



AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2018

Turno de acceso general

Nombre: RIESGO GIL, ANA
Referencia: RYC2018-024247-I
Área Temática: Ciencias y tecnologías medioambientales
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Título:

Evolution and ecology of marine invertebrate lineages

Resumen de la Memoria:

I am a researcher in the areas of evolutionary biology and ecology of invertebrates. I obtained my PhD in Cell Biology in 2007, and did my postdoctoral stays at University of Alberta (2008-2009), Harvard University (2009-2011), CEAB-CSIC (2011-2012), and the University of Barcelona (2012-2015). In July 2015, I was hired as permanent researcher at the Natural History Museum of London, at the Department of Life Sciences and in 2017 I was promoted to Research Leader (Band 3, equivalent to Principal Investigator in the CSIC scale). I have participated in 21 projects (7 as PI). I am currently leading one international project as PI (Royal Society of the UK) and 4 as a Co-I (2 from the European Union H2020, 1 from the Research Council NERC, UK, and another one from the Villum Foundation, Denmark). My total contribution in terms of income to the NHM since 2015 has been £1.9 million. My production reaches 58 papers, half of them as first author and 25% as senior author. My H-index is 18 (1114 citations). I have presented 56 contributions to international conferences, 50% as first or senior author. I am currently an Associate Editor for the journals Systematics and Biodiversity, Invertebrate Systematics, and Journal of Natural History and has served as reviewer for several international grant panels such as INACH (Chile), the Ministry of Science of Israel, the Hong Kong Research Grants Council, NSF (USA) and National Science Center (Poland). I have reviewed manuscripts for more than 30 international scientific journals in the fields of genomics, phylogeny, systematics, evolution, reproduction, and cell biology. I am currently supervising 3 PhD students, and supervised one PhD student who defended in 2016 with the Award of Extraordinary PhD from the Universidad Autónoma de Madrid. I have supervised 7 master's students, 4 undergraduate students and 1 student from the Honor's High School program in Cambridge (MA, USA). I have hosted 5 postdoctoral researchers in my lab, two of them awarded a Marie Skłodowska Curie Action, of which I am the coordinator. I have over 200 hours of teaching at the University College London, Imperial College of London, The Natural History Museum of London, and the University of Barcelona. I have performed fieldwork in more than 10 countries, including on board of research vessels in Spain, Norway, Canada and Antarctica, and diving field trips around the world. I routinely engage into public dissemination and outreach activities at the NHM, which receives over 5 million visitors a year, including events such as the European Researchers Night (Science Uncovered), NHMlates, Nature Live, or the Annual Science Lecture among others.

Resumen del Currículum Vitae:

1) Number of scientific publications: 56 (50% as first author, 25% as senior author, 6 of them with impact factor over 6). 2) Number of book chapters/books = 2. 3) H-index = 18; i10-index = 27. 4) Citations = 1120. 5) Projects as PI or CoPI = 10 (5 of them from the European Union). 6) Projects in which I participated = 22. 7) Average income generated from competitive grants = £1.9 million (2.18 millions of euros). 8) PhDs supervised and defended = 1. Currently supervising = 3. 9) Postdocs supervised = 6. 10) Competitive fellowships = 4 (1 predoctoral, 3 postdoctoral). 11) Years working in international research centres = 6 and a half. 12) Number of research centres in which I have worked = 6 (3 of them international, 3 national). 13) Number of invited conferences = 9. 14) Number of contributions to international conferences = 56. 15) Number of panels for grant reviewing = 5. 16) Number of journals for which I am Associate Editor = 3.



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Nombre: SANTIN NUÑO, CRISTINA
Referencia: RYC2018-025797-I
Área Temática: Ciencias y tecnologías medioambientales
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Título:

Wildfire impacts on carbon cycle, soils, water quality and society

Resumen de la Memoria:

My PhD focused on carbon sequestration in soils and sediments in estuarine environments and the effect of anthropogenic activities in their carbon pools and fluxes. It gave me solid expertise in organic carbon (C) characterization and quantification methods, such as fluorescence and FTI spectroscopy or ¹³C Nuclear Magnetic Resonance. Further on, I decided to link my research expertise (C sequestration) with a subject I have been always extremely interested in, as it is one of the main environmental issues in my home region in NW Spain: wildfires. I approached the Fire Team at Swansea Univ. (SU), a world leading group in wildfire research, and suggested to initiate a new research line: the impact of wildfires on the C cycle.

From Jan. 2011, I have developed this research line at SU with very fruitful outcomes in terms of scientific publications, international impact and new collaborations and projects in Europe, Australia, Canada, United States and South Africa. Since then, I have also expanded to other related research areas. My current main research lines are the following two:

I) FIRE & CARBON CYCLE

Vegetation fires are generally considered as net zero C emission events because their C emissions are balanced by C uptake by regenerating vegetation (excluding deforestation and peatland fires). However, I have demonstrated (e.g. Santin et al. 2012, 2015a&2016a), that this zero C emission assumption is fundamentally flawed as it does not consider the production of Pyrogenic Carbon (PyC). My previous work in the boreal forest has shown that up to 28% of the C burnt can remain sequestered as PyC instead of being released to the atmosphere. I have also demonstrated that global charcoal production has been underestimated and could account for up to 25% of the current missing terrestrial C sink. We are currently working on the first inclusion of PyC in a global wildfire emission model (GFED4+PyC).

In addition, my research has, for the first time, related PyC chemical properties to in-situ measured wildfire conditions (Santin et al. 2016b). It has also shown that the commonly held assumption that PyC produced naturally (wildfire charcoal) and anthropogenically (biochar or lab-produced charcoal) are analogues is wrong (Santin et al. 2017). In other studies (Santin et al. 2013, Doerr et al. 2018), we have also proved that subsequent fires can be an effective mechanism of PyC removal.

My current research fellowship (2017-2019, 201340), funded by the UE Marie-Curie Actions, aims at gaining a full understanding of the mechanisms that drive production of charcoal during prescribed fires.

II) FIRE & WATER QUALITY

Wildfires threaten water quality through the production of ash, which is rich in nutrients and potential water pollutants, and highly erodible (Bodi et al. 2014). With our research in Australian wildfires, we have developed a novel approach that predicts initial ash loads in the landscape and quantified contaminants in ash (Santin et al. 2015b and Chafer et al. 2016).

This previous research has been the basis for the Research Grant 'Fire and water: predicting and mitigating water pollution risk from wildfire ash' (2018-2021, 751286) where I am Co-PI. This project aims to develop the first end-user probabilistic model that allows predicting ash delivery and associated water contamination risk (Nunes et al. 2018).

Resumen del Currículum Vitae:

I studied Biology at the Univ. of Oviedo, Spain (2003, with Sobresaliente). I then obtained an FPU scholarship to carry out my PhD also at the Univ. of Oviedo (2004-2009). It focused on carbon sequestration in soils and sediments of estuarine environments. It gave me solid expertise in carbon characterization and quantification techniques and an excellent CV [6 JCR papers, 3 research internships overseas, and the award Premio Extraordinario de Doctorado]. I then linked my carbon sequestration expertise with one of the main environmental concerns of my home region (NW Spain): wildfires. I approached the world-leading wildfire research team at Swansea University (UK) and proposed to initiate a new research theme there: the impact of wildfires on the carbon cycle. Swansea's team main expertise was on post-fire soil erosion and I was interested in linking this process to the fluxes of carbon in fire-affected landscape. I was awarded 3 Spanish postdoctoral fellowships to work on this topic.



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Since 2011, I have developed this new research line of wildfires & carbon at Swansea and, in addition, I have expanded to related areas such as the effects of wildfires on water quality, environmental impacts of prescribed fires and social perceptions of fire. This has resulted in high-impact JCR papers, research grants, new collaborations with top leading research institutions and field campaigns across Europe, USA, Canada, South Africa and Australia.

In April 2016, I secured a permanent lectureship at Swansea University after a highly competitive process with over 100 applicants for two position. In July 2016, I was also awarded the prestigious Sêr Cymru II Fellowship funded by the EU Marie-Curie actions (Jan. 2017-Dec. 2019; > 200.000). In Dec. 2017 I was promoted to Senior Lecturer.

I am now being recognized as an emergent leader within the international fire science community, some of my most relevant achievements:

- 27 publications in ISI-listed international journals and 4 book chapters with ISBN. 19 of these 31 as lead author.
- All JCR publications are in journals within the Q1 of their fields.
- 2 publications classified as highly cited papers by Web of Science (Jan. 2019) [they have enough citations to be placed in the top 1% of their academic field].
- ~800 citations; h-index = 14 (Scopus, Jan. 2019).
- > 1.000.000 research funds as main PI or Co-PI in research projects funded through competitive calls and > 2.500.000 in research projects where I am/have been team member or collaborator.
- Associate Editor of the Journal of Geophysical Research-Biogeosciences (since Jan.2017) and Guest Editor for Frontiers in Earth Science (Research Topic with 18 contributions).
- 60 contributions to international conferences and workshops including 21 orals and 7 keynotes. Several contributions to Organizing and Scientific Conference Committees.
- External reviewer for 22 international journals, including Nature Communications and Nature Geoscience, and also for research proposals of funding bodies from UK, US, Austria, Chile and Croatia.
- Main supervisor of 2 masters students (completed) and co-supervisor of 3 PhD students (2 ongoing, 1 completed).
- Line manager of a technician (2019-2021) and mentor of a post-doc (2018-2020).
- 530 hours of officially certified teaching in graduate and undergraduate courses in UK and Spain.



AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2018

Turno de acceso general

Nombre: ALOS CRESPI, JOSE
Referencia: RYC2018-024488-I
Área Temática: Ciencias y tecnologías medioambientales
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Título:

Proximate mechanisms underlying personality-dependent movement in marine animals

Resumen de la Memoria:

RESEARCH INTERESTS

I am a quantitative researcher interested in fundamental and applied questions of animal movement ecology in marine social-ecological systems. Animal movement is a fundamental property of marine life implied in processes as diverse as the dynamics of meta-populations, species distribution, biological invasions, coexistence, extinction risk or the species ability to deal with global change. My research career has revealed that oceans around the globe are inhabited by fish that exhibit remarkable within-species variation in movement, mirroring the properties of animal personality, conforming personality-dependent movement syndromes that play a fundamental role in such movement-dependences.

- i) What are the proximate mechanisms involved in the development and maintenance of personality-dependent movement variation?
- ii) How personality-dependent movement is translated to the wide range of life-histories observed across oceans?
- iii) How fish behavior affects population resilience and conservation, ecological functioning and ocean ecosystem services?
- iv) How the interplay among fish, human and environment shape the dynamics marine systems?

These are my main research questions which I try to shed light by developing robust quantitative tools, applying new tracking and bio-logging technologies, developing novel artificial intelligence and individual-based algorithms and, recently, by applying state-of-the-art omics (genomics, proteomics, metabolomics, metagenomics, epigenetics).

#HIGH QUALITY EDUCATION AND TRAINING

In 2007, as just a post-graduate, I was awarded with my first project as PI and in 2009 with my first competitive Fellowship (Balearic Government, Spain). In 2011, I obtained my MSc degree in Marine Ecology and I was awarded with a competitive national Fellowship to carry out my PhD (FPI). I successfully defended my PhD with Awards at the University of the Balearic Islands (UIB) in 2013 and when I was still a PhD student, I was awarded a two-year Marie Curie IEF Post-Doc Grant to develop my first post-doctoral stage (2014-2015) in a world-leading group on social-ecological systems (IGB, Germany). In 2015, I was awarded with a prestigious Juan de la Cierva (Formación) post-doc to carry out my second post-doctoral stage (2016-2017). In 2017, I was awarded with a Juan de la Cierva (Incorporación) post-doc to carry out my current post-doctoral stage at Fish Ecology Group of IMEDEA (CSIC-UIB, 2018-2019).

