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AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2020

Turno de acceso general

Nombre: MARTINEZ MEDINA, AINHOA
Referencia: RYC2020-030727-I
Área Temática: Ciencias agrarias y agroalimentarias
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Título:

Inducción de resistencia por microorganismos beneficiosos del suelo

Resumen de la Memoria:

I have focused my career on understanding how beneficial microbes in the rhizosphere microbiome boost plant immunity and thereby stimulate plant health. After finishing my Ph.D. research on the biocontrol potential of soil beneficial fungi (CEBAS-CSIC, Spain), I became intrigued by the way beneficial soil microbes protect aboveground plant tissues against the attack by pathogens. To investigate this, I moved to the lab of Dr. Pozo (EEZ-CSIC, Spain) as a Postdoctoral Researcher; and later to Prof. Pieterse's lab at Utrecht University (The Netherlands) as a Marie Curie Postdoctoral Fellow. I performed pioneering research on the molecular regulation of Induced Systemic Resistance (ISR) and priming in species of agronomical interest. After this stage, I was willing to place all this knowledge on the molecular mechanisms regulating ISR into a more (agro)ecological frame. With this objective, I incorporated as Postdoctoral Researcher to the group of Prof. van Dam, at the German Centre for Integrative Biodiversity Research (iDiv, Germany), where I became a Project Leader (2015-2018). There, I had the opportunity for starting a new research line on plant-microbe-insect multitrophic interactions. On 2018, I got a highly competitive grant (Attraction of Talent) that has given me the opportunity for starting my own research group as Junior Group Leader at IRNASA-CSIC (2019-2022, Spain). With two currently hired Postdocs and by using state-of-the-art techniques and methods in molecular biology, biochemistry, genomics, and bioinformatics, I investigate the role of the complex rhizosphere microbiome in natural soils as an integral part of the plant immune response against insect pests.

My research has been continuously funded by European, national and regional projects in some of which I played as PI/co-PI. Since the start of my Ph.D. I have published 30 articles, most of them as first/last author and in Q1 journals, including 13 in leading journals in my area. During my career, I have been continuously involved in teaching and supervision of young researchers from multiple countries. Moreover, I have built an ample research network, mostly in the frame of a COST ACTION FA1405, in which I participated as one of the young leaders; and the International Training Network ITN 65290, in which I am participating as work package leader.

Resumen del Currículum Vitae:

I have focused my career on understanding how beneficial microbes in the rhizosphere microbiome boost plant immunity and thereby stimulate plant health. I did my Ph.D. (2006-2010) in the group of Soil-Plant Systems (CEBAS-CSIC, Spain), led by Prof. Roldán. I was involved in a research project investigating the ability of beneficial soil microbes for controlling crop pathogens. I found especially fascinating how the rhizosphere microbiome had the potential for inducing resistance systemically against leaf attackers. After completing my PhD, I became intrigued about the fundamental mechanisms driving this phenomenon. To investigate this, I moved to the lab of Dr. Pozo (EEZ-CSIC, Spain) as a Postdoctoral Researcher (2010-2012); and later to Prof. Pieterse's lab at Utrecht University as a Marie Curie Postdoctoral Fellow (2012-2014, The Netherlands). I performed pioneering research on Induced Systemic Resistance (ISR) and priming in species of agronomical interest. We uncovered major regulatory elements involved in ISR and priming in a crop species; discoveries that have called for a reshaping of the ISR and priming concepts. After this stage, I was willing to place all this knowledge on the molecular mechanisms regulating ISR into a more (agro)ecological frame. With this objective, I incorporated as Postdoctoral Researcher (with a highly competitive contract) to the group of Prof. van Dam, at the German Centre for Integrative Biodiversity Research (iDiv, Germany), where I became a Project Leader (2015-2018). There, I had the opportunity for starting a new research line on plant-microbe-insect multitrophic interactions, what gave me the chance to become PI/co-PI of several projects. We discovered that beneficial microbes shape the multitrophic dynamics of plant-insect interactions in agroecosystems, and characterised some relevant metabolites and volatiles driving this phenomenon. On 2018, I got a highly competitive grant (Attraction of Talent, success rate < 3%) that has given me the opportunity for starting my own research group as Junior Group Leader at IRNASA-CSIC (2019-2022, Spain). With two currently hired Postdocs and by using state-of-the-art techniques and methods in molecular biology, biochemistry, genomics, and bioinformatics, I investigate the role of the complex rhizosphere microbiome in natural soils as an integral part of the plant immune response against insect pests. My research has been continuously funded by European, international, national, and regional projects in some of which I played as PI/co-PI (approx. 800 K obtained as PI/co-PI). Since the start of my Ph.D. I have published 30 articles (23 without Thesis supervisor), most of them as first/last author and in Q1 journals, including 13 in leading journals in my area (D1); several have already >100 citations and have been featured by WoS; and 5 book chapters. During my career, I had the chance to participate in multiple activities related to science communication/divulgarion, and knowledge transfer including the development of a patent (licensed), and the participation in contracts with companies. I have also been continuously involved in teaching and supervision of young researchers from multiple countries. Moreover, had the chance for establishing an ample network of collaborators.



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Turno de acceso general

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Área Temática: Ciencias agrarias y agroalimentarias
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Título:

Towards a better understanding of forest resilience to climate change and its determinants

Resumen de la Memoria:

Dr. Antonio Gazol is a forest ecologist interested in the vulnerability and resilience capacity of ecosystems to climate change and land use. In his research, he applies multidisciplinary approaches to disentangle how biotic and abiotic factors influence the spatial and temporal patterns of tree growth, dissolving the line between forestry and plant community ecology. He is a botanist by background, and he has also a solid formation in vegetation ecology and dendrochronology. He has a notable experience in studying vegetation response to global change in semi-natural ecosystems including several plant functional groups (grasses, shrubs, trees) and using different methodological approaches (field experiments and analyses of global databases). He tries to answer two main questions; what determines tree growth resilience capacity to drought? and ii) how does this resilience capacity varies across populations, species, and biomes?

During his PhD (University of Navarra; 2005-2009), Antonio Gazol acquired a solid background in forest ecology through the lens of studying community properties. To complement his formation, He took two complementary directions. First, He joined the Macroecology workgroup of the University of Tartu (Estonia) as a postdoctoral researcher for 3 years (2010-2013; ERMOS grant cofounded by Marie Curie Actions). He gained a notable background on plant community ecology and plant-soil interactions. Second, He did a collaboration with researchers from the Pyrenean Institute of Ecology (IPE-CSIC) to learn dendrochronology. He applied retrospective approaches for inferring how woody plants are responding to their environment.

In 2014, Antonio Gazol joined the IPE-CSIC (Ayuda para la formación postdoctoral MINECO 2013). Since then, to study the response of forests to global change is at the core of his research. He has dedicated a strong effort to understand the causes and consequences of the drought-induced forest decline detected during recent decades. His research is highly multidisciplinary and collaborative. He has used the information provided by tree-rings to understand how trees and other woody plants respond to drought at the individual level, and he has combined this information with satellite-based estimations of vegetation activity, forest structural and composition attributes, and soil conditions for upscaling these responses to the forest level. He has studied how Iberian forests react to global change (Universidad de Alcalá - UAH y Universidad Rey Juan Carlos - URJC), how past legacies modulate holm-oak resilience to drought (Basque Centre for Climate Change - BC3; guest researcher) and which factors modify the resilience capacity of trees to drought (IPE-CSIC). Throughout his career, He has gained the necessary abilities to study the dynamic of forest ecosystems and their response to climate change.

His research goals for the near future are combining knowledge on tree growth with species coexistence theory to understand how community properties modulate forest resilience to global-change related threats such as drought. He is also deeply interested in linking tree growth response to drought with soil physical, chemical and biological properties. A promising research line and of maximum societal interest, given the current climatic crisis, that is in the resilience capacity of trees to global change.

Resumen del Currículum Vitae:

Antonio Gazol obtained the University degree in Biology at the Universidad de Navarra (2005), where he also obtained the PhD in Biology and Environmental Sciences. He defended his PhD thesis in 2009 obtaining the highest distinction of Summa Cum Laude honours and the PhD Extraordinary Award from the Faculty of Sciences at the Universidad de Navarra. Since then, Antonio Gazol has carried out his research in national and international research groups. His research effort focuses on understanding how vegetation in terrestrial ecosystems respond to climate-change related threats.

The scientific impact of the research carried out by Antonio Gazol can be scored by the large number of articles published in SCI journals as well as the quality and the number of times these articles have been cited. Antonio Gazol has published 80 SCI articles and he has collaborated in the publication of a book chapter and a technical report as well. Furthermore, he has presented my work in 27 national and international conferences. The great amount of the SCI articles (60 out of 80; 70%) have been published in Q1 journals. He has been the first author in 23 publications, the second author in 25 and the last author in three of them. His research has been published in 37 different journals from the fields of Forestry, Plant sciences, Ecology, Environmental Sciences etc. including prestigious journals such as NEE, PNAS, Global Change Biology, Agricultural and Forest Meteorology, Forest Ecology and Management etc. His h-Index is 25 and his work has been cited 1,743 times with 296, 460 and 521 citations received in 2018, 2019 and 2020, respectively. Finally, three of these articles had a great impact on the media.



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AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2020

Turno de acceso general

Dr. Antonio Gazol has carried out his research in the University of Tartu (36 months), the Universidad Rey Juan Carlos (6 months) and the Instituto Pirenaico de Ecología (50 months). He was also guest researcher in the Basque Centre from Climate Change (BC3). He has participated in several national projects (12) founded by public and private entities being the Principal Investigator in two of them. He has also participated in three international projects (ERA Net, Estonian Science Foundation) being the PI in one of them. He started his postdoctoral stage in the University of Tartu (Estonia) where he worked from 2010 to 2013 as a postdoctoral researcher (ERMOS postdoctoral grant, cofounded by Marie Curie Actions). In 2014, he joined the Instituto Pirenaico de Ecología (IPE-CSIC, Zaragoza, Spain) awarded with a postdoctoral grant from the Spanish Government (Ayuda para la formación postdoctoral MINECO 2013).

Antonio Gazol got the positive assessments as "Profesor Contratado Doctor" by ANECA. He served as Associate Professor in the Universidad de Navarra (2016-2017). He has participated in a Teaching Innovative project from the Universidad de Valladolid. He has co-supervised three final grade thesis (TFG) and three master theses (TFM), and currently He co-supervise the PhD studies of two talented researchers in the Universidad de Navarra and the Instituto Pirenaico de Ecología (CSIC), respectively. He has served as a guest editor in the Journal Forests and he is member of the editorial board of the Journal of Vegetation Science. He has revised 68 manuscript submitted to SCI journals and research projects from the different countries (The Netherlands, UK).



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AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2020

Turno de acceso general

Nombre: CARRION BRAVO, VICTOR JOSE
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Título:

Exploring plant microbiomes for a better agriculture

Resumen de la Memoria:

The research interest during my scientific career has been how plants interact with microorganisms. I started working with pathogenic bacteria and later included the beneficial microorganisms. I have a strong background in molecular characterization of virulence factors of bacterial pathogens, genomics, metagenomics and metatranscriptomics of microbial communities living with/within plants and the development of synthetic communities or new natural products to be applied in agriculture.

I participated in 16 research projects (3 as PI and 3 Co-PI) which resulted in 28 peer-reviewed SCI publications (12 publications are ranked in D1 and 24 in Q1), 1 patent, 1 book chapter, more than 25 conference presentations (17 as oral presentations) and 14 invited keynote/spotlight talks.

I obtained a PhD grant from the Junta de Andalucía (Becas de excelencia). I also got 4 competitive postdoctoral grants, the first from the Junta de Andalucía (Becas de excelencia), another from the BE-Basic consortium and the other two from NWO.

I already have supervised 4 BSc, 14 MSc and 2 PhDs projects (successfully finished). Currently I am supervising 1 PhD, 6 MSc, 2 Bioinformaticians, and 1 PhD and 2 Postdocs starting in February 2021. I have been invited as a reviewer for 2 PhD thesis, committee member of 5 international PhD thesis. I have participated in international projects and leading JCR journals in the fields of agriculture, plant-microbe interactions, microbiology, and bioinformatics. Active member of several scientific societies and specialized groups.

My research has always led to significant practical applications. I have tried to merge multidisciplinary approaches that combines insights and technologies from classical microbiology, bacterial genomics, metabolomics, microbial ecology, metagenomics and computational biology. I expect to transfer all these knowledge and experience, obtained along my PhD (UMA), Postdoctoral (WUR and NIOO) and Assistant Professorship (ULEI), to contribute to the field of agricultural science in Spain.

Resumen del Currículum Vitae:

Academic formation and research positions

PhD, Licensed, Graduate	University/Institution	Year
Graduate in Biology	Málaga (Spain)	2002-2007
PhD. In Biology	Málaga (Spain)	2008-2012
Senior Postdoc	WUR and NIOO (The Netherlands)	2012-2018
Assistant Professor	Leiden University (The Netherlands)	2018-Act.
Guest Researcher	WUR and NIOO (The Netherlands)	2018-Act.

Project participation and research activities.

Participation in 16 international/national projects.

- 3 as PI: CoBioClust (50k), MicroRes (687K) and SYMBIOS (156k).
- 3 as Co-IP: Back to the Roots from NOW (3M), Next Generation of Bio-inoculants from INACH (600K) and MARBLES from H2020 (7M).

Scientific output

28 publications (12 in D1; 24 in Q1), 3 publications are in press ,1 patent and 1 book chapter. These include papers in high impact journals such as Science, Nature Microbiology or ISME Journal.

5 publications as first author (2 in high impact factor journals, Science [IF: 41,063] and ISME [IF: 9,493]); 3 publications as last author/corresponding author.

Awards

Nominated to the C.J. Kok Public Award (2019).

Teaching experience

Since 2010 until now I have been involved in teaching activities at BSc and MSc level at:



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AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2020

Turno de acceso general

- University of Málaga (Basic Microbiology at BSc level).
- Wageningen University (Microbial Ecology and Biological processes for resource recovery , both at MSc level).
- Recently at Leiden University (Microbial ecology and evolution and Molecular genetics and Biotechnology , BSc and MSc respectively).

I lectured approximately 500 hours, among them 140 theoretical and 342 practical hours. I have supervised 4 BSc projects (Bioinformatics and Biology), 14 Master projects. (Bioinformatics, Biotechnology and Biology) and 2 PhDs projects.

Currently, my group is formed by 1 PhD, 2 PostDocs, 7 MSc students and 2 bioinformaticians (MSc level).



