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AYUDAS RAMÓN Y CAJAL
CONVOCATORIA 2014

Turno de acceso general

Nombre: **PADILLA RUIZ, FRANCISCO MANUEL**
Referencia: RYC-2014-15815
Área Científica: Agricultura
Correo Electrónico: f.padilla@ual.es

Título:

Plant-soil interactions in relation to availability of soil resources

Resumen de la Memoria:

Broadly speaking, I am a plant/crop researcher whose research career has focused on plant-soil interactions in relation to the availability of key soil resources such as water and nitrogen. I started my scientific career with a research grant with CSIC's Arid Zone Experimental Station (EEZA) and worked in the improvement of re-forestation techniques in degraded environments, by studying seedling development and plasticity of root systems of forestry species in drying soils. This theme was the background of my PhD work supported by a predoctoral grant from CSIC's I3P program. During my PhD work I became involved in research on ecophysiological plant responses to drought and climate change. I participated in several projects on the effects of climate change on arid shrublands, and led a research line on root ecology. I also visited several recognized international research centers (Switzerland, USA) with short stays (nearly 6 months) that were the foundation of future successful collaborations. After obtaining my PhD and before conducting a postdoc abroad, I worked for a private forestry company (Serfosur SL) on the assessment of carbon sequestration potential of Mediterranean forests. Later, I was hired by an EU FP7 project to work on characterization of functional ecophysiological traits of African tree species. To further develop my specialization on plant-soil relationships and responses to resource availability, I conducted a two-year postdoc in Radboud University (Holland) funded by a postdoc grant from Spanish Ministry of Education. In that work, I focused on responses to heterogeneity and patchiness of soil resources in extensive grassland systems. During this postdoc, I got involved in several projects and started fruitful collaborations with researchers from the Netherlands and China, which is reflected in joint articles and my participation in projects where I contributed my expertise on plant-soil relationships. More recently, as a Juan de la Cierva researcher in the University of Almeria, I am applying my background on plant-soil relationships to horticultural crops. I have enhanced and am now leading a research line on the use of proximal optical sensors to assess crop N status and improve the management of intensively managed vegetable crops. I am now involved in a Plant Nacional project and a project with a private company (Zeraim Gedera (Syngenta)) on this line. Overall, throughout my career, I have used a wide range of techniques to measure plant/crop responses, root growth, soil and crop water status, and nutrition in field studies and also in controlled conditions, and have demonstrated my versatility to work on plant-soil interactions in natural systems, re-forestation, extensive grassland systems and intensive horticultural crops. I have productive research experience (28 JCR papers) in a wide range of topics and have collaborated with diverse researchers, both nationally (other than the group where I conducted my PhD work) and internationally (e.g., UAL, USA, Netherlands, China).

Resumen del Currículum Vitae:

After graduating in Environmental Sciences from the University of Almeria (1997-2001), my scientific career commenced in 2003 in CSIC's Arid Zones Experimental Station (EEZA) assessing re-forestation techniques in arid environments. I started my PhD work in 2004 with a grant from CSIC's I3P program. In my thesis, besides expanding my work on re-forestation, I focused on root responses of forestry species in drying soil. During my PhD stage, I also got involved in research on climate change and had short stays at several recognized international research centers in Switzerland and USA. After defending my PhD thesis in 2007, I worked for a private forestry company on the carbon sequestration potential of Mediterranean forests, and was then (2009-2010) hired by the EU FP7 Project FunciTree in EEZA-CSIC to work on the characterization of tree functional traits in African agroforestry systems. In 2010, I started a postdoc (grant from Spanish MEC) in Radboud University (Holland) to expand my research on plant responses to water and nutrient heterogeneity in extensive grasslands. Since 2012, I have worked as a Juan de la Cierva researcher in the University of Almeria (UAL) where I have widened my research to include plant-soil relationships in crops. Overall, I have conducted research in controlled condition studies and in degraded and natural systems, extensive grasslands and intensive horticultural crops.

Throughout my career, I have spent two years (postdoc) and nearly eight months (short visits and stays) in international research centers and have been involved in research with international researchers from Switzerland, Germany, North America, Chile, Holland and China.

I have been involved in the preparation of competitive grants and have actively participated in various capacities in 7 international projects, 10 national projects, 2 regional projects and 1 project with a private company. I have actively participated in collaborative research with private companies from forestry and horticulture. In different environments, I have proposed research and led data analysis and manuscript writing, as indicated by the appreciable number of JCR articles as first (15 articles) or last author (2 articles).

