

Fecha del CVA	09/06/2025
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## Parte A. DATOS PERSONALES

Nombre	Rubén		
Apellidos	Martínez Buey		
Sexo	No Contesta	Fecha de Nacimiento	
DNI/NIE/Pasaporte			
URL Web	<a href="https://produccioncientifica.usal.es/investigadores/57552/detalle">https://produccioncientifica.usal.es/investigadores/57552/detalle</a>		
Dirección Email			
Open Researcher and Contributor ID (ORCID)	0000-0003-1263-0221		

### A.1. Situación profesional actual

Puesto	Associate Professor		
Fecha inicio	2020		
Organismo / Institución	Universidad de Salamanca		
Departamento / Centro	Microbiology and Genetics / Faculty of Biology		
País	España	Teléfono	
Palabras clave	Biología estructural; Organismos modificados genéticamente		

### A.3. Formación académica

Grado/Master/Tesis	Universidad / País	Año
Biochemistry and Molecular Biology. PhD	Universidad Complutense de Madrid	2005
Biochemistry Degree	Universidad de Salamanca	2001

## Parte B. RESUMEN DEL CV

As an Associate Professor since 2020 at the Universidad de Salamanca, I am a member of the Metabolic Engineering Group. My scientific career encompasses pre-doctoral and post-doctoral research roles in Spain, Germany, and Switzerland, specializing in molecular biology and biophysics, protein biochemistry and engineering, as well as chemical and structural biology.

In recent years, my research has centered on unraveling the molecular mechanisms of proteins and enzymes of two different biological systems: the purine nucleotide biosynthetic pathway and the thioredoxin redox regulatory system. As a principal investigator, I've led two national projects focused on the structural and functional characterization of IMP dehydrogenase, an enzyme essential for GTP biosynthesis. The results of these projects have unveiled intricate layers of allosteric regulation that fine tune the catalytic activity, including conformational changes, enzyme filamentation, and posttranslational modifications. Beyond contributing to understanding this pharmacologically relevant enzyme, this work has established the molecular physiopathological basis of certain neurodevelopmental disorders and retinopathies.

These achievements are the result of active collaborations with leading international research groups that apply methodologies such as cryo-electron microscopy, computational, and cell biology. The findings of this research have been disseminated through conferences, workshops, invited seminars in several research centers, and manuscripts in prestigious international journals, including Nat Commun, Nat Struct Mol Biol, eLife, and Structure, among others.

Presently, my laboratory has expanded its research scope to encompass additional enzymes within the purine nucleotide and riboflavin biosynthetic pathways. The primary focus is on translating the acquired knowledge into practical biotechnological applications. This involves the rational engineering of microbial strains to enhance the productivity of metabolites with industrial significance.

In the realm of education, in addition to my responsibilities as a teacher in the Biology and Biotechnology Degrees, as well as in the Master of Cell Molecular Biology at the

University of Salamanca, my group imparts multidisciplinary research to several pregraduate and postgraduate students and supervise three doctoral theses.

Beyond academia, I'm engaged in a long-standing university-industry collaboration with the multinational company BASF SE, having contributed to knowledge transfer through three patents related to genetic modifications in the industrial fungus *A. gossypii* for improved riboflavin production.

Finally, I actively participate as an expert reviewer for various scientific journals and grant applications from national and European funding programs.