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AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2020

Turno de acceso general

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Título:

Studying the impact of environmental stressors on pollinator health

Resumen de la Memoria:

I am a researcher in the areas of pathology, ecology and conservation of pollinators. I obtained my PhD in Bee Pathology in 2013, and received the Award of Extraordinary PhD from the Universidad Complutense de Madrid. Subsequently, I was hired as a post-doctoral researcher at the University of Sussex (UK) to study the levels of exposure and the effects of pesticides on bees. Later, in 2016, I was granted a Juan de la Cierva fellowship to work at the Doñana Biological Station (EBD-CSIC), where I investigated the ecological and genetic risk factors behind disease pressure in wild bee communities. Since 2018, I am working as a DOC-INIA post-doctoral researcher at the Instituto Regional de Investigación y Desarrollo Agroalimentario y Forestal (CIAPA-IRIAF; 5 years contract), where I am investigating the diversity and abundance of wild pollinator communities, and the pressures that affect their health, with a focus on the pathogenesis and epidemiology of multi-host bee pathogens. I have participated in 16 projects (4 as PI or co-PI). I am currently leading one project as PI and working as part of the research team in two international projects, one of them being from the European Union H2020. My production reaches 43 papers, 12 of them as first author and 1 as senior author. My h-index is 27 (5418 citations) according to Google Scholar. I have presented 45 contributions to international conferences, 10 as first author. I am currently an Associate Editor for the journal *Insects*, and has served as reviewer for several international grant panels such as the Biotechnology and Biological Sciences Research Council (BBRSC, UK) and the National Science Center (Poland). I have reviewed manuscripts for more than 26 international scientific journals in the fields of parasitology, ecotoxicology, conservation, pollination ecology, bee pathology, and epidemiology. I am currently supervising 1 PhD student, and have supervised 3 undergraduate students (University of Sussex). I have performed fieldwork in 5 countries, having to coordinate technicians, assistants and/or students in many occasions. I routinely engage into public dissemination and outreach activities at the CIAPA-IRIAF, which gives over 35 courses/conferences per year, including events such as the Science Week among others. My broad research interests span biodiversity, ecology and conservation of pollinators. Healthy pollinators are essential for the reproduction of wild and cultivated flowering plants, so my research is motivated by the potential to improve conservation biology and agriculture. My scientific interests generally involves the study of responses of pollinators to environmental stressors to address ecologically applied issues. In particular I am interested in how pathogens and other anthropogenic influences, affect pollinator populations. This has involved focusing on how specific factors, such as aspects of habitat loss or chemical applications associated with agricultural practices, can influence individual physiology, behaviour(s) and fitness measures and how this can scale up to shape populations and communities. Pollinators have been the group used to address my questions and the focus of much of my research, as they are a dominant insect group in the environment that provide vital ecosystem functions and crucial ecosystem services important for human welfare.

Resumen del Currículum Vitae:

I completed my PhD at the Apicultural and Agri-environmental Research Center (2013, CIAPA-IRIAF, Guadalajara, Spain), where the focus of my studies was on analyzing the impacts caused by highly prevalent pathogens in honeybees, both at the individual and at the colony level. The doctoral thesis for these studies was recognized with the PhD extraordinary award by the Complutense University of Madrid. Subsequently, I was hired as a post-doctoral research fellow at the University of Sussex (2013-2016; Brighton, United Kingdom), where my work was directed towards the analysis of the levels of exposure to pesticides on bees, and the effects of such exposure in their health, with emphasis on the possible interaction of pesticides with other debilitating agents such as pathogens. Later, as a Juan de la Cierva research fellow at the Doñana Biological Station (2016-2018; EBD-CSIC, Seville, Spain), I followed up with the study of the effects of global change pressures on pollinators health, investigating the ecological and genetic risk factors behind disease pressure in wild bee communities. Currently, and since 2018, I work as a postdoctoral researcher at CIAPA-IRIAF (5 years contract) exploring the diversity and abundance of wild pollinator communities, and assessing the pressures that may affect their health, with a focus on the pathogenesis and epidemiology of bee pathogens.

JCR articles: 41; JCR articles in Q1 journals: 37; JCR articles in D1 journals: 24; Articles in peer-reviewed non-JCR journals: 2
Times cited: 3278 (according to WoS) / 3489 (according to Scopus) / 5418 (according to Google Scholar)

h-index: 22 (WoS) / 23 (Scopus) / 27 (Google Scholar)

Theses supervised: 1 in process; Bachelor's degree projects supervised: 3



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Turno de acceso general

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Área Temática: Ciencias agrarias y agroalimentarias
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Título:

Researching fruit and seeds, plant stresses and evolution using Bioinformatics.

Resumen de la Memoria:

I am an expert in bioinformatics with more than 13 years of experience in which I have studied stress responses and evolution in plants, and investigated fruit development and seed germination, creating valuable resources and tools for plant research and breeding. I researched the tomato fruit development from anthesis to the ripe stage, including the main tissues of the fruit and detailed laser capture microdissection data for the pericarp. I focused on interesting traits, identifying stage and tissue specific genes, and I created the Tomato Expression Atlas to host and analyze these data. This atlas is flexible enough to host transcriptomics, proteomics and metabolomics data and it has been expanded to many other projects such as citrus greening solutions, CassavaBase, CassBase and MADLand (PEATmoss). I have applied my experience in bioinformatics in large projects funded with millionaire budgets, such as the Tomato Disease Resistance and Citrus Greening Solutions, where I studied plant-pathogen interactions in tomato and citrus, SeedAdapt, to study seed germination and evolution in *Ae. arabicum*, and others such as the Tomato Expression Atlas, EpiDiverse and MADLand. I also participated in the assembly, annotation and analysis of transcriptomes and genomes of many plant species, and developed genomic databases and bioinformatics tools such as the Sol Genomics Network, the SGN VIGS tool, OliveTreeDB, the Tomato Expression Atlas, the Physcomitrella Expression Atlas Tool (PEATmoss), *Aethionema arabicum* DB, EuroPineDB, SeqTrim and the EpiDiverse EWAS pipeline. I am a PI in 2 projects, EpiDiverse and CharKeyS. In EpiDiverse, a European Training Network, I am co-director of a PhD student, where we study plant epigenetics and we are developing bioinformatics pipelines for epigenome-wide association studies (EWAS). In CharKeyS we are sequencing the genomes of the 2 streptophyte algae to study the evolution of plants and in coordination with MADLand, the adaptations developed by early land plants in the transition from water to land. During my postdoctoral period, I spent more than 8 years in international centers under the direction of two PIs awarded as Highly Cited Researchers in 2020 (Web of Science). For five years I worked at BTI, in Cornell University, which was ranked third of the world in agriculture and first in animal and plant science. In my postdoctoral positions, I contributed to 29 publications, 24 in the first quartile and 18 in the first decile and 3 highly cited, obtaining more than 1000 citations. I have taught more than 300 hours of bioinformatics around the world, and I was invited to present my work and organize bioinformatics workshops abroad several times. I participated in the organization of multiple scientific events, I taught bioinformatics in bachelor and master courses for 7 semesters in the University of Marburg, I am directing a PhD thesis, I have directed 1 master and 1 bachelor theses, and 10 intern student projects. I have submitted 2 grants as the main PI, to further develop the expression atlas and to study subtropical crops in Spain. In the near future, I would like to join a research center or university in Spain to contribute to the development of crops of interest in Spain, using bioinformatics to support breeding and to research plant responses to stresses and fruit development.

Resumen del Currículum Vitae:

I am an expert in bioinformatics with more than 13 years of experience. I have spent 100 months in international centers under the direction of two PIs awarded as Highly Cited Researchers in 2020 by Web of Science (WoS). For five years I worked at the Boyce Thompson Institute, in Cornell University, which was ranked third of the world in agriculture and first in animal and plant science during my time there. I have investigated and developed resources for many species of great interest for agriculture and forestry, such as tomato, cassava, pine, olive tree, and for evolution and basic science, such as *N. benthamiana*, *P. patens* and many others. I participated in several millionaire projects in the USA and Germany to study citrus greening disease, to deeply understand tomato fruit ripening, to investigate plant-pathogen interactions in tomato, and to learn about how plants evolved to adapt from water to land, among others. This is reflected in 43 publications, including 32 SCI articles, 30 of them in journals in the first quartile of their research area, 20 of them in the first decile, and cited more than 1000 times. I have publications as first author in prestigious journals such as Nature communications, Bioinformatics, Nucleic Acids Research and The Plant Journal, including 2 highly cited publications (WoS). I have created bioinformatics tools and genomic databases such as the Sol Genomics Network, the SGN VIGS tool, OliveTreeDB, the Tomato Expression Atlas, the Physcomitrella Expression Atlas Tool (PEATmoss), *Aethionema arabicum* DB, EuroPineDB, SeqTrim and the EpiDiverse EWAS pipeline. I am a PI in EpiDiverse, a European Training Network where I am co-directing a PhD student, and a PI in CharKeyS, a project granted by the DFG (German Research Foundation). I am involved in MADLand, a 6 million euros project, where the expression atlas and bioinformatics tools I developed, have a key role to analyze and host the generated data. Additionally, I submitted a grant proposal to the DFG as the main PI to further develop these tools. I have taught bioinformatics in bachelor and master courses for 7 semesters in the University of Marburg, and bioinformatics workshops



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AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2020

Turno de acceso general

around the world, 314 hours in total. I presented my work as invited speaker in meetings in Germany, Japan and the Philippines. I have directed 1 master and 1 bachelor theses, and 10 intern student projects. I have presented 40 works in international meetings, 16 talks and 3 posters as main author, and I was involved in the organization of 19 scientific events.

My goal in the near future is to join a competitive research center in Spain, where I can apply my experience in bioinformatics to investigate and create resources for species of interest for Spanish agriculture. I submitted a grant proposal as the main PI to research subtropical crops at the IHSM-CSIC, where it is hosted the largest collection of subtropical crops in continental Europe. I would use bioinformatics to support breeding and to research important traits and mechanisms in crops such as resistance to stresses, fruit ripening, gene regulation and genetic variation/diversity.



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AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2020

Turno de acceso general

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Título:

Diversity and Functionality of soil microorganisms

Resumen de la Memoria:

My research line focuses on the diversity and functionality of soil microorganisms, combining different approaches and methodologies for an integrative view. Through my career I have approached various aspects within this line: microbial diversity in soils, microbial functionality in the ecosystem processes, and application and potential uses of soil microorganisms in agriculture, forestry and biotechnology.

My PhD (University of Alicante, 2011) carried out at the CEBAS-CSIC (Spain) analyzed, using an innovative approach, the application of soil microorganisms with beneficial properties in agriculture. Its results, widely published and cited, have contributed to improve the use of biological control agents in soils and to enhance their activity against phytopathogens.

During my postdoctoral stage (2012-2017) and following research as a Junior Researcher (2018-today) in the Institute of Microbiology of the Czech Republic, I have expanded my knowledge about microbial communities and microbial taxa in forestry soils. I focused on diversity of soil microbial communities, analyzing their composition, structure and response to environmental changes, but also on their functionality, describing not only who is living there and how they change according to different factors but also answering the questions of what are they doing there and how they do it. Results have been published and presented in numerous international conferences worldwide.

In 2018, I got a 3-years project as Principal Investigator. It was granted by the Czech Academy of Sciences (GACR) in the Czech Republic. This project (with a 345.000 budget) allowed me to establish my own team, currently formed by a postdoctoral researcher, a student and a technician besides me, and also offered me the chance to manage both all the research and administrative issues.

During my research career, defined by a wide international mobility, I have had the opportunity to work with different research groups (CEBAS-CSIC (Spain), Ludwig-Maximilians-University of Munich (Germany), Vienna University of Technology (Austria), Ernst-Moritz-Arndt-University of Greifswald (Germany), Czech Academy of Sciences (Czech Republic), Environmental Molecular Sciences Laboratory (USA), Helmholtz-Zentrum für Umweltforschung (Germany)), participating in a number of projects carried out mainly in the Czech Republic and Spain.

Those collaborations have strongly broadened my research interests and perspectives; therefore, issues addressed in my works cover multiple dimensions of the study of the diversity and functionality of microbial communities in soil in the fields of agriculture and forestry, at both basic and applied level.

Among my major achievements I would indicate: 1) To have been PI of my own project in a foreign country; 2) my participation in international and national research projects and my collaborations with international researchers; 3) my results during my postdoctoral stage and as a junior researcher in the Institute of Microbiology of the CAS (Czech Republic); 4) my publications during my doctoral research at the CEBAS-CSIC (Spain); 5) my participation as a researcher and teacher in the R+D+I International project IMPLUS Innovation in Microbiology - Post-doctoral Teaching and Laboratory Center (Czech Republic).

Resumen del Currículum Vitae:

My research line has been focused on the study of microorganisms and microbial communities in soils, addressing multiple aspects such as ecology, diversity, functionality and applications in agricultural, forestry and biotechnological fields.

During my PhD research in the CEBAS-CSIC, I worked on the use of beneficial microorganisms in agriculture and in the development of molecular methods for improving their effectivity and application against phytopathogens, receiving my Ph.D. in Applied Biology from the University of Alicante (Spain) in 2011.

In 2012, I become a postdoctoral researcher in the Laboratory of Environmental Microbiology of the Institute of Microbiology (IMIC) of the Czech Academy of Sciences (CAS), in the Czech Republic, working on the study of the biodiversity and ecology of microbial communities in



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Turno de acceso general

soils by using multiomics methods, paying special attention to the role of bacteria in the carbon cycle in these ecosystems. During this time, I participated as researcher and teacher in the R+D+I International project IMPLUS Innovation in Microbiology - Post-doctoral Teaching and Laboratory Center, aimed to establish a European Centre of Excellence in Biomedicine and Biotechnology in the Czech Republic (2012-2015).

In 2018, I got a grant from the Czech Science Foundation (GACR) for funding my own 3-years project as Principal Investigator (PI), for studying the role of soil microorganisms in the transformation of organic matters in the forestry field. This grant entails a 351.000 budget for developing my project and to establish my own team, currently formed by a postdoctoral researcher, a student and a technician besides me. This project has also offered me the chance to manage both all the research and administrative issues in a foreign country.

Since 2007, my career has been defined by a wide international mobility which has widened my research interest and perspectives, offering me the opportunity to work with a number of prestigious research groups and institutes in Spain, Germany, Austria, USA and the Czech Republic. During these years, I have improved my knowledge and scientific skills through stays and courses in international labs in Munich (2007), Vienna (2008), Greifswald (2013, 2014), USA (2014) and Prague (since 2012). This mobility also has allowed me to collaborate as researcher in numerous national and international scientific projects in the forestry and agricultural fields.

The results of my research have been published in renowned journals of the fields of Ecology, Environmental Sciences, Microbiology, Soil Sciences or Agricultural Engineering. At the current moment, I am the author or co-author of 42 publications, including 32 peer-review papers in SCI journals (such as the prestigious journals The ISME Journal, Microbiology and Molecular Biology Reviews, Global Change Biology, Biotechnological Advances, Nature Communications) plus 5 more under revision, 3 articles in non-SCI journals, 1 book chapter and 1 patent. Moreover, my results have been presented in a number of recognized international conferences as a speaker (International Symposium on Microbial Ecology (ISME), Ecology of Soil Microorganisms (ESM), and Multiomics for Microbiomes), plus also as numerous posters.



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AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2020

Turno de acceso general

Nombre: GASPAR FERRER, LETICIA
Referencia: RYC2020-030338-I
Área Temática: Ciencias agrarias y agroalimentarias
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Título:

Soil loss assessment in the face of changes in agricultural management and climate: Making a difference with nuclear and isotopic techniques

Resumen de la Memoria:

Sustaining agricultural productivity and adapting to climate change requires efficient management of soil and water. In a world of climate and land-use changes, fertile soils are essential resources to ensure food security and sustain humankind. Land degradation and soil erosion by water are associated with the irreversible loss of fertile soil, representing a significant threat to water and nutrient retention, reducing agricultural productivity, and increasing siltation and pollution of water bodies. Current social and economic impacts related to soil degradation have generated a pressing need for obtaining accurate information on soil loss, especially in agrosystems. The goals are to strengthen soil conservation strategies, localize the sources of land degradation in the landscape, identify appropriate conservation measures, and test and assess their efficiency.

