sanchez-Madrid, Francisco; Mittelbrunn, Maria. 2013. Analysis of microRNA and protein transfer by exosomes during an immune synapse. *Methods in molecular biology* (Clifton, N.J.). 1024, pp.41-51.
- 26 **Artículo científico.** Mittelbrunn, Maria; Sanchez-Madrid, Francisco. 2012. Intercellular communication: diverse structures for exchange of genetic information *NATURE REVIEWS MOLECULAR CELL BIOLOGY*. 13-5, pp.328-335. ISSN 1471-0072.
- 27 **Artículo científico.** Sala-Valdes, Monica; Gordon-Alonso, Monica; Tejera, Emilio; et al; Yanez-Mo, Maria. 2012. Association of syntenin-1 with M-RIP polarizes Rac-1 activation during chemotaxis and immune interactions *JOURNAL OF CELL SCIENCE*. 125-5, pp.1235-1246. ISSN 0021-9533.
- 28 **Artículo científico.** Mittelbrunn, Maria; Gutierrez-Vazquez, Cristina; Villarroya-Beltri, Carolina; Gonzalez, Susana; Sanchez-Cabo, Fatima; Angel Gonzalez, Manuel; Bernad, Antonio; Sanchez-Madrid, Francisco. 2011. Unidirectional transfer of microRNA-loaded exosomes from T cells to antigen-presenting cells *NATURE COMMUNICATIONS*. 2. ISSN 2041-1723.
- 29 **Artículo científico.** Mittelbrunn, Maria; Martinez del Hoyo, Gloria; Lopez-Bravo, Maria; et al; Sanchez-Madrid, Francisco. 2009. Imaging of plasmacytoid dendritic cell interactions with T cells *BLOOD*. 113-1, pp.75-84. ISSN 0006-4971.
- 30 **Artículo científico.** Gonzalez-Amaro, R; Mittelbrunn, M; Sanchez-Madrid, F. 2005. Therapeutic anti-integrin (alpha 4 and alpha L) monoclonal antibodies: two-edged swords? *IMMUNOLOGY*. 116-3, pp.289-296. ISSN 0019-2805.
- 31 **Artículo científico.** Mittelbrunn, M; Tejedor, R; de la Fuente, H; et al; Sanchez-Madrid, F. 2005. Solar-simulated ultraviolet radiation induces abnormal maturation and defective chemotaxis of dendritic cells *JOURNAL OF INVESTIGATIVE DERMATOLOGY*. 125-2, pp.334-342. ISSN 0022-202X.
- 32 **Artículo científico.** Mittelbrunn, M; Molina, A; Escribese, MM; et al; Sanchez-Madrid, F. 2004. VLA-4 integrin concentrates at the peripheral supramolecular activation complex of the immune synapse and drives T helper 1 responses *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*. 101-30, pp.11058-11063. ISSN 0027-8424.
- 33 **Artículo científico.** Serrador, JM; Cabrero, JR; Sancho, D; Mittelbrunn, M; Urzainqui, A; Sanchez-Madrid, F. 2004. HDAC6 deacetylase activity links the tubulin cytoskeleton with immune synapse organization *IMMUNITY*. 20-4, pp.417-428. ISSN 1074-7613.
- 34 **Artículo científico.** Mittelbrunn, M; Yanez-Mo, M; Sancho, D; Ursa, A; Sanchez-Madrid, F. 2002. Cutting edge: Dynamic redistribution of tetraspanin CD81 at the central zone of the immune synapse in both T lymphocytes and APC *JOURNAL OF IMMUNOLOGY*. 169-12, pp.6691-6695. ISSN 0022-1767.

C.2. Proyectos

- 1 Metabolismo celular para prevenir la multimorbilidad y enfermedades cardiovasculares (FUNDACION PARA LA INVEST. BIOMEDICA DEL HOSPITAL UNIV. DOCE DE OCTUBRE/ UAM). 01/01/2020-31/12/2022. 148.000 €.
- 2 Exosomes as therapeutic tool to mediate cardioprotection. Instituto de Salud Carlos III. M Mittelbrunn. (FUNDACION PARA LA INVEST. BIOMEDICA DEL HOSPITAL UNIV. DOCE DE OCTUBRE). 01/01/2015-01/01/2018. 121.500 €.
- 3 Impacto de las deficiencias mitocondriales en el sistema endolisosomal y la inflamación sistémica L'OREAL UNESCO Women in Science. M Mittelbrunn. (FUNDACION PARA LA INVEST. BIOMEDICA DEL HOSPITAL UNIV. DOCE DE OCTUBRE). 01/01/2016-01/01/2017. 15.000 €.
- 4 Endolysosomal Mitochondrial Crosstalk in Cell and Organism Homeostasis European Research Council. M Mittelbrunn. (Universidad Autónoma de Madrid). Desde 01/03/2017. 1.480.000 €.
- 5 Metabolic alterations in the immune system and their role in age-associated diseases Acción Estratégica de Salud. M Mittelbrunn. (FUNDACION PARA LA INVEST. BIOMEDICA DEL HOSPITAL UNIV. DOCE DE OCTUBRE/ UAM). Desde 02/01/2017. 151.000 €.

C.3. Contratos

C.4. Patentes

- 1 14/431,955. Nucleotide Sequence Motifs Directing Nucleic Acid Location to Extracellular Vesicles Estados Unidos de América. 27/03/2015. Centro Nacional de Investigaciones Cardiovasculares y Universidad Autónoma de Madrid.
- 2 P200930428. Procedure for the identification of photoprotective compounds España. IFC cantabria.
- 3 200400107. Use of drugs that modulates the acetylation/deacetylation of microtubules for the regulation of the immune response España. Universidad Autónoma de Madrid.

NO VALIDO