



AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2019

Turno de acceso general

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Título:

Molecular Mechanisms Regulating Plant Resistance And Susceptibility Against Phytopathogenic Bacteria

Resumen de la Memoria:

I studied Agronomist Engineer at the Polytechnic University of Valencia. I carried out my Proyecto Final de Carrera at Wageningen University (Netherlands). In UK, I enjoyed a research assistant contract and a competitive PhD Fellowship from The Sainsbury Laboratory (John Innes Centre) where I specialized on plant resistance and susceptibility to bacterial disease produced by *Pseudomonas*. I contributed to identify BAK1 and CERK1 as central regulators of bacterial immunity and discovered that the effector AvrPtoB targets the receptor CERK1 to promote virulence on plants. By 2010, I was awarded with the European FEBS and Juan de la Cierva fellowships to join Roberto Solano's group at CNB-CSIC (Madrid), a reference in hormone jasmonate (JA) signalling in plants. I found that the effector HopX1 directly targets JA-repressor JAZs to promote disease and that JAZ2 controls stomata dynamics during bacterial invasion. In 2014, I was awarded as an UNESCO-L'OREAL International Fellow for Women in Science for Europe&NorthAmerica. This scheme only awards 3 women/continent/year. With this program, I moved to the University of Warwick (UK) with Vardis Ntoukakis, an expert in chromatin remodelling mechanisms, where I led a Pump Priming Grant as IP. During this period, I opened my on-going projects into novel areas of research. Since 2015, I am established at the CNB-CSIC (Madrid) as IP with 2 awarded Spanish Grants For Young Investigators (JIN program) from MICINN, leading a novel research line focussed on Molecular Mechanisms Regulating Plant Resistance And Susceptibility Against Phytopathogenic Bacteria. The aim of my research is to gain knowledge into the molecular basis of hormonal plant immunity and infection by phytopathogenic *Pseudomonas*, towards the development of new solutions that could be applied into long-lasting strategies for crop protection against two of the most important disease caused by phytopathogenic *Pseudomonas*, the bacterial speck disease of tomato, caused by *P. syringae* pv. *tomato*, and the bacterial canker of kiwifruit, caused by *P. syringae* pv. *actinidiae*, by using biotechnology, genome editing, genetic breeding and searching for anti-infective potential novel chemicals. My research combines generation of fundamental knowledge in model plants with applied research lines on tomato and kiwifruit. My current interests are based on four research areas:

- (1) Chromatin Remodelling Enzymes During Hormonal Signalling in Plant Immunity.
- (2) Evolution and Conservation of Immune Plant Hormone Signalling Systems
- (3) Hijacking of Plant Defensive Processes by Bacterial Effectors and Phytotoxins.
- (4) Applied Crop Research: Inactivation of Bacterial Virulent Systems in Crops.

During this period, I have developed a map of suppression of immune responses by *P. syringae* effectors (Frontiers, 2018), established a novel model system for evoMPMI studies, which benefits from unprecedentedly low gene redundancy (Current Biology, 2019), and developed a bacterial speck resistant tomato (Plant Biotech Journal, 2019). I am inventor of a patent licenced to an international biotechnology company. My long-term objective is to generate fundamental and innovative discoveries in the field of plant-microbe interactions that could be applied into novel long-lasting strategies for crop protection against pests, while favour a more sustainable agriculture.

Resumen del Currículum Vitae:

The overall scientific impact of my work can be scored by the number of articles, high impact factor journals and the number of citations. I have published 27 articles a book chapter and a monographic (accepted). 20 are original articles published in high impact journals including PLOS Biology, Current Biology, New Phytologist and Science. 25 articles are published in journals in the first quartile (Q1, 90%). I am co- or corresponding author in articles published in PLOS Biology (2014), Frontiers Plant Science (2018), Current Biology (2019), a review in Plants (2016), a monographic in Metode (2020, accepted) and a perspective published in Science (2016). My work has been cited 2.561 times with an average of 281 citations/year during last 5 years and score H index=19 (SCOPUS). Many of my papers are highly cited significantly above established journal IFs. I am inventor of an EU/PCT/USA patent licensed to an international biotech company, and also, a developer of a disease-resistant tomato that is currently under a major company's trials. I have been awarded as a prestigious 2014 UNESCO-L'OREAL International Fellow for Women in Science for Europe&NorthAmerica, and I am already leading my own research line at the CNB-CSIC (Madrid) as unique IP with 2 awarded Spanish Grants For Young Investigators (JIN program) from MICINN. I have presented my work as invited/plenary speaker, in national and international congresses and research centers (11). Among them, I would highlight my participation as concurrent speaker at the 2014 XVI International Molecular Plant Microbe Interactions Congress (Greece), which is the most important congress in my field, and as plenary speaker at 2015 International Plant Pathology Joint Meeting (Mexico). I have been also invited to give talks at research centers such as IBMCP (Valencia, 2012/2019) and CRAG (Barcelona, 2019) among others. I act as a regular referee for several journals, mostly related to plant-pathogen interactions, and I am currently Review Editor of Frontiers in of Plant



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Microbe Interactions and Plant Genetics and Genomics. Also, I am very active in terms of scientific spreading, being present in the last years in an array of different scientific spreading events. Thus, I have reached the recognition of the quality of my work by the scientific community, and I am well familiar with the scientific process of generating significant scientific results and communicating them. I have established a wide network of national and international research collaborations with leading groups in plant-microbe interactions that are currently ongoing. During my career, I have supervised and directed Master and PhD students. Importantly, I have developed my scientific career in national and international leading scientific groups, obtaining most of my own funding from national and international competitive research agencies. In summary, I have reached a solid understanding of plant-microbe interactions. The excellent training and the amount of independence and scientific freedom I already enjoy in my career have made me confident of my abilities to create/manage innovative projects towards the development of novel strategies for crop protection that will improve durable resistance of plants against pests.



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Título:

Bioactive Lipids in Foods

Resumen de la Memoria:

My main area of expertise is in the field of lipid chemistry and food technology. I earned two BSc. in Chemistry at Universidad Complutense de Madrid (Madrid, Spain) and in Forensic and Analytical Chemistry at Strathclyde University, where I did my final thesis at the Pure and Applied Chemistry Department (Glasgow, Scotland, UK). Then, I started my PhD at the Instituto del Frío (current ICTAN, CSIC) focused on the improvement of the lipid profile of ewes milk and derived dairy products through dietary modifications. In addition, during my PhD, I did a 5-month stage at the Food Research Centre of Agriculture and Agri-Food Canada (Guelph, ON, Canada) where I gained additional experience in lipid analysis.

I have also investigated the alterations of the sensory and nutritional qualities of omega-3 enriched food products by using stable isotope tracer techniques during my 2-year postdoctoral stay at Cornell University (Ithaca, NY, US). Once finished, I got a contract at CIAL (Madrid, Spain) where I focused on the development of novel methods for lipid analysis by ionic liquid capillary gas chromatography. In my second postdoctoral experience abroad (1-year) at the European Commission's Joint Research Centre (JRC, Ispra, Italy), I developed new methods for the analysis of volatile compounds. Thus, concerning international stays, I have fulfilled 50 months in cutting-edge international research centres (14 pre-doctoral and 36 post-doctoral). Then, I returned to the Department of Bioactivity and Food Analysis at the Institute of Food Science Research (CIAL, CSIC-UAM) with a Juan de la Cierva Incorporación research contract (2016-2018) where I have started a new research line focused on improving the nutritional quality of meat from ruminants. My close collaboration with the Animal Production Department at the University of Córdoba resulted in a 4-month stay in 2018 and the co-direction of a defended PhD. Currently, I am working at the Institute of Food Science Research (CIAL, CSIC-UAM) where I am carrying out my own research lines, I am building and consolidating national and international collaborations and I am co-directing an international PhD that will be defended in the second semester of 2020 (Federal University of Juiz de Fora, Brazil).

My major research line entitled Bioactive Lipids in Foods includes (1) Enhancement of ruminant-derived foods composition (milk, meat and dairy products) with bioactive lipids, (2) Lipid oxidation mechanisms and their implications in food quality, (3) Trans-fat metabolism and its isomer-dependent effects, and (4) Lipid profiling and characterization of novel compounds using advanced analytical techniques.

Resumen del Currículum Vitae:

SCIENTIFIC AND TECHNICAL CONTRIBUTIONS

- 54 SCI publications: 26 included in the first decile (48% D1), 39 included in the first quartile (72% Q1). First, second or last author in more than 85% of the publications.
- 2 technical reports (one for the European Commission), 5 book chapters, 8 scientific proceedings and 5 dissemination articles.
- 2 SCI publications recognized with the Hippocrates International Award (2009 and 2014).
- 6 SCI articles with great impact on the media.
- 31 congress contributions: 20 international, 8 oral communications, 3 invited lectures, 1 keynote speaker.
- Co-inventor of an international patent transferred to the industry. Functional cheeses manufactured following the patent are currently on the market and have been recognized by the Spanish Heart Foundation.
- Recipient of 4 scientific international awards: 2 for outstanding scientific articles, 1 best poster and 1 recognizing her scientific career.

MOBILITY AND INTERNATIONALIZATION

- 50 months in cutting-edge international research centres: 14 predoctoral and 36 postdoctoral.
- Postdoctoral mobility: 2-years at Cornell University (USA), 1-year at the European Commission's Joint Research Centre (Italy), 4-month at University of Córdoba and 3.5 years at CIAL (Spain).
- Participation in 11 international research projects: 3 funded by the EU and 8 from non-European countries (2 USA, 2 Brazil, 2 Chile, 1 Canada, 1 Argentina).
- 13 SCI publications with international collaborators: 1 during the PhD and 12 during the post-doctoral period.
- 20 international congress contributions: 5 oral communications and 2 invited.
- POP impact: the research line I started at Cornell University (USA) is currently ongoing in the Food Science Department while the methodology I developed at the JRC (Italy) resulted in a EU Technical Report that is implemented at ERLAP (EU Reference Laboratory).
- Since my reincorporation with the Juan de la Cierva-Incorporación contract (2016) I have established multiple international



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collaborations: Prof. Schopfer (USA), Prof. Leal de Oliveira (Brazil), Prof. Camiña (Argentina), Prof. Vargas (Denmark) and Prof. Caligiani (Italy).

- Currently co-directing an international PhD to be defended in 2020 at the Federal University of Juiz de Fora, Brazil.

LEADERSHIP

- PI of the project carried out at Cornell University (USA) and 2 innovation contracts. Total budget: 75000 .

- Supervisor of 2 PhD (1 defended and another to be defended in 2020) and 1/2 students per academic year.

- Honorary collaborator at the University of Córdoba and regular lecturer in the CSIC postgraduate and specialization course (Dairy Science and Technology).

- Member of the CIAL Fórum organizing committee.

- Member of the Editorial Board of the Journal of Dairy Research and regular reviewer of 22 SCI Journals.

- Guest reviewer of the Elsevier Book Milk and Dairy Foods: Their Functionality in Human Health and Disease .

- Regular participation in dissemination activities: seminars in high schools, Noche de los Investigadores and Día Internacional de la Mujer y la Niña en la Ciencia.

- Scientific trajectory recognized by 4 international awards and 3 congress invitations, including the DGF opening plenary lecture.

- Recognized as an independent and promising scientists with the 2017 Kaufmann Prize, being the first time to recognize a Spanish researcher since it started in 1973.



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Título:

Emergent contaminants: a new and global threat to fish health

Resumen de la Memoria:

My research focuses on assessing the effects of stressors relevant to aquaculture practices on edible species, using new models and genomic tools, with special emphasis on neuroendocrine-immune interactions. After 3 years of postdoctoral research, I achieved a Juan de la Cierva position at Universitat Autònoma de Barcelona and joined 2 projects with focus on aquacultured fish 1) addressing the effects of immunostimulation and 2) developing biomarkers for salmon smoltification. I was also involved in studies evaluating the mechanisms related to the fish immune response to pathogens responsible for disease outbreaks in aquaculture. In 2016, I started a new position at the Interdisciplinary Centre of Marine and Environmental Research, Portugal aiming at studying emerging contaminants-EC effects in edible marine species. I have also developed work in fish dealing with 1) the role of anaesthesia on the stress mitigation; 2) immunostimulation; 3) stress-immune related outcomes triggered by stress. In the last years, I have directed my focus to nanoplastics-NP due to their global distribution, the prediction of their increasing levels in the environment and their potential hazardous effects to biota. Thanks to the interdisciplinary aspects of my research line, I have done several research stays, highlighting the most recent, in Lund University-Sweden, to deepen my knowledge on NP. My outreach activities comprise 56 SCI articles, 2 book chapters and more than 65 presentations in international conferences. I have participated in 16 projects (IP in 1, Co-IP in 3) and have been involved in the organization of 2 International Conferences. I am also involved in editing and reviewing, ie, acting as Associate Editor for the journal *Frontiers in Marine Science*. My internationalization is supported by the 76% of postdoctoral publications with foreign colleagues and by the 82 coauthors of my publications. My current research scheme focuses on the study of EC effects, in particular NP, in marine species, using an integrated and multidisciplinary approach. In the near future, I aim to get insights into the modes of action and health risks of NP for fish and mussels, assess their potential transfer through the food chain and establish a set of indicators to be used in monitoring programs. My research will provide key data to be used by the aquaculture industry in terms of fish health, which is especially relevant since aquaculture is a strategic sector to feed the ever-increasing human population. I have particularly sought out collaborations that enabled me to acquire new techniques and knowledge, seeking to participate in projects where I could face relevant scientific challenges, reinforcing my skills, independence and funding. My leadership ability is supported by the n. of students under my supervision, the publications where I am key author and my wide network of collaborations. In addition, my experience in different institutions has given me a good combination of expertise, technical and social skills that enable me to explore complex multidisciplinary problems concerning the impact of stressors on fish health. In the next years, I expect to have 1) more advanced expertise 2) a wider international network 3) publications in top-ranked journals 4) research projects and funding 5) attraction for new students and 6) active dissemination of my research.