My research line based on using nuclear and isotope techniques to evaluate soil loss under changes in agricultural practices and climate variability in a typical rainfed Mediterranean agrosystem. Nuclear techniques (^{137}Cs , $^{210}\text{Pbex}$), stable isotopes (^{13}C , ^{15}N), physical-chemical characterization of soils, the application of fingerprinting techniques and Cosmic ray soil moisture neutron sensors (CRNS) will be used to fulfil the project objectives in combination with Geographical Information Systems (GIS) and remote sensing technologies.

My research focuses on assessing soil degradation associated with land uses changes and the impacts of climate change on soil loss. The main goal is to achieve a comprehensive view of soil redistribution cycling in agroforestry systems by combining nuclear and isotopic techniques, field work, geostatistical analysis with fingerprinting techniques and hydrological models. My ongoing research focus on three main lines: The FIRST LINE reveals that ^{137}Cs and $^{210}\text{Pbex}$ are efficient radiotracers to document soil redistribution over different time scales in Mediterranean agroecosystems, highlighting the potential of nuclear techniques to obtain accurate rates of soil loss if we cannot measure the problem, we can't manage it. The SECOND LINE demonstrates the capacity to understand questions referring to identify the sources and sinks of mobilized soil and nutrients using fingerprinting techniques and distinguish the impacts of climate variability and agricultural management on soil loss by using stable isotopes (^{13}C , ^{15}N , C:N ratio). Finally, in my THIRD LINE, I am interested in assessing field-scale soil water content by using cosmic-ray neutron technology (CRNS) and gamma-ray spectroscopy (GRS) to better understand how soil moisture affects the process of soil degradation and provide emerging methods that will support precision agriculture for improving agricultural water management practices and climate resilience strategies.

My research lines will offer accurate data for improving our knowledge on the impact of climate variability and land management in agricultural systems. The expected outputs will help to establish guidelines to develop climate smart agricultural practices aimed at improving soil and water management to reduce land degradation, helping in precision agriculture for improving agricultural water management practices and climate resilience strategies.

Resumen del Currículum Vitae:

I am a research scientist holding a postdoc position in EEAD-CSIC (Spain) within the JIN project framework that I lead as IP. (Retos A, 2019). I have a total of 9 years of postdoc experience, more than one-third in international institutions in the UK and Canada, and I have worked for the United Nations organization IAEA (the International Atomic Energy Agency) as an expert in three international missions in Madagascar (2013) and Morocco (2015 and 2017). During my postdoc professional career, I have received several international and national fellowships and research contracts including:

2018-20 Juan de la Cierva Incorporación at EEAD-CSIC (Spain) Prof. Navas. 29 months
2015-17 Juan de la Cierva Formación at MNCN-CSIC (Spain) Prof. Benito. 24 months
2014-15 Postdoc contract at UNBC University (Canada) Prof. Owens. 16 months
2013-14 Postdoc fellow at Plymouth University (UK) Prof. Blake. 12 months
2012-13 Postdoc CAI fellowship at Cranfield University (UK) Prof. White. 9 months
2011-12 Postdoc contract at EEAD-CSIC (Spain) Prof. Navas. 12 months

I obtained a Ph.D. in Science with honours (Cum Laude) in 2011 (UNIZAR), and I have been honoured with the Ph.D. Extraordinary Award of



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AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2020

Turno de acceso general

the University of Zaragoza. I was granted a four-year PhD fellowship (2007-2010) from the highly competitive program of FPI DGA to complete my PhD thesis at the EEAD-CSIC under the supervision of Prof. Navas. I hold a BSc degree in Geology with honours (UNIZAR, 2006) and two MSc degrees in soil science and Education, respectively, from the University of Zaragoza in 2008.

The quality of my research is further evident in my 53 SCI publications, 75% in Q1 (1 in Nature Scientific Report, 1 Earth-Science Reviews), 8 additional peer-reviewed journal publications, 2 Books, 12 book chapters, 1 technical report. 1 intellectual property (patent) and 93 oral and poster communications (1157 citations and 20 h-index).

I have been involved in a total of 20 projects: 14 international (2 as IP), 6 national projects (1 as IP) and 7 contracts (3 as IP), notably the national project I am leading (JIN) Soil loss assessment in the face of changes in agricultural management and climate: Making a difference with nuclear and isotopic techniques. My international activity is dedicated to the leadership of other 2 international projects as IP, with the International Atomic Energy Agency (Joint FAO-IAEA division): CRP-RC12014 (2021-24) and CRP-RA20532 (2016-21). I have obtained 336.760 funding for my own research and the financing for national and international projects in which I have collaborated reaches around 10 million .

I have experience as teaching assistant in international universities (UK and Canada) and co-supervised a Master Thesis at UNBC University, Canada (2015). I supervised a total of 12 IAEA individual fellowships and I am highly active in Science communication.

I have organised as convener an international workshop at Winnipeg University (Canada) in 2014 and participated in a workshop at Scripps Institution of Oceanography (USA) in 2015. I also participated in month-long visiting research in Universities of Ethiopia and Tanzania in March 2016 in the frame of a Marie Curie RISE project (IMIXSED 2015-2017). I have done a total of 7 international stays during my career. Recently, two short stays at ISOFYS lab in Belgium with Prof. Boeckx.

I am part of the Editorial board of CATENA and Pirineos journals, convener at the international EGU20



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AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2020

Turno de acceso general

Nombre: PEREIRA CARO, MARIA GEMA
Referencia: RYC2020-030004-I
Área Temática: Ciencias agrarias y agroalimentarias
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Título:

DIETARY PHYTOCHEMICALS: EVALUATION OF THEIR ABSORPTION, METABOLISM AND EXCRETION AND THEIR POTENTIAL TO PROTECT HUMAN HEALTH

Resumen de la Memoria:

I was awarded with a competitive predoctoral fellowship funded by the Research National Institute of Food, Agriculture and Technology (INIA, Call 2005). During this 4-year-period I worked in the Department of Postharvest Technology and Agrifood Industry at the Andalusian Institute of Agriculture and Fisheries Research and Training (IFAPA). In 2011, my PhD Thesis was awarded with the highest qualification score and the PhD Extraordinary Award by the Universidad Complutense de Madrid.

After my PhD thesis I began to appreciate more fully the important role of diet in disease prevention and focussed my attention on the polyphenolic compounds present in foods and how following ingestion these compounds are transformed by the body into metabolites and catabolites that in vivo are responsible for the potential protective effects of a fruit and vegetable-rich diet. It is against this background that I started working in January 2012 with Prof. Alan Crozier at the University of Glasgow on the bioavailability of polyphenols from different dietary sources in humans and animal models. My stay was funded during a 12 month period by postdoctoral contract from IFAPA and for 15 months by the Foundation Alfonso Martín Escudero competitive postdoctoral fellowship (Madrid) (from January 2012 until March 2014). During that time I worked on bioavailability studies that involves the acute ingestion of orange juice and raspberries by human volunteers and the analysis of their metabolites and catabolites in biofluids by HPLC-PDA-MS/MS and GC-MS; also in a study that evaluates the effect of the acute and chronic intake of a probiotic on the bioavailability of orange juice flavanones in healthy humans and in a study which focus on the evaluation of the phenolic profile of different dietary source by HPLC-PDA-MS/MS.

From April 2014, I am working in the Department of Food Science and Health at IFAPA thanks to several competitive postdoctoral contracts as the head of the new research line at IFAPA Bioavailability and biological activities of bioactives in foods. From that date, I was the responsible for several research contracts with private companies and I am currently Principal Investigator of a project from the Young Researchers Program Retos Investigación 2018, MICINN (12.4% rate of success).

The specific targets for my research include:

- 1) Head and supervisor of the LISEEM-lab (for the MS facilities)
- 2) Head and supervisor of the new cell culture lab at IFAPA.
- 3) To deep in the analysis of polyphenolics and other bioactive compounds in food and in the evaluation of their bioavailability in humans or animal models with an expansion in the scope of my previously acquired skills and techniques;
- 4) To acquire extensive experience with the analysis of polyphenolics and their metabolites/catabolites in biological fluids by having experience in more sensitive HPLC-MS equipment such as UPLC-HRMS and UPLC-MS/MS.
- 5) To develop and validate of improved analytical methods for the determination of bioactives and compounds related to nutritional properties in foods;
- 6) The impact of the gut microbiota on the overall bioavailability of dietary polyphenols from fruits and vegetables.

Resumen del Currículum Vitae:

Co-author of 57 scientific articles in JCR journals, among which 54 papers are Q1. I have privileged position of authorship in 67% of them (being first, second author, last or corresponding author. I have an h-index of 25, (Scopus database), with 250, 227 and 331 citation received in 2018, 2019 and 2020. It is particularly noteworthy that the 93% of my papers published during my postdoctoral period are not linked to my PhD thesis supervisors, demonstrating my independence as researcher and the 72% of them has non-Spanish authorships, pointing out my capability of leadership and collaborating with other national and international research groups. I have given oral presentations and poster communications on my research at 49 international and national meetings. I have participated actively in 17 national and international projects and 8 research contracts with private national and international companies, all directly related to the field of food science, being the principal investigator for 3 of them. Important to note my participation in EU projects: SWAFAX (Seaweed



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E INNOVACIÓN



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AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2020

Turno de acceso general

derived anti-inflammatory agents and antioxidants, FP7-SME-2010-1-262519) and more recently EUCLEG, project 727312 (Breeding forage and grain legumes to increase EU ζ s and China ζ s protein self-sufficiently, H2020, SFS-44-2016).

I am working in the Department of Food Science and Health at IFAPA developing as leader the research line on Bioavailability and biological activities of bioactives in foods thanks to a 3-year competitive postdoctoral contract funded by IFAPA, to a Juan de la Cierva-Incorporación 2015 contract (maximum mark in CV evaluation), and more recently, to a contract as Principal Investigator of a project from the Young Researchers Program Retos Investigación 2018 , MICINN.

I was granted by competitive predoctoral and postdoctoral fellowship and contracts: Predoc INIA 2005, 1-year postdoc contract from IFAPA, 15 months postdoctoral fellowship from Fundación Alfonso Martín Escudero-2011 , 3-years postdoc contract from IFAPA and 2-years Juan de la Cierva-Incorporación 2016 contract. PhD Extraordinary Award by the Universidad Complutense de Madrid 2011 and Prize to the better oral communication at the I Congreso Científico de Investigadores en Formación , University of Córdoba, Food Science Area.

I was an invited member of PhD Thesis jury (University of Jaén, July 2017 and University of Pamplona, December 2018). I was director of a PhD thesis (University of Seville, May 2018) and I am co-director of two ongoing PhD thesis (one funded with a FPU fellowship). I was invited in a seminar by Thermo Scientific: II Jornadas Thermo Fisher Scientific para el análisis de aceite de oliva y otras grasas, in Seville, 2017. Also, I have given dissemination activities and several interviews on my research that have been published in the web. I am reviewer in JRC journals such as Food Chemistry , European Journal of Nutrition , Food Research International , Journal of the Science of Food and Agriculture , LWT-Food Science and Technology and Scientific Reports (Nature Publishing Group) and Editorial Board Member of the International Journal of Pharmaceuticals and Nutrition Sciences and Processes.



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AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2020

Turno de acceso general

Nombre: VENTURAS , MARTIN DAVID
Referencia: RYC2020-029792-I
Área Temática: Ciencias agrarias y agroalimentarias
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Título:

Understanding forest responses to drought and climate change using plant hydraulics and trait-based models

Resumen de la Memoria:

My research mainly focusses on plant pathology, plant hydraulics, forest ecophysiology, and forest conservation. I am interested in understanding how plant communities respond to different environmental stress factors such as drought, disease, and human disturbance. This knowledge is critical for predicting ecosystem responses to global climate change and for establishing adequate forest management practices and conservation and restoration policies. The research I perform includes several scales, ranging from organ level physiological processes to whole stand processes, and multiple tools, including detailed physiological measurements and model development.

During my BSc in Forest Engineering, I started my research career studying conifer intraspecific diversity to guide the conservation of forest genetic resources. Next, I joined the Spanish Elm Breeding and Conservation Program while I obtained a MSc in Environmental Sciences. During this period, I primarily worked on the obtention of elm genotypes resistant to Dutch elm disease for the restoration of riparian habitats. Afterwards, I obtained a PhD in Advanced Forest Research and my PhD thesis focused on studying the ecology of the European white elm (*Ulmus laevis*) in the Iberian Peninsula. I determined *U. laevis* was a native endangered tree species in Spain and studied the species reproductive biology, dispersal capacity, and ecophysiology to guide its conservation. At California State University Bakersfield (USA, 1-year postdoc) I studied the relationship between plant hydraulic traits and drought mortality of woody species. At University of Utah (USA, 5-year postdoc) I developed, tested and applied a model that predicts plant responses to environmental variables from key plant hydraulic traits. This model will help us evaluate the effects of climate change on forest ecosystems. At midterm, I intend to follow this research line, improving the model for it to be able to be applied at larger-scales, represent more complex forest communities, and incorporate the effect of pathogens on the vascular system of plants. In 2020, I was granted a Marie Skłodowska-Curie Individual Fellowship for developing a model capable of predicting mixed forests responses to climate change at Universidad Politécnica de Madrid. In addition, I will study how plant traits acclimate to environmental conditions and further develop plant hydraulics techniques.

Resumen del Currículum Vitae:

I have a BSc in Forestry Engineering (2006), a MSc in Environmental Sciences (2008), and a PhD in Advanced Forest Research (2013) by Universidad Politécnica de Madrid (UPM). During these studies I was granted several prizes due to my outstanding performance (e.g. Extraordinary Doctorate Award, Best Academic Record of the MSc Promotion). I complemented my training by performing two post-doctoral research stays at University of Utah (USA, 2016-Present) and California State University, Bakersfield (USA, 1 year, 2014) and two 3-month stays as part of my PhD training program at University of Edinburgh (UK) and Pepperdine University (USA), plus a fifth stay at the Ethiopian Institute of Agricultural Research as part of an international cooperation and development project (1 month). These stays have enabled me to gain a wide array of skills and build a network of collaborators. I gained additional post-doctoral research experience in 2015 at UPM.

My main research interest is understanding how biotic and abiotic stresses affect forests in order to guide forest management and conservation. I started my research career studying conifer intraspecific diversity and working towards the conservation of forest genetic resources. I joined the Spanish Elm Breeding and Conservation Program and studied the effect of Dutch elm disease on Spanish forests. That led me to focus my PhD thesis on the ecology of the European white elm (*Ulmus laevis*) in the Iberian Peninsula, studying the species genetic diversity, reproductive biology, dispersal capacity, and ecophysiology. During my first postdoctoral position I studied the relationship between plant hydraulic traits and drought mortality of woody species. Currently, I am developing, testing, and applying a model that predicts plant responses to environmental variables from key plant hydraulic traits. This model will potentially help us evaluate the effects of climate change on forest ecosystems. At midterm, I intend to follow this research line, improving the model for it to be able to be applied at larger-scales, represent more complex forest communities, and incorporate the effect of pathogens on the vascular system of plants. I recently obtained a Marie Skłodowska-Curie Individual Fellowship for pursuing this research.

My objective is developing my own research line in plant hydraulics and modelling within a multidisciplinary group and obtaining a permanent academic position in a Spanish university. During these years I have developed simultaneously my research and teaching skills. I have taught in several universities. At UPM I instructed a Plant Anatomy and Physiology laboratory, at California State University Bakersfield I lectured Introductory Plant Biology, and at University of Utah I taught Plant Physiology. In addition, in all the laboratories I have worked I combined my teaching and research roles while mentoring and supervising undergraduate and graduate students research projects. I was the Director of a Final Degree Project at UPM and, currently, I am a Committee Member of a MSs student at University of



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AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2020

Turno de acceso general

Utah. Finally, I obtained the accreditation for Profesor Contratado Doctor by the Spanish National Agency for Quality Evaluation and Accreditation (ANECA).