Since the beginning of my publication record in May 2006, I have published 28 JCR articles, at an average of 3 publications per year. Most of my publications are in Q1 journals (20 articles), 10 of these are in D1 journals. I am first or last author in 13 articles published in Q1 journals, 6 of these are in D1 journals. The sum of citations of my publications is 576 (WOS Core Collection), representing on average 21 citations per article and 64 citations per year. My h-index is 14 and my m-index is 1.6 (WOS Core Collection). I have published several

divulgation articles and book chapters and have presented 22 and 18 scientific contributions in international and national congresses, respectively. I have done teaching at UAL and have supervised one PhD thesis (UAL) and two final bachelor projects (Radboud University, Holland).

I have been awarded as one of the top 10 performing referees of the journal Plant and Soil, followed-up by my incorporation to the Editorial Board. I am currently Consulting Editor of Plant and Soil (since June 2013) and Journal of Arid Environments (since January 2013). I have been invited to act as a reviewer (nearly 100 manuscripts) for diverse leading JCR journals in the fields of Agriculture, Ecology and Plant Scien

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Turno de acceso general

Nombre: **SANCHEZ COLL, NURIA**
Referencia: RYC-2014-16158
Área Científica: Agricultura
Correo Electrónico: nuria.sanchez-coll@cragenomica.es

Título:

DEVELOPING NEW SUSTAINABLE STRATEGIES TO FIGHT AGAINST PLANT BACTERIOSES AND TO IMPROVE WEED CONTROL

Resumen de la Memoria:

The main drive during my scientific career has been to understand how plants respond to environmental stress and how can we use this knowledge to improve crop yield. The complex questions that I focused on during my PhD and postdoc needed cross-disciplinary, methodologically challenging approaches to be solved. This took extra time and effort, but ultimately led to ground-breaking discoveries that have opened avenues for future research. All my research is published in major scientific journals (Science, PNAS, CDD, Plant Journal, Plant Cell Physiol., MPMI...) and has an exponentially increasing citation trend.

I have been trained in world class international research institutions, spending more than 10 years abroad and performing cutting-edge research in laboratories lead by the most outstanding researchers in their fields, who have given me the freedom to carry out my projects independently and lead my own research teams. This has allowed me to establish a very broad network of international collaborators that extend my intellectual and technical reach. In addition, I have been able to obtain competitive international funding to finance my research through my entire scientific career abroad and to establish my own research line in Spain, where I moved back in 2012.

The main research line that I am currently leading focuses on understanding the mechanisms that orchestrate plant-pathogen interactions and to generate new sustainable strategies to translate this knowledge into the field. This research line addresses two major issues:

• Development of new strategies to fight against plant bacterioses. This part of my work focuses on identifying novel forms of sustainable resistance and new agrochemicals effective against bacterial wilt in potato caused by Ralstonia solanacearum. The work combines pharmacological, molecular, cellular and biotechnological approaches to i) identify novel antibacterials for crop protection; ii) Precisely characterize plant cellular/tissue-specific immune responses, iii) Specify the role of novel plant determinants of susceptibility and resistance, to be able to strategically modify them in crops to increase resistance and iv) Generate genome-edited potato with enhanced tolerance to R. solanacearum infection. Part of this project is done in collaboration with 3 biotech companies.

• The regulation of pathogen-triggered programmed cell death and its applications into weed and pest control. Pathogen-triggered programmed cell death or the hypersensitive response (HR) is a plant-specific, localized form of cell death that occurs at the site of attempted pathogen attack, preventing pathogen spread and inducing defenses in the whole plant. A deeper understanding of HR is providing us with the knowledge necessary to generate crops with an enhanced ability to fight infection. In addition, cell death regulators are a source of new traits to specifically target in weed control, an area of intense research needs these days, because of the rapid evolution of weeds resistant to multiple different herbicides, one of the main challenges farmers are facing around the world. As tools for discovery of new cell death regulators we use a multidisciplinary approach, combining proteomics, transcriptomics, phenomics, genetics and biochemistry. Part of this project is done in collaboration with a world-leader international biotech company

Resumen del Currículum Vitae:

EDUCATION and RESEARCH ACTIVITY: B.Sc. Biology (Agricultural-Food Biology and Biotechnology), University of Barcelona (2001). M.Sc. Plant Genomics, IBMB-CSIC (2002). Ph.D. Plant Genetics, Institute of Agricultural Sciences, ETH, Switzerland (2006). Postdoc and Research Associate at the University of North Carolina (UNC), USA. Since 2012, researcher at the Centre for Research in Agricultural Genomics (CRAG), Spain. PUBLICATIONS: 13 publications, in journals including Science, PNAS, The Plant Journal, CDD and MPMI. 5 publications as 1st author, 2 as corresponding author and 1 as last. INTERNATIONAL STAYS: 3 centers (ETH, UNC and University of Munich) for 10.5 years. RESEARCH PROJECTS: Participation in 12 projects, 6 of them funded by international agencies. Principal investigator in 2 projecta. CONTRACTS: 11 scientific contracts, 5 of them international. INTL. CONFERENCE ORGANIZATION: Scientific leader and organizer of "The death of plant cells: from proteases and field applications" in 2013. CONFERENCE ATTENDANCE: 19 major conferences attended, 16 of them international, invited plenary speaker in 9. SEMINARS: Invited to present in 13 research institutions, 9 of them international. COLLABORATIONS: Funded collaboration with 4 biotech companies, 1 of them international. Current participation in 12 academic collaborations, 9 of them international. Funding member of the European COST Actions SUSTAIN and PROTEOSTASIS. Participant of 3 additional scientific networks, currently applying for joint European funding. THESIS DIRECTOR: Director of 11 theses, 4 of them international, already defended (4 M.Sc. and 3 B.Sc). Currently directing 2 Ph.D., 1 M.Sc. and 1 B.Sc. students at CRAG. AWARDS: 2013 Josep Mª Sala-Trepat Award from the Catalan Society of Biology and 2014 Placa de Honor de la Sociedad Española de Científicos (most outstanding young biology researcher of the year). EDITORIAL/REFEREE ACTIVITY: Associate Chief Editor for the journal Frontiers. Referee for 13 indexed, international journals. International scientific panel member of Research Foundation Flanders, French National Research Agency and European Commission. FELLOWSHIPS: 8 fellowships obtained, 6 of them international. TEACHING: 15 courses taught in 5 different universities (3 of them international), including 9 B.Sc. courses 3 M.Sc. course and 3 Ph.D. courses. Teaching accredited by the

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AQU as University Lecturer Professor. COURSES: 10 international courses attended. RESEARCH DIFFUSION: Participation in 4 science diffusion activities including interviews in TV (2009, 2014) and general audience journals (2011 and 2013). MEMBERSHIP SOCIETIES: Member of 2 scientific societies (SEBC and SCB) and 3 established networks (APORED, AUTOFAGIA, ISPI).

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CONVOCATORIA 2014

Turno de acceso general

Nombre: **JIMENEZ LOPEZ, JOSE CARLOS**
Referencia: RYC-2014-16536
Área Científica: Agricultura
Correo Electrónico: josecarlos.jimenez8@gmail.com

Título:

Study of functionality, health benefits and allergenicity of proteins in reproductive tissues (pollen and seed) from plant species with agro-industrial interest

Resumen de la Memoria:

The candidate's research interests strive to gain a better understanding and disclosing the key genes and proteins involved in the molecular mechanisms controlling cell differentiation and morphogenesis, leading fundamental physiological processes such as plant reproduction and development, by integration of cellular communication through multiple signaling pathways. Overall, revealing how plants use cellular communication in growth, development, and reproduction, which is of critical importance to understand the mechanistic underlying cell differentiation processes for potential applications in future crop improvement throughout breeding strategies. Thus, allowing engineering crops for optimum growth in order to maintain future food demands and producing improved crops for sustainable agriculture.

At the same time, the candidate's main research line has also focused in the study of the health promoting aspects, as well as allergenicity of several of these gene products coming from pollen and vegetable sources of food (legumes). The research line is currently dealing with the identification of key proteins integrating the legume grain (seed) storage protein pool, their molecular role and the mechanisms underlying to increase insulin sensitivity and/or reducing appetite, aiming to the prevention of diabetes and obesity through interdisciplinary approaches. In addition, the research line is contributing for the development of molecular tools for clinical trials (diagnosis and immunotherapy) to tackle pollen allergy, as well as food allergy from seed proteins of grain legume species that can potentially contribute to trigger allergy symptoms.

Overall, the candidate's research has helped to identify genes and proteins; functional and signaling pathways involved in different aspects of plant growth and developmental biology by integration of multidisciplinary approaches - this being important in increasing food production, improve human health and decreasing environmental harm. Candidate has used pollen and seeds from plant species with agro-industrial interest as models of study.