Resumen del Currículum Vitae:

Scientific Contributions. N° of indexed publications: 58 (h-index: 19; Citations: 949). Q1: 38 articles (60% of the total, key author in 60%); Q2: 11 articles; Q3-Q4: 7 articles. Book Chapters (international with editor invitation): 2. GEO publications: 2; Divulagation: 8. Proceedings: 8; Congresses: 67 presentations. Oral communications: 11, 4 invited. Technology transfer: Transfer of results and protocols from the university to industry (ACD Pharmaceuticals, Norway and Lucta, Spain). Internationalisation. Postdoctoral stays abroad Spain: Ecotoxicology Group, Aveiro University, Portugal (12 months, 2010-2011), Functional Diversity Group, Aveiro University, Portugal (4 months, 2015), Coastal and Marine Environmental Toxicology (CIIMAR), Portugal (28 months, 2016-2018), Aveiro University (3 months, 2018), Lund University, Sweden (3 months, 2018). Network: Norway, Sweden, UK, USA, China, Chile, Panama, Mexico, Spain and Portugal. 76% of my SCI papers are published with foreigner colleagues. Collaborations in academy, laboratories and private companies in: Spain, Portugal, Norway, Sweden, France, Belgium, Austria, Chile, Panama, China, Thailand, UK and USA. Participations in projects: I have participated or I participate as PI, Co-PI, task leader or member in 16 national and international projects. At this moment I am researcher in the ERC Synergy Grant IMBALANCE-P, (SyG-2013-610028) and in PerformFish (EU-Horizon 2020). I was also Co-PI in 1 international project supported by the Fundação para a Ciência e Tecnologia, Portugal and PI in 1 international project supported by the Government of Panama. I am also Co-PI in 2 international projects supported by the Government of Panama and task leader in the current Plan Nacional de Investigación, Detecstress 2 (Spain). Previously, I was a team member in 1 European Project supported by the European Union. Experience in Organizing I+D Activities: Member of the scientific committee of two international congresses. Other achievements. Activity as evaluator and reviewer of R&D projects: Expert evaluator of the Spanish State Research Agency and of the Agencia Nacional de Promoción Científica y Tecnológica, Argentina. Accreditations: Accreditation of Professor Agregat by the AQU Accreditation agency. Activity as tribunal for Master and PhD dissertations: 11 times. Teaching Experience: Official and regular lectures in the interuniversity Master of Aquaculture (UAB, Spain). LEADERSHIP SKILLS. Supervision of postgraduation students: 1 postdoctoral fellow. 1 PhD student and 3 Ms Students completed. Currently supervising 1 PhD. PI in scientific publications: key author in 60% of my scientific publications. Grants:



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Erasmus. PhD fellowship from FCT, Portugal. Postdoctoral fellowship (3 years) from FCT. 3 years Juan de la Cierva fellowship (Spain); 3 years postdoctoral grant FCT. Ability to attract Funds: I get financial support from the projects I am involved, an agreement with a private company and 2 laboratories. Invited speaker: 4 times in international conferences. Editorial activity: Associate Editor of the journal *Frontiers in Marine Science*. Prizes: Lindsay Laird award for the best poster in innovation aquaculture.



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Título:

Dietary and lifestyle factors, plasma metabolomics and risk of cardiometabolic diseases

Resumen de la Memoria:

Internationalization: In 2015, the candidate Dr. Guasch-Ferré started her postdoctoral training at Harvard TH Chan School of Public Health under the supervision of Dr. Frank Hu, chair of the department of Nutrition. In 2017, she was promoted to Research Associate and in 2018 to Research Scientist, a position that she currently holds. She also holds a position of Instructor of Medicine at Harvard Medical School. She has been conducting her postdoctoral research at Harvard for almost 5 years.

Research Interests: Dr. Guasch-Ferré research interests include investigating the role of Mediterranean diet and other dietary factors on type 2 diabetes (T2D) and Cardiovascular Disease (CVD). Her postdoctoral research has focused on evaluating high dimensional -omics data in relation to dietary and lifestyle factors, diabetes, and CVD. She has obtained training in the analyses of large-scale prospective cohort studies and participated in collaborative international projects with a multidisciplinary group of researchers. Specifically, she is devoting substantial efforts to international, multi-institutional collaborative grants funded by the National Institute of Health (NIH) in the context of the PREDIMED trial and the Harvard Cohorts (The Nurses Health Study I and II and the Health Professionals Follow-up Study) with researchers from different institutions and backgrounds at Harvard, the Broad Institute and Spain. Her primary career interest is to lead an innovative, academic translational research program dedicated to advance the prevention of T2D and CVD by integrating novel -omics approaches into epidemiological studies. The main research lines carried out by the applicant include: 1) Mediterranean Diet and risk of chronic diseases in Mediterranean populations; 2) Dietary factors and risk of chronic diseases in the American population; 3) Meta-analysis: setting the base of dietary guidelines; and 4) Metabolomics to understand the associations between lifestyle factors and the risk of chronic diseases. Her multidisciplinary background and her skills will be crucial when applying for international projects and will position her well for her path towards independence in the near future. Her PhD training with well-known epidemiologists in Spain and her 5 years of postdoctoral training in the outstanding environment of Harvard University, make the applicant an excellent candidate to lead the future generation of Nutrition experts in Spain.

Future goals: Her goals are to continue expanding her research in approaches that integrate emerging multi-omics data with phenotypic data for the prevention of complex multifactorial diseases leveraging the extensive network that she has forged while at Harvard and Boston. The thriving research environment in which she has been trained as well as the forged international collaborations, will foster her pathway to independence. As shown in her CV, she already has a proven record of accomplishment and leadership skills in obtaining independent funding applying to competitive calls and maintaining a high degree of research productivity, with 70 publications in indexed journals. Her goal is to lead an independent research team in the field of nutritional systems epidemiology that integrates -omics technologies into large cohort studies and randomized dietary intervention trials.

Resumen del Currículum Vitae:

Education and current position: Dr. Guasch-Ferré, graduated with a Bachelor's Degree in Nutrition and Dietetics in 2009 and a Masters in Nutrition and Metabolism in 2011 from the Rovira i Virgili and Barcelona University. In 2011, she started her PhD in Nutrition and Metabolism in the same university. As part of her PhD, she carried out a research stage for six months at Harvard School of Public Health. She completed her PhD in 2014 with summa cum laude honors. In 2015, she was awarded with the prestigious Beatriu de Pinós fellowship and started her postdoctoral training at Harvard University under the supervision of Dr. Hu, chair of the department of Nutrition. In 2017, she was promoted to Research Associate and in 2018 to Research Scientist, a position that she currently holds. She also holds a position of Instructor of Medicine at Harvard Medical School. She has been conducting her postdoctoral research at Harvard for almost 5 years.

Research and leadership: The research activities of the applicant have resulted in a total of 70 peer-reviewed articles (92% of them published in top-ranked journals from the Q1, and 65% (45 publications) in the first decile (most them published in top-ranked journals from the first quartile of the scientific areas of Nutrition and Dietetics, Food Science, Medicine, General & Internal, and Endocrinology and Metabolism, among others, in SCI journals).). Her publications have been published in prestigious journals of high impact factor including: The British Medical Journal, Circulation, The Journal of The American College of Cardiology, The American Journal of Nutrition, and Diabetes Care, etc. Her h-Index is 24 and her work has been cited 1,862 times. She is the first author in 27 papers, second author in 10, senior author in 1 and the corresponding author in 5 articles. Additionally, 3 articles are under revision and 4 more are forthcoming. She has co-authored 1 book chapter, and presented 18 communications in national/international conferences. She has participated in 11



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research projects (2 of them funded through the National Institute of Health (NIH)), being the PI in four of them. She is currently the PI of a project entitled: 'Plasma metabolomics and type 2 diabetes in the context of dietary interventions' funded by the American Heart Association (success rate: 8%). She has been successful in obtaining international funding for her research through competitive calls and collaborating in several multidisciplinary international projects. She is also investigator in R01 grants from the NIH. She has acted as a reviewer for 15 SCI journals including top-ranked journals and participated in the Organization Committee of the Omics: Advances, Applications and Translation in Nutrition at Harvard University, Boston, U.S (2017 and 2019).

Teaching: She has been actively involved in teaching activities both in Spain and the United States, including lecturing in the Rovira i Virgili, Tufts and Harvard Universities (Boston, U.S.) in Nutrition, Dietetics, Food Science and Epidemiology courses since 2011. She has supervised several master theses and the scientific work of several Ph.D. students and postdoctoral fellows at the Harvard (10 students/postdocs in total). She is currently the co-director of a doctoral thesis.



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Título:

2019_memoria_lineas_invest_investigadores_ryc_AEI_Kefauver

Resumen de la Memoria:

INTERESTS AND ACTIVE LINES OF RESEARCH. My interests and active lines of research include plant ecophysiology and climate change for biotic and abiotic plant stress applied to agricultural and natural environments with proximal, UAV, airborne and satellite remote sensing using hyperspatial, multispectral, hyperspectral, and thermal sensors, as well integrated GIS spatial analyses, for multi-scale scientific research on these topics. This is a reflection of research and educational activities including (i) airborne imaging spectroscopy at the University of California, Davis Center for Spatial Technologies and Remote Sensing (CSTARS) and Graduate Group in Ecology, (ii) airborne science research at the NASA/NSERC Student Airborne Research Program (SARP), (iii) with the Center for Research on Ecological Applications and Forestry (CREAF) in Spain on forest health, and (iv) currently as Professor Lector of Plant Physiology at the University of Barcelona, Spain on Plant Phenotyping. I am also currently Co-Chair of the IEEE Geoscience and Remote Sensing Society (GRSS) IDEA (Inspire, Develop, Empower, Advance, <http://www.grss-ieee.org/community/idea/>) committee.

HIGH THROUGHPUT PLANT PHENOTYPING FOR GLOBAL CHANGE SUSTAINABILITY. Extreme and abnormal weather events, as well as the more gradual meteorological changes associated with climate change, often coincide with not only increased abiotic risks (such as increases in temperature and decreases in precipitation), but also increased biotic risks due to environmental conditions that are often favorable to the rapid spread of pests and diseases. One of the major bottlenecks impeding sustainable development across the board in agriculture and forestry, including many staple food crops but also silviculture and forestry management. Current breeding methodologies, such as plant phenotyping, have been successful to a certain extent; however, the acceleration of breeding advances is urgently needed to confront the rapid rise in risk due to climate and social changes. Field phenotyping remains a major bottleneck for breeding advances, but remote sensing-based High-Throughput Phenotyping Platforms (HTPPs) have shown promise for rapidly developing both weather-resilient and disease-resistant crops. While improved phenotyping technology will help find short-term solutions, a deeper understanding of plant responses to a wide range of conditions will contribute to a long-term design of genotypes best suited in terms of production and other qualities to face the risks associated with specific geographic regions.

FUTURE VISION, NEW HORIZONS. In summary, I believe that my expertise in the tools of Earth Observation Science (EOS) presents wide-ranging, cross-disciplinary, and scalable applicability across sustainability themes of agricultural development, environmental monitoring and climate change research that can be of a great benefit to humanity through improving our understanding of the forces of change that surround us and how we may improve our capacities for adapting. Besides essential basic research in plant ecophysiology, my current research aims to give real-world direction through pursuing advances in the use of state-of-the-art while also advancing the efficacy of low-cost alternatives and open-source software for expanding its application and providing real improvements in developing countries.

Resumen del Currículum Vitae:

Dr. Shawn C. Kefauver is currently a Professor Lector as part of the Integrative Crop Ecophysiology Group, Plant Physiology Section, Faculty of Biology, University of Barcelona. Dr. Kefauver's interests and active lines of research include plant ecophysiology, climate change, and sustainable development applied to agricultural, natural, and hybrid environments, including proximal and optical remote sensing and integrated GIS spatial analyses for multi-scale scientific research on these topics. In his current position, Dr. Kefauver provides expertise related to satellite, UAV and proximal imaging analyses, UAV piloting, engineering, programming and sensor integration for continental scale remote sensing applications to high throughput plant phenotyping, including software and mobile app development, including so far six GPL 3.0 Copyrights (MaizeScanner, MosaicTool, CerealScanner, Fusion, CerealFusion, CerealsMobile-H.E.A.T., <http://sckefauver.com/software-development/>).

Dr. Kefauver has a proven track record in acquiring competitive funding in support of his scientific research, starting with over 160000 USD in fellowships during his M.S and PhD in Ecology at the University of California, Davis and national and international projects, both public and private, as Principal Investigator, including the International Maize and Wheat Improvement Center (CIMMYT, 150000 USD, 2014-2017), Syngenta Spain (100000 EUR, 2015-2018), Spanish Juan de la Cierva Integration Fellowship (60000 EUR, 2016-2017), CIMMYT Excellence in Breeding Program and MUSE Mobility Incoming Duo Award from the University of Montpellier (10000+10000 EUR, 2018-2019), the FAO (80000 USD, 2019), and as a Research Team Member of Spanish MINECO FENOMED, FENODURUM, FUTURPIN, and RESILPINE projects (>150000 EUR each).

As a Professor Lector, Kefauver has taught as Land Mentor to the NASA Student Airborne Research Program (2009-2011) and accredited university courses in Environmental Remote Sensing and Photogrammetry and GIS in the USA at the University of California, and Plant Physiology, Environmental Plant Physiology, Plant Breeding, and Precision Agriculture in English, Spanish and Catalan since moving to Spain and contributed to training programs in the United States, Spain, Peru, Turkey, Italy, Tunisia, Finland, and Chile. He has tutored one



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undergraduate senior thesis and co-directed one M.S. and one Ph.D. student and is currently tutoring one undergrad senior thesis, one M.S. thesis and co-directing three Ph.D. dissertations. Furthermore, Dr. Kefauver s scientific publication record demonstrates his dedication to international scientific excellence with an H-index of 13, i10 index of 15 and >800 citations in Google Scholar, with 47 ISI indexed documents cited >500 times with 79 different coauthors at SCOPUS, with and h-index of 12, of which >80% are first quartile, including 10 as first author, 16 as corresponding, and 13 as senior author with 1 book chapter, 4 published column articles, 11 ISI indexed peer-reviewed conference proceedings papers and over 75 total international conference contributions. Recent publications in diverse first quartile journals include Journal of Experimental Botany, Trends in Plant Science, Plant Methods, Remote Sensing, Sensors, Current Opinion in Plant Biology, Frontiers in Plant Science, Conservation Biology, and Remote Sensing of Environment.