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AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2020

Turno de acceso general

Nombre: PIERNAS SANCHEZ, CARMEN M
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Área Temática: Ciencias agrarias y agroalimentarias
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Título:

Healthier and sustainable diets for the prevention of chronic diseases and a lower environmental footprint

Resumen de la Memoria:

Internationalization: The applicant is a Nutrition scientist and University Research Lecturer at the University of Oxford (UK) since 2015. In 2013 she obtained a PhD in Nutrition (University of North Carolina at Chapel Hill, USA).

Research Interests: During her PhD studies she conducted research on dietary patterns and behaviours related to obesity and chronic disease, including snacking, portion sizes and sugary beverages. She is currently working at the University of Oxford to specifically develop her knowledge and expertise in behavioural nutritional interventions. During this time, she has worked with a high level of independence and leadership on a range of applied and policy-relevant projects, including clinical trials, systematic reviews, and large-scale epidemiological studies. She has managed and conducted the PCSHOP RCT as principal investigator for which she has obtained ~300,000 of public funding (6 projects as PI) from the UK National Institute for Health Research (NIHR). She is currently leading a new project on

Healthier and Sustainable Diets to evaluate voluntary initiatives from UK retailers to help people improve diet and reduce the environmental footprint of food choices, which involves important cross-cutting collaborations with the food industry, charities and policymakers, as well as multi-disciplinary academic collaborations across behavioural science, nutrition, big data and health geography with world-leading institutions.

Career Goals: The applicant counts with extensive research experience and outstanding outputs, and has demonstrated leadership and capacity to develop and implement important research ideas and projects for which she has obtained competitive grants from major UK funders. Her career pathway is deeply grounded in developing excellent applied health research, so that scientific discoveries in the Nutrition field can be rapidly implemented and applied for a greater societal impact. Her goals are to continue developing and testing practical and scalable approaches to help the population achieve and maintain a healthy diet in order to reduce the burden of chronic diseases and also the environmental footprint of dietary choices. The applicant is on track to become an excellent researcher in Nutrition and to continue her development to establish her own research group in Spain.

Resumen del Currículum Vitae:

Education and current position: the applicant is a Nutrition scientist working as a University Research Lecturer at the University of Oxford since 2015. She graduated in 2013 with a PhD in Nutrition from the University of North Carolina at Chapel Hill (USA) where she was awarded the School of Public Health's Annual Fund Scholarship and the Doctoral Dissertation Award.

Research and leadership: She has worked at the University of Oxford to develop a new research programme that aims to improve the nutritional quality of the food purchased in order to reduce the risk of cardiovascular disease, diabetes and obesity. She is also investigating ways to promote healthier and more sustainable food choices. This work involves important new cross-cutting collaborations with the food industry (Tesco, Sainsbury's), charities (British Heart Foundation, Cancer Research UK) and policymakers (Public Health England), as well as multi-disciplinary academic collaborations across nutrition, behavioural science, big data and health geography with top leading institutions. Through this work, she has attracted ~300,000 in competitive research grants as independent PI from the UK National Institute for Health Research (NIHR) and charitable foundations. She is currently funded by the UK NIHR Applied Research Collaboration in Oxford, a 10 million program of research for which she is the sub-theme lead and research coordinator for Theme 1 Disease prevention through health behaviour change; for which she contributed to the development of the funding application. In parallel, she has established excellent working collaborations with colleagues from the UK Biobank group. She is leading work using the dietary data to develop a new system of grouping the dietary data and to apply novel methods to investigate dietary patterns which will be made available to the whole UK Biobank community. She has attracted ~40,000 in grants as PI and a personal pump-priming award for this work in the UK Biobank.

Her research to date has resulted in a total of 34 peer-reviewed SCI publications (plus 17 more under review), one book chapter and one patent. Of all published research, 24 papers (~70%) are in Q1; of which 60% are in D1 in Nutrition, Medicine or Public Health. Of all published research, 28 papers were as first/second/last author (of which 85% are in Q1). Her H index is 16 (Scopus) 19 (Scholar); ~1,321 cites (Scopus) ~2,200 cites (Scholar); average of 165 cites/year over the last 5 years. She has participated as speaker in top scientific



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AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2020

Turno de acceso general

conferences in the USA, UK or other European countries with 23 oral communications or invited lectures. She is serving in the Editorial Board of Public Health Nutrition (Cambridge University Press) as Associate Editor since 2019. She is a frequent external reviewer for top scientific journals in the area of Nutrition, Medicine, Public Health (e.g. BMJ, Lancet).

Transfer of knowledge through mentoring and teaching: She has supervised 4 MSc theses, 1 BSc Honors and co-directed 2 PhD students (one ongoing); and has served in examination boards for 3 PhD students (University of Oxford). She is Module Lead and lecturer in the Nutrition Epidemiology module (MSc Global Health and Epidemiology); and course tutor in the Essential Medical Statistics (MSc Evidence Base Health Care) at the University of Oxford.



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Turno de acceso general

Nombre: HERNANDEZ CLEMENTE, ROCIO
Referencia: RYC2020-029187-I
Área Temática: Ciencias agrarias y agroalimentarias
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Título:

Assessing plant functional traits with imaging spectroscopy and radiative transfer models to monitor productivity, vegetation stress and climate change adaptability in agricultural and forest systems

Resumen de la Memoria:

I obtained my PhD and a Premio Extraordinario de Doctorado award in 2012 at the University of Cordoba, focused on quantifying plant biochemistry and forest condition with hyperspectral and thermal data. I have >8 years of international and over a year of national postdoctoral experience and four postdoctoral positions. In 2018, I obtained a permanent position as a Lecturer by public competition at Swansea University and was promoted to Senior Lecturer in 2019.

I have attracted > 1.5M in research funds as PI or Co-PI in 8 research projects and > 2.5M as a team member in another 16. I have 34 publications in ISI-listed journals, three classified as highly cited papers (ISI, Jan. 2019), one book chapter with ISBN and 32 conference papers. I have >1000 citations and h-index = 17.

As an early-career academic, I have established a strong track record in developing new tools for precision forestry and have pioneered:

i) FluorFLIGHT, a new 3-D physical model for quantifying fluorescence in forest canopies:

This outstanding new line of research was successfully funded with the FP7-FluorFLIGHT- Marie Curie-IEF project and my contribution as PI took place in Swansea University as Senior Researcher during 2017-2018. With this project, I developed a new 3D radiative transfer modelling approach to quantify the chlorophyll fluorescence obtained from airborne and satellite data. The implications and impact of this research were particularly important for the validation of FLEX, a new ESA satellite that will provide chlorophyll fluorescence information from space in two years.

ii) the formulation of new spectral-based plant trait (PT) indicators:

My research has contributed to developing new analytical methods to quantify different plant traits such as leaf pigment and water content or vegetation structure using radiative transfer models (Hernández-Clemente et al., 2012, 2011 and 2014b). This included developing new methods for the acquisition and processing of hyperspectral images with unmanned aerial vehicles (UAVs) and airborne platforms and the development of a protocol with High-performance liquid chromatography (HPLC) to measure the pigment content of the leaves.

I have also contributed to the analysis of remote sensing data with different plant and soil traits of drylands globally as a result of the project proposed for my last fellowship, Juan de la Cierva. The first results have been published in high impact journals such as Science (IF:41.8) (Berdugo et al., 2020).

iii) a novel methodology for monitoring plant productivity and detecting plant diseases at an early stage using radiative transfer models:

My research has contributed to enhancing the technological basis of a European network of SMEs using remote sensing data in forest management with the FP7-THERMOLIDAR project. One of my significant achievements in science has been to demonstrate that the early detection of the biotic- and abiotic-induced stresses in crops and forest canopies can be revealed using a multilayered functional plant trait scheme approach based on FluorFLIGHT model simulations with a paper published in Nature Plants (IF:13.26) and 6 others published in Remote Sensing of Environment (IF:9.09). Additionally, I also used Eddy covariance data based on radiative transfer models to analyse the productivity of boreal forest canopies (Hernández-Clemente et al., 2016).

Resumen del Currículum Vitae:

- Current position: Senior lecturer at Swansea University (UK)-permanent position.

- PI or Co-PI in 8 research projects attracting > 1.5M in research funds and team member of another 16 attracting > 2.5M. A total of 24 research projects funded by public competitive calls both national and international funding agencies, including my involvement as principal investigator in two European Projects (FP7-IEF-FluorFLIGHT and FP7-SME-THERMOLIDAR)

- 4 postdoctoral fellowship positions funded by the prestigious FP7-Marie Curie Grant, FP7-SMEs-Capacities, Juan de la Cierva-



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AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2020

Turno de acceso general

Incorporación and Academy of Finland.

- 34 SCI publications (11 as first author) and 1 book with ISBN.
- 3 papers classified as highly cited papers (WoS, Jan. 2019) and 10,188 (RG) reads.
- Top-tier journal publications (Q1): 24, (D1):11 and 7 publications with IF between 9 and 42, and with 93 different co-authors (Scopus, Jan. 2019).
- Researcher score: 29.88 (RG), h index: 14 (WoS) / 17 (GS), i10 index: 23(GS).
- Researcher average impact factor in the last 5 years: 7.9 (WoS).
- Total cites (in 01/2021): 712 (WoS) / 922 (RG) / 1145 (GS).
- No. of cites during the last 5 years: 613 (WoS) / 908 (GS).
- 32 conference papers and 5 pre- and postdoctoral stays at i) Auladei (Zaragoza, Spain), University of Eastern Finland, Joensuu (Finland), Forestry Commission (Edinburgh, UK), University of Thessaloniki (Greece) and POLWET experimental station (Rzeczyn, POLAND).
- Supervised works in the last 5 years: 2 PhDs (ongoing), 7 Masters and 10 graduate dissertations.
- More than 1100 hours of officially certified teaching in graduate and undergraduate courses in the UK, Finland and Spain.
- Board Editor of the SCI journals Remote Sensing and Remote Sensing Applications: Society and Environment) (2016 - ongoing), Guest editor of Remote Sensing- Special Issue "Modelling and Monitoring Vegetation Decline and Productivity with Remote Sensing".
- Panel Member of the Natural Environment Research Council (UK) (2019 - ongoing).
- Editorial board of Spanish Association of Remote Sensing (2016 - ongoing).
- Deputy Director of a Master's programme, exam officer and admissions officer of Swansea University (UK) (2016 - ongoing).
- Committee member of the Copernicus Sentinels programme, European Spatial Agency (ESA) within the "Land Community Experts group" to advise on the requirement of sensors for the study of vegetation. (2020 - ongoing).
- Very active in outreach activities focused on increasing social awareness regarding forest health and remote sensing applications, including several articles in EurekaAlert and mass news media, such as The Guardian or El Mundo and participation in several outdoors science festivals in Spain and UK.



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AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2020

Turno de acceso general

Nombre: LOZANO JUSTE, JORGE
Referencia: RYC2020-029097-I
Área Temática: Ciencias agrarias y agroalimentarias
Correo Electrónico: lojujo@ibmcp.upv.es

Título:

Lozano-Juste_2020_memoria

Resumen de la Memoria:

I am BSc in Biology by the Universidad de Valencia (2004) and PhD in Biotechnology by the Universidad Politécnica de Valencia (UPV) (2011). I carried out postdoctoral training at the University of California, Riverside from 2011 to 2016. Since I returned to Spain, I have obtained funding to support my independent research line. First, with a Juan de la Cierva award (2016) and next with a Marie Curie Re-Integration grant (2017-2019), a UPV (Universidad Politécnica de Valencia) grant (2019-2021; PI), a competitive Grupos Emergentes GVA (Generalitat Valenciana) grant (2020-2021; PI), a Retos-Colaboracion grant (2018-2021; scientific coordinator), and a grant from the government of Dominican Republic (2020-2022; Co- PI). These funding has allowed me to develop my own project and to gain experience as independent researcher.

My research has always been focused on understanding and manipulating plant tolerance to abiotic stress with a specific interest on abscisic acid (ABA) signaling. During my PhD, supervised by Dr. José León (IBMCP, Valencia), I studied the interplay between Nitric Oxide and ABA and I contributed with 8 papers (5 as first author) published in good journals (Molecular Cell, Plant Phys, Science signaling). Next, I joined the lab of Prof. Sean Cutler (University of California), to gain experience in chemical genetics and ABA signaling. During my postdoc, I became interested in crop plant species (maize, soybean, setaria and switchgrass) and I published 6 papers (Nat Plants, TIPS, ACS Chem Biol).

In 2016, I returned to Spain to develop my own research line hosted by Prof. Pedro L. Rodriguez (IBMCP, Valencia), thanks to Juan de la Cierva and Marie Curie fellowships. Since I came back to Valencia, I have been applying chemical genomics to crops, especially Maize, Setaria and Rice. Research grants by UPV and GVA as well as other collaborative projects funded my independent work aimed to generate biochemical and structural knowledge on crop ABA receptors and exploit it to identify chemical molecules able to activate drought resistance in the field. Since my return to the IBMCP, I have published 9 papers (PNAS, TIPS, Molecular Plant) and directed 1 PhD and 4 master theses. This work has unveiled promising molecules able to activate ABA signaling in maize and we have solved their structures in complex with ABA receptors. To further increase the activity of these molecules in maize, I am now collaborating with organic chemists to improve the potency of these compounds using a structure-based drug design approach. The newly synthesized agrochemicals show ABA-like potency *in vitro* and a good activity *in vivo* and have gained the attention of 2 biotech companies (1 patent is under evaluation).

In the recently funded grant by the Government of Dominican Republic, I am collaborating with Dr. Concha Domingo (IVIA, Spain) and Stefany Rosario and Tomás Matos (UASD, Dominican Republic) to apply chemical genomics and genome editing in rice, the third most consumed food crop in the world. In this project we aim to develop small molecules and genome-edited rice to counteract the effects of salt and drought stress in rice. Therefore, technologies produced through this work have the capacity to stimulate private-public initiatives and to increase our knowledge on drought tolerance and ABA signaling in crops.

