

Fecha del CVA

13/02/2025

Parte A. DATOS PERSONALES

Nombre *	Rafael		
Apellidos *	Prados Rosales		
Sexo *		Fecha de Nacimiento *	
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Dirección Email	rafael.prados@uam.es		
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* Obligatorio

A.1. Situación profesional actual

Puesto	Profesor Titular		
Fecha inicio	2022		
Organismo / Institución	Universidad Autónoma de Madrid		
Departamento / Centro			
País		Teléfono	
Palabras clave			

A.2. Situación profesional anterior

Periodo	Puesto / Institución / País
2019 - 2021	Ramon y Cajal Investigator / Universidad Autónoma de Madrid

A.4. Indicadores generales de calidad de la producción científica Publications

Number of scientific publications: 76; Number of scientific articles: 71; Corresponding author papers: 22; Book chapters: 4; Index H: 32; Total number of citations: (WoS): 3690; Mean cites per article: 52,4; Mean cites per year: 142,3; D1 publications: 25%; Q1 publications: 77%.

Parte B. RESUMEN LIBRE DEL CURRÍCULUM

I obtained my BS in Environmental Sciences at the University of Cordoba with a "Premio Extraordinario de Carrera" distinction in 2003. Before graduating, I joined the Analytical Chemistry department to work on the automatization of continuous and discontinuous systems for analytical processes. Before completing my BS I had published five articles (4 as first author) in two of the most important journals of

the field. In 2004 I joined the Genetics Department of the University of Cordoba with a fellowship from the Ministerio de Ciencia y Tecnología (FPU) to undertake my Ph.D. studies on the molecular dissection of a signaling pathway of the fungal pathogen *Fusarium oxysporum*, producing six publications (4 as first author) in recognized international peer-reviewed journals. In 2009, I started my postdoctoral studies in the Department of Microbiology and Immunology at the Albert Einstein College of Medicine in New York. I was the first to isolate and describe mycobacterial vesicles and establish that these structures have powerful immunological properties, publishing the results as first author in the "JOURNAL OF CLINICAL INVESTIGATION IF 13.069". These findings represent the base of my main research line, which is focused on the understanding of the vesicle-based transport in *Mycobacteria*. In collaboration with other groups we have identify the first mycobacterial gene implicated in vesiculogenesis (PNAS IF 9.737). We also demonstrated that mycobacterial vesicles have the capacity to modify the antigen presentation process in a model of myocarditis (CIRCULATION IF 15.202) and that they represent a new effective anti-tuberculosis vaccine (mBIO IF 6.78). In collaboration with research clinicians we have started to test mycobacterial vesicles as a tool for TB diagnosis. Due to the work on mycobacterial vesicles, two independent invention disclosures (patents) have been developed. I have been invited to talk in some of the most prestigious Tuberculosis meetings in the past 3 years indicating that my research is worldwide recognized. I have recently published two reviews in the two most prestigious journals in the Microbiology and Immunology field: "IMMUNOLOGICAL REVIEWS IF 12.909 (first author)", NATURE REVIEWS IN MICROBIOLOGY IF 23.054 (corresponding author)" and PLoS Pathogens IF 7.003 (corresponding author) . I have supervised several rotating students and directed one Thesis of Master during my postdoctoral studies. In 2014, I was appointed as Research Assistant Professor at the Department of Microbiology and Immunology and as Adjunct Professor at Hostos Community College from College University of New York (CUNY) to teach Microbiology. In 2015 I got an NIH R21 to attempt the genetic direction of vesicle production in *Mycobacteria*. In mid 2015 I got a "Ramon y Cajal" fellowship from the Ministry of Economy and competitiveness and in January 2016 I joined the CIC bioGUNE research Institute to keep developing my research interest in *Mycobacterium* membrane vesicles. I recently moved my RyC contract to Autonoma University of Madrid. I have published 56 articles, 19 first author and 8 corresponding author with a H-index of 24 (Google Scholar) . I have been cited 1835 times with an average of 97 times per year. I have obtained funding from MINECO (SAF2016-77433-R, PID2019-110240RB-I00) and MICINN (RED2018-102677-T) and NIH (R21-AI115091; R01AI162821-01) as leading investigator.