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Título:

Advanced analytical methodologies for food quality and safety assessment

Resumen de la Memoria:

I have achieved a great deal of experience in Food Science during both, my PhD studies and during my different postdoctoral appointments. Throughout my career I have successfully addressed several aspects related to food quality, safety and its potential healthy effect, too. I have studied different food commodities such as raw vegetables, olives, olive oil, babyfood, beverages, shrimps or algae. In addition, my publications bear witness to my scientific experience in developing new chromatographic methods for HPLC-MS and GC-MS using instruments from different vendors, a wide variety of mass analyzers and ionization sources. Therefore, I have acquired a comprehensive background and sound knowledge of mass spectrometry and specialized software, which placed me in a privileged position to go one step further and investigate new ionization sources for mass spectrometry. I studied the application for the first time of a new ionization source (dielectric barrier discharge ionization (DBDI)) in Ambient mass spectrometry, when it was an emerging discipline, obtaining outstanding results and establishing a solid collaboration with PD Dr. Franzke (DBDI pioneer), which continues nowadays. My work has been recognized by two national research awards in the field of Analytical Chemistry.

Judging from my research work, I have shown to have sufficient skills and knowledge to face every analytical problem, from sample acquisition and preparation to data analysis and critical discussion of results. The research topics in which I have shown a high competence include:

1.- Food quality and safety. My background in this field is mainly devoted to the development of analytical methods based on the use of mass spectrometry, either as standalone technique (Ambient mass spectrometry) or combined with chromatographic methods. I have a solid experience in the use of new ionization sources for the analysis of compounds of interest in food science that do not ionize properly by the commercial electrospray ionization source. The analysis of both contaminants (mainly pesticide residues) and bioactive compounds in processed food (especially olive oil) and novel food (algae) are the main targets of my research. For instance, I have supervised a PhD thesis that studied the transfer rate of contaminants from olives to olive oil during industrial production, and I have supervised research works for the analysis of phenols in food aiming the search for biomarkers of origin or variety.

2.- Chemistry of natural products: Extraction, identification and fractionation of chemical compounds in food matrices. I have valuable experience in green extraction processes to obtain target compounds from food matrices (especially algae), using experimental designs and chemometric tools for their optimization. Lipids, sugars, pigments, flavonoids and phenolic compounds are identified and quantified by chromatographic and spectrometric techniques. Also, I have gained valuable experience in the functional analysis of the extracts, mainly regarding the antioxidant activity.

Among my career objectives, I pursue to become principal investigator of research projects, with an eye on increasing the degree of internationalization of my research through funding applications to European (H2020) calls. Processed food, but also novel food such as algae will be the main focus of my interest.

Resumen del Currículum Vitae:

I completed my PhD studies in the University of Jaén (UJA) supported by a FPI grant funded by the Andalusian Government. I defended my PhD thesis in 2010 (Doctor Europeus), obtaining the highest score (summa cum laude) and the PhD Extraordinary Award from the Faculty of Experimental Sciences. My research career is focused on the development of green analytical techniques for compounds of interest in Food Science. I carry out analytical applications for the miniaturized plasma devices, using them as ionization sources for mass spectrometric analysis of low-mass molecules. Also, I develop green extraction processes and analytical methods for food analysis and algae biorefinery. The quality of my work has been recognized by the Award for Young Researchers from both the Andalusian (2012) and the Spanish (2013) societies of Analytical Chemistry.

I have accumulated 5 years of experience in internationally recognized research groups, pioneers in their fields, which have been the building blocks of active networking activities. On one hand, I have spent 2 years in the Leibniz-Institut für Analytische Wissenschaften (ISAS, Dortmund, Germany), through different appointments that bear witness of a collaboration maintained during 10 years with a leading group in plasma science and ambient mass spectrometry. On the other hand, I have spent 3 years in the Institute of Food Science Research (CIAL, CSIC, Madrid) in the worldwide recognized research group that defined and developed the discipline Foodomics. In all cases I have obtained competitive funding from the German Academic Exchange Service and from the Spanish State Research Agency (Leibniz-DAAD).



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2011, Juan de la Cierva 2012, Europa Investigación 2017, DAAD-reinvitation 2018 and José Castillejo 2019 calls). Overall, these competitive fellowships/contracts are equivalent to more than 125,500 EUR. Moreover, I have developed a research project as principal investigator at the UJA through a competitive call for young researchers with external assessment panel (Acción 6, call 2017), with an overall funding of 83,376 EUR for two years (ending January 2020).

To date, I have contributed actively in 15 research projects, including 3 funded by the EU (1 in the steering committee). I have published 64 articles indexed in JCR, 47 of them in journals ranked Q1, among which 17 papers are ranked in the first decile of their scientific areas. I have privileged position of authorship in 72% of them (first/second author in 37 papers, last/corresponding author in 9). I have also authored 9 international book chapters, most of them indexed in WOS and Scopus databases. These publications have accumulated ca.1622 citations (h-index: 23 (Scopus)) with 215, 239 and 298 citations received in 2017, 2018 and 2019, respectively. I have also disseminated my research through 11 and 10 oral presentations in international and national conferences, respectively, plus more than 50 posters. I have been involved in 7 R&D contracts with SMEs and hold the co-ownership of a patent. I have participated as referee in the peer-review process of SCI journals and project calls (Argentina, France). I have also demonstrated leadership by supervising 2 PhD theses, 5 MSc theses and 2 international BSc theses. I obtained the accreditation as Profesor Titular de Universidad from ANECA in 2018 and the I3 certificate in 2019.



AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2019

Turno de acceso general

Nombre: FIALLO OLIVE, ELVIRA
Referencia: RYC2019-028486-I
Área Temática: Ciencias agrarias y agroalimentarias
Correo Electrónico: efiallo@eelm.csic.es

Título:

Emergent whitefly-transmitted viruses and associated DNA satellites infecting vegetable crops and reservoir wild plants: genetic diversity and pathogenesis

Resumen de la Memoria:

My research career has been devoted to reveal the molecular and biological diversity of plant viruses, with emphasis on those transmitted by whiteflies, with the aim of controlling the serious diseases that they transmit worldwide. I got my PhD degree at the University of Havana, Cuba, where I worked on the identification and characterization of new begomoviruses that affect solanaceous crops (tomato, pepper, tobacco) and reservoir weeds. In spite of the difficulties to initiate a scientific career in Cuba, combined with my teaching activities at the university, I was awarded with several international fellowships which allowed me to accomplish my doctorate thanks to research stays in Mexico and Spain. Also, being a PhD student, I was PI of a research grant from the International Foundation for Science (Sweden). After getting my PhD degree (2012), I moved to Spain where I took up a post-doctoral position at the Instituto de Hortofruticultura Subtropical y Mediterránea La Mayora (IHSM-UMA-CSIC), funded between 2016 and 2018 by a Juan de la Cierva-Incorporación contract. Part of my research at IHSM has been funded by an international scientific cooperation project with developing countries (Venezuela, Ecuador) of which I was PI. I am currently involved in two major research projects: i) the study of the molecular interactions between Tomato chlorosis virus, an emerging crinivirus (family Closteroviridae) affecting tomato crops worldwide, and the insect vector, the whitefly Bemisia tabaci and ii) the molecular, phylogenetic and biological characterization of a novel class of small non-coding DNA satellites associated to begomoviruses (deltasatellites). As a result of my scientific career, I have published 53 papers in SCI journals (27 of them as first author and 16 as corresponding author), 16 popular science articles and 3 book chapters. I supervised a PhD student already graduated and currently I supervise other two PhD students. Also, I am the Chair of the Geminiviridae and Tolecusatellitidae Study Group of the International Committee on Taxonomy of Viruses (ICTV), Editor of the journal Archives of Virology and Review Editor of Frontiers in Microbiology and Frontiers in Plant Science.

Resumen del Currículum Vitae:

Mi carrera investigadora ha estado dedicada a revelar la diversidad molecular y biológica de virus de plantas, así como a descifrar los mecanismos moleculares de las interacciones de algunos de estos virus con sus insectos vectores, con énfasis en aquellos transmitidos por mosca blanca, con el objetivo final de controlar las graves enfermedades que ocasionan en todo el mundo. He descrito 24 nuevas especies de virus en cultivos de importancia económica y en plantas silvestres de 7 países y establecido una nueva clase de ADN satélites asociados a los begomovirus, los deltasatélites.

Obtuve mi grado de doctora en la Universidad de La Habana, Cuba, donde trabajé en la caracterización de nuevas especies de begomovirus que afectan a cultivos solanáceos (tomate, pimiento, tabaco) y malas hierbas que constituyen reservorios para estos virus. A pesar de las dificultades de iniciar una carrera científica en Cuba, combinada con la actividad de profesora en la Universidad de la Habana, obtuve varias becas internacionales que me permitieron realizar mi doctorado gracias a estancias de investigación en México y España. Además, siendo estudiante de doctorado, fui Investigadora Principal de un proyecto financiado por la International Foundation for Science (Suecia). Después de alcanzar el grado de doctora (2012), he estado contratada como investigadora en el Instituto de Hortofruticultura Subtropical y Mediterránea La Mayora (IHSM), centro mixto del Consejo Superior de Investigaciones Científica (CSIC) y la Universidad de Málaga, incluyendo un contrato del programa Juan de la Cierva-Incorporación desde abril de 2016 hasta abril de 2018. En esta etapa postdoctoral he realizado estancias en Brasil y China. Parte de mi investigación ha estado financiada por un proyecto internacional de cooperación científica con países en desarrollo (Venezuela y Ecuador) del cual fui Investigadora Principal.

Actualmente, estoy involucrada en dos líneas de investigación principales: i) el estudio de las interacciones moleculares entre tomato chlorosis virus, un crinivirus (familia Closteroviridae) emergente que afecta al cultivo de tomate a nivel mundial, y su insecto vector, las moscas blancas del complejo de especies crípticas Bemisia tabaci y ii) la caracterización molecular, filogenética y biológica de los deltasatélites.

Como resultado de mi carrera científica, he publicado 53 artículos en revistas SCI (27 de ellos como primer autor, 16 como autor para la correspondencia, 27 en revistas Q1), 16 artículos de divulgación científica y tres capítulos de libro. Dos de los artículos que he publicado están incluidos en la lista Highly Cited Papers de Essential Science Indicators (Thomson Reuters). He participado en 14 proyectos de investigación, dos de ellos como Investigadora Principal. Además, he recibido 4 premios nacionales de la Academia de Ciencias de Cuba (2005, 2009, 2013 y 2018) y el Accésit del Premio Virólogo Joven de la Sociedad Española de Virología (2019).

Actualmente, soy la Jefa del Grupo de Estudio de las familias Geminiviridae y Tolecusatellitidae del Comité Internacional de Taxonomía Viral (ICTV), Editora de la revista Archives of Virology y Review Editor de Frontiers in Microbiology y Frontiers in Plant Science.



AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2019

Turno de acceso general

Nombre: FRANCISCO CANDEIRA, MARTA
Referencia: RYC2019-027834-I
Área Temática: Ciencias agrarias y agroalimentarias
Correo Electrónico: mfrancisco@mbg.csic.es

Título:

Genetics and biochemistry of plant secondary metabolites involved in plant defense

Resumen de la Memoria:

Plant secondary metabolism has an important role to play in plant growth and development, and is a source of phytochemicals involved in the protection (against stress, herbivory and diseases) of plants. During my PhD at Misión Biológica de Galicia (MBG-CSIC) (Spain) I carried out studies under field conditions using different Brassica crop genotypes at diverse environmental conditions and tackled the objectives from different points of view including phytochemical profile and content, crop production, processing and quality. These studies established the bases of how the genetics × environment interaction modulates the synthesis of these compounds. During my post-doctoral stage at University of California in Davis (USA), I continued working on plant secondary metabolism to understand the genetic regulation of the secondary metabolite pathways within the Brassicaceae family and how this is interconnected with plant growth and circadian rhythms under the project Network QTL mapping founded by the European Commission. These studies involved quantitative genetics and molecular biology techniques including RNA sequencing and plant transformation technologies. These studies have led to the identification of new connections between plant secondary metabolism and physiological processes of the plant such as growth, production of biomass, induction of defenses or circadian rhythms among others. During the last decade, there is increasing evidence that the circadian clock is a significant driver of plant phytochemicals. However, the diurnal rhythms of plant secondary metabolite levels have been less studied. In this sense, I started a new research line at the MBG-CSIC supported by the JIN project PLANTCLOCK which combines my experience on plant metabolomics and circadian clocks to study plant responses to biotic stress conditions. Our first results are starting to elucidate key plant metabolites regulated by the clock and involved in the defense against biotic threats to be used for future implementation of crop management strategies to reduce pest attack in field.