Resumen del Currículum Vitae:

I am B.Sc. in Biology by the Universidad de Valencia (2004) and PhD in Biotechnology by the Universidad Politécnica de Valencia (UPV) (2011). I carried out Postdoctoral training at the University of California from 2011 to 2016. Since I returned to Spain, I have obtained funding to support my independent research line. First, with a Juan de la Cierva Incorporación (2016), then with a Marie-Curie Re-Integration grant (2017-2019) and recently with a UPV grant (2019-2021), and a highly-competitive Grupos Emergentes GVA grant (2020-2021). These funding have allowed me to develop my own project and to gain experience as independent researcher. My research has been always focused on understanding and manipulating plant tolerance to abiotic stress with a specific interest on abscisic acid (ABA) signaling. During my PhD, under the supervision of Dr. José León, I studied the connections between Nitric Oxide and ABA and I contributed with 8 papers published in Q1 journals (5 as first author). Next, I joined the lab of Prof. Sean Cutler (University of California), to gain experience in chemical genomics and ABA signaling. During this postdoc I became interested in the regulation of ABA receptors in crop plants species (maize, soybean, setaria and switchgrass) and I developed high-throughput screening assays to identify novel ABA-receptor agonists in economically relevant plant species. I isolated several ABA-receptor maize mutants from the UniformMu collection. Additionally, I set up genome editing protocols to generate mutants in eudicot and monocot plants species. I have published 6 papers derived from this work (2 as first author). Besides lab work, I also gained experience in mentoring, grant and paper writing and I become involved in several outreach activities. I was one of the 3 founders of the University of California, Riverside Postdoc Association (RPA) in 2014. This association is still running and organizing events to improve the quality of life of postdoctoral researchers and their families at University of California, Riverside, both a the academic and the personal levels. In 2016 I returned to Spain to the Instituto de Biología



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Turno de acceso general

Molecular y Celular de Plantas (IBMCP) in Valencia to develop my own research line hosted by Prof. Pedro L. Rodriguez, thanks to a Juan de la Cierva Incorporación and a Marie-Curie Re-Integration grant. The main goal was to generate biochemical and structural data on crop ABA receptors and exploit it to identify chemical molecules able to activate drought resistance in the field. Since my return to the IBMCP I have published 9 papers (2 as corresponding and first author), 2 technical papers as corresponding author (Methods in Molecular Biology) and 1 book chapter, started the registration process for a patent and directed 1 PhD student, 4 Master theses (TFMs) and 2 B.Sc. theses (TFGs). We have discovered some promising molecules able to activate ABA signaling in maize. In my UPV and GVA grants, I am collaborating with organic chemists to improve the potency of these compounds that have attracted the interest of several biotech companies. Recently, I was also awarded, along with other 3 researchers (4 Co-PIs), an international grant to translate these findings into rice and to develop chemical and genetic tools to improve salt and drought tolerance in rice.



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AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2020

Turno de acceso general

Nombre: XIAO , JIANBO
Referencia: RYC2020-030365-I
Área Temática: Ciencias agrarias y agroalimentarias
Correo Electrónico: jianboxiao@yahoo.com

Título:

Impact of hyperglycemia on bioavailability and bioactivity of polyphenols

Resumen de la Memoria:

During his research career, the applicant has addressed several research topics focusing on dietary polyphenols. This inter-disciplinary cutting-edge background provides him outstanding versatility to success in attracting funds from competitive calls and to create his own research group in his career. Moreover, the applicant has carried out stays in several internationally acknowledged reputation research groups, as is evidenced in the co-authorship of his publications, and this fact provided him an important multidisciplinary network for collaborations in research projects.

The applicant's research area of expertise is focusing dietary polyphenols emphasizing on their bioavailability and benefits.

- (1) The field of polyphenols bioavailability, in which he has acquired a broad knowledge on the: 1.a) characterization of polyphenol-protein interactions; 1.b) investigation of the stability and unstable products of polyphenols in biological samples by an in situ analysis.
- (2) The field of polyphenols benefits, focused on the anti-diabetic effects of polyphenols: 2.a) the preventing and managing effects of polyphenols on type 2 diabetes; 2.b) the influence of type 2 diabetes on the benefits of dietary polyphenols; 2.c) the impact of type 2 diabetes on the pharmacokinetics of dietary polyphenols.

The applicant research aim is to integrate the stability and metabolism of dietary polyphenols.

- (1) The polyphenol-protein interactions were characterized by multi-strategies and their structure-affinity relationships were illustrated.
- (2) The influence of glycated plasma proteins in diabetes on the polyphenol-protein interaction was investigated and the result showed that the glycation of plasma proteins in type II diabetes lowers the non-covalent interaction affinities for polyphenols, which was published in Integrative Biology as a featured article in Chemistry World.
- (3) Systematically investigated the structure-stability relationship of polyphenols in cell culture. Flavonoids with catechol or pyrogallol structure were evidently instable in DMEM. Flavonols with a catechol or pyrogallol substitution pattern on ring B readily formed stable dimers and oxidized products in PBS within 5 seconds. The new products were further identified via an in situ UPLC-MS-MS analysis.
- (4) The metabolites of dietary polyphenols in various cells were identified. Methylate, glucuronide and sulfate of polyphenols and their oxidized products were formed in cells. The metabolizing process was deeply explored.

The applicant future prospects in research are:

- (1) The stability and bioactivity of dietary polyphenols during thermal processing. The influences of thermal processing on the stability, bioactivity and digestive properties of dietary polyphenols will be comprehensively investigated. The unstable products of dietary polyphenols during thermal processing will be further isolated and identified, and the relative mechanism will be clarified.
- (2) The effects of dietary polyphenols on the formation of heterocyclic amines of meat during the thermal processing. How dietary polyphenols inhibit the formation of heterocyclic amines of meat as well as its mechanisms will be further explored. The new products of dietary polyphenols when cooked with meat during the thermal processing will be investigated, as well as their function on human being.

Resumen del Currículum Vitae:

The applicant holds multidiscipline graduate record covering disciplines from Molecular Nutrition, Food Science and Technology, to analytical chemistry at different institutions from different countries (China, Japan, Germany and Macau). In 2009-03, the applicant completed his PhD degree in Molecular Nutrition at Okayama Prefectural University (Japan), and then worked as a research associate in Shanghai Normal University (China) from 2009-07 to 2013-03. The applicant worked as a postdoctoral fellow in University of Würzburg (Germany) from 2013-06 to 2015-05. Then, the applicant worked as an assistant professor in University of Macau from 2015-10 to 2020-12. Recently, the applicant is a full professor in Jinan University (China) from 2019-10.

The applicant has published more than 200 peer-reviewed articles listed in journals indexed in the Web of Science (ResearcherID: C-7323-2012), mainly in Food Science and Technology area. Key features are highlighted next:

1. To date the applicant has achieved a 46 h-index with over 7036 citations from 2006 to 19th January of 2021.
2. Among these peer-reviewed articles, the applicant merit distribution has been as follows: 51 articles as first author (25%), and 83 as corresponding author (41 %).
3. Regarding the impact of the journals in which the applicant has published the documents, 154 of those have been published in journals



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Turno de acceso general

that are located within the first quartile (Q1) of the related area of study.

4. Additionally, the applicant has published 120 peer-reviewed publications in high Impact Factor (IF) of SCI-journals belonging to the First Decile (D1), such as Seminars in Cancer Biology (IF 11.09, 1 document), Biotechnology Advances (IF10.744, 4 documents), Trends in Food Science & Technology (IF 11.077, 14 documents), Medicinal Research Reviews (IF 9.3, 2 documents), Journal of Hazardous Materials (IF 9.038, 1 document), Critical Reviews in Food Science and Nutrition (IF 7.862, 27 documents), Journal of Advanced Research (IF 6.992, 2 documents), Food Chemistry (IF 6.306, 32 documents), Pharmacological Research (IF 5.5893, 5 documents), Molecular Nutrition and Food Research (IF 5.309, 5 documents), Food and Chemical Toxicology (IF 4.672, 28 documents).

5. As demonstrative example of the internationalization of the applicant's research career, the 152 articles have been accomplished in collaboration with a total of 114 world-wide recognized institutions. The relation between the articles, institutions and countries are listed next: Italy (31 articles in 18 institutions), Japan (16 in 6 institutions), Germany (15 in 2 institutions), Spain (11 articles in 9 institutions), Iran (10 in 6 institutions), USA (8 in 3 institutions), Malaysia (8 in 2 institutions), Turkey (8 in 4 institutions), France (7 in 4 institutions), Pakistan (7 in 1 institution), Poland (7 in 6 institutions), Bulgaria (6 in 2 institutions), Hong Kong (5 in 3 institutions), Romania (5 in 3 institutions), among many others.

6. Another highlight of my work is the fact that the applicant has been the editor of Handbook of Dietary Phytochemicals published by Springer-Nature (2020) and co-author of six chapters on two international books.

7. Finally the applicant has experiences on teaching the undergraduates and graduates for Food Nutrition (English course) and has supervised 6 PhD students and 9 master students since 2012.



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Turno de acceso general

Nombre: LLOMCH OBIOLS, POL
Referencia: RYC2020-029067-I
Área Temática: Ciencias agrarias y agroalimentarias
Correo Electrónico: pol.llomch@uab.cat

Título:

Phenotyping animal behaviour and physiology to improve sustainability of animal farming

Resumen de la Memoria:

After working as a veterinary practitioner, I started as a researcher investigating animal welfare in farm animals. I undertook a PhD thesis at the Animal Welfare Group of IRTA, funded by an FPI fellowship, investigating pig behaviour and stress physiology, to underly humane methods to stun pigs. The experimental work included behaviour analysis (aversion test), brain activity (electroencephalography; EEG) and physiology (eectrocardiography). During my PhD studies, I also conducted a 3-month stay in Wageningen University to investigate new methodologies for humane slaughter of farmed fish that was published in Aquaculture journal. During the PhD I also participated in numerous projects investigating animal behaviour and welfare in different species (i.e. cattle, lambs, poultry and rabbits), being pigs the most notorious species. This gave me proficiency skills on the assessment of animal performance (growth), animal emotions (cognitive bias tests), animal behaviour, physiological indicators of stress (cortisol), assessment of consciousness (using EEG), meat quality and welfare assessment (WQ protocols). As a result, I published 12 SCI papers during the PhD stage.

As Postdoc (2012) I moved to Warwick University to work on the identification of new phenotypical indicators of welfare with Professor Laura Green. I conducted a systematic literature review, which was published in The Veterinary Journal. Thanks to a Marie Curie IEF I moved to the Scotland s Rural College (SRUC), to study the links between animal behaviour and welfare with GHG emissions in cattle, pioneering a new line of research combining two key aspects of livestock sustainability; animal welfare and environmental impact, where I published 5 SCI papers.

After three years as a postdoc in the UK, I moved to UAB (Spain), to investigate early life strategies to improve animal welfare, supported by several postdoc fellowships (including Beatriu de Pinós, Marie Curie COFUND, and Juan de la Cierva). As a result, I have published ground-breaking results in 6 SCI papers evidencing that the neonatal environment of piglets has an impact in their stress coping abilities during weaning, and shockingly, throughout their lifespan. The funds obtained as a PI (over 600,000) and as a Co-PI (1,3 million) fuelled valuable experience managing both personnel and funds.

One of my current lines of research is on the potential of Precision Livestock Farming tools to phenotype animal behaviour and monitor animal welfare. I am the technical coordinator and a Work Package leader of the ClearFarm project, an H2020 action integrating 14 international partners with a budget of nearly 7 million . I also co-lead a project to develop a sensor using bioacoustics in dairy cattle.

Networking has also been a crucial part when developing as a scientist. I participated in the creation of a network gathering scientists working on animal welfare in Spain (Red CIBA). In addition, thanks to my previous position in prestigious European academic institutions, and the participation in international panels (EiP-AGRI, FORMAS, etc.) I have a strong network of scientists to collaborate. Apart from my duties as a research scientist I enjoy teaching and student supervision, which led to publication of 7 papers related to animal welfare in different species.

Resumen del Currículum Vitae:

I hold a degree in Veterinary Medicine (UAB, 2007), an MSc on Veterinary Science (UAB, 2008), an MSc on Organic Agriculture (Universitat de Barcelona, 2011) and a PhD in Veterinary Science (UAB, 2012)

SCIENTIFIC AND TECHNICAL CONTRIBUTIONS

I have authored 63 scientific publications, 42 of which are SCI, and 30 in Q1 journals. I have an Index H of 13 (Scopus) being the 7th most prolific scientist on Animal Welfare research in Spain. I co-authored 4 book chapters and presented in 40 conferences (35 international and 5 national), from which 25 where oral contributions, 6 of them upon invitation. I received two international awards: the Humane Slaughter Association award (2013) and the UFAW Young Animal Welfare Scientist of the Year award (2017). I am a de facto member of the European College of Animal Welfare since 2015.

MOBILITY AND INTERNATIONALIZATION

I finished my degree at the École National Vétérinaire de Toulouse (France). I moved then to IRTA to start a PhD on pig welfare, during which period I published 12 papers. As PhD student I visited the University of Wageningen for 3 months, which resulted in one Q1 publication. As a postdoc, in 2012 I moved to Warwick University where I published one Q1 paper. In 2013, I obtained a prestigious Marie Curie fellowship (IF) to move to the Scotland Rural College (Roslin Institute), where I spent more than 2 years (2013-2015). During that period, I published 5 papers and attended 8 international conferences. In November 2015 I moved to UAB, where I work as a senior researcher. In April 2017 I spent one month at the University of Helsinki as a visiting researcher.

From 2017 to 2018 I was a member of the Focus group on resilient and robust dairy cattle (EiP-AGRI). Since 2017 I am an Alternate member of the EU Platform on Animal Welfare. I participated as a member of the Evaluation Panel of the Swedish Research Scientific



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Turno de acceso general

Council (FORMAS) for 2019 and 2020 calls, and as an external reviewer for one Uruguayan and one French research calls. I recently joined the Editorial Board of Frontiers in Physiology (Physio-logging).

LEADERSHIP

I obtained 1.9 million as a leading scientist. I obtained a fellowship (FI-INIA) to conduct a PhD at IRTA. As a PhD student I participated in the preparation of a H2020 grant proposal (IMPRO) bringing more than 400,000 to IRTA. As a postdoc I gained a Marie Curie IEF (BEHENT). Following, I concatenated 3 fellowships to continue my career in Spain: Beatriu de Pinós, Marie Curie COFUND (Tecnispring), and Juan de la Cierva-Incoming. As a principal scientist I led an H2020 application (ClearFarm), resulting in a 7 million project (1.3 for UAB) that I work as Technical Coordinator and WP leader. I gained 2 innovation projects (2017 and 2020) funded by the Generalitat de Catalunya (with 30.000 each) and 1 research project (Llabor call, 20.000). During 2020 I participated as PI in 2 international and 2 national applications and led, together with 3 other Spanish researchers, the creation of the first Spanish scientific network on animal welfare research (Red CIBA).

I supervised 14 MSc students both from the Edinburgh University and UAB, and currently supervising 3 PhD students. I teach in 2 MSc programmes of the Edinburgh University, and in 2 more MSc courses run by UAB. I received the accreditation as Lector (2016) and Professor Agregat (2018) by the AQU.



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Turno de acceso general

Nombre: LOPEZ SANCHEZ, PATRICIA
Referencia: RYC2020-030485-I
Área Temática: Ciencias agrarias y agroalimentarias
Correo Electrónico: patricia2011.ls@gmail.com

Título:

Physicochemical properties, microstructure and rheology of plant cell walls and cell wall polysaccharides for sustainable and nutritious plant-based foods.

Resumen de la Memoria:

The applicant has 18 years of international experience in 3 different countries (The Netherlands, Australia, Sweden) including 8 years as corporate researcher at Unilever R&D. Her expertise is funded on several disciplines i.e food chemistry, food physics, food technology and material science. She obtained a MSc in Chemistry from The University of Santiago de Compostela (Spain) and a PhD in Food Science, funded by EU 6th framework, from Chalmers University of Technology (Sweden). She was granted 2 post-doctoral fellowships, one from the Australian Research Council, in the group of Prof. Mike Gidley at the University of Queensland, and a second one at The Swedish University of Agricultural Sciences. Since her doctorate degree the applicant has been involved in 5 years of post-doctoral stages and 4 years as independent researcher.

She has demonstrated her ability to act as independent research leader by securing public and private funding of a value of approximately 6.5 million (550.000 as Principal Investigator), including funding by the Bill and Melinda Gates Foundation. As competence leader at Research Institutes of Sweden (2017-2020) she established 2 research lines in Food Material Science. She has been appointed tribunal member of The Swedish Foundation for Strategic Research (SSF) and has been awarded the prestigious Future Research Leaders Grants from The Swedish Research Council FORMAS. The applicant is currently senior researcher at Chalmers University of Technology (Sweden), among other activities she is coordinator of 1 European project (JPI Metadis) and collaborates with Prof Jesus Simal Gandara at The University of Vigo (Spain) in 1 H2020 European project (UP4HEALTH), this is the group in which she would like to further develop her research career.