Resumen del Currículum Vitae:

The candiate's capacity to conduct high quality and innovative research is evidenced by his strong publication record along his scientific-research trajectory. He has co-authored 14 book chapters, four conference papers, two edited books, and 33 manuscripts (in international peer-reviewed journals) in interdisciplinary fields such as proteomics, proteins biochemical characterization, plant cell physiology, microscopy and computational biology. More than 60% of candidate's journal articles have been published in Q1-ranked journals in Web of Sciences. The quality of his publications is also reflected by his "H-index" of 9 (01/02/2015). Having a total number of 230 citations for these articles in the last 5 years, showing a citation record of 46 cites per year.
In addition, the candidate has co-authorized an interantional patent as co-inventor (Ref. PCT/ES2006/000008), and has deposited more that 200 gen/protein sequences in international databases such as GenBank or Uniprot.
He has actively participated in different outreach Activities with the primary goal of creating awareness in the general public about my scientific accomplishments and its implications for the citizens. The outcomes of his research work have been the object of eight scientific news and world-wild press releases from 2005 to 2014. Furthermore, the candidate is an active member of seven Scientific Societies, including the American Society of Plant Biologists (ASPB), Australian Society of Plant Scientists (ASPS), The European Societies of Microscopy (EMS), The Protein Society, just to nane but few. The candidate has been invited to review numerous manuscripts for nearly 20 international peer-reviewed journals in the fields of Agriculture; Molecular Biology; Genomics; Proteomics; Biochemistry; Plant Cell Physiology; and Computational Biology, and currently he is scientific editor of 3 book editorials from New Zealand, Europe and USA.
The candiadate has participated in more than 15 successfully funded grants/projects, by national (Spanish government) and European bodies of funding, which have combined multidisciplinary teams of researchers from various fields, thanks to fruitful establishment of a long-term research relationship and networking with the work accomplished in different international stays with a number of international experts in Australia, Germany, Spain and USA, showing independency and a great initiative and ability for in different research environments. The candidate's capability of leadership to present outstanding findings and projects outcome is also reflected in more than 60 proceeding in congresses.
As further evidences of the candidate's international projection, independent thinking and leadership, as well as outstanding accomplishments are two awarded projects/grants, throughout an extremely competitive process, I) European Research Program MARIE

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CURIE (FP7-PEOPLE-2011-IOF) as Principal Investigator (PI), Ref Nº: PIOF-GA-2011-301550 (Budget: 270.000€). This project is currently in development in the frame of an international collaborative endeavour between The University of Western Australia and the National Council for Scientific Research (CSIC); II) €Andalucia Talent Hub€, co-funded by the European Research Program MARIE CURIE (FP7 framework) and Andalusian Government, also as Principal Investigator (PI), Ref nº 291780 (Budget: 165.000€).

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Turno de acceso general

Nombre: **MEIJON VIDAL, MONICA**
Referencia: RYC-2014-14981
Área Científica: Agricultura
Correo Electrónico: mmeijon@hotmail.com

Título:

Root and shoot apical meristems development: From Arabidopsis to forest species

Resumen de la Memoria:

In my PhD project I gained extensive research experience in the fields of plant epigenetics and floral development. I started studying the improvement of floral plant quality through the application of GA inhibitors as a Master student at SERIDA-INIA. After finishing my Master studies I focused on floral bud development, particularly, on hormone and epigenetic regulation of floral differentiation. In addition, during the last 2 years of my PhD, and in my first year as a postdoc at the University of Oviedo, also, I actively collaborated in the Epiphysage research group on other differentiation processes. Additionally, during this period I participated as researcher in European project: EUCANET (ERA-CAP project) whose main goal was to identify a Candidate Genes that are likely to impact wood traits and productivity under drought conditions in Eucalyptus.

From 2010-2012, I was Postdoc fellowship in GMI (Vienna-Austria) in the Busch lab. My major research focus was to identify regulatory networks that underlie developmental processes of a complex organ, the Arabidopsis root, using a novel approach which combines high throughput confocal microscope imaging of whole roots with genome-wide association studies (GWAS). Thereby, I could identify multiple regions in the genome that were associated with variation of root development. Using expression data I could identify several novel genes, between them: one F-box gene that modulates meristem length, and one phloem protein family gene which is involved in determining the width of the mature stele in the root. In correspondence with the mutant phenotype, we named the first gene KURZ UND KLEIN (KUK) and the second AUTOPISTA (AUT). An intriguing question was how different alleles of KUK could confer changes in meristem size and cell size. Using a transgenic approach, we found that the major variation between accessions was conferred by polymorphisms in the coding region of the KUK gene. During this phase of my scientific career I established active collaborations with top scientist in international environment, such as: Wolfram Weckwerth (University of Vienna-Austria), Pinto Lab (University of Aveiro-Portugal), and Dr. Till Ischebeck (Goettingen University-Germany).