## Parte C. LISTADO DE APORTACIONES MÁS RELEVANTES

### C.1. Publicaciones más importantes en libros y revistas con "peer review" y conferencias

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

- 1 Artículo científico.** Alejandro Hernandez Gomez; Iker Irisarri; David Fernandez Justel; Rafael Peláez; Alberto Jimenez; José Luis Revuelta; Monica Balsera; (8/8) Ruben Martinez Buey (AC). 2023. GuaB3, an overlooked enzyme in cyanobacteria's toolbox that sheds light on IMP dehydrogenase evolution. *Structure. Cell Press.* 31-12, pp.1526-1534. <https://doi.org/10.1016/j.str.2023.09.014>
- 2 Artículo científico.** Javier Martín González; Javier Fernando Montero Bullón; Gloria Muñoz Fernández; (4/5) Rubén Martínez Buey; Alberto Jiménez. 2025. Valorization of waste cooking oil for bioproduction of industrially-relevant metabolites in *Ashbya gossypii*. *New Biotechnology.* S1871-6784(25)00040-8.
- 3 Artículo científico.** Hector Gaitán Peñas; Anna Priscilla Pérez González; Marc González Subías; Anselm Zdebic; Xavier Gasull; (6/8) Rubén Martínez Buey; Ekaitz Errasti Murugarren; Raúl Estévez. 2025. Identification of a crosstalk between CIC-1 C-terminal CBS domains and the transmembrane region. *Jouynal of Physiology.* 603-5, pp.1123-1140.
- 4 Artículo científico.** Gloria Muñoz Fernández; Javier Fernando Montero Bullón; José Luis Martínez; (4/5) Rubén Martínez Buey; Alberto Jiménez. 2024. *Ashbya gossypii* as a versatile platform to produce sabinene from agro-industrial wastes. *Fungal Biology and Biotechnology.* 11-1, pp.16.
- 5 Artículo científico.** John Calise; Audrey O'Neill; Anika Burrell; et al; Justin Kollman. 2024. Light-sensitive phosphorylation regulates activity and filament assembly of IMPDH1 retinal variants John Calise, Audrey O'Neill, Anika Burrell, Miles Dickinson, Josephine Molfino, Charlie Clarke, Joel Quispe, David Sokolov, Rubén Buey, and Justin Kollman. *Journal of Cell Biology.* In press.
- 6 Artículo científico.** Tim Habenicht; Katrin Weidenbach; Addria Velazquez Campoy; Ruben Martinez Buey; Monica Balsera; Ruth A Smith. 2023. Small protein mediates inhibition of ammonium transport in *Methanosarcina mazei*-an ancient mechanism?. *Microbiology Spectrum.* ISSN 2165-0497. <https://doi.org/10.1128/spectrum.02811-23>
- 7 Artículo científico.** David Fernandez Justel; Iñigo Marcos Alcalde; Federico Abascal; Nerea Vidaña; Paulino Gomez Puertas; Alberto Jimenez; (7/8) Jose Luis Revuelta (AC); Ruben Martinez Buey. 2022. Diversity of mechanisms to control bacterial GTP homeostasis by the mutually exclusive binding of adenine and guanine nucleotides to IMP dehydrogenase. *Protein Science.* 31-5, pp.4314.
- 8 Artículo científico.** Anika L Burrell; Chuankai Niet; Meerit Said; et al; Justin M Kollman; (8/10) Ruben M Buey. 2022. Nature Structural and Molecular Biology. IMPDH1 retinal variants control filament architecture to tune allosteric regulation. 29, pp.47-58. <https://doi.org/10.1038/s41594-021-00706-2>

- 9 **Artículo científico.** Cristina Gallego Paramo; Noelia Henandez Ortiz; (3/8) Ruben Martinez Buey; Palma Rico Lastres; Guadalupe Garcia; Jose Fernando Diaz; Pedro Garcia; Margarita Menendez. 2021. *Frontiers in Microbiology. Structural and Functional Insights Into Skl and Pal Endolysins, Two Cysteine-Amidases With Anti-pneumococcal Activity. Dithiothreitol (DTT) Effect on Lytic Activity.* *Frontiers.* 12, pp.740194. <https://doi.org/10.3389/fmicb.2021.740914>
- 10 **Artículo científico.** Ruben M Buey; David Fernández Justel; Gloria González Holgado; et al; Mónica Balsera. 2021. Unexpected diversity of ferredoxin-dependent thioredoxin reductases in cyanobacteria. *Plant Physiology.* Oxford University Press. En prensa.
- 11 **Artículo científico.** Plana-Bonamaiso, Anna; Lopez-Begines, Santiago; Fernandez-Justel, David; et al; Mendez, Ana; (13/14) Buey, Ruben M.2020. Post-translational regulation of retinal IMPDH1 in vivo to adjust GTP synthesis to illumination conditions. *ELIFE.* 9-e56418, pp.1-31. ISSN 2050-084X. <https://doi.org/10.7554/eLife.56418>
- 12 **Artículo científico.** Estevez-Gallego, Juan; Josa-Prado, Fernando; Ku, Siou; et al; Oliva, Maria A.; (4/17) Buey, Ruben M.2020. Structural model for differential cap maturation at growing microtubule ends. *ELIFE.* 9-e50155, pp.1-26. ISSN 2050-084X. <https://doi.org/10.7554/eLife.50155>
- 13 **Reseña.** (1/4) Ruben Martinez Buey (AC); David Fernandez Justel; Alberto Jimenez; Jose Luis Revuelta. 2022. The gateway to guanine nucleotides: Allosteric regulation of IMP dehydrogenases. *Protein Science.* 31-9, pp.4399.