The applicants main research line focuses on plant-based foods and addresses the need to ensure food security and to produce more sustainable, healthy and functional foods. The underlying hypothesis is that cell walls and wall polysaccharides, which determine microstructure and physicochemical properties during manufacturing and under physiological conditions, are key to improve our exploitation of plants. The research line is summarised as:

- How to exploit plant cellular materials from vegetables, cereals, legumes and algae to modulate functional properties by using methodologies based on spectroscopy, microscopy and material science techniques.
- How the generated insights could be utilised to design personalised foods with specific organoleptic (texture, taste) and nutritional properties, and to reduce waste from agrifood industry.

The applicant highlights that she has successfully developed her research career at the interface between industry and academia, this is reflected in the direct transfer of her research (h index 18, 1026 citations, 40 peer-review articles and 6 book chapters) into 6 products in the market, and contribution to 6 patent applications. She has been 1st author of 14 articles (35%), last author of 4 (10 %) and corresponding author in 13 articles (33%). In addition, 37 of the 40 articles are located within the first quartile (Q1). She has worked in 43 international projects, including 17 as Project Manager/PI. The applicant has supervised 4 PhD thesis and 12 Master and Bachelor projects. She has managed personnel (up to 9 FTEs).

Resumen del Currículum Vitae:

The applicant has 18 years of international experience in 3 different countries (The Netherlands, Australia, Sweden) including 8 years as corporate researcher at Unilever R&D. Her expertise is funded on several disciplines i.e food chemistry, food physics, food technology and material science. She obtained a MSc in Chemistry from The University of Santiago de Compostela (Spain) and a PhD in Food Science, funded by EU 6th framework, from Chalmers University of Technology (Sweden). She was granted 2 post-doctoral fellowships, one from the Australian Research Council, in the group of Prof. Mike Gidley at the University of Queensland, and a second one at The Swedish University of Agricultural Sciences. Since her doctorate degree the applicant has been involved in 5 years of post-doctoral stages and 4 years as independent researcher.

She has demonstrated her ability to act as independent research leader by securing public and private funding of a value of approximately 6.5 million (550.000 as Principal Investigator), including funding by the Bill and Melinda Gates Foundation. As competence leader at Research Institutes of Sweden (2017-2020) she established 2 research lines in Food Material Science. She has been appointed tribunal



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Turno de acceso general

member of The Swedish Foundation for Strategic Research (SSF) and has been awarded the prestigious Future Research Leaders Grants from The Swedish Research Council FORMAS. The applicant is currently senior researcher at Chalmers University of Technology (Sweden), among other activities she is coordinator of 1 European project (JPI Metadis) and collaborates with Prof Jesus Simal Gandara at The University of Vigo (Spain) in 1 H2020 European project (UP4HEALTH), this is the group in which she would like to further develop her research career.

The applicants main research line focuses on plant-based foods and addresses the need to ensure food security and to produce more sustainable, healthy and functional foods. The underlying hypothesis is that cell walls and wall polysaccharides, which determine microstructure and physicochemical properties during manufacturing and under physiological conditions, are key to improve our exploitation of plants. The research line is summarised as:

- a) How to exploit plant cellular materials from vegetables, cereals, legumes and algae to modulate functional properties by using methodologies based on spectroscopy, microscopy and material science techniques.
- b) How the generated insights could be utilised to design personalised foods with specific organoleptic (texture, taste) and nutritional properties, and to reduce waste from agrifood industry.

The applicant highlights that she has successfully developed her research career at the interface between industry and academia, this is reflected in the direct transfer of her research (h index 18, 1026 citations, 40 peer-review articles and 6 book chapters) into 6 products in the market, and contribution to 6 patent applications. She has been 1st author of 14 articles (35%), last author of 4 (10 %) and corresponding author in 13 articles (33%). In addition, 37 of the 40 articles are located within the first quartile (Q1). She has worked in 43 international projects, including 17 as Project Manager/PI. The applicant has supervised 4 PhD thesis and 12 Master and Bachelor projects. She has managed personnel (up to 9 FTEs). She has contributed with presentations to 20 international conferences.



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Turno de acceso general

Nombre: VARGAS BELLO PEREZ, EINAR
Referencia: RYC2020-029390-I
Área Temática: Ciencias agrarias y agroalimentarias
Correo Electrónico: evargasb@sund.ku.dk

Título:

Smart Ruminant Nutrition: Improving Product Quality and Livestock Production

Resumen de la Memoria:

I am a Veterinarian with MSc and PhD in Ruminant Nutrition. I have worked as Assistant Professor in different universities from Chile and Denmark.

During my career, I have collaborated with researchers from 15 different countries, which is reflected, in 69 articles in SCI journals. I have published a book and co-authored 3 book chapters. I have been main supervisor for BSc, MSc and PhD thesis. According to SciVal Topic Prominence from Scopus, globally, from 2015 until 2020, I am researcher 14 of 500, due to my scientific prominence in the topic cluster of Conjugated Linoleic Acids; Milk Fat; Vaccenic Acid .

I have been recipient for 11 grants (5 as PI) funded by public institutions, levy funds and private companies. I have presented my results in a wide range of international conferences and I have been invited as keynote speaker in international conferences.

My research line is in the interface between ruminant nutrition and product quality with emphasis on lipids.

My expertise in lipid metabolism and physiology of plasma lipid transport and gene expression in different tissues in dairy cows has prepared me to explore new lines in emerging technologies (omics) as they apply to ruminant nutrition, physiology and metabolism.

In the mid-term, I want to keep studying a variety of data that includes nutrition, physiology, production, genes, metabolites, enzymes, and product quality components (fatty acids and caseins) in order to promote a systematic analysis of dairy and beef productions. This will provide knowledge that will be useful to achieve sustainability in ruminant farming systems and smart-nutrition agriculture.

In the long-term, I would like to lead a strong research group and collaborate with different disciplines beyond those from veterinary and animal sciences and agriculture and exchange ideas with other research institutions or universities via students or researchers.

Resumen del Currículum Vitae:

I am a Veterinarian from Universidad Nacional Autónoma de México (2000-2005). I did my MSc at McGill University in Canada (2005-2007) and my PhD at the University of Nottingham in the United Kingdom (2007-2011). I worked at Pontificia Universidad Católica de Chile as Assistant (2011-2016) and then as Associate Professor (2017) and moved to the University of Copenhagen as tenure track Assistant Professor since 2018.

During my career, in permanent positions as professor, I have maintained an excellent record of publications, and in the past years, I have continuously improved quality and metrics. It is important to note that for the past 10 years, I have been combining teaching and research as I directly got a position as Assistant Professor after I graduated from my PhD. I have regularly delivered lectures for graduate and undergraduate students on ruminant nutrition and physiology (first in Chile and now in Denmark).

I have been main thesis supervisor for PhD (1), MSc (10), BSc (10). I have published 69 JCR articles (54% as first author and 70% corresponding author), 1 book and co-authored 3 book chapters. I have been recipient for 11 grants (5 as Principal investigator) funded by public institutions (i.e., Fondo Nacional de Desarrollo Científico y Tecnológico, Chile), levy funds (i.e., Cattle Levy Fund, Denmark) and private companies (i.e., Danish Clear Water, Denmark). I have presented 68 conference contributions in a wide range of international conferences (at ADSA, EAAP, BSAS, EuroFedLipid, World Buiatrics) and I have been invited as keynote speaker in international conferences (one at EAAP, virtual 2020, and two at Congreso Internacional de Agroecosistemas Tropicales, Mexico).

My research line is in the interface between ruminant nutrition and product quality with emphasis on lipids. My research line is multidisciplinary as it combines different areas of animal science. My research framework is based on a from-farm-to-fork approach. The rationale of my research projects had the following pillars: animal production, food production and public health (as I aim at improving the lipid fraction of ruminant-derived products). I have collaborated with prominent research groups led by Prof. Juan J. Looor (h index of 52, USA), Prof. Philip C. Garnsworthy (h index of 32, UK) and Prof. Massimo Bionaz (h index of 30, USA). Those collaborations together with



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Turno de acceso general

other colleagues, has yielded to 59 publications over the past 5 years. My research network includes universities and research centers from USA, UK, Canada, Chile, Mexico, Argentina, Finland, Denmark, Spain, France, Italy, Portugal, Iran, Cameroon, and Bangladesh.

I am an Editorial Board Member for Livestock Science and Associate Editor for International Journal of Agriculture and Natural Resources, Milchwissenschaft - Milk Science International and Heliyon. I have been also guest editor for Animals and Frontiers in Veterinary Science. I am regular reviewer for Journal of Dairy Science, Animal, Animal Feed Science and Technology, Animals, Scientific Reports, and Animal Nutrition. I have been external reviewer for research projects from Research councils of United Kingdom (BBSRC), Chile (CONACYT, FIA, CORFO), Kuwait (Kuwait Foundation for the Advancement of Sciences) and Argentina (CONICET). I have been a Member and Evaluator of the Scientific Board for Fondo Nacional de Desarrollo Científico y Tecnológico, Chile. I am a native Spanish speaker, English (C1), French (B2) and Dani



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Turno de acceso general

Nombre: GONZALEZ FERNANDEZ, LAURO
Referencia: RYC2020-028915-I
Área Temática: Ciencias agrarias y agroalimentarias
Correo Electrónico: lgonfer@unex.es

Título:

Improvement of assisted reproductive techniques in domestic species: optimization of gamete preservation and in vitro fertilization

Resumen de la Memoria:

My research has been focused in the study of intracellular pathways in mammalian gametes (predominantly in equine, bovine and porcine), aiming to improve gamete preservation and in vitro fertilization outcomes.

My pre-doctoral research was funded by a grant from Junta de Extremadura, Spain (Ref. FIC05A020). During my PhD at the University of Extremadura (UEX) I described for the first time the presence of a wide range of protein tyrosine phosphatases in mammalian sperm and their role in sperm motility and capacitation. I also worked studying the lethal and sub-lethal changes induced by cryopreservation in equine sperm.

I then did my first postdoctoral stay under the supervision of Dr. Jane Morrell at the Swedish University of Agricultural Science (Uppsala, Sweden) studying how osmotic shock affects equine sperm. After this stay I was awarded with a postdoctoral grant by the Junta of Extremadura, Spain (Ref. PO10003) to work for two years (2011-2012) at Dr. Katrin Hinrichs laboratory at Texas A&M University (College Station, USA). I pursued my research there studying the intracellular pathways involved in equine sperm capacitation and hyperactivation. I described for the first time the regulation of the capacitation process by pH, calmodulin and by Focal Adhesion Kinases (FAK). From February of 2013 to February of 2017 I was granted by the Fundação para a Ciência e a Tecnologia (FCT, Portugal; Ref. SFRH/BPD/85532/2012) to work as a postdoctoral researcher at the University of Porto at Dr. Antonio Rocha's laboratory attempting to elucidate the reasons underneath the repeated failure of equine in vitro fertilization (IVF). I described for first time the presence of the calcium-sensing receptor (CaSR) in stallion sperm and its role on the regulation of sperm motility and protein tyrosine phosphorylation. Also, I demonstrated the presence of CaSR in bovine gametes and the key role of CaSR on sperm motility and embryo development. In parallel, other studies were conducted aiming to elucidate how the composition of the fertilization medium affects equine IVF outcome.

In 2017 I joined the Research Institute INBIO G+C at the University of Extremadura and I started my own research lines as PI of two projects. One project was funded by the Spanish Ministry of Economy, Industry and Competitiveness (Proyectos de I+D+i para jóvenes investigadores; AGL2015-73249-JIN); the purpose of this project was to mitigate the adverse effects associated to seasonal temperature increase in the production and quality of porcine seminal doses by adding recombinant Heat Shock Proteins. The second project is currently ongoing and was funded by the Junta de Extremadura, Spain (TA18008); the aim of this project is to avoid the use of antibiotics in boar seminal doses produced for artificial insemination, replacing the antibiotics by Short AntiMicrobial Peptides (sAMPs).

Resumen del Currículum Vitae:

I obtained my degree in Biochemistry in 2003 at the University of Extremadura. In 2005 I started my PhD studies at the University of Extremadura, working on the role of protein tyrosine phosphatases on sperm motility and capacitation in mammalian sperm. In December of 2009 I defended my PhD thesis being awarded with the highest mark (Sobresaliente Cum Laude) obtaining afterwards the extraordinary PhD prize by the University of Extremadura.

In 2010, I visited the Swedish University of Agricultural Science (Uppsala, Sweden) for 5 weeks under the supervision of Dr. Jane Morrell to study the effect of osmotic shock on stallion sperm. In 2011, I obtained a postdoctoral grant from the Junta de Extremadura (Spain; Ref. PO10003) to join Dr. Katrin Hinrichs laboratory at Texas A&M University (College Station, USA) for two years (2011-2012). I focused my research in the study of the conditions required to induce capacitation in stallion sperm and the intracellular pathways involved in the capacitation and hyperactivation processes. I described for the first time the regulation of the capacitation process by pH, calmodulin and by Focal Adhesion Kinases (FAK). In February of 2013 I was granted with a postdoctoral fellowship from the Portuguese Ministry of Education and Science (Fundação para a Ciência e a Tecnologia (FCT); Ref. SFRH/BPD/85532/2012) to work with Dr. Antonio Rocha at the University of Porto (Portugal) and I initiated my own research line in bovine and equine in vitro fertilization. I described for first time the presence of calcium-sensing receptor (CaSR) in stallion sperm and its role in the regulation of sperm motility and protein tyrosine phosphorylation. Also, I demonstrated the presence of CaSR in bovine gametes and the key role of CaSR on sperm motility and embryo development in the cow.

During my postdoctoral research stays abroad (2010-2016) I have published 16 indexed papers (6 as first author and 4 as last and corresponding author). In 2016, I was awarded with a Juan de la Cierva-Incorporación contract (Ref. IJCI-2015-23209) but I renounced to this grant by a project funded by the Spanish Ministry of Economy, Industry and Competitiveness (Proyectos de I+D+i para jóvenes investigadores; Project: AGL2015-73249-JIN).

In 2017, I moved to the University of Extremadura (Cáceres, Spain) to work as independent researcher as Principal Investigator of 2 projects (AGL2015-73249-JIN and TA18008) at the Research Institute INBIO G+C. I started my own research lines on boar sperm



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AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2020

Turno de acceso general

preservation and the intracellular signalling implicated in boar sperm capacitation. In this period (2017-2020), I have published 15 papers in JCR journals (3 as first author and 5 as last author, 5 of them as corresponding author) in collaboration with different national and international research groups. I have co-supervised 1 PhD student that obtained the maximum score awarded (sobresaliente Cum Laude with International mention), 4 students projects (TFG) and 1 Erasmus+Master student (TFM). I have been involved in competitive projects in different research groups in different countries; additionally, I have participated in teaching activities at the University of Porto (Portugal) and the University of Extremadura (Spain).

During my research career I have had three children (2013, 2015 and 2020), nevertheless, I have published 55 peer-reviewed papers, (53 of them indexed in the JCR). In the last Ramón y Cajal call I was in the reserve list.