Resumen del Currículum Vitae:

MAJOR HIGHLIGHTS OF MY CV

- n=74 SCI-manuscripts in high-impact journals (n=65 in Q1) including Trends in Ecology & Evolution (IF=16.7), Ecology Letters (n=2, IF=9.4) or Fish and Fisheries (n=3, IF=9).
- n=28 SCI-Manuscripts as first author, n=35 without the presence of my PhD supervisors and n=5 as last author.
- 1,427 citations (Google scholar), 1,072 (Scopus)
- H-index =24 (Google scholar), 22 (Scopus)
- n= 5 book-chapters and n=4 non-SCI scientific publications
- n= 56 communications at International conferences (n=7 invited, n=20 communications as first author, n=41 oral communications)
- n= 16 communications at National conferences
- n=19 supervised and co-supervised students; one completed (FPU) and one on-going PhD student (FPI), n=7 Master's Thesis and n=8 Final Project Degree or Bachelor's Thesis across the Humboldt University, the University of the Balearic Islands and University of Alicante
- n= 6 Research Projects as PI (n=2 local, n=3 nationals, n=1 EU/International)
- A total amount of 322,940 euro generated in projects as PI
- Participation in n=30 Research Projects (n=6 local, n=14 national, n=10 EU/International)
- n=1 non-competitive Private Contracts
- Work eminently collaborative (n=147 co-authors) and international (n=20 countries)
- Involved in four excellence international networks and two international advisory boards
- International research institutions: IGB-DE (2 years), FFWRI-USA (70 days), HU-DE (61 days)
- n=75 papers reviewed for 39 SCI-Journals and associate Editor of Fisheries Research
- n=7 participations in short- and long-term Commissions of Trust in academics and administration
- Outreach: Highlights in newspapers and news in media (n=48), TV shows (n=5), Radio shows (n=5), advice to fisheries associations (n=4),



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Outreach talks and other activities (n=18)



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Turno de acceso general

Nombre: GIANNAKIS, STEFANOS
Referencia: RYC2018-024033-I
Área Temática: Ciencias y tecnologías medioambientales
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Título:

Drinking water and wastewater treatment by light-assisted oxidation processes: shedding light in microorganism disinfection and chemical decontamination mechanisms

Resumen de la Memoria:

My first research period dealt with wastewater treatment, mostly with fundamental Environmental Engineering aspects of solar inactivation of microorganisms in urban effluents, and the risk of post-treatment bacterial regrowth. In summary, the factors involved in solar disinfection were modeled, and the regrowth potential of treated effluents was analyzed as a function of the pre-treatment conditions. My findings provided conclusions on the suitability of solar irradiation as a wastewater disinfection technique, indicating its opportunities and the limitations, the considerations on the treatment specifications and its environmental perspectives. The milestones that characterize the present line of research were the modelling of microorganism inactivation, as well as the assessment of regrowth, which have brought new insights in a process that was empirically approached.

Following, the second period of my research dealt with hospital wastewater treatment in Switzerland, Ivory Coast and Colombia. This work demonstrated that the application of UV- and solar-based Advanced Oxidation Processes (AOPs) against bacteria, viruses, yeasts and micro-pollutants is feasible, even with respect to the local context and application capacity. The use of light-supported AOPs was proven to be effective in degrading the respective targets and further mechanistic insights were provided by each application, which could facilitate their dissemination and potential application in the field. In parallel, my knowledge in the field of semiconductor photo-catalysis was transferred in the creation of self-cleaning surfaces. I performed tests on the activity of surfaces under light on co-deposited and plain surfaces, and interpreted the inactivation mechanisms, leading to a new interpretations of bacterial inactivation mechanisms. Within the years preceding my research, several black-box hypotheses have been formed on the bacterial inactivation pathways by solar light and photo-Fenton processes, but after my specific contributions, few doubts remain on the topic, elucidating the disinfection mechanisms of microorganisms as my second milestone achievement.

My on-going research deals with drinking water treatment and the enhancement of the traditional solar disinfection (SODIS) method, already applied with relative success, but small dissemination in Africa. I am actively contributing in the transformation of people's access to safe drinking water through solar technologies and focus on helping remote and vulnerable communities in South Africa, Uganda, Malawi and Ethiopia. The alleviation of the limitations of SODIS is underway, and the use of the Fenton reagents as an improvement method is studied against wild pathogens. Lately, I have integrated the sulfate-radicals oxidation in this context. By applying the aforementioned methods, the volumes of possible water treated can be enlarged, providing local population with higher amounts of micro-biologically safer water, plus eliminating the risk of microbial recovery due to the oxidative action. I have attained various practical and scientific achievements, that include modeling of the complex light-bacteria interactions in natural waters, proof that AOPs can be effective against antibiotic resistant bacteria and others. These milestones can affect the way SODIS and AOPs are applied in water-stressed regions.

Resumen del Currículum Vitae:

In 2009 I graduated from BSc & MSc on Civil, Hydraulics & Environmental Engineering program in Aristotle University of Thessaloniki (AUTH, Greece), followed by further Master Level Environmental Science studies in this faculty (MSc Environmental Protection and Sustainable Development), from which I graduated end of 2010 at the top of my class (mark: 91.5%, 2nd among 28).

In December 2010 I initiated doctoral research in Greece related with water disinfection and decontamination by means of solar energy. After signing a memorandum of understanding between AUTH and the Universitat Politècnica de Catalunya (Spain), for co-supervised PhD degrees, I was awarded a Double Doctorate of Philosophy in 2014 (Cum Laude, Spain & Distinction, Greece) with European Doctoral Mention in Environmental Engineering, for my research that was developed in three countries: 1 year in Greece, 1 year in Spain and, through the Swiss Government Excellence Scholarships, 1 year in École Polytechnique Fédérale de Lausanne (EPFL), Switzerland.

Following, as employee in the Institute of Chemical Sciences and Engineering (EPFL) since 2014, the innovative findings of my scientific production concerning the treatment of hospital wastewaters in Africa and Latin America by Advanced Oxidation Processes, resulted in a Doctorate in Science in 2016, in the domain of Chemical Engineering.

Since January 2017, I participate in an 18-partite consortium engaged in drinking water problems in Africa. I am working as Post-Doctoral researcher in EPFL, on the Fenton-driven enhancement of solar disinfection of drinking water in Africa, leading the research of a Working



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Package (WP) related with microbial disinfection, supporting three technological WPs. In parallel in this period, 5 months of post-doctoral research visits to Italy and USA have been completed.

In total, I have worked in 5 Projects (EU and Swiss), 1 as Principal Investigator and so far I have published 46 articles, almost all in the top 25% Journals in the fields of Environmental Science and Chemical Engineering (~95% in Q1). In 4 years since PhD award I received 583 citations and an h-index of 16. I have been first author in 25 and corresponding author in 20 of my published works.

Until 2018, the most important awards that I have acquired were the Mobility Grant by the Mediterranean Office for Youth, the highly competitive "Swiss Government Excellence Scholarship", the nomination from the PhD jury for the prestigious EPFL Dimitris Chorafas Award as a doctoral assistant and the Prime Speciale for the exceptional performance during my post-doctoral work.

In the last 5 years, I have directed the laboratory work of 11 incoming visiting PhD students, supervised 22 Master Theses, a Bachelor Thesis, and 13 trainees' internships. Currently, I am currently serving as a Special Issue Guest Editor in Applied Catalysis B: Environmental. Furthermore, I act as Associate Editor of the Journal of Advanced Oxidation Technologies (JAOTs), as a Review Editor of Frontiers in Environmental Science and I have been Guest Editor in a special issue in Coatings (MDPI-Switzerland). Additionally, I have participated in the jury and/or the external evaluation committee of 5 PhD Theses in Spain. Finally, over the last years I have evaluated projects for French funding bodies and the Chilean Government.



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Turno de acceso general

Nombre: BALLESTER CLARAMUNT, JOAN
Referencia: RYC2018-025446-I
Área Temática: Ciencias y tecnologías medioambientales
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Título:

Climate and health: sources of vulnerability, effectiveness of early adaptation and predictability of disease risks

Resumen de la Memoria:

My main goal is to perform world class scientific research on climate and health sciences, with especial emphasis on how environmental conditions and climate change affect human health. The primary focus of my current research is the link between climate variability and health impacts. I aim to describe the major sources of vulnerability, and if, which and to what extent societies have already started to adapt to climate change. I am also analyzing weather and climate predictability at a range of timescales, from days to seasons, so that it can be used for the generation of skilful early warning systems of disease risk. My ultimate goal is to improve the well-being of societies by increasing human resilience and adaptation to climate variability and change.

Resumen del Currículum Vitae:

I have published several articles in high-impact journals, including two in Nature Climate Change, two in Nature Communications, one in PLOS Medicine, one in Proceedings of the National Academy of Sciences, and two in Nature Scientific Reports. I am currently the Principal Investigator of two H2020 projects, in which I am leading cutting-edge research on temperature-related mortality in European regions and cities. I have been consecutively awarded three Marie Skłodowska-Curie postdoctoral fellowships, and I have worked in several leading international institutions such as the California Institute of Technology (Caltech). Since January 2017, I am a Tenure Track Assistant Research Professor at the Climate and Health Program of the Barcelona Institute for Global Health (ISGlobal). I currently lead a team of four postdoctoral fellows, one technician, one predoctoral student, and one master student. Several of my articles have been highlighted as news features in Nature and Science.



AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2018

Turno de acceso general

Nombre: DELGADO BAQUERIZO, MANUEL
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Área Temática: Ciencias y tecnologías medioambientales
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Título:

Soil biodiversity and ecosystem functioning in a changing world

Resumen de la Memoria:

I am a soil ecologist with a strong multidisciplinary background in soil microbial ecology, global change, historical legacies, biodiversity and ecosystem functioning. I am currently a Marie Skłodowska-Curie Fellow at University Rey Juan Carlos (URJC). I have >4.5 years of international and over a year of national postdoctoral experience. Since I finished my PhD at the University Pablo de Olavide (UPO; 2013), I have worked as a postdoc at Western Sydney University (Australia; 2014-2016), University of Colorado Boulder (USA, 2016-2018) and URJC (Spain, 2013, 2018-2019). I am currently an honorary fellow at UPO (2015-), Western Sydney University (2016-), and Chinese Academy of Science (2019-). I have also conducted multiple national and international research stays at Colorado State University (USA), Northern Arizona University (USA), University of Canterbury (New Zealand), and URJC.

I have already published 92 JCR articles, which include lead-author articles in leading multidisciplinary and ecological journals like Science, Nature, Nature Communications, Science Advances, The ISME Journal, Nature Ecology & Evolution, and Ecology Letters. I have published four book chapters, and three articles in peer-reviewed Spanish journals. My publications have received 1862 citations according to Web of Science (WoS, 2571 according to Google Scholar; GS), and my current H-index is 22 (WoS) and 26 (GS). Also, according to WoS, I am the author of three highly cited papers. My work has been presented in >30 national and international scientific meetings, including four invited talks in China, USA and Spain.

I have participated in 12 national and international projects, being the PI of three of them (~300,000). I am the main coordinator of two global collaborative networks CLIMIFUN and MUSGONET including collaborators from >20 countries on every continent. I am credited as "Profesor contratado doctor" by ANECA, and have advised two PhD students. Moreover, I am a section Editor in the journal Plant and Soil, and have experience reviewing scientific proposals from national and international funding agencies (e.g., NSF-USA). I have been awarded with an Extraordinary Doctorate Award from the UPO (2013) and the Andaluces del Futuro Award (Science category, 2018).

Through my investigation, I have identified global patterns in nutrient decoupling in response to predicted increases in aridity in drylands worldwide (Nature, 2013). I have found novel global links between soil microbial diversity and multiple ecosystem functions (Nature Communications 2016). More recently, I published the first global atlas for soil bacterial communities (Science 2018). I have also contributed to a better understanding of how climatic legacies regulate the distribution of soil microbes and carbon storage around the world (Science Advances 2017). The outcome of my research has been disseminated through press releases, radio interviews, newspapers (including ABC & El País) and blogs/webpages.