## C.2. Congresos

- 1 Ruben M Buey. The gateway to guanine nucleotides: molecular insights into the regulation of imp dehydrogenases. 45th Annual Meeting of the Spanish Society of Biochemistry & Molecular Biology. Spanish Society of Biochemistry & Molecular Biology. 2023. Participativo - Ponencia oral (comunicación oral). Congreso.
- 2 Ruben M Buey. Crystallographic structures decode the key to the gateway to guanine nucleotides: allosteric regulation of IMP dehydrogenases. 30 Simposio del GE3C. Grupo Español de Crecimiento Cristalino y Cristalografía. 2023. Participativo - Ponencia oral (comunicación oral). Jornada.
- 3 David Fernandez Justel; Jose Luis Revuelta Doval; Ruben M Buey. The Bateman domain of IMP dehydrogenase is a binding target for dinucleoside polyphosphates. 43rd Annual Meeting of the Spanish Society of Biochemistry & Molecular Biology. Spanish Society of Biochemistry & Molecular Biology. 2021. Participativo - Póster. Congreso.

## C.3. Proyectos o líneas de investigación

- 1 **Proyecto.** PID2023-146797OB-C33, Nuevas estrategias para el diseño de bioprocesos de *Ashbya gossypii* en el contexto de la bioeconomía. PROYECTOS DE GENERACIÓN DE CONOCIMIENTO. Ruben MARTINEZ Buey. (Universidad de Salamanca). 2024-2027. 138,75 €. Investigador principal.
- 2 **Proyecto.** PID2019-109671GB-I00, IMP deshidrogenasa: estructura, función e identificación de compuestos moduladores. Proyectos I+D del Subprograma de Generación de Conocimiento. Rubén Martínez Buey. (Universidad de Salamanca). 01/06/2020-31/05/2024. 145.000 €. Investigador principal.
- 3 **Proyecto.** BFU2016-79237-P, Caracterización Estructural y Funcional de la IMP deshidrogenasa más allá de su función catalítica. Proyectos I+D del Subprograma de Generación de Conocimiento. Rubén Martínez Buey. (Universidad de Salamanca). 01/01/2017-31/12/2020. 145.000 €. Investigador principal.
- 4 **Proyecto.** Desarrollo de bioprocesos para la valorización de residuos agro-industriales.. Junta de Castilla y León. (Universidad de Salamanca). 2017-2019. 199.650 €.

## C.4. Actividades de transferencia de tecnología/conocimiento y explotación de resultados

- 1 Rodrigo Ledesma Amaro; Andrea Molt; José Luis Revuelta Doval; Stefan Haeffner; Birgit Hoff; Rubén Martínez Buey; Oskar Zelder. CN105603035 (A). Genetic modification of Eremothecium to increase IMP dehydrogenase activity China. 25/05/2016. BASF SE.
- 2 Andrea Molt; Stefan Haefner; José Luis Revuelta Doval; Rodrigo Ledesma Amaro; Rubén Martínez Buey; Birgit Hoff; Oskar Zelder; Alberto Jiménez García. CN105603033 (A). Genetic modification of eremothecium for improving GMP synthetase activation China. 25/05/2016. BASF SE.
- 3 Adrea Molt; Alberto Jiménez García; Rubén Martínez Buey; Oskar Zelder; Rodrigo Ledesma Amaro; Birgit Hoff; Stefan Haefner; José Luis Revuelta Doval. CN105603034 (A). RIB genetic modification of eremothecium to downregulate gene expression by using the RIB7 promoter China. 25/05/2016. BASF SE.