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Turno de acceso general

Nombre: CLEMENTE MORENO, MARIA JOSE
Referencia: RYC2020-029602-I
Área Temática: Ciencias agrarias y agroalimentarias
Correo Electrónico: esojariam2@gmail.com

Título:

Antioxidant metabolism: a key issue to sustain productivity for the future agricultural stress scenarios

Resumen de la Memoria:

My expertise is plant ecophysiology and biochemistry, specially focused in the study of the antioxidant metabolism leading plant's performance under stress conditions. For this purpose, my research has been developed in model species, species from extreme environments (polar tundra) and crops (peach, grapevine, melon). My major goal is deeping on stress tolerance mechanisms to generate new biotechnological and industrial strategies that could allow to improve our crops and without reducing productivity.

I performed my PhD at CEBAS-CSIC, focus on biochemical and biotechnological strategies to induce resistance to Sharka in peach. After this period, I worked as postdoc at INRA-Bordeaux, studying grafting process in grapevine. Later, I achieved a Juan de la Cierva to work as postdoc researcher at Balearic Island University (UIB) where I raised my interest in the trade-off between photosynthetic capacity and stress tolerance. I developed an independent research line integrating my expertise in antioxidant/stress responses to the photosynthetic capacity. Currently, I'm working as researcher in a plant biotechnological company where I'm integrating my expertise focusing to improve stress tolerance in economically relevant crops in the south-east of Spain. Moreover, I'm Collaborator Researcher at UIB, continuing with my research lines, supervising students and trying to establish links between industrial interests and knowledge of plant physiology.

Among the most relevant achievements in my career I would highlight the following: (1) Awarded by several and prestigious competitive fellowships from national (Juan de la Cierva; Santander Universities) and international (AgreenSkills; Endeavour) calls; (2) contributions to the field of plant physiology and metabolism in high impact journals (TIPS, New Phytol, PCE, Plant J, J.Exp.Bot) and one patent; (3) establishment of an international network with more than 12 research groups from 6 different countries which are recognized experts on different plant science topics; (4) supervision of Master and Bachelor Thesis and teaching at four institutions; (5) development of an independent research line with an integrative and multidisciplinary perspective to sustain crop productivity under stress conditions.

Resumen del Currículum Vitae:

I performed my PhD research in the Plant Breeding department of CEBAS-CSIC, where I investigated the molecular antioxidant response to sharka virus (PPV) infection in order to design new biochemical and biotechnological strategies to induce resistance to this disease. I obtained my PhD in 2011 at the University of Murcia, publishing 4 SCI papers as first author, and a research patent. Moreover, I performed different national collaborations resulting in 9 SCI papers published (33% of first/second authorship). I participated in 5 national projects and 14 congresses.

In 2012, I was awarded a Marie Curie Fellowship as part of the UE-funded project International mobility program (AgreenSkills) to work as postdoc at INRA-Bordeaux. My interest was focused on the first grafting responses at the tissue level, including redox reactions induced by different grafting combinations. Here, I developed new expertise in genetic transformation and metabolomics. I published 5 SCI papers (2 as first author and 3 as second) 60% in Q1 of Plant Science. Also I supervised a bachelor thesis at Bordeaux University.

Later, I achieved a Juan de la Cierva contract to work as postdoc at Balearic Island University (UIB) where I expanded my expertise in plant physiology; raising my interest in the trade-off between photosynthetic capacity and stress tolerance. There I developed an independent research line integrating my expertise in antioxidant and plant stress responses to the photosynthetic capacity. Since then, I have published 19 articles (16 SCI), 2 book chapters and 1 international scientific report. I have participated in 2 national and 6 international projects (leading 3 of them), and 16 congresses. Also, I supervised two bachelor's thesis and I taught 147 hours of courses at UIB. Moreover, I was awarded with 2 international highly competitive fellowships to realize two international research projects. Moreover I'm Spanish Leader of an international exchange REDES project and international collaborator in a Chilean Antarctic project (CONICYT-INACH ART 1102). In addition, during 2017 I participated in two polar campaigns to explore the stress tolerance mechanisms of their native vascular species.

Currently, I'm working as researcher (Torres-Quevedo) in a plant biotechnological company (ABIOPEP S.L.) where I'm integrating my experience in plant physiology in two projects with the aim of improve crops (as melon, tomato or pepper) in a climate change scenario.

In summary, I have produced a total of 42 scientific publications. Among them are 35 SCI publications, 71% / 56% of them belong to Q1 / D1 of Plant Science, two book chapters and one international scientific report. In addition to being co-author a research patent. I'm first,



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AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2020

Turno de acceso general

last or corresponding author of 43% of my scientific records, being one of them a highly-cited article by WoS. I have presented 51 research works to national and international congress. I have participated in 16 research projects (8 nationals and 8 internationals), leading 3 of them, and I've supervised 3 Bachelor and 1 Master Thesis (two of them internationals). I have obtained 5 prestigious competitive fellowships and I have accumulated 33 months of international research experience (31 of them as post-doc). Moreover, I am referee of several SCI journals, referee of ANEP (Spanish National Evaluation and Foresight Agency) since 2014, and I have the University Professor Habilitation by ANECA.



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Turno de acceso general

Nombre: LOPEZ DE DISCASTILLO BERGAMO, ANA CAROLINA
Referencia: RYC2020-029874-I
Área Temática: Ciencias agrarias y agroalimentarias
Correo Electrónico: clopez.decastillo@gmail.com

Título:

Application of micro- and nanotechnologies for developing functional and improved polymeric materials

Resumen de la Memoria:

The development of improved and functional polymeric materials has been an area of increasing interest for the scientific community and the packaging industry. The modification and/or improvement of some polymeric properties with special attention in biodegradable and recycled polymers is a key factor to increase their applications. Achieving an appropriate incorporation of active substances to polymeric matrixes through different processes, and eventually encapsulation, and controlling their release are both key factors to have into account in the development of functional substances and materials. The candidate has specialized in the selection of different polymer processing methods, such as melting extrusion, emulsion, electrospinning and coating, depending on the chemical and physical properties of the active substances and their chemical affinity with the polymer substrate. The development of suitable polymeric matrices with functional and/or improved properties requires a control on the micro- and nano- scale structure as these subsequently control the properties and functionality of materials. Furthermore, the candidate has also developed an interesting background by developing novel functional nanoparticles, such as nano-reinforcements (cellulose nanocrystals), novel antimicrobial nanoparticles and encapsulated active compounds from natural extracts.

Thus, the MAIN RESEARCH LINE of the candidate can be defined as the Application of micro- and nano-technologies for the development of functional and improved polymeric materials .

Her scientific background covers these main aspects: i) the development of polymeric materials through different techniques; ii) reinforcement and functionalization of polymers; iii) the characterization of physical properties through structural (FTIR, SAXS and X-ray), morphological (SEM, TEM microscopy), thermal (TGA, DSC), mechanical, optical and barrier analysis; and iv) analytical tools for measuring active compound release (gas and high performance liquid chromatography), functionality (antimicrobial and antioxidant capacities), encapsulation efficiency and strategies to control the kinetic release of active compounds by changing composite structure and/or blend composition.

Resumen del Currículum Vitae:

Chemist by the University of Valencia (2005) and PhD in Food Science and Technology in the Polytechnic University of Valencia (2011). My PhD was carried out in the Institute of Agrochemistry and Food Technology (IATA-CSIC) and was focused on the development and characterization of active packaging based on hydrophilic polymers. During the predoctoral period, I got familiarized with different processing methods for developing polymeric materials, their corresponding physical and functional characterization and their interaction with food. During this period, I did two stays abroad: i) a six-months stay at Rutgers University (NJ, USA) in 2008; and ii) a four-months stay at CSIRO (Commonwealth Scientific and Industrial Research Organization) (Sidney, Australia) in 2009. Both stays were focused on studying mechanisms of incorporation of natural extractive compounds into polymers and studying their functionalities. After my PhD, I joined the Polymeric and Chemical Group of the Technological Research Center (CIT) from the University of Coruña for 18 months. The modification and functionalization of polymeric materials through grafting and chain extensors to control the release of active compounds were the center of research. In 2013, I moved to Chile with a postdoctoral fellowship from CEDENNA (Center for the Development of Nanoscience and Nanotechnology), and since 2015, I am an associate researcher at the University of Santiago de Chile (USACH). During this period in Chile, I have led seven projects as principal investigator, performed interdisciplinary collaborations and generated new collaborative lines with international groups, some of them I have had the possibility to perform short research stays. These facts have resulted in a new research line in my research group based on the application of micro- and nano-technological techniques and compounds for the development of functional and improved polymeric materials principally focused on packaging applications. This research is focused on different polymeric materials including biodegradable and recycled polymers, methods of polymer processing and the characterization of their structural, morphological, thermal, mechanical and functional properties. My research has embraced the performance of basic and applied oriented projects. The basic science projects have allowed the acquisition and learning of new techniques for developing new materials and active and reinforcing substances that have contributed to my scientific background. On the other hand, applied-oriented projects connected to the packaging industry have resulted on several patented prototypes and important skill as communication with other sectors and protection of intellectual property rights.

During this period at USACH, I have had also the chance of teaching several subjects for undergraduate students (Food Engineering, Food



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Turno de acceso general

Technologists, Chemical Engineering) and postgraduate students (Master & Doctorate degrees) and participating at several teaching and evaluation committees.



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AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2020

Turno de acceso general

Nombre: CONTRERAS GAMEZ, MARIA DEL MAR
Referencia: RYC2020-030546-I
Área Temática: Ciencias agrarias y agroalimentarias
Correo Electrónico: mar.contreras.gamez@gmail.com

Título:

Obtaining bioactive compounds from agri-food byproducts, a complementary step in biorefinery for a circular bioeconomy

Resumen de la Memoria:

My research career started at the Inst. Industrial Fermentations (IFI) (CSIC, Madrid) thanks to a CSIC I3P grant (2005-2008) and focused on the production of bioactive, mainly antihypertensive, peptides from milk proteins. It involved the characterization of proteins, enzymatic hydrolysis, purification, identification/quantification by mass spectrometry (MS), and bioactivity testing in vitro. Moreover, I applied technological processes, optimization tools, and sensory analysis to formulate new functional foods. These results were patented and transferred to the industry. Moreover, a short stay at the Inst. Food Research (UK) enabled me to evaluate the transformation and absorption of bioactive peptides through intestinal cell models. To continue these works, I was awarded by Danone Inst. (2009-2010) and contracted by a national partner company, giving my first steps as a postdoc at the Research Inst. Food Science (CIAL, UAM-CSIC). This period resulted in 24 publications (Q1, 13, including one from the stay; Q2, 6).

Later, I started a new research line at the Univ. Granada (UGR) within a Juan de la Cierva program (2012-2014): the optimization of nano-liquid chromatography-MS-based methodologies to evaluate the metabolism of phenolic compounds. Thanks to a postdoctoral grant within an Andalusia Excellence Project, I continued working at UGR (2015) in the extraction and characterization of bioactive phytochemicals from medicinal plants, plant foods, and agri-food byproducts. I was also research collaborator of the Functional Food Research and Development Centre (CIDAF) (Granada). In this period, I coordinated two regional projects as principal investigator (PI) and a contract with the industry, and supervised some international PhD and postdoc researchers during their stays. This resulted in 40 publications (Q1, 17; Q2, 14; two within an Erasmus Mundus-Al-Idrisi cooperation cell).

In 2015, I participated in a staff exchange activity in Jordan (EU Tempus Project), aimed to develop the Jordanian olive sector through building labs and training activities. Afterwards, I was involved in the development of ion mobility spectrometry-based approaches to classify olive oils according to their quality and to complement the sensory analysis method (Univ. of Cordoba, 2016-2017). All results were transferred to the industry (Sovena España), 10 publications (8 Q1) were obtained and a communication. I carried out a short stay at the Inst. Bioengineering of Catalonia (Severo Ochoa accreditation) and Univ. Barcelona to deepen my knowledge on chemometrics (1 Q1 publication). I was also granted by the International Olive Council, acquiring the title of expert in olive oil sensory analysis.

Currently, thanks to two projects (including a FEDER Andalucía 2014-2020 Project) (PI), I am leading a research line (Univ. Jaén, UJA, since 2018) aimed to obtain bioactive compounds from agri-food byproducts, their characterization and integration in biorefinery to be in line with the Circular Bioeconomy. This includes the optimization of extraction strategies using green technologies and chemometrics; results will be disseminated within the cost action Greenering. Main outcomes: 29 JCR publications (21 Q1, 6Q2), 6 book chapters, edition of a MDPI book and three special issues; most of them from international collaborations. Also, I am co-directing a Thesis at UJA.

Resumen del Currículum Vitae:

Predocctoral period: Inst. Industrial Fermentations (CSIC, Madrid).

Mobility and postdoc experience:

-Predocctoral: Inst. of Food Research (UK) (3 months).

-Postdoctoral: Univ. of Granada (UGR) (48 months), Univ. of Cordoba (UCO) (15 months), Inst. for Bioengineering of Catalonia (Severo Ochoa excellence) and Univ. Barcelona (2.5 months), Univ. Jordan (Jordan) (0.5 months), Univ. of Jaén (UJA) (since 2018).

-In a biotechnological company (3 months).

-Research collaborator of the foundation CIDAF (Granada) since 2012 and member of the scientific committee of the UJA Centre for Advanced Studies in Earth Sciences, Energy and Environment.

Participation in Projects:

-13 research projects (7 national and 6 regional); principal investigator (PI) of four of them (funded by UGR-CEI Biotic, UJA and FEDER Andalucía).

- An EU Tempus project, 3 EU cooperation projects/networks.

Contract and knowledge transference:

-8 contracts with national and international companies (PI of one of them), with successful transfer of the developed methodologies to the industry (Sovena España).

-Two international patents; one of them exploited to develop an antihypertensive supplement based on dairy peptides, which is on the market.

Publications:



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AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2020

Turno de acceso general

Total: 115, with H index 28.

In JCR journals: 91 publications (60 in Q1; 27 in Q2; 14 in open access); 1st, 2nd, last and/or corresponding author in more than 60%. Book chapters: 11, and editor of a MDPI book. Around 50% of these publications derive from international collaborations (Algeria, China, India, Iran, Mexico, Portugal, Saudi Arabia, Tunisia, UK, etc.). 11 publications with recognitions by their respective journals and 5 are top papers in the Essential Science Indicators.

Dissemination activities:

-Conferences: 51 contributions (42 international; an invited oral presentation).

-Dissemination seminars: 6, with 5 oral invited presentations (UCO, UGR, Univ. of Vigo).

Grants (all under competitive calls):

-Predoctoral grant from CSIC.

-Danone Inst. Research fellowship performed at CSIC (two years).

-Postdoctoral grants: Juan de la Cierva, Torres Quevedo, and Andalusia Government.

-International Olive Council to be trained in the prestigious Expert Course in Tasting Virgin Olive Oils.

Communication activities:

-Publications in Mercacei and FEGLININ, and radio interviews (Cadena Ser, Canal Sur radio).

Participation in international activities:

-Lead/guest editor of 9 issues in international open access journals (7 JCR, including the Q1 Foods and Biology).

-Editorial board member of Foods (MDPI), Challenges (MDPI), Curr. Chromatogr. (Bentham Sci.) and Eur. J. Bio. Med. Res.

-Organization of two international congresses.

-Scientific committee member of the electronic conference FOODS2020 (MDPI).

Evaluator activities:

Reviewer for 30 JCR journals, ABS 2019 conference, member of the court of two PhD Thesis and project evaluator for the Argentine Agencia Nacional de Promoción Científica y Tecnológica.