Resumen del Currículum Vitae:

My academic and research life has been spent at different institutions in Europe (Spain, United Kingdom) and the United States. In Spain, concretely in the University of A Coruña, I started my scientific career carrying out a Master of Sciences in Genetics (2004-2006). Then I obtained an I3P pre-doctoral fellowship for carrying out a doctoral thesis in the in the Group of Genetics, Breeding and Biochemistry of Brassicas at MBG-CSIC. I completed my pre-doctoral formations working in the CEBAS-CSIC and in the Institute of Food Research in Norwich (UK). After completing my PhD (University of Vigo, 2011) with highest honors and European mention, I was awarded with a Marie Curie Individual Outgoing Fellowship (FP7-PEOPLE-IOF) to join the Department of Plant Sciences at the University of California in Davis (2011-2013); and my project Network QTL mapping (PIOF-GA-2010-275286) was founded by the European Commission (223.669). The IOF implies a returning period to an European institution, thus I also enjoyed a covered return period at MGB-CSIC (2013-2014) where I set up a new line in synergy with the preexistent lines, bringing together complementary skills, knowledge, and resources in order to jointly address ambitious research questions. Thereafter I was awarded with a "Juan de la Cierva-incorporation" contract (JCI-2014-19653) and I got founding for my own being PI within the project JIN-RTI2018-094650-J-I00 (169.400). Transfer of knowledge to private sector also played an important role in my career including contracts with companies (total budget of 111.476). To date, my research work has generated 41 papers included in the Science Citation Index (SCI) (16 D1, 29 Q1). My research has a clear impact with 1015 citations in SCOPUS (January, 2020), enabling me to reach an h-index of 14. I have presented 34 contributions in international and national congresses. I have participated in one book and eight book chapters. I am the Editor of the Acta Horticulturae 2018. Moreover, I have engaged in teaching specialized courses in chromatography and plant molecular biology. I am usual reviewer for top journals of Plant Sciences and an expert Peer-Review for the scientific evaluation of Italian research of the Italian Ministry of Education, University and Research (MIUR) and for the Spanish Agency of Evaluation and Prospective (ANEP). Throughout my whole scientific career, I have shown independence in my research as well as strong leadership, team work, and coordinating skills, collaborating with a broad variety of researchers in different disciplines. During the last years I co-authored 14 SCI papers with international researchers from foreign institutions, including University of California (USA), University of Copenhagen (DK), Universidad Autónoma de Yucatán (MX), Wageningen University (NL), University of Neuchâtel (CH), University of Stockholm (SE), IFR (UK) and the INRA (FR) among others. Moreover, I have engaged in student mentoring, I have supervised two master theses, one final year project and tutored 14 students for the degrees in Biology and Biotechnology and hired international post-doctoral researchers. Over all, the published papers as well as featured projects in the framework of independent international collaborations, co-organizing one international Symposium and supervising international students gave me extensive experience in research management and a high level of independence to support my leadership capacity.



AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2019

Turno de acceso general

Nombre: HERNANDEZ CASTELLANO, LORENZO ENRIQUE

Referencia: RYC2019-027064-I

Área Temática: Ciencias agrarias y agroalimentarias

Correo Electrónico: lorenzo_enri@hotmail.com

Título:

Immune system development in newborn ruminants and ruminant mammary gland physiology

Resumen de la Memoria:

I hold a Veterinary degree, an University Expert in Immune Nutrition, a Master in Animal Health and Food Safety and a PhD obtained at the University of Las Palmas de Gran Canaria (ULPGC, Spain). During my PhD, I performed research stays in Portugal, Denmark and the United States of America and I received the best thesis award granted by the ULPGC (2014).

From 2014 to 2017, I worked as a postdoctoral researcher at the Veterinary Physiology department (University of Bern, Switzerland). During this time, I developed my own research lines focusing on the immune system development in newborn ruminants and on ruminant mammary gland physiology.

In 2018 and after a very competitive process, I got an assistant professor position at the Department of Animal Science (Aarhus University, Denmark), where I am currently working on my main research lines, especially on new management alternatives for improving colostrum quality and calf immune system development and health status. I am also supervising one PhD student (Ms. Bhagya Milani Samarasinghe). Her PhD thesis is in line with my own research lines and focus on feeding diverse seaweeds in milk-fed calves and their effects on the immune system development.

During my research career I have collaborated with researchers from 20 different countries, which have resulted in 55 articles in Science Citation Index (SCI) journals, 12 research projects, 11 articles in popular science journals, two Master students supervised, two veterinary doctorate students supervised and one PhD student (currently under my supervision).

My medium-term goals will be finding new therapeutic targets as well as alternative management strategies to reduce the incidence of relevant diseases in dairy ruminants (i.e. hypocalcemia, ketosis or rumen acidosis) and newborn ruminants. This will cause an important reduction in the use of antibiotics and other drugs in animal production, which will have a positive impact on animal welfare, performance and health as well as in the economic benefit for animal producers.

My long-term goals will be to continue my research career, and become a well-respected researcher in the field of ruminant physiology and immunology.

Resumen del Currículum Vitae:

I studied at the University of Las Palmas de Gran Canaria (ULPGC, Spain), where I obtained my Veterinary degree and my Master in Animal Health and Food Safety. After obtaining a PhD grant (FPU, Ministry of Education, Spain), I defended my PhD thesis with honours at the ULPGC (2013) under the European Doctorate basis (Doctor europeus). Additionally, I earned the best thesis award granted by the ULPGC. During my PhD, I performed research stays in Portugal (four months, 2011), Denmark (three months, 2012-2013) and USA (three months, 2012-2013). In 2018, I also obtained an University Expert in Immune Nutrition (Catholic University of Valencia, Spain).

From 2014 to 2017 (42 months), I worked as postdoctoral researcher at the University of Bern (Switzerland). In 2018, I was selected for an associate professor position at the Department of Animal Science (Aarhus University, Denmark) where I am currently working.

I have actively participated in 12 research projects (4 as PI) funded by public institutions, private foundations and private companies. I have participated in two European projects (one as PI) and I have obtained a 3-year starting grant/project from Aarhus University (Denmark) intended to boost the CV of potential candidates for an ERC (European Research Council) starting grant.

During my career, I have maintained an excellent record of publications, improving the quality and the metrics especially in the last years (H index=15, citations=574). This resulted in two book chapters (one as first and corresponding author), 55 articles in Science Citation Index (SCI) journals (29 of them published in Q1 journals and 16 of them in Q2 journals). Additionally, I have been either first, last and/or corresponding author in 24 out of 56 articles. In 2019, 12 out of 55 papers have been published or accepted for publication in 2020, therefore I expect that my metrics will be significantly improved in 2020. I have also published 11 articles in popular science journals.

I have supervised two veterinary doctorate students in Switzerland and two master students (Yasouj University (Iran) and University of Lisbon (Portugal)) and one PhD student (Aarhus University, Denmark).



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I have presented my results in a wide range of international and national conferences, where I have won the best poster/oral communication award in six occasions.

I have been member of the executive and organizing committee of an International Conference and member of the organizing committee in two other International Conferences. Additionally, I have been member of different European Cooperation in Science and Technology (COST) actions (Farm Animal Proteomics FA1002 and DairyCare FA1308) funded by the EU Framework Programme Horizon 2020.

I have been member of the Examining Board of two PhD thesis (Autonomous University of Barcelona, Spain; and Ross University, St. Kitts and Nevis) and a Master thesis (University of Lisbon, Portugal).

I am associate editor for two SCI journals (Tropical Animal Health and Production / Journal of Applied Animal Research) and referee for 14 SCI journals.

I speak Spanish (native speaker), English (C1), Italian (B1), French (B1), Danish (B1) and German (A2).

I have collaborated with teaching at the ULPGC (Spain), the University of Bern (Switzerland), Yasouj University (Iran), University of Lisbon (Portugal) and Aarhus University (Denmark)



AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2019

Turno de acceso general

Nombre: BELANCHE GRACIA, ALEJANDRO
Referencia: RYC2019-027764-I
Área Temática: Ciencias agrarias y agroalimentarias
Correo Electrónico: a.belanche@csic.es

Título:

Developing nutritional strategies to optimize rumen function, competitiveness and sustainability in ruminant production systems

Resumen de la Memoria:

Increasing productivity is a key target in ruminant sciences which requires better understanding of the complex rumen microbiome. My research career has been devoted to the optimization of rumen function through nutrition in order to improve efficiency and sustainability and to decrease the environmental impact of livestock agriculture. My PhD work (Zaragoza, 2008) focused on the development of new methods to quantify microbial protein synthesis in the rumen. The implementation of molecular techniques (DGGE, TRFLP and qPCR) learned during pre-doctoral stays in the United Kingdom represented my main PhD's achievements. Following my PhD I had 3 research contracts at Aberystwyth University (UK).

-REDNEX project (2008/12). This EU-FP7 project aimed to improve the efficiency of diet utilization by ruminants in order to reduce N excretion and subsequent environmental problems. My work in this project was focused on: 1) Use of spectroscopy for rapid feed evaluation; 2) Nutritional interventions to optimise feed utilization; 3) Biomarker discovery in milk and plasma; 4) Effect of rumen protozoa on rumen N metabolism and methane emissions. During this period I gained experience in the use of non-invasive techniques (metabolomics), measurements of GHG emissions, spectroscopy techniques to estimate feed nutritional value, or use of isotopes to study the rumen protein metabolism.

-WISE Network (2012/14) funded by the European Regional Development Funds. I was responsible for establishing collaborative R&D programs with Welsh enterprises to improve and adapt their products towards a green economy. Most products were additives or by-products with potential use in ruminant nutrition. I was in charge of developing in vitro gut simulation platforms, which along with sequencing technologies, allowed me to describe the mode of action of these nutritional interventions.

-Rumen System Biology (2014/16). This UK-funded project aimed to improve the sustainability of pasture-based production systems. I led a group of post-doctoral researchers studying plant-microbial interactions in the rumen. The acquisition of state-of-the-art knowledge in molecular techniques and bioinformatics tools was key to describe plant microbial colonization process and its implications.

Working for 8 consecutive years abroad made an invaluable impact in my scientific career. In 2016 I returned to Spain as a Research Fellow at EEZ-CSIC (Granada) to work on the iSAGE project. This H2020 project has widened my expertise in implementation of technological innovations into the ruminant production and assessment of their impact on productivity, carbon footprint and farm sustainability. This context has allowed me to engage with the institutions involved on the revitalization of the Spanish livestock sector.

-Currently my main research line is Developing nutritional strategies to optimize rumen function, competitiveness and sustainability in ruminant production systems. To achieve this objective I focused on: 1) Promotion of feed efficiency and circular bioeconomy, 2) Feed additives to decrease GHG emissions and as alternative to antibiotics, 3) Early life rumen microbial programming. I am fully involved in several national and international projects, participating in dissemination activities, R&D contracts and supervising PhD and masters students as an experienced and leading researcher.

Resumen del Currículum Vitae:

During my research career I have worked in several National (4 years at University of Zaragoza, 4 years at EEZ-CSIC) and International research institutions (8 years at Aberystwyth University, UK), taking part of various research groups led by some of the most prominent scientist in animal sciences such as Prof Emilio Manrique (1 year), Prof Quim Balcells (4 years), Prof Jon Moorby (2 years), Prof Jamie Newbold (4 years), Prof Alison Kingston-Smith (2 years) and Dr David Yañez-Ruiz (4 years). This highlights my adaptability to teamwork in different multidisciplinary groups under different research models. This research diversity has been scientifically enriching and has provided a high level of internationalization to me, as a result I have been involved in 12 international projects (1 FP7, 4 H2020, 5 FACCE, 2 Cost-Action), delivering 13 invited keynote talks and 110 contributions in international conferences (mostly as theatre presentations). As a result of my research versatility and my international recognition, during the last 2 years I have been fully involved in the application for 3 H2020 projects in the calls SFS-03-2018 (MASTER), SFS-02-2020 (HOLORUMINANT), and FNR-02-2020 (PATHWAY). The first application has been funded (496.000 €), and the two under evaluation could bring 1 more million to EEZ-CSIC.

At national level, I have participated in 10 research projects (3 National Plan, 2 British Government, 2 Regional, 2 CSIC and 1 Network of Excellence), 14 invited keynote talks, and 46 conference contributions, receiving the award to the best communication by the Spanish Prebiotics and Probiotics Society in 2018. The knowledge transfer to the sector has also been relevant; I have participated in 44 research contracts (19 as PI) with some of the most relevant animal feed companies.

As a result of this extensive career I am co-author of 44 scientific peer-review publications (34 JCR-SCI) with high impact (26 Q1, 10 Decile 1) being first or last author in 80% of them (H index=14). I am also co-author of 8 book chapters and 13 popular sciences articles (10 as first author) and 15 deliverables for the EU.



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Turno de acceso general

Regarding to research management, I contributed to the organization of 20 scientific events, I have been member of the evaluation panel of 10 research projects from national (AEI, ACIE, ANEP, BBSRC) and international calls (Cost-Action, Cliff-Grads, Commonwealth Scholarships), 10 PhD theses, 6 master dissertations and over 100 research articles in 25 different journals. I have organized 22 scientific events and I am editor and coordinator of a Research Topic in Frontiers in Microbiology.

Provide training and expertise to the next generation of scientist has always been a priority: I have 270h of lecturing experience in undergraduates and master students; I have supervised 3 TFG, 8 TGM and 13 research visitors. In 2013 I took an Effective leadership course which resulted useful to develop my leadership role and I am currently supervising 2 PhD and lecturing postgraduate students at the Granada University. As a result, I desire that my research activity contributes to the professionalization of the livestock sector in Spain and my internationalization helps to disseminate this scientific knowledge and know-how to third countries to increase their productivity and decrease the environmental impact of ruminant production globally.



AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2019

Turno de acceso general

Nombre: SAENZ NAVAJAS, MARIA-PILAR
Referencia: RYC2019-027995-I
Área Temática: Ciencias agrarias y agroalimentarias
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Título:

Development of conceptual, instrumental and methodological tools for the modeling of sensory properties of food systems from their content in senso-active molecules

Resumen de la Memoria:

The scientific career of the candidate started in 2003 with a one-year collaboration grant in the Technical University of Vienna (Austria) in the area of analytical chemistry and chemometrics. Her PhD (2007/11 Universidad de La Rioja, UR) addressed wine sensory interactions and non-volatile sensory-active molecules driving quality. She initialized into sensory science during a predoctoral stay at Centre du Goût et de l'Alimentation (CSGA, Dijon, France), and established for the first time a descriptive sensory panel in the UR. The PhD work was innovative in that sensory interactions were firstly studied and demonstrated in wines by construction/deconstruction strategies combining sensory and chemical sciences. 12 SCI papers; 3 book chapters.