Parte C. MÉRITOS MÁS RELEVANTES C.1. Publicaciones

AC: Autor de correspondencia; (nº x / nº y): posición firma solicitante / total autores. Si aplica, indique el número de citaciones

- 1 Artículo científico. Vivian Salgueiro; Jorge Bertol; Claude Gutierrez; et al; Rafael Prados-Rosales. 2024. Maintenance of cell

- wall remodeling and vesicle production are connected in Mycobacterium tuberculosis. Elife. Elife sciences publications.
- 2 Artículo científico. Franklin, Aaron; Salgueiro, Vivian C.; Layton, Abigail J.; et al; Moynihan, Patrick J.2024. The mycobacterial glycoside hydrolase LamH enables capsular arabinomannan release and stimulates growth (vol 15, 5740, 2024). NATURE COMMUNICATIONS. NATURE PORTFOLIO. 15. <https://doi.org/10.1038/s41467-024-51724-9>
 - 3 Artículo científico. José L Luque-García; Rafael Prados-Rosales. 2023. Dual delivery of antigens shows promise. Elife. eLife Sciences Publications, Ltd. 12, pp.e90407.
 - 4 Artículo científico. et al.; Sogol Allebouyeh. 2022. Iron deprivation enhances transcriptional responses to *in vitro* growth arrest of *Mycobacterium tuberculosis*. Frontiers in Microbiology. Frontiers. 29-9, pp.965359.
 - 5 Artículo científico. Sogol Allebouyeh. 2022. Feasibility of novel approaches to detect viable Mycobacterium tuberculosis within the spectrum of the tuberculosis disease. Frontiers in Medicine. Frontiers. 22-9965359.
 - 6 Artículo científico. Sebastian Schrimmer. 2022. Immunogenicity of Mycobacterial Extracellular Vesicles Isolated From Host-Related Conditions Informs About Tuberculosis Disease Status. Frontiers in Microbiology. Frontiers. 22-13, pp.9072967.
 - 7 Artículo científico. Alfonso Olaya-Abril; Rafael Prados-Rosales; José A. González; Arturo Casadevall; Liise-anne Pirofski; Manuel J. Rodríguez. 2021. Extracellular Vesicles from Different Pneumococcal Serotypes Are Internalized by Macrophages and Induce Host Immune Responses. Pathogens. MDPI. 10-12, pp.1530.
 - 8 Artículo científico. Palacios, Ainhoa; Gupta, Shamba; Rodriguez, G. Marcela; Prados-Rosales, Rafael. 2021. Extracellular vesicles in the context of Mycobacterium tuberculosis infection. MOLECULAR IMMUNOLOGY. PERGAMON-ELSEVIER SCIENCE LTD. 133, pp.175-181. ISSN 0161-5890, ISSN 1872-9142.
 - 9 Artículo científico. Boldrin, Francesca; Anso, Itxaso; Alebouyeh, Sogol; et al; Prados-Rosales, Rafael. 2021. The Phosphatidyl-myo-Inositol Dimannoside Acyltransferase PatA Is Essential for Mycobacterium tuberculosis Growth In Vitro and In Vivo. JOURNAL OF BACTERIOLOGY. AMER SOC MICROBIOLOGY. 203-7. ISSN 0021-9193, ISSN 1098-5530.
 - 10 Artículo de divulgación. S Gupta; M Bhagavathula; N Sharma; et al; Rafael Prados-Rosales. 2023. Dynamin-like proteins mediate extracellular vesicle secretion in Mycobacterium tuberculosis. EMBO Reports. EMBO. 24-6, pp.e55593.
 - 11 Capítulo de libro. RA García; G Aragoneses-Cazorla; L Lerma; Rafael Prados-Rosales; José L Luque-García. 2023. Isolation of Bacterial Extracellular Vesicles and Identification of Their Protein Cargo. Methods Mol Biol. Springer Nature. 2652, pp.285-292.
 - 12 Revisión bibliográfica. Salgueiro, Vivian C.; Passemar, Charlotte; Vazquez-Iniesta, Lucia; Lerma, Laura; Floto, Andres; Prados-Rosales, Rafael. 2024. Extracellular vesicles in mycobacteria: new findings in biogenesis, host-pathogen interactions, and diagnostics. MBIOL. AMER SOC MICROBIOLOGY. 15. ISSN 2150-7511. <https://doi.org/10.1128/mbio.02552-23>