In November 2012, I joined SERIDA in their Forest Research Program after receiving a Juan de la Cierva fellowship, for studying polycyclic growth in P. pinaster. Briefly, the main goal of this project is to establish the molecular basis of polycyclic growth of apical meristem and the adaptation process of P. pinaster, focusing the results on breeding strategies. For this, molecular, physiological and omic approaches are being used. In the same research line, from October 2014 I am Principal Investigator of INIA project entitled: "Genetic diversity management. Development of an operational programme for breendign identification of chemical-molecular markers for application to selection (RTA2013-00048-C03-02)". The main goal of this proposal incorporates state of the art knowledge on transcriptome, protein complex analysis and metabolic profiling in order to construct a picture of how polyclyclic growth functions in Conifer.This project also involves collaborations with different European multidisciplinary research groups (Czech Republic, Portugal, Austria and Spain) contributing to establish a European Forest network focussed on studying ad

Resumen del Currículum Vitae:

I graduated in Biology in 1998 and in Biochemistry in 2000 in the University of Oviedo. I started my PhD studies in 2004 between University of Oviedo in the Plant Physiology area and SERIDA-INIA getting my doctorate in 2009 about floral development and improvement of ornamental quality plants.

I have more than 2 year of international postdoc experience enjoying the most part of this time in the Gregor Mendel Institute of Molecular Plant Biology (Vienna-Austria), where my major research focus was to identify novels regulatory elements involved in root development of Arabidopsis using a novel approach which combines high throughput confocal microscope imaging of whole roots with genome-wide association studies (GWAS), this work was recently published in "Nature Genetics". In this paper we reveal that polymorphisms in the coding sequence are the major causes of KUK-allele dependent natural variation of root development.

In November of 2012 I started a Juan de la Cierva project at SERIDA-INIA (Asturias). This project has the global aim of improving knowledge of the physiological, molecular and genetic basis of a trait essential for the breeding strategies in forest species: polycyclic growth. An omics approach is being used in order to broaden understanding of the hormonal and molecular bases of polycyclic growth. Moreover, during June and July of 2013 I performed a short stay at CzechGlobe, (Brno, Czech Republic) to analyze the metabolome on P. pinaster by LC-MSn (Orbitrap) in. In the same research line, from October 2014, I am PI of INIA project (RTA2013-00048-C03-02).

In the last years, I supervised three master students and two degree projects between University of Oviedo (Spain) and University of Aveiro (Portugal), several summer students at GMI and SERIDA. Currently, I supervise one PhD student, one master student, and two degree projects at the University of Oviedo; and one PhD student at University of Aveiro.

So far, I have contributed as researcher in 11 National (funding from different countries: Spain, Portugal and Austria) and 1 European (ERA-

CAPs) projects. I have 18 publications in journals included in SCI, 5 chapters of book and one divulgation article. More than 90% of my publications are within the first quartile, signing as first or last author in the 45% and being some of these the most prestigious journals in their field, such as: ‘Nature Genetics’, ‘Plant Cell’, ‘Molecular Cell Proteomics’ and ‘The Plant Journal’. I have been cited more than 330 times and my H-index is 11 with an average IF of 5.43 (at Jan.2015).

As other merits, I have contributed in 20 national and international conferences. Also I have been member of scientific committee of international meetings (9º Encuentro Nacional de Biotecnología del IPN-Mexico and 1st Biotechnology World Symposium), and I have participated in 7 national and 5 international projects. Currently I participle in the COST action FA 1306: "The quest for tolerant varieties - Phenotyping at plant and cellular level". Additionally, I work as reviewer for journals, such as: ‘Photosynthetica’, ‘Plant Physiology and Biochemistry’, ‘Trees’, ‘Annals of Forest Science’, and ‘New Phytologist’. Two of my papers (one signing like first author, and the other like last) have been award as cover articles in their respective issue. And, I am enabled as PhD assistant for University teaching by ANECA.

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Nombre: **AGUSTI FELIU, JAVIER**
Referencia: RYC-2014-15752
Área Científica: Agricultura
Correo Electrónico: javier.agusti@plants.ox.ac.uk

Título:

Understanding the genetic control of crucial questions in agriculture.