During her first postdoc (6 months, 2011) in the Universidad de Zaragoza (UZ), she acquired expertise in modeling aroma perception from volatile compounds and developed real wine models by novel reconstitution strategies. In 2011 she was awarded with a postdoctoral position at CSGA (2 years, France), where she acquired expertise in Sensory and Consumer Science and focused on understanding wine quality perception by a multidisciplinary approach including psychology, psychophysics, chemistry and enology. 9 SCI papers; 1 book chapter

In 2013 she was awarded with a 2-year postdoctoral position (Juan de la Cierva Formación) which allowed her to establish her own research line focused on the development of conceptual, instrumental and methodological tools for the modeling of taste and mouthfeel sensations in complex mixtures employing psychophysics concepts. In 2016 (during her 3rd postdoctoral position: Juan de la Cierva Incorporación), she conducted a 6-month-postdoctoral stay at the dep. Viticulture and Enology (University of California) to apply an innovative method to understand stickiness of wine polyphenols. This line of research has established levels of specific molecules depreciating wine quality/preference, demonstrated important sensory interactions and disclosed a number of volatile and non-volatile compounds involved in quality, taste and mouthfeel perception (23 SCI papers; 2 book chapters). As principal investigator (PI) and/or co-PI she has managed 75790 (regional projects and private companies) and 230000 in pre/postdoctoral contracts from competitive calls. Lately, she has applied for a Marie-Curie Innovative training action to led one PhD project focused on the molecular characterization of selected molecules displaying astringency and tactile-related perceptions and of their interactions with salivary proteins and with oral mucosa (with Dr. F Canon from CSGA as collaborator).

Resumen del Currículum Vitae:

In 2004 the candidate earned the Chemistry Degree (Universidad de La Rioja, UR), in 2006 the Enology Degree and Master Degree in Advanced chemistry (UR). She was firstly awarded with a 3-months (mo) and 4-year predoctoral fellowships (FPI-UR) to further obtain the European PhD Degree (UR, 25/1/11) and special doctorate award in UR (sobresaliente 'cum laude'). Predoctoral research stays at Technische Universität Wien (Austria, 10 mo) and Université de Bourgogne (UB) (France, 4 mo). Postdoctoral stays in (1) Universidad de Zaragoza-UZ- (2011, 6 mo), (2) Centre du Goût et de l'Alimentation (UB-CSGA), Dijon, France (2011/13, 24 mo) and (3) Department of Viticulture and Enology, University of California (6 mo). Competitive postdoctoral contracts of Ministerio de Educación y Ciencia: 1)

Programa nacional de estancias de movilidad posdoctoral en el extranjero 2011 (24 mo, CSGA, France), 2) Ayudas para contratos para la Formación Posdoctoral 2013 (Juan de la Cierva Formación, 2015/16) and 3) Juan de la Cierva-Incorporación (MEC, 2017/18). Postdoctoral contracts associated to projects at UZ: 15 months (2013-2014) and from May 2019 until now.

44 scientific articles indexed in SCI 96% of them in Q1 of Food Science category; 1st author in >70%, corresponding in 40% of them. h-index = 17/19; citations 820/1120 (Scopus/GoogleScholar). Coauthor in 6 book chapters (Springer, Elsevier). 5 invited conferences (Spain, Italy, France and England), 95 contributions mainly to international scientific symposiums (13 oral communications); 10 technical/vulgarization articles. Participation in one European project, six national (5 in Spain and 1 in France), 13 regional projects (10 in Spain and 3 in France) and 19 projects with private companies. Principal investigator (PI) in 3 regional projects (2015-2019), 1 with a private company (2019-2020 the Bulli Foundation, F. Adriá) and 5 with wine Designations of Origin (2016-2019) for training and advise sensory panels for accreditation. Technical expert in ENAC (auditor for sensory quality control). Management of 75790 as PI/co-PI and 230000 in pre/postdoctoral contracts from competitive calls.

Teacher in Summer Programs of UR, UZ and Universidad de Oviedo, Máster de Viticultura, Enología y Gestión (Fundación UR) and assistant teacher in the degree of Enology at UR. Invited teacher at the professional agency of enologists in Sardinia (Italy) and Plumpton Collage (England). Project evaluator for FONDECYT (Chile). Organising and scientific committee of 3 international congresses and one technical local workshop. The candidate will chair the next Spanish Congress of Sensory Analysis (AEPAS 2021). Member of two PhD evaluation



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committees. Guest editor in 3 special issues: Grape and Wine Science (Food Res Int, 2019), Oeno One (Macrowine, 2018) and Foods (2019). Co-supervisor of 4 end of course projects, 1 Master and 2 PhD thesis and currently 2 PhD ongoing. Design and commercialisation of aroma references (incomes of ca 6000 /year) and wine perfumes made ad hoc for private wineries. Participation in vulgarization events: Pint of Science Rioja-2018, DataBeers-Rio2019, Club Márketing-2019, Talent Girl-2019. International collaborations: Plumpton Collage (Dr. Rodrigues), Université de Bourgogne (Dr Valentin), University of California (Dr Waterhouse), University of Adelaide (Dr Jeffery), University of Trento (Dr Mattivi).



AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2019

Turno de acceso general

Nombre: ROCA HERNANDEZ, AMALIA DE LA ARRIXACA

Referencia: RYC2019-026481-I

Área Temática: Ciencias agrarias y agroalimentarias

Correo Electrónico: amaliaroca@gmail.com

Título:

Rizobacterias y metagenómica para el desarrollo de biofertilizantes y tratamientos de rizadorremediación

Resumen de la Memoria:

Amalia Roca graduated in Agricultural Engineering in 2004 from the Polytechnic University of Cartagena where she joined several Plant Science departments supported by different research grants. During her PhD (2005-2009; Granada University & EEZ-CSIC), she investigated the mechanisms used by plant-associated bacteria to tolerate and degrade toxic compounds. Her results highlighted the bacterial genetic plasticity to degrade recalcitrant toxic compounds, the complex regulatory networks that control biodegradation processes and the potential use of plant-associated bacteria in rhizoremediation strategies. After winning the first prize in the 50K Business Launching Program with the Rizosfera project, she co-founded the CSIC spin-off company Bio-Iliberis Reserch and Development (BIRD) in 2008. She joined BIRD as Torres Quevedo Postdoctoral Researcher in 2009 and became Scientific Director and Principal Research Scientist of the company in 2012. Her research in BIRD is focussed on the development of microbiology-based approaches for water and soil restoration, as well as to promote plant growth and biocontrol against phytopathogens. During this period, she has directed the work of up to 12 people, supervised master's and final projects of numerous students in national and international educational programs.

The scientific productivity of Dra. Roca is reflected in 24 peer-reviewed international publications (22 articles in journals (Q1, >83%) and 2 book chapters), including research articles in high impact journals such as FEMS Microbiol. Rev., Trends Biotechnol., Environ. Microbiol., Microb. Biotechnol., among others. She is also the inventor of 9 patents, 4 of them international and 5 Spanish. Five of these patents have been exploited successfully. The successful technological transfer of her research is also reflected in: (i) the development of 7 products based on microorganisms designed for agriculture (4 registered as plant protection products (MDF) in the Spanish MAPA and certified as organic products; 3 formulations in the process of registration); and (ii) the development of 7 bio- and rhizoremediation treatments for the restoration of contaminated water and soil.

During her career, Dr. Roca participated in 22 research projects, including 10 national and international projects and contracts as principal investigador totalling a budget of around 1.2 million €. She collaborated with more than 80 researchers from countries like Germany, France, USA, Norway, United Kingdom, Netherlands, Portugal, France, Italy, Ireland, among others. Her results were also presented at prestigious national and international conferences, outreach articles and notices in newspaper and digital magazines and TV-Radio interviews. She is a reviewer for different high impact journals and has participated in the organization of International Workshops. Finally, she wrote several divulgation articles and gave outreach talks on her research.

Dr. Roca's future research lines as Ramon y Cajal researcher will include: (i) the characterization of plant growth promoting microorganisms and biocontrol agents; (ii) the study of the production of enzymes and metabolites that exert positive effects on plant growth or protect them against phytopathogens; and (iii) the use of metagenomics as a new generation technology for the search for enzymes of agricultural interest.

Resumen del Currículum Vitae:

EDUCATION

2009: PhD in Agricultural biology. UGR, Spain.

2008: Master in Agricultural biology & aquaculture. UGR, Spain.

2004: Degree in Agricultural Engineering. UPCT, Spain.

PROFESSIONAL RECORD

2012-currently: Scientific Director & Principal Research Scientist. Bio-Iliberis R&D.

2009-12: Postdoctoral Torres-Quevedo Fellow. Head of the Agronomy Dep. Bio-Iliberis R&D.

2004-09: PhD student. Environmental Protection Dep. EEZ-CSIC, Spain.

2002-04: Undergraduate Fellow. Agricultural Production Dep. UPCT, Spain.

SCIENTIFIC PRODUCTION

-Publications in JCR journals: 22 (83%, Q1-JCR), including the high-rank journals FEMS Microbiol Rev, Trends Biotechnol, Environ Microbiol, Microb Biotechnol

-H index: 12 (WoS); 14 (Google Scholar)



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-Book chapters: 2
-Citations number: 421 (WoS); 680 (Google Scholar)

TECHNOLOGY TRANSFER

-Inventor of 9 Patents: 5 (national) and 4 (international)
-Registration of 4 bacterial-based products for the agricultural sector. 3 additional products under evaluation.
-Transfer technology activities with the companies Trops, Royal berries, Batlle Seeds and world leading agricultural cooperatives

R&D PROJECTS AND CONTRACTS

As principal investigator (total budget: 1.2 million):

-Projects: 3 national (Junta de Andalucía & MINECO) and 2 international (EU FP7 & H2020 programmes). Total budget: 924.000 .
Currently, PI and WP leader in an EU Project (Metafluidics. Ref. 685474).
-Contracts with private companies: 5 (total budget: 253.000).

As team member:

-Participation in 11 projects (9 national, 1 international) funded by public agencies and 1 project funded by companies.

CONFERENCES/SEMINARS

Author in: (i) 17 oral communications at national and international conferences; (ii) multiple invited research seminars in courses, workshops and Master's programmes; (iii) fairs in the agricultural sector.

NATIONAL AND INTERNATIONAL COLLABORATORS

Collaboration network of more than 80 researchers from research institutions and private companies from UK, USA, Italy, Ireland, France, Spain, Denmark, The Netherlands, Norway and Portugal, among others.

TEAM MANAGEMENT AND SUPERVISION OF STUDENTS

As a group leader (since 2012), I have directed a team formed by up to 12 people including postdoctoral researchers, invited PhD students, Master (e.g. Sciences and Technologies, Bioenterprise), Bachelor's degree (e.g. Biology, Chemistry) and professional training students, research technicians, and sales and administrative staff.

ADVISORY ACTIVITIES AND ORGANIZATION OF R&D ACTIVITIES

-Regular reviewer for Environ Microbiol, Microb Biotechnol, Environ Microbiol Rep, J Environ Manage, PloS One, among others.
-Organizer of the International Workshop Micr'Omics for Biotech Applications. Madrid, 2015.

OUTREACH ACTIVITIES

-Outreach talks at Granada University and agricultural cooperatives (e.g. Casi, La caña, Grupo Suca).
-Outreach articles and notices in the Andalusian Cooperative Society Journal, ecosector.es, ideal.es, europapress.es, lavanguardia.com, Fundación Descubre, citandalucia.com, Andalucía Investiga. Radio and TV interviews (e.g. SER, COPE, Canal sur TV).

AWARDS AND OTHER MERITS OF INTEREST

-First prize in the 8th Edition of the 50K Company Launching Program. Fundación San Telmo, Sevilla.
-Founding member of CSIC's spin-off company Bio-Iliberis R&D
-Training: 19 specialized courses on the latest technologies and agricultural practices



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Turno de acceso general

Nombre: FLOREZ SARASA, IGOR
Referencia: RYC2019-028030-I
Área Temática: Ciencias agrarias y agroalimentarias
Correo Electrónico: igor.florez@cragenomica.es

Título:

Regulation of primary metabolism in crops and model plants under environmental stress

Resumen de la Memoria:

I am a plant physiologist with experience in leading my independent research on the regulation of primary metabolism under different environmental stresses in several crops (tomato, grapevine, pea, soybean, cucumber, white lupin, maize and tobacco) and model organisms (*Arabidopsis*). My major aim is to improve our understanding on the regulation of plant primary metabolism, which can be used to adopt new biotechnological strategies for improving crop productivity and quality in the upcoming global change scenarios.

I obtained a best PhD award and did my first postdoc at the Universitat de les Illes Balears where I investigated the role and regulation of respiration and its interaction with different aspects of photosynthesis. Later, I moved to Germany where I worked as a postdoc for more than 4 years at the Max Plank Institute of Molecular Plant Physiology where I developed and expanded my research towards a more system-wide analysis of plant central metabolism under environmental stress by combining metabolomics with physiological and molecular biology approaches. Since March 2017, I work as a postdoc at the Centre for Research in Agricultural Genomics in Barcelona, where I am currently integrating my expertise in plant physiology, metabolomics and molecular biology with metabolic engineering and modelling to investigate the interface between primary metabolism and secondary metabolism in vegetable crops.