My research lines include:

1. Microbial diversity and ecosystem functioning
2. Patterns and mechanisms driving soil biodiversity globally
3. Global environmental change drivers of soil biodiversity and ecosystem functioning
4. Above-belowground linkages as drivers of ecosystem functioning in a changing world
5. Historical legacies as drivers of soil biodiversity and ecosystem functioning

Resumen del Currículum Vitae:

I am a soil ecologist with a multidisciplinary background working on soil microbial ecology, global environmental change, historical legacies, biodiversity and ecosystem functioning. I am currently a Marie Skłodowska-Curie Post-doctoral Fellow working at Rey Juan Carlos University (URJC; Spain). I have >4.5 years of international and over a year of national postdoctoral experience. Since the time I finished my PhD at the University Pablo de Olavide (UPO; 2013), I have worked as a postdoc at Western Sydney University (WSU; Australia; 2.5 years), University of Colorado Boulder (USA, >2 years) and URJC. I am currently an honorary fellow at UPO (2015-), WSU (2016-) and the Chinese Academy of Science (2019-). I have also conducted multiple national and international research stays at Colorado State University (USA), Northern Arizona University (USA), University of Canterbury (New Zealand), and URJC. I have already published 92 JCR articles, which include lead-author articles in leading multidisciplinary and ecological journals like Science, Nature, Nature Communications, Science Advances, The ISME Journal, Nature Ecology & Evolution, and Ecology Letters. I am also a co-author of high-profile papers published in PNAS, Science, and Nature Microbiology. Moreover, I have published four book chapters as well as three articles in peer-reviewed Spanish journals. I have participated in 12 national and international projects supporting this research, being the PI of three of them (~300,000). Currently, I am the main coordinator of two global collaborative networks (CLIMIFUN & MUSGONET) which aim to evaluate the changes in soil biodiversity during ecosystem development, and to study the microbiome associated with soil mosses across the globe. These networks include collaborators from >20 countries and all continents.

I am credited as "Profesor contratado doctor" by ANECA, and have advised two PhD students. I am a section Editor in the journal Plant and



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Soil, and have experience reviewing scientific proposals from international and national funding agencies (e.g., NSF-USA). I have also been awarded with an Extraordinary Doctorate Award from UPO (2013) and the Andaluces del Futuro Award (Science category, 2018). My publications have received 1862 citations according to Web of Science (WoS, 2571 according to Google Scholar; GS), and my current H-index is 22 (WoS) and 26 (GS). Also, according to WoS, I am the author of three highly cited papers. My work has been presented in >30 national and international scientific meetings, including four invited/plenary talks in China, USA and Spain. Through my investigation, I have identified global patterns in nutrient decoupling in response to predicted increases in aridity in drylands worldwide (Nature, 2013). I have found novel global links between soil microbial diversity and multiple ecosystem functions (Nature Communications, 2016). More recently, I published the first global atlas for soil bacterial communities (Science, 2018). I have also contributed to a better understanding of how climatic legacies regulate the current distribution of soil microbes and carbon storage around the world (Science Advances, 2017; Nature Ecology & Evolution, 2017). The outcome of my research has been disseminated through press releases, radio interviews, newspapers (including ABC & El País) and blogs/webpages.



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Turno de acceso general

Nombre: GARCIA PALACIOS, PABLO
Referencia: RYC2018-024766-I
Área Temática: Ciencias y tecnologías medioambientales
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Título:

Interactions between plants, soil organisms and ecosystem processes under climate change

Resumen de la Memoria:

My PhD at Universidad Rey Juan Carlos (URJC, Extraordinary Award 2010) focused on plant-soil interactions. I then performed five postdoctoral stays (8 years), two of them abroad (3 years). After addressing ecosystem responses to plant domestication (URJC), I worked with global datasets of soil organisms, ecosystem processes and plant traits at Colorado State University (USA, Fulbright, 1 yr). I moved to the CNRS (France) as a Marie-Curie fellow (2 yr) to lead a project on litter decomposition. Since 2015, I work at the interface between community and ecosystem ecology, with funding from Juan de la Cierva-Incorporación (first-ranked in the 2015 BVAE section) and British Ecological Society grants. I am strongly involved in outreach (books, blog posts, science festivals and workshops) and organizational duties (I lead the plant-soil interactions working group of the Spanish Association of Terrestrial Ecology).

I have published 42 SCI articles (98% Q1, average JCR IF 7.5), five of them in Nature/Science/PNAS and many others in top ecology journals. I have solid leadership skills, since 1) I am the first author in 20 articles (including PNAS, Ecol Lett x2, Global Change Biol x2), and second and last author in 4 and 2 articles, respectively, 2) I have published 16 articles (8 first-authored) without my PhD supervisors, 3) I am the PI of 3 competitive grants (totaling ~215000 €), and 4) I have mentored two Master and I am currently mentoring two PhD students. I have an extensive international network and visibility, as indicated by the participation of international researchers in my funded grants and publications, the leadership of Work Packages in two recent EU (Biodiversa) consortiums, the organization of three special sessions in international conferences, and the reviewer activity of international projects, PhD theses, and journals. I am also a Consulting Editor in Plant and Soil since 2017 and I am credited as Profesor Contratado Doctor by ANECA.

I work at the interface between community and ecosystem ecology, with special interest in how climate change affects the relationships between plants, soil organisms and ecosystem processes. My research combines approaches (global surveys, manipulative field and greenhouse experiments and meta-analyses) and tools (remote sensing, next-generation sequencing and biogeochemical analyses) from multiple disciplines. Currently, I am addressing key issues for global ecology such as the impacts of climate change on biosphere-atmosphere feedbacks and ecosystem stability. In the last three years, my research is transitioning towards the use of basic ecological knowledge to face one of the most urgent global challenges: increasing crop yield and yield stability in a context of human population growth and climate change.

Resumen del Currículum Vitae:

I did my PhD at URJC on plant-soil interactions and restoration. The PhD resulted in eight first-author articles, and three book chapters. My PhD training was complemented with a 3-month stay at the James Hutton Institute (Scotland). I defended my PhD in 2010, graduating with honors (cum laude) and obtaining the Extraordinary Award from URJC.

I have performed five postdoctoral stays, two of them abroad (totaling 3 years). First, I collaborated with Dr. Rubén Milla in a project on crop domestication and litter decomposition (two first-author articles in SBB and New Phytol). In 2012, I was awarded with a MEC-Fulbright postdoctoral fellowship at Colorado State University (USA, 1 year) in a project addressing the drivers of litter decomposition (two first-author articles in Ecol Lett and Global Change Biol). In 2013, I was awarded with a Marie Curie postdoctoral fellowship at CNRS (France, 2 years) to assess the effects of tree diversity, soil organisms and climate change on litter decomposition (four first-author articles in Ecosystems, J Ecol, Funct Ecol and Ecol Lett). As the PI of this EU-funded project (201932 €), I had the opportunity to start performing independent research, raise my own funds and manage economic resources.

After my return to Spain in 2015, I joined URJC to work as Work Package leader for 1.5 years in a EU consortium focusing on ecosystem services triggering crop yield (García-Palacios et al. 2018 J Appl Ecol). In 2016, I was awarded with a Juan de la Cierva-Incorporación (first-ranked in the BVAE section in the 2015 call, two first-author articles in PNAS and Global Change Biol). I am also the Work Package leader of another EU consortium looking at the effects of crop diversity and soil communities on ecosystem multifunctionality across European cereal fields. I am the PI of two competitive projects (totaling 11.451 €).

I have published 42 SCI articles, which accumulate 2205 citations (Google Scholar, H-index = 22). I have an extensive international network,



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as I currently collaborate with more than 20 researchers from 11 countries. I have given presentations in 24 conferences in seven countries. I have organized and chaired three special sessions in international conferences. I am Consulting Editor in Plant and Soil. I regularly review articles in international journals (42), projects (1), PhD thesis (2 in Spain, 1 in Australia), and books (1).

I believe that outreach activities are fundamental to increase the impact of our research results and ultimately, to inform and influence both the society and the policy makers. I have been fully committed to outreach activities since my PhD, where I participated in three book chapters on good restoration practices involving researchers, road construction companies (OHL and Ferrovial) and the Administration (Fundación Biodiversidad). My articles have reached considerable media attention, as indicated by the 130+ news and press releases in national and international media. Since my return to Spain after three years of postdoctoral experience abroad, I have been involved in several science fairs and similar events such as the Pint of Science Festival, Semana de la Ciencia, Ciencia a la Carta and workshops in elementary schools. I also frequently write posts in national and international blogs.



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Turno de acceso general

Nombre: GOMEZ RIVAS, ENRIQUE
Referencia: RYC2018-026335-I
Área Temática: Ciencias y tecnologías medioambientales
Correo Electrónico: enrique.gomez.rivas@gmail.com

Título:

Understanding the interplay between deformation, dynamic fluid flow and rock alteration in the Earth's subsurface

Resumen de la Memoria:

I am currently a Research Fellow funded by the Marie Skłodowska-Curie Cofund (Beatriu de Pinós programme) at the University of Barcelona, since January 2018. I also hold the position of Lecturer in Geology and Petroleum Geology at the University of Aberdeen (UK) since July 2014 (on voluntary leave since January 2018). This is a permanent post that involves leading research, teaching at BSc and MSc level and carrying out academic administration. Prior to that I held postdoctoral research fellowships at the University of Tübingen (Germany) for 4.5 years and at the Autonomous University of Barcelona (Spain) for 2 years. I have a PhD (with Doctor Europaeus mention) from the Autonomous University of Barcelona.

My research focuses on structural geology, sedimentary geology and the study of geofluids and the diagenetic/hydrothermal alteration of rock. My work integrates numerical simulations, field studies and laboratory experiments to understand the deformation of anisotropic rocks, as well as fluid flow and mineral reactions in sedimentary basins and the Earth's crust. This work is strongly process-oriented and focuses on testing and quantifying the processes and mechanisms controlling rock deformation and geochemical alterations. Recent studies include (i) the interaction between brittle and ductile deformation, (ii) the formation of tectonic veins, (iii) analysis of deformation microstructures of polar ice and crustal and mantle rocks, and (iv) the study of depositional, structural and geochemical controls on fluid-rock interactions.

I carry out both fundamental and applied research, and transfer research results to non-academic communities. I have participated in several large research consortia and international projects funded both by the hydrocarbon industry and national and international public funding bodies, including EU Horizon 2020. I have participated in 24 research projects (with a total budget of >3 Mill EUR), and I have been principal investigator of 12 of them (with a budget of > 450,000 EUR). This includes a 50,000 EUR project as principal investigator that is part of a EU Horizon 2020 EraNET network.

My publication record includes 58 peer-reviewed journal articles and 9 books or book chapters. 37 publications are indexed in Web of Science (14 in Q1 journals) and 43 in Scopus (34 in Q1 journals). I currently have three manuscripts in review. These outputs have been cited 848 times, resulting in an h-index of 17 (Google Scholar).

I currently supervise a postdoctoral researcher and 6 PhD students (3 as lead supervisor), and have supervised to completion 1 PhD, 24 MSc and 36 BSc theses.

I have contributed to 123 conference presentations and have co-organised a number of international conferences and symposia. I recently acted as lead convener of the 21st International Conference on Deformation Mechanisms, Rheology and Tectonics (DRT-2017), one of the key world meetings in structural geology and tectonics. I am also co-organiser of the DRT-2019 and have acted as co-organiser of the international Yorsget-2018 conference.

Additionally, I serve as Associate Editor of the Q1 journal Marine and Petroleum Geology since 2016, Guest Editor of the Journal of Structural Geology and reviewer for 13 different journals. I am also Treasurer and member of the Executive Committee of the IUGS Tectonics and Structural Geology Commission.

Resumen del Currículum Vitae:

· Current positions: Research Fellow funded by the Marie Skłodowska-Curie Cofund (Beatriu de Pinós programme) at the University of Barcelona (from 2018), and Lecturer in Geology and Petroleum Geology at the University of Aberdeen (UK), since 2014 (on voluntary leave since 2018).