C.2. Congresos

- 1 Extracellular vesicle production and virulence of Mycobacterium tuberculosis are dependent on functional dynamin-like proteins. Bacterial membrane vesicles: biogenesis, functions and medical applications. EMBO. 2021. Congreso.
- 2 Rafael Prados-Rosales. Connecting vesiculogenesis with cell envelope remodeling in Mycobacterium tuberculosis. MycoPorto 2019. International meeting on Tuberculosis. ICBAS. 2019. Portugal.
- 3 Rafael Prados-Rosales. Connecting vesiculogenesis with cell envelope remodeling in Mycobacterium tuberculosis. Mycobacteria 2019. French Microbiology Society. 2019. Francia.
- 4 Cell envelope remodeling pathways in Mycobacterium tuberculosis. IX National Conference BIFI 2019. Instituto Universitario de Investigación de Biocomputación y Física de Sistemas Complejos. 2019. España.
- 5 Cell envelope remodeling pathways in mycobacteria. BilboTB 2018. National meeting on Tuberculosis. CIC bioGUNE, Centro de Investigación Cooperativa en Biociencias. 2018. España.

C.3. Proyectos y Contratos

- 1 Proyecto. Identificación de vulnerabilidades en Mycobacterium tuberculosis a través de la disección genética y química del proceso de vesiculación. MJ Garcia Garcia. (Universidad Autónoma de Madrid). 01/09/2023-30/08/2026. 286.000 €.
- 2 Proyecto. NIOH R01- AI162821-01 Role of mycobacterial dynamin-like proteins in the biogenesis of membrane vesicles, and host-pathogen interactions. National Institute's of Health (NIH). Rafael Prados-Rosales. (Rutgers University). 06/11/2021-01/07/2024. 669.830 €.
- 3 Proyecto. Connection between vesiculogenesis and antibiotic resistance in M. tuberculosis.. (Universidad Autónoma de Madrid). 01/06/2019-31/05/2023. 186.000 €.
- 4 Proyecto. RED2018-102677-T, Red Temática en Biología de Sistemas en Micobacterias. MCINN. (Universidad Autónoma de Madrid). 01/12/2019-30/11/2021. 20.000 €.
- 5 Proyecto. VESICULAS EXTRACELULARES MICOBACTERIANAS: BIOGENESIS Y APLICACIONES DE VACUNAS. (Universidad Autónoma de Madrid). 01/01/2019-31/12/2020. 120.000 €.
- 6 Proyecto. Dissection of vesiculogenesis in Mycobacterium tuberculosis. National Institutes of Health. Rafael Prados Rosales. (Albert Einstein College of Medicine). 30/04/2015-30/04/2017. 250.000 €. Coordinador.
- 7 Proyecto de sanidad. Melanin as oral radioprotectant. (Albert Einstein College of Medicine). Desde 2014. €. Coordinador.
- 8 Proyecto de sanidad. Evaluation of diagnostic tools for tuberculosis in both HIV-uninfected and co-infected individuals, with special focus on immunodiagnostic approaches. National Institute of Health. Jacqueline Achkar. (Albert Einstein College of Medicine). Desde 2011. €. Otros.

C.4. Actividades de transferencia y explotación de resultados

- 1 Patente de invención. Jacqueline M. Achkar; Arturo Casadevall; Rafael Prados Rosales. D-946. Serologic test for the rapid diagnosis of active tuberculosis Estados Unidos de América. 07/08/2012. Albert Einstein College of Medicine.

- 2 Patente de invención. Arturo Casadevall; Rafael Prados Rosales; Steven Porcelli; William R. Jacobs Jr.D-933. Use of membrane vesicles based vaccine against M. tuberculosis for subcutaneous administration Estados Unidos de América. 19/06/2012. Albert Einstein College of Medicine.