Among the most relevant achievements in my career I highlight the following:

- (1) Awarded by several and prestigious competitive fellowships from national (Beatriu de Pinos, Severo Ochoa) and international (Alexander von Humboldt, Marie Sklodowska-Curie) calls;
- (2) Contributions to the field of plant respiration and primary metabolism in high impact journals (Trends in Plant Science, New Phytologist, Plant Physiology, Plant Cell and Environment, Journal of Experimental Botany);
- (3) Establishment of an international network with more than 20 research groups from 12 different countries which are recognized experts on primary metabolism in crops and model plants;
- (4) Supervision of PhD, Master and Bachelor Thesis and teaching in Master and undergraduate courses at four different Universities.
- (5) Establishment of an independent research line with an integrative and multidisciplinary perspective to study the responses of primary metabolism in vegetable crops under climate change conditions

Resumen del Currículum Vitae:

My CV can be summarized in the following categories:

1. Relevance and degree of contribution in publications:

-JCR articles: 37
-Primary research articles: 34: 32 (94%) in Q1, 24 (71%) in D1
-Review articles: 3: 3 (100%) in D1
-Total number of citations: 1012
-Average citations per article: 27.4
-H index: 18
-Articles as First/Corresponding author: 14
-Book chapters: 2 (1 as Corresponding author)

2. Participation in national and international research projects.

-Researcher in National Projects: 7 (Competitive calls).
-Researcher in International Projects: 4 (Competitive calls) and 2 (Non-competitive calls); 1 Project (Marie Curie Actions) as Principal Investigator

3. National and international research collaborators

-Research groups from 12 different countries: 20
-Associated publications: 21 (20 in Q1), 9 as first/corresponding author

4. R&D Dissemination, Activity Organization and Evaluation.



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- Contributions in congresses and meetings: 30
 - Conferences and seminars given upon invitation: 9
 - Reviewer tasks in different journals: New Phytologist, Plant Journal, Plant Cell Physiology, Plos One, Global Change Biology, Physiologia Plantarum, Plant Science, Plant Physiology and Biochemistry, Plant and Soil, Photosynthetica, Brazilian Journal of Plant Physiology, Plants, Acta Biochimica Polonica, Journal of Proteomics.
 - Editor tasks: 1 invited as Guest Editor (International Journal of Molecular Sciences Special Issue: Molecular Regulation of Mitochondria-Chloroplast Metabolic Interactions in Plants)
 - Organizing Committee of International Conferences: 1
 - Scientific Committee of International Conferences: 1
 - R&D project evaluation: ANEP (Spain), AGAUR (Catalonia)
 - Member of SEFV- Sociedad Española de Fisiología Vegetal
 - Member of 3 PhD Thesis committees
 - Outreach activities: 2 as responsible and 2 as collaborator.
5. Supervision and mentoring activities
- 1 PhD, 1 Master and 1 Bachelor Thesis.
 - Lecturer in 7.4h of Master courses
 - Lecturer in 19h of undergraduate theory courses
 - Lecturer in 200h of undergraduate practical courses
6. Fellowships and awards
- Best PhD: Premio extraordinario Doctorado
 - PhD fellowships: 2 (BRD-UB, FPI)
 - Postdoc fellowships: 4 (Beatriu de Pinos, Severo Ochoa, Alexander von Humboldt, Marie S. Curie)



AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2019

Turno de acceso general

Nombre: DIE RAMON, JOSE VICENTE
Referencia: RYC2019-028188-I
Área Temática: Ciencias agrarias y agroalimentarias
Correo Electrónico: jodiera@upv.es

Título:

Integrative approach of genomics and bioinformatics tools for next generation crop breeding

Resumen de la Memoria:

As a plant geneticist, during the last decade I have been interested in understanding the molecular basis of phenotypic variation through finding genes that are differentially expressed between conditions. Most of my research is extensively focused on transcriptomics to investigate particular variants and characterize response profiles with implications for breeding programs, including plant defence responses (to parasitic plants, *Ascochyta*, and *Fusarium*), molecular changes during cold acclimation, or fruit development. I have an Agricultural Engineering degree (Polytechnic University of Valencia), with expertise in "Biotechnology and Breeding". In 2009, I obtained my PhD with European Doctor Mention and high cum laude honors. Also, my PhD thesis was awarded with the Extraordinary PhD Award. My first postdoctoral position was supported by the highly competitive Juan de la Cierva national program. In 2012, I moved to USA and worked for 5 year for the US Department of Agriculture (Genetic Improvement of Fruits and Vegetables Laboratory). My responsibilities involved the use of the first blueberry transcriptome sequencing project as a high-throughput discovery platform to identify potential targets for improving blueberry cultivars. Gaining experience in a multicultural research environment and using advanced scientific and computational techniques was a major driving force to allow me being the recipient of the internationally renowned top-level research program Marie Curie individual fellowship. Since 2017, I have been working at the Dept. Genetics-ETSIAM, University of Córdoba. I have initiated several new projects within the broad area of crop improvement via genomics delved into analyzing large high-throughput data sets (genome, transcriptome) and computer programming. My goal is to assist the chickpea and asparagus breeding programs by dissecting the molecular basis controlling agronomic traits through combing state-of-the-art technologies in next-generation sequencing with experimentation. Currently, my main research line is focused on the molecular basis controlling flowering time in chickpea, which is the major domestication trait defining the adaptation of chickpea to different agro-climatic conditions, and therefore, is a major determinant of its productivity. Understanding this is fundamental to accelerating introgression of new traits into adapted backgrounds. In 2018, I was invited by the Scientific Visitor Program (U.S. National Institutes of Health) to work at the National Center for Biotechnological Information. At NCBI, I led a project to develop a computational pipeline for processing DNA-seq data and translate genomic knowledge into effective strategies for identification and analysis of plant gene families. My international network of collaborators is a valuable resource for discussions of new projects and my experiences at USDA or NIH-NCBI represent an excellent knowledge-exchange opportunity and will result in international cooperation leading to new ideas, collaborative grant applications and international visibility to our work.

Resumen del Currículum Vitae:

Scientific production

- Author of 35 scientific papers (32 in SCI journals); 23 papers published in Q1-journals.
- I was cited 476 times (56 citations/year during the last 5-years).
- h-index=13 (Scopus).
- Author of three book chapters and 28 studies presented at national and international conferences

International experience

- Scientific Visitor. National Institutes of Health (NIH) Visiting Program. National Center for Biotechnological Information (NCBI), Bethesda (MD), USA. 6 weeks.
- Postdoctoral Research Associate. Genetic Improvement of Fruits and Vegetables Laboratory. United States Department of Agriculture, Beltsville (MD), USA. 4 years + 10 months.

Participation in Research Projects

- I signed as a member of the research team in 3 international projects funded by the European Union and the US Government.
- I signed as a member of the research team in 4 national projects funded by Spanish public agencies.
- I am PI of 1 personal project Marie-Curie H2020-MSCA-IF-2018 funded by the European Commission and 1 regional project Programa Operativo FEDER 2014-2020 funded by Junta de Andalucía.

Teaching and supervising experience

- At University of Córdoba, I teach in the Master Degree in Biotechnology, and Degrees of Biology and Environmental Sciences. Since 2017, I also collaborate with the Master Degree in Agronomic Engineering.



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- I supervise 1 PhD thesis on going and have supervised 4 TFMs and 2 TFGs + 2 TFGs ongoing.
- I have developed (academic director) the postgraduate course Introduction to R programming for Data Science (30h), which is offered by the Instituto de Estudios de Postgrado (IdEP, UCO).

Editorial Services

- I work as regular reviewer of SCI high impact journals in my field. Having reviewed 22 manuscripts in the last 12 months, I rank as the 9th reviewer from University of Cordoba, according the website Publons.

Awards and accreditations

- Ramón y Cajal program (2019): reserve in RYC2018-025981-I call.
- Seal of Excellence, European Commission (2018): Marie Curie Individual Fellowship (Score 87%).
- Reviewer for the American Phytopathological Society Foundation Student Travel Awards in 2018, 2017, and 2016
- Member of the organizing Team for the "Spanish Track at PyCon US". PyCon US Conference (Python Software Foundation) in 2020, 2019 and 2018
- Extraordinary PhD Doctorate Award (University of Cordoba)
- European Doctor Mention (University of Cordoba)
- I got positive assessments as "Profesor Ayudante Doctor" and "Profesor Contratado Doctor" by ANECA.



AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2019

Turno de acceso general

Nombre: MORAL MORAL, JUAN
Referencia: RYC2019-028404-I
Área Temática: Ciencias agrarias y agroalimentarias
Correo Electrónico: juanmoralmoral@yahoo.es

Título:

Applied epidemiology and control of plant diseases

Resumen de la Memoria:

Throughout my career, I have gained the necessary abilities to study the epidemiology and control of plant diseases. I completed my Ph.D. in Crop Protection at the Universidad de Córdoba (UCO) in 2009. University of Cordoba (UCO) honored me with the Extraordinary (Best) Ph.D. Award. Additionally, my Ph.D. Thesis was recognized as the Best Scientific Work in Olive by the Rural Bank of Jaen.

At UCO (2009-2012), I worked as a researcher while continuing my specialization in applied epidemiology, a research field in which I am internationally recognized, with active collaborations in Argentina, Australia, China, Greece, Israel, Italy, Portugal, and the USA. In 2011, I obtained both the Fulbright and Juan de la Cierva (JdC) grants. I worked as a JdC fellowship on legumes at IAS-CSIC.

In 2014, I was awarded a project (172.625) as PI within the Talent-Hub Call from the European Commission and the Andalusian Government to conduct research on aflatoxin at UC Davis. I subsequently earned a Marie Curie (IOF) grant (235.674). In 2015, I received a project as a PI with the industry (38.599). In 2017, the Almond Board of California granted us (as PIs) a project (277.355\$) on mycotoxins. In 2017, I obtained a Tenure Track position as Professor at the University of Aarhus, Denmark. Nonetheless, I work as a researcher on my own (PI) project, funded (78.200) through the FEDER Operational Program at UCO, where I lead a research group (1 postdoctoral researcher, 1 Ph.D., and 3 graduate students) that focuses on plant disease epidemiology and mycotoxin.

Briefly, I have worked abroad for over 4 years. I have advised 19 Degree/Master Theses and 3 Ph.D. dissertations (two of which are ongoing). While much of my epidemiological research has been conducted throughout various seasons under field conditions, however, I have published 53 SCI-JCR articles (including 42 in Q1 journals, with 28 as principal author); 6 book chapters; 25 extension articles; and 1 teaching article. I have been an Associate Editor of Frontiers in Plant Science (Q1) for 3 years. I have already received the I3 certification.

Resumen del Currículum Vitae:

Throughout my career, I have gained the necessary abilities to study the epidemiology and control of plant diseases. I completed my Ph.D. in Crop Protection at the Universidad de Córdoba (UCO) in 2009. University of Cordoba (UCO) honored me with the Extraordinary (Best) Ph.D. Award. Additionally, my Ph.D. Thesis was recognized as the Best Scientific Work in Olive by the Rural Bank of Jaen.

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Briefly, I have worked abroad for over 4 years. I have advised over 20 students/researchers, including 3 Ph.D. dissertations (two of which are ongoing). While much of my epidemiological research has been conducted throughout various seasons under field conditions, however, I have published 53 SCI-JCR articles (including 42 in Q1 journals, with 28 as principal author); 6 book chapters; 25 extension articles; and 1 teaching article. I have been an Associate Editor of Frontiers in Plant Science (Q1) for 3 years. I have already received the I3 certification.

INDICATORS:

Published SCI Articles: 53; As the 1st or last author: 28 (53%); Q1: 42 (80%); 1stD: 6 (11%) articles; Sent articles: 2 (D1 and Q1)
o No SCI Articles: 25 in Spanish and English



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- o Book Chapters: 6 Book Chapters in Spanish, English, and Portuguese
- o Quality Indicators:
- o Web of Science: H-Index = 12; Cites = 483; Cites per yr (last 5 yr) = 72
- o Google Scholar: H-Index = 17; Cites = 952; Cites per yr (last 5 yr) = 123
- o PhD Thesis Supervised: 1 (presented on Dec 2015) and 2 in progress.
- o Master Thesis Supervised: 12
- o Degree (TFC/TFG) Thesis Supervised: 5

Total 29 Research projects in Spain or USA (Total 3.870.000), of which as a PI (487099)

Total 28 contracts in Spain or USA (Total 1.967.00), of which as a PI (315954)



AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2019

Turno de acceso general

Nombre: NAVARRO MARTIN, LAIA
Referencia: RYC2019-026426-I
Área Temática: Ciencias agrarias y agroalimentarias
Correo Electrónico: laianavarromartin@gmail.com

Título:

Environmental Omics in Aquaculture and Ecotoxicology

Resumen de la Memoria:

I obtained my PhD in Physiology (Biology, UB, 2008) under the supervision of Prof. Piferrer (Institute of Marine Science, CMIMA-CSIC). The research undertaken during my doctoral studies determined the effects of temperature on fish sex differentiation. One of the main findings was that a temperature-induced epigenetic mechanism was responsible for the alterations of sexual differentiation in farmed fish. These results linked, for the first time, epigenetics to sex ratios shifts by temperature. I spent six months working at Dr. Sweeney's laboratory (Cardiff University, UK) learning molecular biology techniques and deepening in the study of regulatory mechanisms of gene expression.

In 2009, I joined Prof. Trudeau's research group at the Center for Advanced Research in Environmental Genomics at University of Ottawa (Canada). In collaboration with a multidisciplinary team, we examined the ecosystem-level effects of pesticide applications on experimental ponds. As a Postdoctoral Fellow, I was involved in the implementation, coordination and supervision of laboratory and field experiments, acquiring experience and knowledge in the area of Ecotoxicology.

I joined Dr. Piña's research group in 2014 at the Institute of Environmental Assessment and Water Research (IDAEA-CSIC), working in the characterization of new mechanisms of toxicity of emerging pollutants on zebrafish development. From this work, I published some papers as a senior author and consolidated my research line in aquatic toxicology.

At present, I'm the coordinator of an Individual Fellow Marie Curie project that aims to characterize epigenetic signatures as biomarkers of ecotoxicological effects in fish. This new and independent research line combines my past experience on the epigenetic regulation of reproductive genes in fish and the knowledge of the molecular analysis of endocrine disruption. In this context, I have also established international collaborations with Prof. Jan Menningen (University of Ottawa) and Prof. Juliette Legler (Utrecht University).

In the near future, I plan to study the complex effects that environmental pollutants have using novel approaches that include multi-omic studies and integrate research in environmental ecotoxicology-epigenetics and aquaculture. I plan to conduct interdisciplinary research with a solid foundation and the talent to integrate different types of information that will also allow addressing the complexity of gene-environment interactions.

Resumen del Currículum Vitae:

Education: BSc. Marine Science (UCA) 2001. Ph.D. Physiology (Biology, UB) 2008.