· Previous positions:

2010-2014 (4 years and 6 months): Postdoctoral Research Fellow at the University of Tübingen, Germany, within an international consortium funded by the DGMK (German Society for Petroleum and Coal Science and Technology)

2008-2009 (2 years): Postdoctoral Research Fellow at the Autonomous University of Barcelona, within an international consortium funded by ExxonMobil



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2006-2009 (3 years): Profesor Tutor (Teaching Fellow) at the Universidad Nacional de Educación a Distancia (UNED)
2003-2007 (4 years): FPI PhD grant holder, funded by the Ministerio de Educación y Ciencia

- PhD (2008): Sobresaliente Cum Laude, at the Autonomous University of Barcelona, with Doctor Europaeus mention.
- Funded short research stays:
 - 2015 (16 days, postdoctoral): Autonomous University of Barcelona
 - 2015 (18 days, postdoctoral): University of Barcelona
 - 2009 (3 months, postdoctoral): ExxonMobil Upstream Research Company, USA
 - 2006 (4 months, predoctoral): University of Tübingen, Germany
 - 2004 (2 months, predoctoral): University of Saint Andrews, UK
- Publications (73), including 58 peer-reviewed journal articles, 9 books or book chapters and 3 technical reports. 37 of these publications are indexed in Web of Science (14 in Q1 journals) and 43 in Scopus (34 in Q1 journals). Three manuscripts currently in review. These outputs have been cited 848 times, resulting in an h-index of 17 (Google Scholar).
- Contributions to conferences (123) in a wide range of national and international events, such as EGU, AAPG, Geological Society, EAGE, DRT, etc. conferences.
- Participation in 24 competitive research projects funded by public agencies and industry, with a total budget over 3 million Eur. This includes participations as principal investigator, co-investigator and project partner. Principal investigator of 12 projects, with a total budget of more than 450,000 Eur. This includes a 50,000 Eur project as principal investigator that is part of a EU Horizon 2020 EraNET network.
- Conference organisation: Chair and lead convenor of the 21st International Conference on Deformation Mechanisms, Rheology and Tectonics (DRT 2017). Co-organiser of the international meeting YORSGET-2018 (International Conference of Young Researchers in Structural Geology and Tectonics) and of the DRT-2019 conference. Co-organiser of six international symposia.
- Currently supervisor of 1 postdoctoral researcher and 6 PhD students (3 as lead supervisor). Supervisor to completion of 1 PhD thesis (2018), 24 MSc theses (2010-2018) and 36 BSc dissertations (2010-2018).
- Associate editor of the journal Marine and Petroleum Geology (Elsevier, Q1, with impact factor of 3.281, handled 60 articles since 2016). Lead guest editor of a special issue in the Journal of Structural Geology (Elsevier, impact factor 2.622).
- Reviewer for 13 different journals (most of them Q1 journals) and proposals for two funding agencies, including NERC.
- Treasurer and member of the Executive Committee of the Tectonics and Structural Geology Commission (TecTask) of the International Union of Geological Sciences (IUGS).



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Turno de acceso general

Nombre: ALMEDA GARCIA, RODRIGO
Referencia: RYC2018-025770-I
Área Temática: Ciencias y tecnologías medioambientales
Correo Electrónico: roal@aqua.dtu.dk

Título:

PLANKTON ECOLOGY AND POLLUTION: zooplankton and pollutants interactions and their marine ecosystem impacts

Resumen de la Memoria:

I am a marine biologist interested in the ecology and physiology of plankton, the structure and dynamics of marine food webs, and their response to environmental and anthropogenic stressors, particularly pollution. I am currently a researcher at the Technical University of Denmark (DTU).

Academic career

I completed my BSc in Marine Biology at the University of La Laguna, where I was honoured with the "Extraordinary Graduate Award" for the best academic record in 2003. My MSc and PhD research at the Marine Sciences Institute of Barcelona focused on the ecophysiology of plankton and the role of zooplankton in marine food webs and biochemical cycles. I received the "Ph.D. Extraordinary Award" from the University of Barcelona as a recognition of the outstanding results from my Ph.D. thesis. As a postdoctoral scientist (7 years, USA and Denmark), my research has focused on investigating pollutants and plankton interactions and trait-based approaches to plankton ecology. My scientific results include 38 publications and > 55 contributions to scientific meetings. I have led research projects, obtained my own research funding (>600000 as PI) from highly competitive grants with an excellent evaluation (e.g., Marie Curie fellowship, score: 98.30/100) and successfully supervised PhD, MSc and BSc theses.

Research lines

My scientific career has covered these main four topics/research lines:

- 1) Plankton ecology and physiology (9 publications)
- 2) The role of zooplankton in marine food webs and biochemical cycles (11 publications)
- 3) Trait-based approaches to plankton ecology (8 publications)
- 4) Plankton and pollution interactions (10 publications)

My current research interests focus on two major global environmental problems: petroleum and plastic pollution in the ocean. Particularly, I study the interactions between zooplankton and pollutants (crude oil, microplastics) at individual and community levels to understand the role of zooplankton in the fate and impacts of pollutants on marine ecosystems. My goal is to consolidate a research line that combines experimental and field approaches to investigate plankton and pollution interactions from an ecological and evolutionary perspective different from traditional toxicology.

Resumen del Currículum Vitae:

Excellent academic merits recognized by awards:

- PhD Extraordinary Award, 2012. Awarded by the University of Barcelona to the best PhD thesis in Ecology completed in 2011.
- Certificate of recognition from the 17th Award of the Council of Doctors of the University of Barcelona (2013) for outstanding PhD thesis.
- Final evaluation of MSc/DEA studies: Excellent (the highest). Mention of Excellence MSc Program.
- Extraordinary Graduate Award, 2004. Awarded by University of La Laguna to the best curriculum of highest marks (best academic record) that finished the degree in Biology in 2003.

High quality and quantity of scientific contributions with a strong leading role:

- Publications: 38 scientific articles, 37 publications in peer-reviewed SCI journals.
- 17 publications as 1st author, 7 as second author, and 8 from students under my supervision.
- All my publications are in journals in the first quartile of their area, including Proceedings-B, Nature Scientific Reports, Environmental Science and Technology, L&O, Environmental Pollution.
- H-index: 14, i10-index: 25, citations: 820. First author of my 6 most-cited publications.
- Influential papers in the field (Almeda et al. 2013: >100 citations, Almeda et al. 2014: 80 citations).
- Contributions to scientific meetings: > 55, 26 as first author, including 22 international conferences.



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Success in obtaining funding, leading and collaborating in research projects:

- I have obtained my own research funding as PI (>600000) from highly competitive fellowships and grants, including: Marie Curie Fellowship from European Commission (Excellent score: 98.30/100), H. C. Ørsted fellowship, grant from Danish Council for Independent Research, Orients Funds grant.
- Co-PI in grants: EU H2020 funded AQUACOSM Transnational, Gulf of Mexico Research Initiative.
- Participation in 16 national and international funded research projects (4 as PI).

Broad international experience and network:

- I have worked at 11 institutions in 6 different countries and collaborated with >90 scientists.
- 7 years of research experience in USA and Denmark
- Research stays in Sweden, Canada, Greece, Denmark, USA
- International training courses in France, Germany, Greece, UK, USA
- Oceanographic cruises in Gulf of Mexico, Mediterranean, Antarctica, Arctic Ocean
- Participation in 22 international conferences organized in USA, France, Canada, Japan, etc.
- Coordination of international consortium for JPI-Oceans call (Denmark, Spain, Norway, Italy)
- Outreach activities in USA and Denmark (e.g., Science Field Program, Science City Festival)
- Reviewer for 23 international journals, evaluator for research programs from Chile, USA, etc

Extensive experience in mentoring and designing projects for BSc, MSc and PhD students:

- Main supervisor of 4 BSc students through the USA National Science Foundation REU program.
- Main supervisor of BSc final project, DTU. Qualification: 12 (=A+, the maximum), Denmark.
- Supervisor of 5 BSc students in the DTU-Biological Oceanography Course, Denmark
- Co-supervisor of MSc thesis at the University of Texas MSI, USA.
- De facto main supervisor of PhD thesis completed at DTU
- Co-supervisor of PhD thesis completed at Roskilde University and DTU
- Co-supervisor of on-going PhD thesis on microplastics at DTU



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Turno de acceso general

Nombre: GUILBAUD , ROMAIN
Referencia: RYC2018-024693-I
Área Temática: Ciencias y tecnologías medioambientales
Correo Electrónico: r.guilbaud@cantab.net

Título:

Chemical evolution of the biosphere

Resumen de la Memoria:

I am a biogeochemist, interested in the processes which have shaped the Earth's surface from extreme, oxygen-free environments (hostile to complex life) towards a habitable planet. Specifically, I focus on the co-evolution of life and ancient environments, exploring the role of bioavailable oxygen, nutrients, and oceanic toxicity in the evolution of life.

To address these major questions I develop and apply geochemical techniques (Trace metals, Fe and P mineralogy, traditional and novel, non-traditional stable isotopes, biomarkers). Since my PhD, I have dedicated most of my research to understanding the links between the chemistry of Precambrian (older than 542 million years) oceans and the evolution of life. For instance, my doctoral work has contributed to significant breakthroughs in the field of iron stable isotopes as a novel tracer for ancient microbial metabolisms. This work bore strong implications for the potential use of this new tool to track potential biological fingerprints on other planets, and it opened up a vibrant debate internationally, with a publication and several comments in Science, and the 2012 Geological Society's President's Award. More recently, I have revisited global ocean chemical conditions during the Neoproterozoic - a period of intense biological, climatic, and environmental upheaval. Several highly cited papers came out of this research, including a publication in Nature Geoscience as first author, where I linked the first conspicuous evidence for early eukaryote diversification to the detoxification of continental margins. I also explored the co-evolution of oxygen availability and early animal life, assessing the links between ocean chemistry and the distribution of animal communities, with significant contributions in Nature Communications and Geochemical Perspective Letters.

Building on this research trajectory, I aim to push the boundaries of this research area, developing a new tool to explore the links between life and an oxygen-depleted ancient Earth. A pilot study I conducted as part of a recent grant demonstrates that by combining existing proxies with the calibration of a novel tool based on the geochemistry of uranium and its isotopes can help us reconstruct past ocean oxygen levels to a high reconstruction. I aim to pursue this thrilling research at the University of Barcelona, which hosts the ideal combination of equipment and expertise for this kind of multidisciplinary research. Of particular importance, the UB's infrastructures comprise all required equipment and instrumentations for this project, and the field of geobiology is a current vibrant research focus of the University.

Resumen del Currículum Vitae:

Experience: R. Guilbaud (RG) is an early career biogeochemist and a geologist. After a PhD in Experimental Geochemistry (obtained in 2011 at the University of Edinburgh), RG was a Research Associate in biogeochemistry at the University of Leeds (2011-2014), a Research Fellow at the University of Cambridge, Clare Hall (2014-2016), and a Teaching and Research Associate at the Université de Nîmes (France). RG is now a Lecturer at Lancaster University.

Quality measures: Since 2010, RG's research has led to 15 publications in 1st quartile peer-reviewed journals, including 9 as first author, cited >400 times (Scopus h-index 10). Targeted journals have impact factors ranging from 2.7 to 31.2. He was first author of 21 seminars and international conference presentations, amongst which 12 as invited speaker. His scientific production has been acknowledged in 2012 by the prestigious Geological Society President's Award, and in 2016 by the honorary title of Life Member of Clare Hall College (University of Cambridge).

Research implementation: RG has participated to 4 nationally funded research projects (Natural Environment Research Council), and was the leading PI of his three own projects. He reached the 3rd position on the reserve list for the highly competitive NERC Independent Research Fellowship 2016 call, and the reserve list of the 2018 ERC Starter Grant call. RG also implemented and managed 3 fieldwork expeditions (total of 10 participants), and established the new anoxic facilities at the Lancaster Environment Centre (Biogeochemistry group, Lancaster University).

Research Activities: RG is a regular reviewer of peer-reviewed publications (>40) for a range of publishing groups including Elsevier, Nature, and the American Association for the Advancement of Science, and also an evaluating reviewer for the ERC starting grant programme. RG organised and convened conference sessions at the Nutrient 2015 Conference in Leeds (UK) and at the 2017 Goldschmidt Conference in Paris (France). RG has participated to a range of outreach activities including published scientific debates and filmed interviews for NERC. He was also an elected committee member for the Geochemistry Group (Mineralogical Society of GB), and of the Clare Hall College Governing Body and Environmental Committee (University of Cambridge).



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Supervision and teaching: RG is experienced in teaching at University level (including practicals, lectures and fieldtrips at both undergraduate and graduate levels) and supervising research projects (1 final year BSc, 1 MSc, 2 PhDs). He holds the French qualification to teach at the University level, the AQU accreditation for the Catalan Universities, and a British Higher Education teaching certificate. He was recently allocated with a new Faculty funded PhD studentship (2019-2023). In addition, he has trained visiting researchers (>1000 hours) on several geochemical techniques.