Teaching and supervision:

i) Teaching activities (> 400 h); ii) Educational seminars at Jordan Universities (3) and Universitat Rovira i Virgili (2); iii) Innovation in teaching: projects (2), publications (3) and conferences (2); iv) Participation in the training of technicians (5), PhD (11) and postdoctoral students (3) from 5 national and 8 international centers, which contributed to 16 JCR papers and 2 chapters, a Thesis and other is in progress.



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Turno de acceso general

Nombre: PEDRERO SALCEDO, FRANCISCO
Referencia: RYC2020-030356-I
Área Temática: Ciencias agrarias y agroalimentarias
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Título:

USE OF RECLAIMED WATER IN AGRICULTURE

Resumen de la Memoria:

The importance of water reuse has been already identified in the current European R&D Framework Program Green Deal (3 tematics related with water reuse), the National Plan of Treatment, Sanitation, Efficiency, Savings and Reuse (Plan DESEAR, Ministry for Ecological Transition) and on the Common Agricultural Policy through the development of a EU-specific and practical guidance on water reuse. In the Region of Murcia i'm pioneer on developing long-term studies on water reuse in agriculture, so during my reseach career, I have developed a multi and interdisciplinary approach with an integrated methodology to a new perpection of a conservative agriculture through the sustainable use of non-conventional water resources and management techniques with a multi stakeholder approach combining both basic and applied-research knowledge. In this sense, my research line, the use of reclaimed water (RW) in agriculture, has been developed into 3 sub-research lines: the first one is the agricultural effects of RW in agriculture, demostrating on the long-term studies on the effect of the combined use of RDI and saline RW strategies that by applying continuous and exhaustive monitoring can avoid the possible reduction of the agronomic properties of the soil and good water management practices. I demostrated from a holistic perspective that taking into account different factors (irrigation methods, soil quality and structure, water quality, type of crops, etc.) and sustainable agricultural techniques and strategies, not affect production in some crops and also improve fruit quality parameters. The second sub-research lines is advanced technologies applied to agriculture, where I have been working on the development of Decision Support Systems (DSS) tools related with the nutrient value of RW, the use of Geographic Information Systems (GIS) as a tool for planning and management a water reuse proyect, and remote sensing techniques to asses posible salinization problems related with the use of degraded waters. The last sub-research lines is socio-economic studies and life cycle analysis, demostrating that the use of RW in agriculture can provide positive externalities such as reducing pressures on surface water resources, local food production and job creation, with significant non-commercial benefits. This studies will help policy makers to implement water management measures to achieve the environmental objectives of the Water Framework Directive. My researcher profile allows reaching an integrated, interdisciplinary and holistic approach to facilitate the application of water reuse as part of an integrated water management strategy that can be significantly accelerated in the context of the circular economy. Throughout my research career, I have been able to build an outstanding network of international collaborators which allowed me to acquired skills on project leadership development, to be an effective lead manager and to coordinate innovative projects with groups and European Companies.

Resumen del Currículum Vitae:

Demonstrating outstanding initiative and perseverance in leading of a new line of research in the Irrigation Department at CEBAS-CSIC on Agronomical use of non-conventional water resources , I have completed my M.Sc. and Ph.D. degrees being awarded a special Prize PhD 2011/2012. Throughout my research career (including 2.8 years in EEUU, Portugal, Denmark and Italy) I have developed scientific and professional expertise in wastewater reuse research that has involved successful grant writing and have published the research in top scientific journals. During my career I have published 42 SCI articles, 22 papers in 1Q. My H factor is 16. My articles have been cited 886 times with 77.9 cites per year (WOS). In the application ResearchGate I have increased exponentially the indicator Total Research Interest from 2015 with 199,8 and 131 citations to 908,2 and 1178 citations in 2020. I have demonstrated leadership through acquisition of 3 research contracts as main coordinator collaborating with leading research centres and private enterprises as EMUASA and AZUD. My research program in wastewater reuse on open field (citrus) and under greenhouse (horticulture crops) has become internationally recognized as one of the leading research programs in the field, in this sense, I have acquired management and coordination responsibilities as Technical Director of the International Congress from IWA "IWARESA", Country coordinator on the ENI CBCMED project "PROSIM", Quality Manager on the PRIMA project PRECIMED, and recently Advisory Board on the PRIMA project "MAGO". In addition to research, I have extensive educational experience, I have been Lead Professor in 33 seminars, workshops and short courses all around the world, related with reclaimed water planning and management projects, collaborating with important institutions as Food and Agriculture Organization (FAO), Union for Mediterranean (UfM) or World Bank. Also i have participated as Professor at the Cadi Ayab University and University of Bari and actually i am Assistant Professor at Technical University of Cartagena. I worked as a postdoc at the University of Bari on the Dipartimento di Scienze Agro Ambientali e Territoriali (DiSAAT) where I participated on the patent A new decision-support tool for nutrient management in tree orchards irrigated with treated municipal wastewater . Currently i'm researcher on the Irrigation Department at CEBAS-CSIC (Murcia, Spain), where I won a project on the Regional Program "Saavedra Fajardo". I also work as Water Quality Consultant for FAO being Editor of the guide Water Quality in Agriculture: Risks and Risks Mitigations , an update version of the guide Water Quality in Agriculture (2898 cites). I am currently editing a Special Issue as



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Turno de acceso general

Guest Editor on the journal Sustainability entitle "Sustainable Wastewater Treatments and Reuse", I am Editor in Chief on the journal Irrigation and Drainage system engineering (ISSN 2168-9768), and Associate Editor on the IWA Publishing journal Water Supply (ISSN 1606-9749). I am Coordinator of the Mediterranean Youth for Water network (MedYWat) and member of different European committees related with water reuse as the Euro Mediterranean Institute of Water, University of Montpellier or the Spanish Ministry of Ecological Transition.



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Turno de acceso general

Nombre: ARECHAVALA LOPEZ, PABLO
Referencia: RYC2020-029629-I
Área Temática: Ciencias agrarias y agroalimentarias
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Título:

Ictiología

Resumen de la Memoria:

Graduated in Marine Biology at the University of Alicante (Spain) in 2006. I joined the Department of Marine Sciences and Applied Biology (UA) where further undertook post-graduate studies in Marine Sciences (2006- 2008) participating in national research projects about monitoring wild fish populations in marine protected areas and around aquaculture facilities. During 2009-2012, I did my PhD thesis (fellowship linked to an EU funded research project) assessing the ecological and socio-economic impacts of escaped fish from farms on coastal ecosystems and fisheries, and developing different methodologies to distinguish wild, escaped and farmed fish, useful tools for aquaculture and fisheries management. In parallel, I collaborated with Norwegian institutions (e.g. NINA, IMR, Nofima) since 2009, assessing the sustainability of salmon and cod farms within different international and national frameworks. I granted a fellowship (NILS-EEA grants) in 2013 to study the impacts of Norwegian salmon farming (e.g. sea lice infestations) on wild salmonid populations. Later, in 2016, I immersed into the welfare of fish in aquaculture, collaborating with diverse worldwide institutions. During 2017-2018, I granted a post-doc fellowship (Juan de la Cierva Incorporación; MINECO) to work at the Mediterranean Institute of Advanced Studies (IMEDEA CSIC/UIB) in Mallorca (Spain). There, I participated in diverse projects on fish and cephalopods experimentation and applied technology on welfare and behavioural ecology studies, supervising several under-graduate and post-graduate (MSc, PhD) students. In 2019 I became part of the Fish Ethology and Welfare Group at the Centro de Ciencias do Mar (CCMAR) in Faro (Portugal). Here my research line mostly focuses on improving the knowledge of fish welfare in aquaculture, assessing operational welfare indicators and the effects of environmental enrichment on farmed fish, developing technological tools to monitor fish behaviour and welfare, and rising welfare management plans at commercial and global scale.

To sum up, my background and main research line encompass the multidisciplinary science of fish (Ichthyology), mostly applied to studies on sustainable and responsible aquaculture, with some hints in conservation and coastal management. It particularly focuses on understanding the biological adaptations, phenotypic plasticity and ontogeny of wild and farmed fish under anthropogenic pressures through a multidisciplinary perspective (ecology, behaviour, physiology, biochemistry, welfare) and within an international scope

Resumen del Currículum Vitae:

Marine Biologist and PhD in Marine Sciences. My professional trajectory during the last decade encompasses the multidisciplinary science of fish (i.e. Ichthyology), mostly applied to studies on sustainable and responsible aquaculture, with some hints in conservation and coastal management. It particularly focuses on understanding the biological adaptations, behavioral patterns, phenotypic plasticity and ontogeny of wild and farmed fish under anthropogenic pressures through a multidisciplinary perspective. With an international scope, I have acquired extensive experience in the area of aquaculture, as well as in the ecology, behavior, physiology, biochemistry and welfare of marine fish, especially on those species of farming and fisheries interest. Along with my notable scientific production, I present skills in fish experimentation and experience on coordinating and developing national and international projects, supervising students (undergraduated, MSc and PhD students) and disseminating scientific knowledge. I actively participate in specialized training and consultancy, bridging the gaps between science, society and industry, advancing on the science-based management of worldwide aquaculture activity. I am flexible, enthusiastic and eager to teach, learn and undertake new challenges, and able to coordinate and work as a team. My background supports an efficient and competitive way of working, with leadership skills, and performing international science of excellence.

H-index: 16 (WoS), 20 (SchG)

Scientific papers and reviews in peer-reviewed journals: 62

(5 published reviews, 52 published papers, 5 under review)

Scientific publications in Q1: 41; as first author: 31; as last author: 7.

Scientific books or monographs: 3; Book chapters: 4; Scientific-technical reports: 12.

Total citations (WoS): 649. Annual mean citations: 54.1. Mean citations per item: 13.8.

Supervision: PhD thesis: 2; Master thesis: 10; Degree thesis: 4.

<https://scholar.google.es/citations?user=YLUYf6cAAAAJ&hl=es&oi=ao>

https://www.researchgate.net/profile/Pablo_Arechavala-Lopez



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Turno de acceso general

Nombre: DOMINGUEZ NUÑEZ, MARIA TERESA
Referencia: RYC2020-029382-I
Área Temática: Ciencias agrarias y agroalimentarias
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Título:

Impacts of soil degradation and climate change on agricultural and agroforestry systems

Resumen de la Memoria:

I am a soil biogeochemist with a special interest in the study of soil-plant interactions in degraded soils. I aim to study the impact of some drivers of soil degradation on soil functioning, and to propose strategies for improving soil quality and restoring the provision of ecosystem services by soils. A relevant part of my research has focused on understanding the impacts of trace element contamination on soils, and on evaluating different approaches for the management of contaminated sites. During my PhD at IRNAS-CSIC (Sevilla) I conducted different studies to analyze the response of Mediterranean woody plant species to trace element contamination, to assess the risks of metal intake by grazing herbivores, and to propose strategies for the management of these degraded areas. These studies resulted in 9 scientific publications in top-ranked journals, two awards for thesis dissertation, and four technical reports that directly supported decision-making by regional land managers. As a postdoc scientist at the Centre for Ecology and Hydrology Bangor (UK) I was involved during two years (2010-2012) in an EU project to study the degradation of wet organic soils due to climate change drivers (air warming and summer drought) using a long-term, whole ecosystem experiment. During my stay at CEH I had a special interest in learning isotopic techniques applied to soil C biogeochemistry. For that purpose, I had a training period at Gent University (Belgium). This postdoctoral stay resulted in 5 manuscripts in top-ranked journals. In 2013 I returned to IRNAS-CSIC to work for a project dealing with the degradation of soils from cork oak forests at the Doñana National Park.

In 2014 I was awarded a Juan de la Cierva fellowship to work at IRNAS-CSIC. In this period I led a project funded by the Iberdrola Foundation about the potential of novel bioenergy crops for the management of Mediterranean degraded sites. I was also involved in several projects related to soil degradation and remediation of afforested and agricultural soils, such as the EU project RECARE, and in a small cooperation project in collaboration with Utah State University (USA), thanks to a grant from the OECD Co-operative Research Program (Agriculture Program).

In 2017 I joined the Department of Crystallography, Mineralogy and Agricultural Chemistry at the University of Sevilla (US), thanks to a competitive postdoctoral fellowship from the US. Currently, I am developing my own research line at this Department, which is mainly focused on the impact of climate change in Mediterranean in agricultural and agroforestry systems. I am the principal investigator of the DEGRAMED project (Degradation and vulnerability of Mediterranean soils to drought: role of the soil microbial community) funded by the Spanish National Science Program (Retos), which deals with the potential impact of drought in Mediterranean soils affected by different degradation factors: trace element contamination and loss of organic matter in agricultural soils. I am also the principal investigator in the LABORSEQ project (Vulnerability of agricultural systems to drought under different tillage regimes: effects on the soil microbial community), funded by the FEDER Operative Program of the Government of Andalucía. I have supervised one PhD student and currently I am supervising another PhD associated to the DEGRAMED project.

Resumen del Currículum Vitae:

Since the start of my career I have been involved in 22 research projects, 5 of them international, being the principal investigator in 6 of them. I have published 35 papers in top-ranked journals of the Science Citation Index, such as Soil Biology and Biochemistry, Agriculture, Ecosystems and Environment, or Methods in Ecology and Evolution. From these 35 SCI papers, 10 of them (28 %) have been published in journals included within the first decile of their categories (mainly Environmental Sciences and Soil Science), and 31 (88 %) are published in journals within the first quartile. I have had an important leading role in these publications, being the first author in 17 of these papers (48 %), and first or second author in 25 of them (71 %). In addition, I have published other 18 works as book chapters and science divulgation papers. My works have received 613 citations in Web of Science since 2009 (662 in Scopus), with an H-index of 15 (Scopus). I have presented oral and poster communications in 64 conferences, being an invited speaker in 2 national meetings. The relevance of my research has been highlighted by the University of Sevilla and the Spanish Society for Terrestrial Ecology with respective awards for my PhD Thesis, and by the CSIC press office in several occasions, which has resulted in 12 notes about my research in regional and national media, and 1 note in an international divulgation publication. I am also first author in 4 technical reports of assistance to the regional Ministry of Environment on the management of contaminated areas.

My international activities include pre- and postdoctoral stays in Switzerland, UK, Belgium and USA, and the participation in international projects. In the UK I was involved in an EU project, and I got additional financial support from the UK-NERC and from the EU 7FP Program through 2 Transnational Access projects, and through a short-term scientific mission awarded by the SIBAE COST Action. I have been a team member in the 7FP project RECARE, and I led a project funded by the OECD Co-operative Research Program, in cooperation with Utah State University (USA). I have been a reviewer for a range of international scientific journals, and a project evaluator for the University



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Grants Committee of Hong Kong.

My leadership capacity is indicated by the obtainment of highly competitive fellowships (FPU, MEC-Postdoct, Juan de la Cierva, Contrato de Acceso al Sistema I+D) and grants to conduct research, as well as by the supervision of PhD students. I have been the principal investigator in 6 projects. Until 2017 I led two Transnational Access projects during my stay at the UK, a project funded by the Iberdrola Foundation (Young Researchers Grant Program), and the OECD cooperation project. Since I got my postdoc position at University of Sevilla I am leading the DEGRAMED project, funded by the National Science Program (CGL2017-85891-R). I am also the principal investigator of the LABORSEQ project, funded by the FEDER Operative Program of the Government of Andalucía. I have supervised one Doctoral Thesis, 4 master theses and 7 undergraduate students, and currently I supervise another PhD student. I have been a member of the organizing committees of one international conference and a national one. I was positively evaluated as Profesor Contratado Doctor by ANECA in 2018.