Current and previous positions:

- 1) Feb 2019 - present, Postdoctoral Fellow, IDAEA-CSIC, Barcelona (Spain).
- 2) Set 2018 -Jan 2019, Part-time Professor, Universitat Blanquerna, Barcelona (Spain)
- 3) Jan 2018 -August 2019, Maternity leave
- 4) Oct 2014- Dec 2017, Postdoctoral Fellow, IDAEA-CSIC, Barcelona (Spain)
- 5) May-Sep 2014, Maternity leave
- 6) Jan-May 2014, Research Associate, University of Ottawa (UO, Canada)
- 7) Set 2011- May 2014, Part-time Professor, University of Ottawa (UO, Canada)
- 8) Jan 2009-Dec 2013, Postdoctoral Fellow, University of Ottawa (UO, Canada)
- 9) April 2003- Dec 2008, PhD Student, ICM-CSIC, Barcelona (Spain)

Scientific productivity:

- 37 SCI publications (including 2 book chapters). Corresponding author in 20%. Articles published in Q1-journals (26), and positioned in D1 (13/26)
- h-index=15 and 827 citations (Scopus)
- Contributions to conferences (55), invited speaker (2)



AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2019

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Granted projects: (Total funding of 188K EU as PI)

- 2019-2021. Marie Skłodowska-Curie Action, 797725-EpiSTOX, 170K EU, role: PI
- 2019-2021. Europa Investigación (MICINN), EIN2019-102993, 10K EU, role: PI
- 2015-2016. Europa Investigación (MINECO), EUIN2015-62811, 8K EU, role: co-PI

Technological transfer:

- 1 patent to improve fish aquaculture practices (WO2010043739-A1)

Fellowships, contracts and awards:

- Marie Curie Individual Fellow Reintegration Panel (MSCA-IF-IR-2017).
- Beatriu de Pinós fellowship (Marie Curie COFUND AGAUR, Generalitat de Catalunya)
- NSERC-SGP postdoctoral contract (Canada funding agency)
- Conference Travel Grant (University of Ottawa, Canada)
- 3 travel Grants FPI
- Predoctoral fellowship FPI (Ministerio de Ciencia y Tecnología)
- Best poster at the Aquaculture Europe 2004 meeting

International Experience: (Total international experience: 73 months)

- 6 months as a visiting PhD student at the Cardiff University (UK)
- 5 years and 6 months as a postdoctoral fellow at UO (Canada)
- 1 month as visiting researcher at UO (Canada)

Teaching and Research Supervision:

- International teaching experience at undergraduate and graduate level at 5 Universities in Argentina, Canada and Spain
- Supervised 2 PhD, 3 Master s, 6 Honour s and trained several undergraduate students.
- Recognized as Professor Lector by AQU (Generalitat de Catalunya)
- Invited evaluator of 3 PhD defense

Research Projects and International Collaborations:

- Participated in 14 research projects (7 international)
- Collaborations with Prof. Velasco-Santamaría (Colombia), Prof. Silva de Assis (Brazil), Prof. Menningen (Canada) and Prof. Legler (Netherlands)

Management and Participation in Scientific Committees and Editorials:

- Manager and leader of a WP of NSERC project (Canada) and of 2 Canadian non-competitive grants
- Member of the scientific committee in international conference, workshop and local student symposium
- Chair at SETAC Europe Conference 2020 (Dublin, Ireland)
- External Reviewer of a research proposals: 1) Narodowe Centrum Nauki-Poland (2014-2015); 2) FONCYT-Argentina (2016); 3) CONACYT-México (2020)
- Editor of a Special Issue in the CBP-PartD Journal

Other achievements: Dissemination and communication activities: CSIC a l aula (2016-2018) & Escolab (2016-2020). Animal care certificate (catB) according to the Spanish legislation.



AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2019

Turno de acceso general

Nombre: CUIEL GAMIZ, JOSE ANTONIO
Referencia: RYC2019-026368-I
Área Temática: Ciencias agrarias y agroalimentarias
Correo Electrónico: hirokury@hotmail.com

Título:

Revalorization of agro-industrial by-products into high added-value functional food ingredients through *Lactobacillus plantarum* (LAB) as biotechnological tool

Resumen de la Memoria:

Polyphenols have been described as interesting compounds directly involved in the organoleptic properties of food products and attractive functional bioactivities as well as functional peptides and amino acids. The main predoctoral research (subline 1) of the applicant is focused to elucidate and apply the phenolic compounds (PC) metabolic capabilities of *Lactobacillus plantarum* for leading biotransformation processes in order to enhance wine characteristics and revalorize vegetal by-products from food industry through the production of high added-value PC. In his PhD (FPI-MINECO; Instituto Danone grant, 61 months) at the IFI-CSIC, the applicant identified the tannins metabolic pathway from *Lactobacillus plantarum* through characterizing the tannase and, for the first time in bacteria, gallate decarboxylase enzymes useful for wine clarification and synthesis of antioxidant ingredients as propyl-gallate, respectively.

In order to enlarge his knowledge, the applicant deepened into the *L. plantarum* proteolytic metabolic (subline 2.1) and its application (subline 2.2) in wheat flour fermentation for producing gluten free-products (bread, pasta) at University of Bari (postdoctoral stay funded by Fundación Martín Escudero grant, 24 months). The new skills acquired about proteolytic metabolism join to phenolic metabolism in *L. plantarum* allowed the candidate to face, at University of Bari, the revalorization of raw matrices and by-products as myrtle, wheat germ or pulses into functional food ingredients by increasing greatly the antioxidant and antihypertensive properties through enhancing the production of interesting polyphenols and GABA, and synthesizing novel anticarcinogenic lunasin-like peptides, (postdoctoral contract Co.Co.Co; 11 months).

With the arrival of the more and more affordable omics and given the importance of PC in wine, the applicant continued his research to elucidate the metabolic relationship of *L. plantarum* with *Saccharomyces cerevisiae* during wine fermentation through RNA- seq (subline 1) approach at ICVV-CSIC and funded by a competitive postdoctoral contract called Ayudas postdoctorales para la contratación de doctores (24 months) .

The last years, the applicant is developing his main research line addressed to revalorize vegetal by-products from food industry (topic include in Europe Horizon and Circular Economy frameworks), such as olive leaves by implementing LAB metabolisms as biotechnological tool in order to produce interesting PC as hydroxytyrosol, oleacein or Oleocanthal (subline 3). In this sense the applicant has reached a Young Researcher Contract (JIN from Junta de Andalucía (PAIDI); PY18-CO-0047) with 267.030,00 of total funding for implementing his expertise to revalorize sugarcane vinasse into novel functional antioxidant, antihypertensive and anticholesteremic, among other bioactivities, food ingredients as Principal Investigator (PI). Moreover the candidate showed his expertise as PI in 2 previous private projects funded with 138.540,28 in total.

Resumen del Currículum Vitae:

Researcher ID: H-8831-2015

Orcid code: <http://orcid.org/0000-0002-0111-1437>

Scopus ID: 16505958800

CURRENT POSITION

2020 Young Principal Investigator contract (Ayudas para la realización de Proyectos de I+D+I Junta de Andalucía)
CIDAF

PREVIOUS POSITIONS

2017 2020 Torres Quevedo Program Researcher contract (MINECO)
CIDAF

2015 2017 Researcher under Ayudas para la Formación Postdoctoral contract (MINECO), former Juan de la Cierva contracts,
ICVV-CSIC

2014 2015 Researcher under DISSPA contract,
DISSPA, Facoltà di Agraria/University of Bari Aldo-Moro (UNIBA)

2012 2014 Postdoctoral researcher under FUNDAME (Fundación Alfonso Martín Escudero) grant,
DISSPA/Facoltà dia Agraria/UNIBA



AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2019

Turno de acceso general

2011 2012 Postdoctoral researcher under DANONE grant
BIOBACT, ICTAN-CSIC

2006 2010 PhD Student under FPI program (MINECO)
Department of Microbiology, IFI-CSIC

2005 2006 Introduction of Research Scholarship grant (CSIC)
Department of Microbiology, IFI-CSIC

SCIENTIFIC INDICATORS

H index: 25(Scopus); 26(WOS); 28(Google Scholar)

Total number of articles:83

Total number of articles in SCI journals:55

Total number of citations:1615(Scopus); 1543(WOS); 2156(Google Scholar)

First Decile: 21(38%)

First Quartile: 40(73%)

Second Quartile: 13(23%)

First or last (corresponding) author: 20(36%)

Corresponding Author:5

Non-SCI journals:15

Book Chapters:12

Book:1

Presentation in National/International Congresses: 46(12 posters and 5 oral presentations as corresponding author)

Participation as congress organization staff:3

Reports to Food Industry:6

Patents:1

Thesis directed:1

Student supervisions:9

1 PhD thesis student,

2 postdoctoral students,

2 Master (TFM),

2 Degree (TFG),

1 TUCEP Erasmus student,

1 technician staff and

1 CONICET Full professor (incoming)

Teaching activities:2 doctoral courses at UAM

FOREIGN POSTDOCTORAL STAYS 35 MONTHS (24 + 11 months) at DISSPA-UNIBA

FOREIGN PREDOCTORAL STAYS 3 MONTHS at FLEC-INRA

FOREIGN STAYS total 38 MONTHS

National predoctoral stays at ICP-CSIC, 3 months; and IG-CSIC 2 months

PROJECTS PARTICIPATION

2 European projects + 1 ongoing (participation in an ITN coordinates by Dr. Pascal Piveteau)

2 Italian projects

15 National projects

COMPETITIVE GRANTED PROJECTS AS PI

2022 2022 Young Investigator Researcher Program (Andalucian council); 267.030,00

NON-COMPETITIVE GRANTED PROJECTS AS PI

2017 2019 CIDAF-Industrias Espadafor; 55.000,00

2018 2020 CIDAF-Torres Morente S.A.U.; 83.540,00

REVIEWER

Since 2009, Reviewer of International Peer-Reviewed Journals/ Food Science and Technology, Food Chemistry, Food Research International, International Journal of Food Microbiology, Journal of Dairy Science, Journal of Functional Foods, Molecular Nutrition and Food Research, Nutrients, Frontiers in Microbiology



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EDITOR

2019 Guest Editor of Biomolecules

2014-2017 Food Research International EDITOR

PhD EVALUATION COMMITTEES:

2014 2 PhD Doctorate Thesis at ICTAN-CSIC-UAM

EXTERNAL PROJECT EVALUATOR

Since 2017 at JSC (Kazakhstan) 10

Since 2017 at MIUR (Italy) 1

Since 2019 at FONCYT (Argentina) 1

RECOGNIZED POSITIVELY BY ANECA:

Profesor Contratado Doctor and

I3 certifications

GRANTS AND CONTRACTS

4 grants (FUNDAME, DANONE, FPI-Mineco, and Introduction of Research Scholarship grant-CSIC)

5 contracts (Young Investigator-PAIDI, Torres Quevedo-Mineco, Ayudas para la Formación Postdoctoral contract-MINECO, CoCoCo-UniBA, technician-CSIC)



AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2019

Turno de acceso general

Nombre: REGUERA BLAZQUEZ, MARIA
Referencia: RYC2019-028148-I
Área Temática: Ciencias agrarias y agroalimentarias
Correo Electrónico: maria.reguera@uam.es

Título:

Defining regulatory mechanisms mediating plant responses to changing environments: An integrative biology approach towards developing strategies to improve crop performance and yield quality

Resumen de la Memoria:

The main focus of my scientific career has been centered on investigating the mechanisms that mediate plant abiotic stress responses in crops with special emphasis on elucidating the regulatory role(s) of hormones in source and sink interactions. By using an integrative approach (applying a diversity of techniques that I have acquired during my research career, including plant physiology, biochemistry, cell biology and molecular biology methodologies) the goals of my work pursue: i) to define the metabolic and molecular pathways controlling plant-environment interactions impacting on yields and ii) to determine the regulatory networks that control plant abiotic stress phenotypes to enhance source fitness, sink capacity and seed quality. The biotechnological applicability of the proof-of-concepts derived from this research lines are expected to contribute significantly to crop improvement.

My PhD research work contributed to a better understanding of why and how the symbiotic nitrogen fixation in legumes is compromised under boron deficiency. In order to gain further knowledge regarding abiotic stress responses impact on plant nutrition, I started my postdoctoral research in the laboratory of Dr. Blumwald, at UCD (US) where, for 5 years, I led different research projects. By using a multidisciplinary approach, my research work led to a better understanding of how the modification of sink and source interactions in crops result in the improvement of nutrient assimilation during drought stress increasing yield. I also worked on characterizing at cellular, biochemical and physiological level two intracellular NHX antiporters, which regulate intracellular ion and pH homeostasis controlling protein processing.

As a Juan de la Cierva fellow (2015-17) I investigate the regulatory mechanisms controlling plant response(s) to boron nutrition. I was also the PI of an international grant funded by Banco Santander that allowed to successfully create a collaborative network working on quinoa (with the public and private sector) resulting in several scientific publications (4).

Aiming to gain knowledge on legumes genetics and nutrient transport in the symbiotic interaction, I performed a postdoctoral stay at the CBGP (Spain) investigating oligoelement transport in nodules (2018-2019).

Currently, I hold a non-permanent position at UAM leading, as a PI, a research line studying the biological mechanisms underlying plant responses to changing environmental conditions and their impact on yield quality in quinoa and I keep working on boron nutrition. During the last 2 years, I have published 4 scientific articles and I also maintain an active collaboration with different international and national groups and with entities of the private sector. I am contributing as well to conferences (national and international), I have organized 1 international meeting, I participate in I+D evaluation activities, outreach activities and I have also combined my research work with an intense teaching and mentoring activity.

Altogether, my research experience gives evidence of my knowledge working on a diversity of crops and plant model systems, my achievements in understanding the regulation of key agronomic traits (including grain yield or seed quality under various abiotic stresses) and my proven results extending basic research findings on applied agronomic research.