Resumen de la Memoria:

I graduated in Agriculture Engineering in the Polytechnic University of Valencia (Spain). I then did a one-year internship in the lab of Jeremy Roberts (University of Nottingham, UK), where I learnt fundamental plant molecular biology techniques. My agriculture engineer view and the expertise gained in the Roberts' lab, led me to do my PhD on the transcriptomics of citrus abscission, under the supervision of Dr. Manuel Talón at the IVIA institute (Valencia).

After finishing my PhD (awarded with the "premio extraordinario biotecnologia 2008" of the Polytechnic University of Valencia), I decided to expand my expertise into basic plant science. Thus, I moved into the field of plant development by joining the lab of Thomas Greb in the Gregor Mendel Institute (Vienna), where I worked in the hormonal and genetic regulation of cambium activity and secondary growth. Although part of our work was blocked for publication by a patent that we developed, we published a number of papers that were internationally recognized as being significant contributions to our understanding of vascular development in general and of cambium regulation in particular.

After 5 years of postdoctoral training in Vienna I obtained a Lecturer position at the University of Oxford, where I currently lead a research group. My current research puts in practice my expertise in crop sciences, developmental genetics, molecular biology and genomics to understand broad biology concepts that (at the same time) have strong impact on agriculture, using the cambium as experimental model system. We use different species depending on the actual question to be approached.

I expect this Ramon y Cajal contract to reinforce my research and consolidate my group internationally in the plant science research field. I am confident that my group's research will lead to innovative scientific outcomes and will add to the Spanish scientific community.

Resumen del Currículum Vitae:

EDUCATION

Polytechnic University of Valencia: Agriculture Eng. (2001)
Polytechnic University of Valencia: PhD (Biotechnology; 2007)

RESEARCH EXPERIENCE
January 2013-Present: Departmental Lecturer.
Department of Plant Sciences
University of Oxford (UK).
South Parks Road
Oxford, OX1 3RB
United Kingdom

October 2007-December 2012: Postdoctoral Researcher.
Gregor Mendel Institute of Molecular Plant Biology
Dr. Bohr-Gasse 3
1030 Viena (Austria)
Advisor: Dr. Thomas Greb.
Project: Vascular development in Arabidopsis thaliana.

2003-2007: PhD: "Genomic approaches to the abscission process on citrus leaves: laminar abscission zone transcriptomics."
Centro de Genómica.
Instituto Valenciano de Investigaciones Agrarias.
Moncada (Valencia).

Advisor: Dr. Manuel Talón.

2001-2003: Research student.
Centro de Genómica.
Instituto Valenciano de Investigaciones Agrarias.
Moncada (Valencia).
Advisor: Dr. Manuel Talón.
Project: Citrus Genomics.

October 2000-August 2001: Diploma thesis: "The expression of Polygalacturonases during cell separation processes in plants".
Plant Science Division
Sutton Bonington campus.
Nottingham University (UK)
Advisor: Prof. Jeremy A. Roberts

FELLOWSHIPS

2000-2001: Erasmus Fellowship. Sutton Bonington Campus. Nottingham University (UK).

2003-2007: PhD Fellowship from Instituto Nacional de Investigaciones Agrarias (INIA).

AWARDS

2008: Doctoral thesis award. Polytechnic University of Valencia. "Premio extraordinario de doctorado en biotecnología 2008"

SCIENTIFIC PAPERS: 14

DIVULGATIVE PAPERS: 2

INTERNATIONAL REFERENCES (RECOGNITION) OF MY WORK: Agusti, J., Herold, S., Schwarz, M., Sanchez, P., Ljung, K., Dun, E.A., Brewer, P.B., Beveridge, C.A., Sieberer, T., Sehr, E.M., Greb, T. 2011. Strigolactone signaling is required for auxin-dependent stimulation of secondary growth in plants. PNAS. 108(50): 20242-20247.
This article was evaluated in the Faculty of 1000, getting a rate of 8 (Van Norman J, Benfey P:F1000.com/13408960).

PATENTS AND TECHNOLOGY TRANSFER

The use of strigolactones in plants. Patent pending. Application number: EP09159625.4 filed at the European Patent Office. Inventors: Thomas Greb and Javier Agusti.

COMPETITIVE GRANTS AWARDED

Understanding the genetic regulation of the cambium. PI: Javier Agusti. Funding agency: GATSBY (UK). Quantity awarded: £18.498.