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Turno de acceso general

Nombre: COLON JORDA, JOAN
Referencia: RYC2018-026231-I
Área Temática: Ciencias y tecnologías medioambientales
Correo Electrónico: joan.colon@uvic.cat

Título:

Sustainability & Circular Economy - Valorisation of organic wastes

Resumen de la Memoria:

I got my bachelor's degree in biology in 2006 at the Autonomous University of Barcelona (UAB). In 2007 I joined the UAB Department of Chemical Engineering to carry out my master's thesis and my PhD thesis. In February 2012 I completed my PhD in Environmental Science and Technology with cum laude distinction, my work was also granted with the Extraordinary Doctorate Award for the academic years 2012/13. The PhD dissertation, entitled Determination and treatment of gaseous emissions coming from OFMSW biological treatments. Environmental Impacts of different industrial facilities. My scientific production during the PhD encompassed 13 peer-reviewed journal publications (7 of which have more than 50 citations and 3 with more than 100 citations)

I started my postdoctoral research in March 2012, I got a 1-year contract at the Duke University. I was hired as a coordinator and researcher in charge of the project Effective Sewage Sanitation with Low CO₂ Footprint that was funded by the Bill & Melinda Gates Foundation under the Reinvent the Toilet Grand Challenge. From mid-2013 to mid-2015 I went back to UAB as postdoctoral researcher. I was hired to coordinate the private contract with URBASER SA entitled COMPOBIOL Optimization of Composting, biodrying and odours in which I was responsible to optimise the composting and the biofiltration control systems used at the full-scale plants of URBASER in terms of energy and reagents consumption. From 2015 to 2017 I was awarded with a Torres Quevedo Fellowship and I started to work at the R&D department of AERIS Tecnologías Ambientales SL (spin-off from researchers of UAB).

In 2015 I also became assistant professor at the Faculty of Science and Technology in the University of Vic Central University of Catalonia (UVIC-UCC) and I also became part of the research team at the Technological Centre on Biodiversity, Ecology, Environmental Technologies and Agri-food Industry (BETA Tech. Centre). After finishing my Torres Quevedo Fellowship, in 2017 I was awarded with a Marie Skłodowska-Curie fellowship (under TECNIOspring PLUS, ACCIÓ's fellowship programme). This fellowship was a key achievement in my scientific career as it allowed me to get a consolidated position at the BETA Technological Centre and at the UVIC-UCC. In 2017 I became Associate Professor of the Faculty of Science and Technology of UVIC-UCC and I also became Scientific director of the BETA Tech. Centre. Moreover, in BETA I established and lead my own and new research line (Sustainability & Circular Economy Research line).

My research is focused on 2 main research lines: (i) Sustainability & Circular Economy and (ii) Environmental Engineering.

The Sustainability & Circular Economy Research line focuses mainly on the assessment of triple helix of sustainability (environmental, economic and social). This research line is divided in three main activities: (i) models & methods development, (ii) Software development & applied research and (iii) knowledge transfer projects.

Currently at BETA Tech. Centre I am involved and leading the development of several innovative technologies (biodrying, freeze concentration and solid state fermentation), mainly manures and slurries, to produce Bio-based and Tailor-made fertilisers and to recover energy and other high-added value products.

Resumen del Currículum Vitae:

My research activity has focused on environmental technology and sustainability (PhD on Environmental Sciences, 2012). I am currently the Scientific Coordinator of the BETA Technology Centre (TECNIO Network), head of the Sustainability research line as well as associate professor of the Biosciences Department of the Faculty of Science and Technology, at the University of Vic-Central University of Catalonia (UVIC-UCC). The first period of my scientific career was developed at the Autonomous University of Barcelona (MSc and PhD), later, during my post-doc stage I had 2 years of abroad experience (1 year at Duke University (USA) and 1 year at Brunel University London (UK)). During the last few years, I've developed an important and recognized scientific and technological career, my area of expertise includes waste treatment and valorisation of organic wastes through innovative technologies and processes including the combination of environmental technologies with the assessment of sustainability by means of Life Cycle Assessment.

My overall scientific production resulted in 28 peer-reviewed journal publications (93% in Q1 journals, 10 as first author and 4 as corresponding and leading scientist) plus 3 more already submitted, 5 book chapters (2 as first author) and several popular science papers and reports. These publications resulted in a total of 1267 citations and an H-index of 15, which is an outstanding achievement for a young scientist. I have also participated in 19 conferences (15 oral presentations and 4 posters).

I have participated in 27 R&D projects funded through competitive calls (e.g. H2020, LIFE+, Interreg, Operative Groups, RETOS de la Sociedad) being the coordinator & Principal Investigator in 6 of them. Big part of my research has been devoted to applied research and technology transfer projects, I've participated in 16 R&D non-competitive contracts with public and private entities being the coordinator in 7 of them. The work carried out in these projects has led me to the publication of 1 patent with URBASER SA. Additionally, it is also significant to highlight that the impact of my research goes beyond the EU frontiers and is also applied under Cooperation Development initiatives, mainly in South American countries.



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I proved the ability to attract competitive research funds through (i) the obtention of numerous fellowships (e.g. PhD 13, Torres Quevedo fellow, Marie Skłodowska-Curie fellow), (ii) being involved in the writing of EU and national funded projects and (iii) being in charge of direct contracts with companies and public administrations. Furthermore, I have consolidated experience in supervising students, with 5 on-going PhD students and 4MSc. After more than 10 years of national and international research experience and professional maturity, I am currently well positioned to move a step forward and consolidate myself as a research leader. The potential success of this application will help me achieve this goal.



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Turno de acceso general

Nombre: GALLARDO ARMAS, BELINDA
Referencia: RYC2018-025160-I
Área Temática: Ciencias y tecnologías medioambientales
Correo Electrónico: galla82@hotmail.com

Título:

Biological Invasions under Climate Change

Resumen de la Memoria:

Research trajectory

In 2009 I obtained my doctoral degree in Experimental Sciences and Sustainability by the University of Girona. My PhD dissertation, carried out at the Pyrenean Institute of Ecology (IPE-CSIC), dealt with the effects of river regulation on aquatic biodiversity. The arrival of the zebra mussel to the Ebro River in 2009 triggered my interest in biological invasions. I therefore moved to the University of Cambridge with a Marie Curie IEF fellowship and joined the Aquatic Invasions group. After that, I had the opportunity to work for Cambridge Environmental Consulting, running projects dealing with aquatic invasive species. In 2013 I joined the group of Biological Invasions at Doñana Biological Station (EBD-CSIC) with a Severo Ochoa postdoctoral position, where I expanded my research to other groups of terrestrial and marine organisms. In 2014, I returned to IPE-CSIC as a Juan de la Cierva fellow, where I established an independent line of research focused on biological invasions and climate change with funds from three projects run as principal investigator. In 2019 I will be postdoctoral fellow at St. Catherine's College of Cambridge University working on a broader project about biosecurity.

Line of Research

My current line of research aims to understand the spatio-temporal distributions of invasive species with the ultimate goal to support their prevention, early detection and rapid management. This line of research builds upon three basic hypotheses: 1/ Climate change will facilitate the expansion of invasive species into regions where they previously could not survive and reproduce. 2/ Human activities related to the vectors and pathways of invasion are key to explain the spatio-temporal patterns of invasion. 3/ Protected areas provide an effective filter against invasions, shielding native species and ecosystems.

Some of the fundamental questions that I tackle include: Is Europe on the brink of a major reshuffling of invasive species as a consequence of global warming? How are different aspects related to global change (e.g. warming, land-use) likely to interact? What are the relative roles of biotic resistance and propagule pressure in the ability of protected areas to resist invasions? Will this role as biological filters persist under future climate conditions?

To anticipate the future, my approach involves modelling techniques that allow analysing large datasets efficiently and generating a number of potential scenarios. Species Distribution Models (SDM) allows anticipating changes in the areas climatically suitable for invasive species that can be most vulnerable to colonization. Beyond ecological models, I employ field and laboratory evidence to understand the biological and ecological mechanisms behind the expansion of invasive species, so that we can use this information to prevent further ecological damage.

My line of research is coherent with my experience in ecological modelling in general, and SDM in particular. The skills and knowledge acquired over the last years in Spain and UK, integrating field, laboratory and computer modelling, backed up by multiple projects and scientific publications, provide a solid base to develop a research strategy with unique potential to produce advancement in the field of biological invasions and to underpin conservation strategies that are efficient in the long term.

Resumen del Currículum Vitae:

Scientific Contributions

I have published a total of 74 publications including 42 SCI articles in high-profile journals like Global Change Biology, J. Applied Ecology, and Global Ecology and Biog. It is to highlight the high number of publications in Q1-journals (26; 12 of them in top-10% journals), and as first author (21). My publications have received ca. 1300 citations according to Google Scholar (920 in Scopus), achieving an H-index of 20 (17 Scopus). 17 of my publications have >25 citations, with two Highly Cited Papers in the top 1% of Environment/Ecology.

I have produced 32 other publications including 13 scientific reports, 6 divulgation articles, 5 non-SCI publications and one book chapter.

I have shared the results of my research in 63 conferences, workshops or seminars, 14 of them as invited speaker including one plenary talk.

International activity & Leadership

I have spent a total of 45 months abroad in France (U. Claude-Bernard, 2 months) and the UK (Cambridge University, 24; Cambridge Environmental Consulting, 19). I will start a new fellowship in UK (Cambridge Conservation Initiative) in April 2019.

I have participated in a total of 24 research projects, 8 of them international. I have been the Principal Investigator of 5 research projects (funded by MINECO, F. Iberdrola, F. Biodiversidad, Marie Curie IEF, and BiodivERsA, respectively), raising a total of 369mil €. In addition, I have been co-IP of four contracts with UK environmental agencies and the private sector.

As an expert on global change, I am regularly invited to participate in panels of experts organized by the European Commission, IUCN, COST



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Actions and international NGOs; to give plenary talks in international courses and conferences; to review international project proposals (3 for the Spanish Program of I+D, and 7 for international agencies); to review PhD thesis; and to review manuscripts for 35 different SCI journals.

Reflecting intense international collaboration, 80% (34) of my SCI publications include co-authors from Europe (UK, France, Switzerland and others), Malaysia, Bangladesh, South Africa and the Americas.

I am member of 5 international scientific societies and 3 international networks of researchers.

Science Divulagation

I have disseminated my scientific work in 6 popular science papers, 16 edited material (fliers, posters) and 10 activities including talks for the general public, press interviews and workshops with students at various levels. Our institution received the Premio Aragón Investiga for the divulgation program CSI-Aragón (2016) in which I participated. In addition, I have transferred the results of my research to environmental authorities and the private sector through 13 technical reports and 1 workshop.

Other achievements

I have supervised a total of 13 students in Spain, Italy and UK: one PhD student (excellent cum laude), one visiting PhD student, two master and 8 graduate students (one award to the best TFG). I ve also taught classes in UK (U. Cambridge), Spain (UIMP, UAH) and Portugal (CIBIO).

I have a considerable experience in research management, including the organization of 12 national and international events as conferences, workshops and seminar series.

I ve been positively evaluated by ANECA and obtained approval for university teaching.

My master thesis received the IV Premio Jose Manuel Falcón (2007).



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Nombre: FORTUNA ALCOLADO, MIGUEL ANGEL
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Título:

Harnessing evolution through network ecology to fight human diseases

Resumen de la Memoria:

I am an ecologist and evolutionary biologist turned network scientist who thinks differently about problem solving. I conduct interdisciplinary research to answer questions that go beyond the traditional boundaries among disciplines, merging ecology with evolution, sociology, genetics, software design, and artificial life.

My current research combines mathematical models, database analysis, and digital evolution to find general principles that can help researchers working in the lab to fight against human diseases. This research line is risky but feasible, original and innovative, because it builds on my previous research and is among the few trying to understand how evolution in complex networks of interactions can help us control human diseases. This research line combines, with a solid methodology, community ecology and evolutionary biology in a new fresh way. It has implications in at least three burgeoning fields of biotechnological and biomedical research: 1) cancer research, 2) phage therapy, and 3) human microbiome.

Since the early stages of my career I have made significant contributions in both ecology and evolutionary biology. During my PhD, I pushed forward a fast-growing field, namely spatial networks in ecology. For example, I analyzed how the structure of the network of ponds affects amphibian persistence in fluctuating environments, or how gene flow in insect-pollinated plants creates modular spatial networks with important implications for the role of genetic drift or the concept of effective population size. Later on, I began to collaborate with evolutionary biologists to explore, for example, the role that genetic variation plays in increasing food-web complexity or how evolutionary history structures compartmentalized host-parasite networks. These papers advance our knowledge on unanswered questions in ecology and evolutionary biology such as how to properly define populations, how to identify key patches as evolutionary units from the point of view of conservation, or how phylogeny and trait convergence among species shape the Web of Life.