Resumen del Currículum Vitae:

I finished my BS in Environmental Sciences in 2004 (UAM, Spain). In 2009 I graduated in Plant Biology with European Mention and Highest Honors at UAM. My PhD was funded by a highly competitive regional scholarship FPI-Comunidad de Madrid that was carried out within the framework of a national and a regional funded project. My PhD work included 2 scientific stays at Prof. Goldbach Laboratory at the Institute of Crop Science and Resource Conservation (University of Bonn, Germany), the publication of 9 peer-reviewed scientific articles, 3 book chapters and was presented at national (9, 2 oral communications) and international conferences (15, 3 oral communications). In parallel, I participated actively in teaching activities as teaching assistant in different Plant Biology courses (2005-2009), mentoring students and taking training courses to improve my teaching (9) and project management skills (4). After I graduated, I was hired as a postdoctoral researcher at the Department of Biology at the UAM. During this period (3 months) I was able to continue my research work resulting in my first scientific article published as supervisor (Plant Soil (2012) 361:385-395). In 2010 I got a postdoctoral position at the laboratory of Prof. Blumwald, at the University of California, Davis (US). For 5 years (2010-2014) I led different research projects that resulted in the publication of 9 scientific articles in international peer-reviewed journals in Plant Sciences (Q1). I also participated in several international meetings (16, 7 oral communications) and I was invited as speaker at international conferences (2). Besides, I interacted and collaborated with several international research groups with whom I still maintain a scientific collaboration. I also acquired experience writing grants (3) involving public agencies and companies. I trained and mentored graduate (8) and postgraduate students (2), in addition to several intern students. I also participated as lecturer of UCD undergraduate courses (3) and I taught different post-graduate courses (2). Later, I held a postdoctoral fellowship Juan de la Cierva at UAM (2015-2017) and I was the PI of an International grant (Spain-Latin America) funded by Banco Santander coordinating the work of 23 researchers distributed in 3 countries (2015-2017). The result was the publication



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of 4 articles, 1 book chapter, the organization of a scientific meeting and the establishment of a new collaborative works with companies that belong to the agronomical sector. Besides, during this period, I lectured different courses in Plant Biology at the UAM, I supervised undergraduate Dissertation students (9), 1 MS student (2015) and a PhD student (2014-2016). Later, I held a postdoctoral position at the CBGP (1 year) within the framework of an ERC grant resulting in the publication of 1 article, one short-stay abroad, 1 MS supervision and my participation as speaker in meetings and outreach activities. Currently, I hold a non-permanent position at UAM (2109-) being the PI of 2 National grants and participating in 1 International grant. Leading a research line working on abiotic stress on emerging crops and seed quality. I am supervising 1 PhD student, I contribute actively to I+D+i evaluation, outreach and teaching activities. Overall, my international background is accompanied with a strong publication record with 25 articles (23 of them Q1, including 13 as first author, 4 as corresponding author) and 6 book chapters.



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Turno de acceso general

Nombre: TORRES GINER, SERGIO
Referencia: RYC2019-027784-I
Área Temática: Ciencias agrarias y agroalimentarias
Correo Electrónico: storresginer@gmail.com

Título:

Novel Processes and Materials for Food Preservation in the frame of the Circular Bioeconomy

Resumen de la Memoria:

I am a scientist in the field of macromolecular science of application interest in food packaging technology. I gather more than 14 years of experience in both public research agencies and industrial R&D organizations. I was a Predoctoral Research Assistant at the Joint Research Unit of Agropolymer Engineering and Emerging Technologies (UMR IATE) of the French National Institute for Agricultural Research (INRA) (2006) under the Leonardo da Vinci programme and later I carried out my PhD in Food Science at the Institute of Agrochemistry and Food Technology of the Spanish Council for Scientific Research (IATA CSIC) (2006-11) with an I3P predoctoral fellowship. During my postdoctoral career, I received a Torres Quevedo Doctor contract and I worked as a Product Development Scientist for Ferro Spain Specialty Plastics Division (2011-14), as a Packaging Application Specialist for A. Schulman, Inc. Masterbatch Division (2014-16), and as an R&D Project Manager for UBE Corporation Europe Engineering Plastics (2016-17). In early 2017, I returned to IATA CSIC to the group of Novel Materials and Nanotechnology for Food Applications, where since 2018 I have been the recipient of a Juan de la Cierva Incorporación Postdoctoral contract. My postdoctoral research activity in both industrial and academic R&D placements has strongly contributed to advance the existing knowledge in biopolymers and also to transfer it into applications and products, with a particular emphasis on the relationship between synthesis, structure, processing, and properties of bioplastics for bioactives encapsulation and food packaging applications. I have also performed scientific missions at the University of Minho School of Engineering as a Visiting Researcher (summer of 2017) through a Short Term Scientific Mission (STSM) of a European COST Action, at the International Iberian Nanotechnology Laboratory (INL) as a Scientific Associate (summer of 2018) under a Marie Skłodowska-Curie Action (MSCA), and at the Institute for Polymer Materials (POLYMAT) of the University of the Basque Country (UPV/EHU) as an Invited Researcher (summer of 2019). In 2018, I co-founded the spin-off Ocenic Resins S.L. from the Joint Unit IATA-CSIC/Universitat Jaume I (UJI) in Polymers Technology, which is dedicated to the development and manufacturing of property balanced compounded bioresins for food packaging applications and food-contact disposable articles. My research line is currently focused on the development of the underpinning science to produce sustainable routes that should lead to the next generation of biopolymers that comply with Circular Economy and Bioeconomy strategies.

Resumen del Currículum Vitae:

Scientific production (Scopus):

- Author of 62 papers in JCR, of which 52 (84%) rank in Q1-journals and 21 (34%) in D-1 journals.
- First author in 18 papers (29%) and corresponding author in 25 (40%).
- 8 publications are among the most cited in their field (1%).
- 1568 citations received by 1044 documents, over 400 citations in 2019.
- Author's h-index of 20.
- Author of 8 book and encyclopedia chapters.

Technology transfer:

- Author of 4 patents, all licensed and exploited by industry.
- Co-founder of a spin-off company.
- Development of several commercial products (INNOVEX, OPTUM, BIOTUBE, YPACK, etc.)

International experience and scientific missions:

- French National Institute for Agricultural Research (INRA), Montpellier, France (6 months).
- A. Schulman Plastics BVBA Polybatch Technology Center (PTC), Antwerp, Belgium (18 months).
- University of Minho (UMinho) School of Engineering, Braga, Portugal (3 months).
- International Iberian Nanotechnology Laboratory (INL), Braga, Portugal (2 months).
- Institute for Polymer Materials (POLYMAT) of the University of the Basque Country (UPV/EHU), San Sebastián, Spain (1 month).

Collaborations:

- Participation in 18 European or international and 12 national research projects funded through competitive calls.
- Principal Investigator in several industrial contracts and projects of the Agència Valenciana de la Innovació (AVI) and Alba Synchrotron.
- Professional Member of the Society of Plastics Engineers (SPE).
- Team Member of the Joint Unit IATA-CSIC/UJI in Polymers Technology.



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Teaching and supervising experience:

- Nearly 300 hours of teaching.
- Co-supervisor of 3 Master's degree projects.
- Co-supervisor of 4 doctoral theses.

Dissemination activities:

- Participation in 36 conferences, including 33 international events with 32 oral communications.
- Organizer of 1 international conference.
- Moderator of the round table "Biolásticos" in TheCircularLab of Ecoembes.
- Team Member the CSIC s Interdisciplinary Platform for Sustainable Plastics towards a Circular Economy ("SusPlast").

Research grants and scholarships:

- Leonardo da Vinci programme.
- I3P predoctoral fellowship.
- Torres Quevedo Doctor contract.
- Short Term Scientific Mission (STSM) of European COST Action.
- Juan de la Cierva Incorporación contract.
- Marie Skłodowska-Curie Action (MSCA).

Editorial activities:

- Member of the Editorial Board of Applied Sciences (ISSN 2076-3417) section Food Packaging and Technology and Polymers (ISSN 2073-4360) section Biopolymers .
- Guest Editor of Special Issues in Nanomaterials (ISSN 2079-4991), Materials (ISSN 1996-1944), Applied Sciences (ISSN 2076-3417), Polymers (ISSN 2073-4360), and Frontiers in Nutrition (ISSN 2296-861X).

Awards and accreditations:

- Nominated for the "Bioplastics Oskar" at the 10th Global Bioplastics Awards by the European bioplastics MAGAZINE.
- Runner-Up of the "Blowing Agents and Foaming Processes Award" by Smithers Rapra.
- CEEI-IVACE 2019 award for the creation of the best start-up in the Valencia region.
- Positive assessment as Profesor Contratado Doctor by ANECA.
- Accredited with the I3 Positive Evaluation Certificate by the Ministry of Science, Innovation and Universities.
- Qualified as "Investigador Distinguido con I3" for the scientific profile Soluciones Innovadoras y Sostenibles para mejorar la Calidad de los Alimentos .



AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2019

Turno de acceso general

Nombre: BERNAL GUZMAN, PATRICIA
Referencia: RYC2019-026551-I
Área Temática: Ciencias agrarias y agroalimentarias
Correo Electrónico: pbernal@us.es

Título:

Developing effective biocontrol agents to protect crop infections by exploiting their type VI secretion systems (T6SSs)

Resumen de la Memoria:

I am an Environmental Microbiologist specialised in *Pseudomonas* with 18 years of experience in the field. I am currently working at the University of Seville as a Young Investigator ("Research Challenges" 2018 R+D+i Projects - JIN Modality).

I did my PhD in the Environmental Protection Department in Estación Experimental del Zaidín (CSIC) under the supervision of Prof. J. L. Ramos and Dr Segura. The work was funded by 2 CSIC Fellowships and was part of a Spanish and an UE Project. Prof. Ramos laboratory is leader in the *Pseudomonas* field and it is specially focused in bioremediation and biocontrol. The thesis entitled Role of phospholipids in the abiotic stress response in *Pseudomonas putida* was focused on the study of the membrane lipids in *P. putida* strains in response to abiotic stress. The scientific results from this period have been published in various microbiology and biochemistry journals. Since then, I have held several postdoctoral positions in Spain and abroad including 3-years MRC-contract in the laboratory of Prof. Peter Taylor at UCL (London, UK) working in multidrug-resistant human pathogens.

I have been a Research Fellow for 8 years funded by different Spanish and European organisation programs including the Junior Postdoctoral Program Juan de la Cierva, the EMBO short-term, the Talent Hub, the Marie Curie and the InterTalentum fellowship. During this period, I developed my own research line focusing on the analysis of a sophisticated bacterial secretion system named type VI (T6SS). T6SS toxins are translocated from the cytosol of the producer bacterium into target cells. Producer cells are gram-negative bacteria which use T6SS to outcompete other bacteria. The T6SSs are present not only in pathogenic but also in beneficial strains; many are in the soil where they stimulate plants growth and protect them from the attack of pathogens (biocontrol agents). This fact led me to study the role of T6SS in the biocontrol properties of *P. putida*. The results of this project showed that *P. putida* effectively uses the T6SS to annihilate important plant pathogens, confirming that T6SS is a new and powerful mechanism of biocontrol. My leading contribution to the project resulted in been co-corresponding author in a paper published in the top-tier ISME Journal (Bernal et al., 2017) and sole corresponding author on an invited review in Environmental Microbiology (Bernal et al., 2018). A paper on the characterisation of novel T6SS structural components that drive distinct anchoring modes has just been submitted to Nature (Bernal et al.,).

The use of environmental microorganisms to eradicate plant pathogens is an old strategy that fell in disuse after the introduction of chemical pesticides for intensive farming. The overuse of these contaminants results in many negative effects. Thus, sustainable agriculture has become a priority as reflected in Horizon 2020. With this in mind, my current goal is the development of an "enhanced"-biocontrol agent to protect our crops from severe infections and to this aim, I will explore among other aspects, the molecular mechanisms responsible for the regulation of *P. putida* T6SSs, the role of the system in polymicrobial populations and the secretion of toxins to improve (tailor) T6SSs along with the biological control capacity of *P. putida* for the benefit of crop plants.

Resumen del Currículum Vitae:

I did my PhD in the Environmental Protection Department at EEZ-CSIC under the supervision of Prof Ramos. My project was funded by 2 CSIC Fellowships and was also part of a Spanish and a European Project. I acquired expertise in microbiology, molecular biology and biochemistry. My thesis focused on the study of membrane lipids in *P. putida* strains in response to abiotic stress. The results were fundamental for understanding the role of the cell wall, the first protective barrier in microorganisms. My studies were published in recognised journals in microbiology (Munoz 2006; Bernal 2007a; Bernal 2007b; Pini 2009 & 2011; Segura 2012). I obtained my PhD with the highest distinction of Summa Cum Laude.

After my PhD, I moved to Prof Taylor's lab at UCL (UK), funded by a MRC project grant. There, I broadened my expertise working with Methicillin-Resistant *Staphylococcus aureus* (MRSA), a human opportunistic pathogen resistant to most antibiotics. I investigated the effect of catechins on MRSA; catechins modify bacteria provoking a less fit phenotype thus sensitising MRSA to b-lactam drugs. Since b-lactams act at the bacterial cell envelope, I determined the effect of catechins on the architecture of the cell wall (Bernal 2009). Subsequently, I found that catechins change the physical properties of the cell wall by de-localising the complex involved in the synthesis of peptidoglycan (Bernal 2010). Finally, I investigated the impact of catechins in the expression profile of several MRSA strains, using complex microarray analysis (Palacios 2014). In May 2009, I visited Dr Pinho lab at ITQB (Lisbon University), where I studied the localisation of PBPs in the presence of catechins.

In 2010, I moved to the lab of Prof Ramos and Dr Llamas (EEZ-CSIC) as a Juan de la Cierva Fellow. My project focused on the post-genomic functional characterization of *P. putida*, and had 2 research directions. Firstly, I studied the adhesion determinants used by *P. putida* to attach to surfaces (Duque 2013), and was also involved in the genome sequencing of a *P. putida* clinical isolate (Molina 2013). Secondly, I characterised the type VI secretion systems (T6SSs) of *P. putida*. I was awarded a short-term EMBO fellowship to visit the lab of Prof. Filloux (Imperial College London, UK), where I remained after being awarded a Talent Hub (2015) and a Marie Curie Fellowship (2016)



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and an MRC grant (2018). My work here showed that the T6SS of *P. putida* is a potent antibacterial device, used by bacteria to eradicate competitors, including phytopathogens. These results were published in ISME J. (Bernal 2017; co-corresponding author, recommended by F1000), a top-tier journal in microbiology. Because of my latest pioneering work, I was invited to write a review for Environmental Microbiology about the T6SS in plant-associated bacteria (2018).

I moved back to Spain as an InterTalentum Fellow (2019) at the Autonomus University of Madrid to continue my work on T6SS and recently started a position as a Young Principal Investigator (2019) in the Department of Microbiology in the University of Seville after being awarded my first research grant ("Research Challenges" 2018 R+D+i Projects). I have recently submitted to Nature my latest work on the characterisation of novel T6SS structural components that drive distinct anchoring modes underpinning functional diversity.