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## AYUDAS RAMÓN Y CAJAL – CONVOCATORIA 2024

### Turno General

**Área Temática:** Ciencias y tecnologías medioambientales  
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**Título:** Behaviour, ecology and evolution in an anthropogenic world

#### Resumen de la Memoria:

My career has developed in 7 international research institutions in 5 countries and I have collaborated with 69 researchers across 10 countries. My work spans urban ecology, evolution, behavioral ecology, and migration biology, combining fieldwork, advanced analytical methods, and molecular techniques to address fundamental and applied scientific questions. While completing my undergraduate studies at the Complutense University of Madrid (Spain), I did two research stays abroad, first at Lund University (Sweden) and then doing an internship at IMARES-Wageningen University (the Netherlands). I finished my undergraduate studies with a research collaboration grant at Complutense University of Madrid, studying tree sparrow nest ecology and, producing a research paper and a presentation at an international conference. During my PhD at the University of Exeter, I focused on the evolution of cooperation in arid environments using the white-browed sparrow weaver as the study species. I employed advanced statistical models and genomic approaches, demonstrating that cooperation reduces environmental variance in reproductive success, showing evidence for plasticity in maternal pre-natal investment and providing an explanation for widespread sex differences in cooperation. I produced 6 PhD papers, including publications in Science Advances, PLoS Biology and Science. As a postdoctoral researcher at the University of Glasgow, I worked on urban ecology and on animal responses to anthropogenic environmental change, the research fields in which I see myself in the future. Here, I published two influential papers: a perspective paper in Trends in Ecology and Evolution, and a global meta-analysis on urban effects on phenotypic variation published in Ecology Letters. My work attracted competitive funding from Wellcome Trust and the Wild Animal Initiative, enabling me to initiate an independent research line on urban bird gut microbiomes, leading to publications and an invited keynote presentation at the 2024 British Ornithologists' Union Annual Conference. Currently, as a Marie Skłodowska-Curie Postdoctoral Fellow at the Swiss Ornithological Institute, I am combining my expertise in urban ecology with cutting-edge research on bird migration. I am investigating the migration of scops owls to understand anthropogenic effects on this behaviour and its potential role in urban adaptation. As a Ramón y Cajal Fellow, I plan to investigate whether variation in migratory behaviour serves as a mechanism for adaptation to anthropogenic global change and its consequences. Long-distance migration is a key behavioural trait that determines many aspects of the reproductive biology of a species and whose variation can have important consequences for biodiversity conservation and public health. I will utilise and further expand the research system that I have developed during my Marie Skłodowska-Curie Fellowship. My research program will not only generate insights into the fundamental mechanisms of adaptation to environmental change and the evolutionary ecology of migration, but it will also inform the conservation of biodiversity in urban areas and has the potential to help us understand how changes in animal behaviour might impact animal and human health.

#### Resumen del Currículum Vitae:

I study how animal populations and individuals respond to human changes to the environment, the ecological causes and the evolutionary mechanisms and implications of such responses. I have published 24 scientific papers, some in high impact journals. My h-index is 12 and the total number of citations is 555. As a Principal Investigator, I have attracted over 400,000 € in funding from three research calls. I have a deep interest in establishing networks and collaborations, reflected in the articles I have participated: they include 69 researchers from 10 countries. I have developed research projects at 7 institutions from 5 countries. Currently, I am a Marie Skłodowska-Curie Global Fellow working at the Swiss Ornithological Institute (Switzerland) where I am strengthening my long-standing research line: mechanisms and implications of animal adaptation to human-induced environmental change. At the University of Glasgow (2019-24, UK), I played a key role formulating a novel hypothesis in urban ecology and evolution and performed the first empirical test of this hypothesis. These two papers opened a new research line and have been highly cited. I also investigated how urban conditions impact behaviour and physiology of wild animals, performing large scale correlational work and experimental work. During this time, I also acquired competitive research funding from calls including research funding but not my own salary to start a research line investigating variation in bird gut microbiomes in urban environments. My research in Glasgow has yielded 11 papers to date. During my PhD at the University of Exeter (2015-19, UK), I studied the evolution of cooperation combining long-term datasets, advanced statistics and genomics. I provided the first empirical test of a new explanation for the evolution of cooperation, empirical evidence for plasticity to social conditions in maternal pre-natal investment and tested the main hypotheses for the evolution of sex differences in cooperation. A collaboration started during my PhD has led to evidence for the evolution of culture in birds, published in Science. Work done during my PhD has led to 8 papers. Previously, I did research stays at IMARES-Wageningen (the Netherlands), Lund University (Sweden) and worked on the development of new methods to study avian incubation. I have organised 2 international symposia and contributed to multiple presentations at international meetings. I have also been invited as a seminar speaker at 4 European Institutions, have been invited as a public speaker twice, have been involved in outreach events and write about science in a culture magazine. I have participated in 7 research projects, in 3 of them as the PI. My research is regularly featured in news outlets and on popular science sites. I have 88 hours of teaching experience in BSc modules. I have supervised 3 BSc and 5 MSc students from several institutions in Europe, have been invited to examine 2 PhD theses and to be part of the thesis defence committee in another 2 PhD theses. My scientific experience has allowed me to develop expertise in various research fields and be at the forefront of a growing research field, urban ecology and evolution.