Before getting my doctorate, I spent significant amounts of time in several top labs in Europe such as Ilkka Hanski's in Helsinki or the Department of Ecological Modelling at UFZ in Leipzig. Those experiences enriched my theoretical skills and my background as evolutionary ecologist. I also learned how to combine models with dataset analysis.

In my postdoctoral stage at Princeton University with Simon A. Levin, I was involved in a vibrant academic environment while working in a mature, prestigious, and well-consolidated research group led by one of the founders of mathematical biology. Simon's multidisciplinary team composed of physicists, computer scientists, and mathematicians broadened my perspectives on how to think about the evolution of complex adaptive systems.

Now at Zurich, in collaboration with Andreas Wagner, I have characterized the genotype-phenotype map of digital organisms---self-replicating and evolving computer programs that mutate and evolve within a user-defined computational environment---and we have found that, like most natural maps, the artificial map we studied facilitates evolutionary innovations. This computational framework naturally combines novelty with experience, new techniques with classic questions in ecology and evolutionary biology.

Resumen del Currículum Vitae:

During my research career I have demonstrated independent thinking by addressing some of the major challenges we face as a society and building an international network of collaborators. Below, I summarize what distinguishes my research.

My research is synthetic and interdisciplinary. Besides publishing in the leading international journals in the field of ecology (e.g., Ecol. Lett., Am. Nat., Ecology, J. Anim. Ecol.), my work has been published in the major international multidisciplinary scientific journals (Nature, PNAS, Nat. Commun.), the leading journals in the field of biology (Proc. R. Soc. B., Phil. Trans. R. Soc. B.), theoretical biology (J. Theor. Biol.), evolutionary biology (Evolution), and computational biology (PLoS Comput. Biol.), and journals on such a different scope as Physica A. The questions explored in those publications go beyond the traditional boundaries among disciplines, merging ecology with evolution, sociology, genetics, software design, and artificial life. The approaches he used to answer those questions combine mathematical models, computer simulations, statistical techniques, and database analysis.

My research is innovative. I have published papers on problems as diverse as the network of dependencies and conflicts among software



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packages in the Linux operating system as a metaphor of gene regulation, or on scaling laws in historical memory in human populations, on top of my past research on ecological networks. In spite of the disparity of these studies, they all tackle questions on the characterization of the structure and dynamics of complex networks. This combination of depth and breadth is of tremendous value in any interdisciplinary research agenda and captures the goals of promoting excellence research and opening new paths. A proof of my innovative ideas was Science's selection of my account on how science will be performed in the next 50 years (in their Voices of the Next Generation section, Science 335 (2012):37).

My research has an impact in the scientific community. My collaboration with physicists in Nature on the influence of network architecture on the number of coexisting species has been the most highly cited paper in my career (cited almost 400 times according to the ISI Web of Knowledge). My next 3 most cited papers have been published in the major leading journals in the field of ecology and cited more than 150 times. Yet, the number of citations is not the only indicator of the impact of a publication. Some papers have been highlighted by the editors (Nature, 2009 and PNAS, 2011) and Faculty1000 (Ecol. Lett., 2006), or were on the list of the top downloaded papers in the journal the year of their publication (J. Anim. Ecol., 2010). In fact, after finishing my PhD, I was awarded the Horst-Wiehe Award for an outstanding PhD in Ecology granted every two years by the Ecological Society of Germany, Austria and Switzerland.

My research is eminently collaborative. I have worked with many researchers from all around the world. Networking is a must and has shaped my career as a scientist. My external collaborations (without the participation of my advisors) are frequent and diverse (15 publications involving 25 coauthors). In addition, I have also played a major role in the publications led by other colleagues, as it is shown by my second authorship in more than half of those collaborations.



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Nombre: SANCHEZ GARCIA, LAURA
Referencia: RYC2018-023943-I
Área Temática: Ciencias y tecnologías medioambientales
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Título:

Forensic Geochemistry: on the search for biosignatures in extreme environments by exploiting molecular and isotopic tools

Resumen de la Memoria:

Laura is biogeochemist (PhD in Science, 2007; M.Sc. in Environmental Sciences, 2002; and B.Sc. in Chemistry 1998, by UAM) and has >17 yr of professional experience (>4.5 yr abroad). She has worked in 12 R+D Centers (7 in Spain + 5 abroad), participating in 21 R+D projects, being P.I. in 4 (European and Spanish, tot. 433 k). At present, she works at the Centro de Astrobiología (INTA-CSIC), leading a 3-yr JIN project (MICINN).

She has a formal background in Chemistry and Environmental Sciences, expanded and applied to different disciplines (biogeochemistry, analytical and environmental chemistry, atmospheric science, ecology, or astrobiology). She has extensive laboratory and field-work experience (Siberian Arctic, NW Spanish Continental Shelf, Riverine systems from Madrid, Rio Tinto, Island, Atacama Desert), and expertise in exploiting the use of molecular biomarkers and stable isotope analysis as forensic tools for: (i) searching for signs of life in extreme environments, (ii) assess the degradability and potential feedback of OC to global warming, (iii) environmental impact assessment and paleoenvironmental reconstruction.

She devoted her PhD (IGME, 2003-2007) to molecularly characterize sedimentary OC for assessing terrigenous inputs and anthropogenic impact into the Gulf of Cádiz. She developed sequential isolation and analysis of organic moieties as proxies of source, diagenesis, or environment (8 public.: 5 JCR). Then, she moved to Sweden to make a postdoc at Stockholm University (4 contracts, 2007-2011), investigating on the large-scale processing of OC and land-ocean interactions in the climate-sensitive Arctic region. She was P.I. of an IEF-UE project (VII Framework) and member of the International Siberian Shelf Study campaign across the Russian Arctic (2008), which allowed estimating annual emissions of GHGs in the Arctic upon global warming (8 JCR public., incl. Nature). She also investigated on the role of recalcitrant black carbon (BC) in carbon sequestration and in atmospheric pollution (6 JCR public.).

From 2011 to 2013, she held a post-doc position at the Institut Català de Ciències del Clima (Barcelona) for implementing a Spanish network for monitoring climate and understanding climate-biogeosphere interactions at national scale (1 JCR public. + 1 proceeding paper). She was co-responsible for the set-up of the GC-MS instrumentation. Later, she made a third post-Doc at the Instituto Universitario de Ciencias Ambientales de Aragón (Zaragoza, 2013-2015), where she was P.I. of a project devoted to implement an analytical platform for characterizing engineered nanoparticles involved in mitigating diesel emissions (2 JCR public.).

In 2016, she was funded (203 k) within the Progr. Estat. I+D+I RETOS (MICINN) for working at the Centro de Astrobiología (CAB) as P.I. of the GeoMARS project (2017-2020), which aims at searching for molecular evidences of life in extreme environments with analogies to Mars (3 JCR public., plus 2 in rev.). She is also co-PI of a EuroPlanet-funded project on hydrothermal extreme environments in Iceland (2018), and member of the Work Team of two other projects at CAB (a MICINN-funded ESP2017-87690-C3-3-R and a project from the Instituto Antártico Uruguayo).

She was on maternal leave twice, in 2012 and 2016.

Resumen del Currículum Vitae:

She is biogeochemist specialized in lipid biomarkers, with >10 yr of post-doctoral experience. She is expert on exploiting molecular and isotopic tools with diagnosis value for reconstructing paleoenvironments, paleoclimates, and biogeochemical processes. She has analytical skills in GC-MS, IRMS, ICP-MS, UV-VIS, and Field Flow Fractionation.

She obtained her European PhD (2007) with the highest distinction awarded by the UAM, holding a FPI fellowship at the Spanish Geological Survey (IGME) for molecular and isotopically characterizing sediments from the Gulf of Cádiz. Btw. 2007-2011, she held 3 Post-Doc positions (1 Marie-Curie IEF-7FP-UE and 2 project-funded) at Stockholm Univ. She investigated on large-scale C cycle and atmospheric processing of organic pollutants. Btw. 2011-2013, she was Post-Doc at the Catalan Inst. of Climate Sciences (IC3, Barcelona), setting up a Spanish network for measuring GHGs and monitoring climate change. Btw. 2013-2015, she was Marie-Curie ARAID-EU Post-Doc at the Nanoscience group at IUCA (Zaragoza Univ.), where she studied physico-chemical properties and environmental impact of ceria nanoparticles as diesel catalyzers for soot-emission mitigation. In 2017, she started leading a 3-yr project (MICINN funded) for searching for



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molecular evidences of life in terrestrial Mars analogues (Centro de Astrobiología, Madrid).

She has participated in 21 R+D PROJECTS of European and Spanish funds, being PI or co-PI in 4. She has worked in 7 R+D Centres in Spain (CAB, IUCA-UNIZAR, IC3, IGME, IRNASE, and UAM), 3 in Europe (Stockholm Univ., Munich Techn. Univ., Zürich Univ.), 1 in US (Texas A&M Univ.) and 1 in Canada (Concordia Univ.), accumulating >4.5 yr of WORK EXPERIENCE ABROAD. She has EDUCATIONAL EXPERIENCE, with responsibility organizing and lecturing (2 Master Courses, 95 h), and supervising students (3 PhD, 2 master, and 2 undergraduate). She has FIELD TRAINING in diverse disciplines (biogeochemistry, geophysics atmospheric and ecology), through her participation in two oceanographic cruises (2003 and 2008), and multiple geochemical (2018 and 2017), atmospheric (2011-2013) and limnological (2001-2002) campaigns.

She authors 61 PUBLICATIONS (28 as 1st author): 25+2 JCR-papers (96% in Q1, 11 as 1st author), 1 book, 1 chapter, 1 peer-reviewed national journal, 1 divulgation article, 32 peer-reviewed abstracts with ISSN. One article in Nature (sharing 1st authorship, 2012); and another in Glob. Biogeochem. Cycles (2012), commented on the Research Highlights section in Nature Geosciences. She has 886 (Google Scholar), 699 (Scopus), and 640 (WOS) citations, and an h-index of 15 (Google Sch.) or 14 (Scopus & WOS). She authors 75 communications (34 as 1st author) in internat. CONFERENCES.

She was invited to 2 Scientific Committees (Survey on Ocean Research Priorities, Univ. of York, 2014; Effects of Global Change, Repsol, 2013), invited speaker to the Arctic Polar Forum (Stockholm, 2018); lecturer in 2 Master Courses (M.Sc. Program in Geoscience, Univ. de La Republica, Uruguay, 2011; M.Sc. Program in Environ. Sci., Soil Science Faculty at Univ. of Munich, 2009), and organizer of scientific events (ISSS-08 Arctic Cruise, 2008; XIV Edition of Aula, 2006; XXII Internat. Meeting of Org. Geochem. 2004). In addition, she has experience in the private sector (Endesa, 2003; Danisco Seeds, 2002).



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Nombre: MORENO MATEOS, DAVID
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Título:

RECOVERY OF ECOSYSTEM COMPLEXITY TO INFORM RESTORATION AND CONSERVATION

Resumen de la Memoria:

My research aims to understand the recovery process of ecosystems degraded by anthropogenic disturbances and how that may be used to improve the effectiveness and regulation of ecosystem conservation and restoration. During my PhD, I tackled this aim using engineered wetlands in agricultural landscapes of Spain. Being awarded the Award on Doctorate Excellence, I found that wetlands could simultaneously reduce nitrates and available phosphorus from agricultural streams, improve salinized soils, and increase local bird diversity. Soon, I realized of the need to understand basic ecological processes to restore or create ecosystems, and spent three years at the University of California at Berkeley, where I started to develop a meta-analytical approach, in addition to the empirical one, to address my aim. The idea was to understand recovery trajectories of wetland hydrology, diversity, and biogeochemical functions over the long term (decades to centuries). Among other papers, results were published in a PLoS Biology paper, cited >450 times, where I built a synthetic chronosequence to explore long-term (100 years) recovery and found that, after that time, even when hydrology recovers quickly, diversity and functionality only recovered to 74% compared with undisturbed wetlands. After that, I was awarded a Jasper Ridge Restoration Fellowship to spend two years at Stanford University's field station. During that time, I commenced my multidisciplinary career and started working with economists which fructified in relevant papers in Nature.

The next question was, is the lack of recovery of ecosystems damaged by anthropogenic impacts a general phenomenon? After Stanford, I moved to France (Centre National de la Recherche Scientifique) and explore this question focused on meta-analysis supported by a research grant from the National Socio-environmental Synthesis Center (SESYNC, USA) and the Integrative Biodiversity Centre (iDiv) from Germany, where I was the PI. This new meta-analysis included over 3,000 recovering sites from six ecosystem types (e.g. forests, wetlands, marine systems) and eight degrading factors (e.g. agriculture, eutrophication, mining). Supported by economist colleagues, I have developed the metric recovery debt that estimates the interim reduction of biodiversity, functions, and services that happens during the recovery process. For example, we found that one third of the diversity, half of the abundance of plants and animals, and 40% of the cycling of carbon and nitrogen are lost annually until an ecosystem recovers. This manuscript, where I am the first author, is published in Nature Communications. Other relevant outcomes from this period are a critical review of new paradigms in ecosystem management (i.e. novel ecosystems) in Trends in Ecology and Evolution. Also, I explore the socio-ecological implications of biodiversity offset policies (e.g. paper in Biological Conservation). Currently, I am an Ikerbasque research fellow at the Basque Centre for Climate Change - BC3 (Leioa, Spain). I have supervised 11 undergraduate students and 7 graduate students (4 master thesis and 3 PhD jury member). Currently, I have in my team one PhD student, two Master students, one undergraduate student, and one research assistant.

Resumen del Currículum Vitae:

I have authored 42 papers, including 31 papers published or accepted in indexed journals, 5 peer-reviewed book chapters in scholarly multi-author syntheses, 3 papers in broad audience science magazines. I have been the first author in 52% of the papers and senior author in three of them. From those papers indexed at Science Citation Index, 55% are in the first quartile of its category, and the average IF is 6.39. My h-index is 19 according to google Scholar. My publications include papers in Nature Communications (IF=11), Nature (IF=41), PLoS Biology (IF=12), and Trends in Ecology and Evolution (IF=16). I have >1,400 citations according to Google Scholar (140 cites/year), including two papers with >100 citations. I have got over 3 million in national and international grants, including one successful LIFE+ grant, one grant from the US National Centre for Socio-environmental Synthesis, and one grant from the Spanish Ministry of Economy and Competitiveness (Societal Challenges program). In the two last ones, I was the PI. I have presented my work at 31 international conferences and workshops, and seminars at major Universities and research institutions, and been 14 times invited speaker. I am Associate Editor in Journal of Applied Ecology (British Ecological Society) and Ecological Restoration (Society for Ecological Restoration) and I am currently guest editor for the journal Ecosistemas (Asociación Española de Ecología Terrestre). Finally, I have been part of the scientific committee in 4 international conferences and I regularly participate in outreach activities, including over 20 seminars to students at primary, secondary, and high school levels.



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Nombre: PADRON NAVARTA, JOSE ALBERTO
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Área Temática: Ciencias y tecnologías medioambientales
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Título:

Deep Earth's water cycle

Resumen de la Memoria:

I am an Earth scientist looking at the cycling and fate of volatiles in the interior of our planet. Constraining the deep Earth's water cycle is an outstanding scientific and societal challenge whose study necessarily needs a multidisciplinary approach. During the course of my career I have combined and applied tools from several disciplines ranging from Mineral Physics (infrared spectroscopy, solid state diffusion, point defects in silicates, rheology), Geochemistry (major and trace elements, EPMA and LA-ICPMS), Thermodynamic modelling, Crystallography (Electron Backscattered Diffraction, Transmission Electron Microscopy), Experimental Petrology (equilibrium high-pressure and high-temperature experiments and rock deformation experiments), and natural observations (from high-pressure orogenic belts) to unravel the existence of the much-specified ultra-deep hidden oceans. This is a critical step to understand the role of volatiles in Earth's dynamics. Since almost 4.5 years I am a CNRS research scientist in France with a previous four years postdoctoral experience including a position as an International Outgoing Marie Curie Fellow (currently known as Global Fellow from the Marie Skłodowska-Curie Actions), at the Australian National University and the CNRS in France.

The main achievements during my research career are divided in three phases: [1] pre-doctoral phase (2005-2010), where I developed a bimodal fluid-flow model (punctuated and continuous fluid extraction) by linking advanced rock microstructural analyses (Electron Backscattered Diffraction EBSD mapping) to the dehydration kinetics of hydrous minerals at conditions relevant to the most vigorous volatile-exchange setting on Earth (i.e. subduction zones). This model explains the heterogeneous spatial distribution of reaction rates (at dm to m scale) as a consequence of spatio-temporal changes in permeability and fluid pressure, which is ultimately modulated by viscous compaction and sudden overpressure-induced embrittlement; [2] Post-doctoral phase (2011-2014), where I conducted unconventional proton diffusion experiments in mantle silicates that lead to the slowest hydrogen diffusion coefficient ever observed, thus challenging conventional views of transport properties in the Earth's mantle; and [3] as a CNRS research scientist (since 2014), where I am using cutting-edge EBSD techniques (allowing for crystallographic orientation mapping at the submicron scale resolution) and non-hydrostatic high-pressure experiments to investigate rates of metamorphic reaction and compaction. I furthermore completed an ambitious experimental study that I started at the Australian National University, that presents the most complete and detailed picture to date of H₂O dissolution in olivine (the most abundant mineral in the upper mantle of rocky planets). I have a strong international network (Australia and Europe) that allowed me to enrol in more than 10 research projects (6 as PI) including time access to the Diamond Light Source (UK) and the European Synchrotron ESRF (France). I have been successful in applying competitive and highly competitive research grants including Marie Skłodowska-Curie Actions, CNRS-funded projects, European bilateral projects and specific actions of the French Research Agency (ANR) for ERC candidates having passed to the interview stage.

Resumen del Currículum Vitae:

I completed by degree in Geology in 2005 being awarded by the Spanish Ministry of Education and Science for the best academic grade for students majoring in Geology (First National prize). Shortly after the completion of the Degree I was awarded with a national-scale competitive funded PhD Fellowship from the Spanish Ministerio de Educación FPU Grant (4 years) to carry out my PhD at the University of Granada (2006-2010). After one year of postdoc in Spain I was awarded with a competitive Marie Curie International Outgoing Grant (2 years outside Europe and 1 year return phase in Europe) to develop an experimental research plan in the renowned Research School of Earth Sciences at the Australian National University. After the return phase of the MC project I applied for CNRS permanent position (CR, Chargé de Recherche) that I earn in 2014. Since then I am building up my own research group dedicated to fluid-rock interaction at high pressures, seeking for EU2020 funding through ERC applications and developing unconventional applications of high-resolution (FE, Field Emission) Electron Backscattered Diffraction Microscopy and non-hydrostatic fluid-rock experiments.

My academic output includes 48 publications and 2 book chapters 33 papers in international and high-impact peer-reviewed journals (listed in the top 25% of their respective category, Q1). Attended 17 international (Goldschmidt, EGU, AGU, International Geological Congress, International Symposium on Experimental Mineralogy, Petrology and Geochemistry) and 5 national conferences (Spain, Germany and Australia). Over 100 communications to national and international meetings of the specialty (30 as first author and 27 of them as oral presentation), 6 invited talks in international meetings. Publications include original research related to the mineralogy, petrology, geochemistry and geophysics of ultramafic rocks, and they have had a large impact in the relevant scientific community as is attested by the number of citations (a total of 966, including 777 without self-citations; h-index = 20, source Web of Science).



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I have a good record of supervising/mentoring students (1 main PhD supervisor, 6 PhD co-advisor and 4 Master students). I have been principal investigator of 6 projects (1 EU Marie Curie and 4 French national projects, 1 bilateral project Slovenia-France) and associated investigator of 6 Spanish national projects.



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Turno de acceso general

Nombre: PEREZ PORTELA, ROCIO
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Título:

GENETIC DIVERGENCE, CONNECTIVITY AND STRESS RESPONSES TO ENVIRONMENTAL SHIFTS IN MARINE INVERTEBRATES

Resumen de la Memoria:

My research focuses on identifying biotic and abiotic processes driving populations divergence, adaptation and speciation, and exploring the molecular machinery underpinning the phenotypic plasticity that allows marine invertebrates facing environmental shifts. These topics are central themes of evolutionary biology and climate change research, but for which little knowledge is available, and especially in marine invertebrates because most research has been developed on model terrestrial or marine vertebrate systems. My current line is a pioneer by implementing RNA-sequencing and genome-wide scans based on Next Generation Sequencing (NGS) technologies together with physical oceanographic modelling to approach evolutionary questions in non-model marine invertebrates. Thus, I have developed a strong, novel and multidisciplinary program that represents a step further in marine molecular ecology of benthic invertebrates, and that combines ecological, biological and molecular data. My RNA-seq based studies explore the molecular machinery underpinning gene expression responses to temperature shifts in an ecologically relevant echinoderm, and that allows making predictions about the potential response of the species to global warming. I de novo assembled transcriptomes of four different echinoderm tissues, and characterized gene expression and physiological patterns of them, that can be the base for further studies. My research in USA focused on population genomics of coral reefs species to investigate a) connectivity patterns by combining genomic information obtained through genome-wide scans (Genotyping by Sequencing) and oceanographic modelling, and b) adaptation of species to divergence environmental conditions in the form of different gene variants and/or allele frequencies, among other topics. My line in marine molecular ecology of invertebrates has largely contributed to understand how past climatic events, current barriers, mass mortalities and biological cycles shaped the genetic structure and diversity of marine benthic invertebrates across the European coast, studies that have an enormous relevance in a broad biogeographical and ecological context. I have also done valuable contributions describing the biology and biodiversity of marine invertebrates and to deepen on evolutionary aspects of coloniality in Tunicates, phylogeny of sea stars, and molluscs, and genetic temporal trends in invasive species.

My future research will focus on a) evaluating stress responses to temperature shifts, and b) investigating adaptation to different thermal regimes and deep gradients, the role of mito-nuclear interactions during local adaptation and their associate divergence during speciation. I have developed my research career among six countries, and I have spent 5.5 years in foreign institutions. My international experience gave me the opportunity to establish strong international network, and interact with scientists from different disciplines and learn how to merge multidisciplinary approaches to extract strong conclusions about the evolution and ecology of marine invertebrates.

I attracted several competitive research grants and eight fellowships, being Principal Investigator in four grants (plus one currently under review), and I actively participated in other 11 Spanish, European, English, Brazilian and American projects.

Resumen del Currículum Vitae:

I graduated in Biology (Complutense University, 2001), where I was an Undergraduate research assistant for two years. I got my European PhD degree in Biology (Cum Laude) at the University of Barcelona in 2007. During my PhD, I spent 6 months in UK, France and Australia. I was awarded five competitive postdoctoral fellowships. I was a postdoctoral fellow at the Marine Biological Association of UK and later for the Eco-Ethology Research Unit of Portugal. In 2010, I reincorporated to the University of Barcelona with the competitive programme-Beatriu de Pinos (Catalan Government), and later with a Juan de la Cierva contract at CSIC. In October 2015, I moved to the Marine Genomics Lab of the University of Miami- USA, where I developed my career for two years. In September 2017, I was appointed as an Assistant Professor at the Rey Juan Carlos University in Madrid. Therefore, I count with a large international experience including over 5.5 years expended in USA, UK, Portugal, and Australia.

I perform a multidisciplinary and cutting-edge research line on Marine Molecular Ecology and Evolution of invertebrates, implementing the most novel techniques of Next Generation Sequencing and oceanographic modelling. My research has generated 41 manuscripts in SCI journals and one book chapter. I am the first author, senior and/or corresponding author of 28 of these papers. Most of my publications (31) are in Q1, five in first Decil, with a high average impact factor (3.0), and a low average of authors per paper (4.1). I have published my research in collaboration with international experts from 18 countries, and over 55% of my publications are independent of my PhD supervisors. I have presented 52 papers (32 of them as presenting and/or the first author) and one Keynote at International Conferences. I was invited to give 11 international and 6 national seminars. I have been Principal Investigator of four grants, and submitted a proposal for the 2018 call of Plan Nacional currently under evaluation. I additionally participated in other 11 projects, four of them from the European Union, one from USA and one from Brazil, and developing tasks of high responsibility, such as proposals designing, coordinating, and managing research funds (over 70,000). I have been an official member of one Consolidated Research Team since 2006. I participated in



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evaluation panels of the European Union, Graduate Women in Science (USA), ANEP and the Chilean Government. I acted in students Committees for 11 PhDs and 8 Masters, and invited editor in Frontiers in Genetics. I participated in the organization of two International Conferences and acted as an evaluator for Presentation Awards in other three.

I also supervised younger scientists. I graduate my first PhD student in 2016. Moreover, I supervised short scientific stays of two foreign PhD students in my lab, graduated three undergraduate students and 7 Master students in at UK and Spain. I obtained several Accreditations for Assistant /Associate Professor, and I taught over 600 hours of classes at the university level.

I received additional training by attending 17 courses and participated in different initiatives for science communication.

I count with an extensive fieldwork experience and participated in an Oceanographic Research Expeditions for 11 days.



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Turno de acceso general

Nombre: TALAVERA , GERARD
Referencia: RYC2018-025335-I
Área Temática: Ciencias y tecnologías medioambientales
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Título:

Phylogeography, genomics and macroecology of insect migration

Resumen de la Memoria:

I am evolutionary biologist and entomologist (www.gerardtalavera.com). My research interests focus on understanding the extraordinary biodiversity of the insects, with a view at all diversity levels: genetic, species, and ecosystem. Thanks to the interaction with multiple research groups and environments along my career, I have integrated multidisciplinary approaches to develop my research ideas. To understand organismal variation, I regularly combine tools on: phylogenetics, genomics, phylogeography, behaviour, and ecology to study different aspects of insect biology, such as macroevolution, historical biogeography, trait adaptation, spatial distributions, population dynamics, and speciation. Many of the questions that I address also have direct implications for conservation. Along my career, I have experienced a progressive transition from a methodological and theoretical background on molecular evolution towards an organismic view on insect diversity, behaviour, and ecology.

My early research focused on developing and testing phylogenetic methods using molecular data, particularly by addressing potential artefacts related to alignment algorithms limitations and to biases challenging models of molecular evolution in insect mitochondrial genomes. An important part of my trajectory has focused on studying the phylogenetic history of butterflies, facing questions from macroevolution to phylogeography and speciation. Examples include the study of chromosomal rearrangements as causes for incipient speciation, conducting large-scale regional genetic biodiversity assessments to detect cryptic species/lineages, the biogeographic study of complex exchange of colonization events across continents, or the systematic/taxonomic reviews of highly-debated taxonomic groups.

Currently, my main research lines focus on the study of behaviour, phylogeography and genome evolution of migratory insects (www.butterflymigration.org/research). While insect migration is suspected to represent a natural phenomenon of major importance, remarkably little is known about it. I have studied migratory insects in the field and in the laboratory, in order to track seasonal movements and to understand the evolutionary processes involved in the migration strategy. A general achievement has been to develop the butterfly species *Vanessa cardui* as an emerging model system for insect migration, after discovering to be the first Lepidopteran case with a Palaearctic-Tropical migratory cycle. Being this ideal for interdisciplinary research, I investigate questions related to movement ecology, population genetics, demography, and behaviour. After having characterized many traits on the biology and the migratory dynamics of the species, these advances have delineated a perfect opportunity to study the evolutionary genomics of migratory behaviour using this model. I have therefore assembled the first high-quality reference genome for the species. Some of my most enthusiastic future plans include, thus, studying the genomic basis regulating complex migratory behaviour in insects, a hitherto understudied field of research.

Resumen del Currículum Vitae:

I am a researcher at the Institute of Evolutionary Biology (CSIC-UPF, Barcelona), currently holding a Juan de la Cierva (Incorporación) Fellowship. I am also a Research Associate at the Museum of Comparative Zoology (MCZ) at Harvard University (USA). I have 14 years of experience in research: 3.5 years as postgraduate, 4.5 years as a PhD student and 6 years as a postdoc. I have been awarded 8 individual fellowships, including highly competitive international calls as a Marie Curie IOF Fellowship (EU), and the national Beatriu de Pinós grant (Spain).

My research activities started in 2004 with a postgraduate period at the CSIC Institute of Molecular Biology (IBMB, Barcelona), working on phylogenetic theory and computational biology in the laboratory of José Castresana, where I also conducted my MSc thesis. Next, I joined the Institute of Evolutionary Biology (IBE, CSIC-UPF) for my PhD, under the supervision of Dr. Roger Vila, and graduated in 2012 by the Universitat Autònoma de Barcelona (UAB). During this period I also spent substantial time (2 years in total) at Harvard University (USA). In my thesis, entitled *Phylogenetic inference at different insect taxonomic levels*, I studied diversification patterns and speciation through chromosomal evolution in several insect groups from a phylogenetic perspective. As a postdoc, I was first associated to St. Petersburg State University (Russia), under the supervision of Prof. Vladimir Lukhtanov (2013-2014). Next, I joined Prof. Naomi Pierce's group at Harvard, where I spent three years (2014-2017), returning to IBE as a Marie Curie Researcher and further linking that position to a Juan de la Cierva Fellowship.

During my trajectory as a researcher I have participated in 24 funded research projects (6 Spanish I+D+i National Plans, 13 from international I+D+i agencies). Among them, I have lead 6 projects as a PI (meaning a direct administration of 180000 €). I have published 29



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papers (several others currently in review and in preparation) and my citation record shows a constant progression over time. Among these, 21 are published in journals of the first quartile. According to Google Scholar, my research has been cited 3275 times (2385 during the last five years). My h-index is 15 and i10-index is 19. Web of Science estimates an h-index of 13 and 2516 cites in total. I have presented 21 contributions in 16 international meetings (11 oral presentations, 4 upon invitation), and have given 13 seminars in different institutions. I have also been actively participating in specialized workshops where cutting-edge techniques and theory are discussed and developed (e.g. Evomics Workshops). I am currently supervising one PhD thesis and have a hired research assistant under my charge.

I am regularly invited to review in international journals, having served in 16 journals in a wide variety of topics. I am a Member of the Committee for Research and Exploration Reviewer Circle of the National Geographic Society since February 2018, where I have advised the Society in more than 50 grants applications. I have also reviewed research proposals for the Division of Environmental Biology (DEB) of the National Science Foundation (USA) and for the Italian Ministry of Education, University and Research (MIUR).

My research is regularly highlighted in the media by renowned publishers and I am also leading a worldwide citizen science project with strong social and educational implications.



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Nombre: NOVO RODRIGUEZ, MARTA
Referencia: RYC2018-024654-I
Área Temática: Ciencias y tecnologías medioambientales
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Título:

EVOLUTIONARY BIOLOGY OF TERRESTRIAL ANNELIDS AND THEIR RESPONSE TO ENVIRONMENTAL CHALLENGES

Resumen de la Memoria:

My research has focused on invertebrates biodiversity, and evolutionary biology, combining the latest molecular techniques with more traditional and multidisciplinary approaches. I have worked with different animal taxa, being annelids my preferred group and specifically earthworms.

As an undergraduate, I was trained at Complutense University, where I obtained an award for the best grades (2005). I received my Doctoral degree in 2010 at the same University (funded by FPU, Spanish Government), including an award for the best PhD in my area for 2010/2011. During my PhD training (Earthworms & Evolutionary Biology), two research internships took me to prestigious research groups (Tübingen, Germany and Harvard, USA). I participated in teaching (undergraduates and Master students) and supervised several undergraduate projects. I opened a research line on evolutionary biology of Mediterranean earthworms that was continued by Dr. DF Marchán, a PhD student I supervised (finished in 2017 with 9 publications).

After my PhD, I went to Harvard (USA) funded by Caja Madrid (2010-2011). There, I continued my research on phylogeography and phylogenetics of earthworms but also learnt cutting edge techniques such as transcriptomics and collaborated in different projects. I participated in the organization of an international Congress. Afterwards, I joined Cardiff University (UK), firstly funded by the Spanish Government (2012-2013) and then by a Marie Curie Fellowship (2013-2015), acting as PI of the latter. Apart from carrying my own research with the MC funding, I participated in a project funded by the British Government and in an EU-funded project gathering 12 partners in 9 European countries, for which I organized and taught an invited workshop on RNA-seq data. Projects in Cardiff were on gene expression and epigenetics of earthworms living in volcanos (involving working at Azores University, Portugal), phylogeography of invasive species and toxicology. I visited the EMBL (Germany) during 7 weeks, participated in teaching undergraduates and supervised final year projects for several students. I got further funding as PI. When my Marie Curie finished, I got a Juan de la Cierva and joined the Biology and Toxicology Group at UNED (2015-2017) and worked on invertebrates toxicology, and evolutionary biology of small heat shock proteins. I supervised several Master Thesis and participated in teaching. I was involved in dissemination activities such as the European Researchers Night and some online newspapers. Moreover I am part of an innovative teaching group with funded projects and awards.

After a maternity leave, I got two Postdoctoral Fellowships (UNED and UCM). I had to decline one and I am at the moment based at Complutense University, at the Biodiversity, Ecology and Evolution Department where I am making the way for leading my own research group. There, I have been able to apply for a National Project as PI and I am supervising one PhD student (finishing in 2020) and Master students. I am also involved in teaching. I have also presented a proposal for a European ITN Project (submitted Jan 2019, 10 Universities and 3 companies) in coordination with JL Martínez (UNED). We were able to complete the proposal thanks to a couple of projects given to us by Santander-UNED.

Resumen del Currículum Vitae:

My research career focuses on invertebrates biodiversity and evolutionary biology, including phylogeny, phylogeography and their response to stressful environments, mainly on terrestrial annelids. I have used molecular tools, firstly traditional molecular markers (mitochondrial and nuclear) and later on Next Generation Sequencing techniques, including studies on phylogenomics, gene expression with full transcriptomes and epigenomics. I am at the moment starting my research group as a leader at the Complutense University of Madrid.

To date, I have co-authored 48 peer-reviewed papers (+3 submitted), one book chapter, one paper with no impact factor and a book. 60% of the papers were published at Q1 and ca. 55% as first or senior author (h index=17 in google scholar). I have presented my work at 31 conferences/workshops in 57 talks or posters, chairing three sessions and organizing one session and one conference, including plenary and invited talks. I have been a reviewer for 24 international journals, 35 times as well as member of the jury for four PhD candidates and different projects from Poland, USA, Croatia and Czech Republic. I obtained awards for the best grades during my studies (2005) and for the best PhD in my area (2010/2011) at Complutense University, among others.

I have self-funded my whole career, which shows my capacity to apply and get funding: FPU grant for my PhD (with two short stays abroad), Caja Madrid Fellowship, Postdoctoral Fellowship from the Spanish Government to go abroad, the European Marie Curie



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Fellowship, Juan de la Cierva, UNED Fellowship and UCM Fellowship.

I have participated in 16 research projects (ca. 3,5M), being two of them European and two from the UK, and acting as PI several times (I am waiting for resolution of National and European projects as PI).

I have supervised several undergraduate and Master student projects, one Minor thesis (Tesina), and two PhDs (one in progress), having produced already 10 papers as Senior author.

I have been in continuous collaboration with international groups. I have worked in five countries and seven different laboratories, spending nearly 6 years abroad. My short stays and Postdoctoral Fellowships helped me create a solid network of colleagues with whom I continue working: Predoctoral stays in Tübingen University (Germany) and Harvard (USA); Postdoctoral Fellowships at Harvard (USA) and Cardiff University (UK), visiting Fellow in EMBL (Germany) and Azores University (Portugal). I have been invited as member for international collaborative networks, such as one for invasive earthworms in USA.

I have participated in teaching at Complutense University, Cardiff University and UNED. Both face-to-face and distance education, including undergraduate and Master subjects; theory and practice work. I am part of an innovative teaching group (BIOINNOVA) with funded projects and awards. I organized an invited workshop, teaching RNA-seq analyses within a European project and have participated in dissemination activities, such as the European Researchers' night or collaboration with local newspapers.

I have been in continuous training, attending 40 courses, either related to technical issues or other professional skills. I have conducted sampling campaigns all along Iberian Peninsula, France, Italian Peninsula, Corsica, Sardinia and Azores, leading most of them.