INVITED TALKS TO INTERNATIONAL CONFERENCES: 2

INVITED TALKS TO INTERNATIONAL INSTITUTIONS: 2

CONTRIBUTIONS TO INTERNATIONAL CONFERENCES: 11

TEACHING EXPERIENCE

UNIVERSITY OF OXFORD: 250 hours

ADMINISTRATIVE EXPERIENCE: PhD Committee Plant Science Department, University of Oxford.

PhD STUDENTS MENTORED: 1

UNDERGRADS MENTORED: 7

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AYUDAS RAMÓN Y CAJAL
CONVOCATORIA 2014

Turno de acceso general

Nombre: **BLANCO PORTALES, ROSARIO**
Referencia: RYC-2014-15111
Área Científica: Agricultura
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Título:

Functional characterization of riprning-related genes and transcription factors in strawberry fruits

Resumen de la Memoria:

My research career has always been related with the study of the strawberry fruit and its ripening process. This crop is of great agronomic importance and brings great economic benefits to our country hence it is considered a biotechnological target of great interest. From our research group, we have study the main up-regulated genes related with the ripening process of strawberry fruit with the objective to improve the fruit quality, through the improvement of its organoleptic properties, to reduce its losses after the harvesting and, in general, to clarify the molecular basis that support the fruit ripening process and determine the biotechnological targets of this process.
In the last years, my work has been mainly related with the study of the regulatory function carried out by Transcriptional factors during the strawberry fruit ripening and senescence process as well as. The elucidation of the role played by transcription factors in specific processes in strawberry is an important post-genomic research field since their physiological function in the fruit ripening and senescence process has been very scarcely studied. Previous results of my research group have shown that the expression of several genes encoding transcription factors and other genes related with the fruit organoleptic propierties strongly increases during the maturation process.
Thus, our objective is to determine the physiological role played by these genes in the fruit development and maturation process by means of transgenic approaches and the evaluation of their capability for biotechnological application.
Currently, I'm also working in olive defense response against infection by Verticillium dahliae. Thus, I am researching About the role of Ve1 gene in the response of olive against this disease and about its biotechnological potential to combat it. During my research career, I has published 20 papers (one of them in press), 4 of them of first author, 4 of them of last author and two of them as corresponding author; in general, all of them with impact index between 3-7 and included in the top 25% of Plant Science area. In fact, I have a total impact index of 94.95, 345 citations and a RG score of 25.93. Moreover, I have under review two new manuscripts (I am the last and first author respectively in each one) and I am writing two new manuscripts in this moment (one of them as last author). I would like to highlight my following publications:
1.-. J Exp Bot 53, 1723-1734 (2002).; 2.- J Exp Bot. 63, 4275 – 4290 (2012); 3.- Plant Cell Physiol. 54, 218 – 236 (2013);.
4.- J Exp Bot. 64, 1471 – 1483 (2013); 5.- J Exp Bot. 65(2):401-17 (2014).
I co-managed (2013) the doctoral thesis "Functional characterization of strawberry (Fragaria x ananassa) fruit-specific and ripening-related genes involved in aroma and anthocyanins biosynthesis" with "Sobresaliente Cum Laude" of mark and I have supervised and managed two works leading to an ASD (both "sobresaliente") and one end of course project ("sobresaliente"). In 2014, I also co-managed two final degree reports (both "sobresaliente"). Currently, I am also co-managing three doctoral PhD thesis in the strawberry research field related with the functional characterization of genes with biotechnology applications for improving the fruit quality and its nutraceutic content. All of them will finish in 2015.

Resumen del Currículum Vitae:

Licenciada en Bioquímica por la Universidad de Córdoba en 1994. Mi tesis doctoral consistió en el estudio de varios genes involucrados directamente en el proceso de maduración del fruto de fresa. En esta etapa adquirí importantes conocimientos sobre técnicas de Biología Molecular básica, Qrt-PCR. Microscopía óptica y electrónica, histología, inmunocitoquímicas, bioquímicas y microarrays, También aprendí técnicas de cultivo in vitro de plantas y cultivos celulares en el CIFA de Churriana (Málaga) entre 1997 y 1998. Realicé mi postdoc en el Plant Research International (Wageningen, Holanda) durante dos años bajo la supervisión del Dr, Edwin van der Vossen. Posteriormente, me incorporé en el grupo del Dr. Juan Muñoz del Dpto. de Bioquímica y Biología Molecular de la Universidad de Córdoba y en 2007 conseguí un contrato del programa Juan de la Cierva. He sido investigadora contratada del Campus Internacional de Excelencia Agroalimentaria CeiA3, investigadora postdoctoral a cargo de un proyecto de Excelencia de la Junta de Andalucía y actualmente disfruto de un contrato postdoctoral de investigadora en la Universidad de Córdoba en el grupo del Dr. Juan Muñoz. En estos años he perfeccionado algunas de las técnicas de Biología Molecular que ya conocía y he aprendido y desarrollado otras como LCM, amplificación de RNA, sistema Gateway, generación de plantas transgénicas, microarrays de oligonucleótidos, Y2H, localización por GFP, PCR digital, RNA-seq, etc. En general, durante mi trayectoria profesional he participado en 15 proyectos de investigación que han generado 47 contribuciones a congresos nacionales e internacionales, jornadas de investigación y 20 artículos de investigación con un índice de impacto medio de 94.95, 345 citaciones y todos ellos dentro del primer percentil de su área. Actualmente, tengo dos manuscritos más bajo revisión y otros dos

prácticamente finalizados. Además, he codirigido un trabajo fin de carrera, dos trabajos fin de Máster y dos trabajos fin de grado, todos ellos calificados con sobresaliente; y una tesis doctoral defendida en 2013 y calificada con Sobresaliente Cum Lauden. Actualmente, estoy codirigiendo tres tesis doctorales más que serán defendidas a lo largo del año 2015. Participo también en la docencia del departamento de Bioquímica y Biología Molecular impartiendo clases prácticas y teóricas en 4º curso de Agrónomos, 2º y 4º curso de Biológicas y en el Máster de Biotecnología Molecular, Celular y Genética. Tengo evaluación positiva de la ANECA como profesor contratado doctor, profesor ayudante doctor y profesor de universidad privada y evaluación positiva de mi capacidad docente por la Universidad de Córdoba (evaluación DOCENTIA).
Paralelamente, he recibido varios cursos de especialización en microarrays y de formación de personal docente. Soy componente del grupo docente 131 de la universidad de Córdoba, de la comisión de integración de actividades del Dpto. de Bioquímica y Biología Molecular de la Universidad de Córdoba, directora de varios trabajos de investigación realizados dentro del programa LLP Erasmus, he participado como revisora de las revistas Planta y Plant Physiology y soy miembro del equipo editorial de la revista Conference papers in Biology.

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AYUDAS RAMÓN Y CAJAL
CONVOCATORIA 2014

Turno de acceso general

Nombre: **SAMPEDRO QUESADA, INMACULADA**
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Título:

Role of Intra- and Inter- species signalling via small molecules in microbe-plant-interactions (infection and symbiosis)

Resumen de la Memoria:

My research career has been mainly focused on Microorganism, Bioremediation and Intra- and Inter-Species Signaling. My professional career has offered me experience in the search for new alternatives for the reutilization and revaluation of the enormous amount of by-products and organic residues generated by today's society. I have been interested in bioremediation processes of agricultural residues using saprobe fungi analysing the chemical quality and the fertilizing properties of these amendments. I have been also interested in the contribution of the arbuscular mycorrhizal symbiosis to these bioremediation processes and in the hormone signalling pathways involved in mycorrhizal establishment focusing my interest in the phytohormones strigolactones. After obtaining my doctoral degree, I acquired a solid background in microbial ecology of soils using several methodological approaches including next generation sequencing techniques.
Due to my interest to continue working in microbial signalling, I moved three years ago to the University of Vermont (Burlington, VT, USA) where I worked in the identification of volatile organic compounds (VOCs) that are produced as the result of bacterial metabolism and I also worked in preliminary studies of bacterial chemotaxis.Currently, I'm working at Dartmouth College (Hanover, NH, USA), member of the Ivy League and consistently ranks among the world's greatest academic institutions, where I focus my interest in the intra- and inter-species signaling via small molecules. I primarily focus on trying to better understand how a bacterium senses a site of infection through studies of its chemotaxis response to small molecules. I am considering chemotaxis as an earliest step in microbe-host interaction and the role of chemotaxis in important processes such pathogenesis, bioremediation, and the bioprotection of plants remain to be fully explored.
My work aims to explore a broad range of possible chemoattractants and chemorepellants, for microorganisms, in the context of root colonization and plant infection, with an emphasis on small molecules (VOCs) and links to the plant's signaling pathway, particularly the role of the chemoreceptors. The identification of the genome-encoded chemoreceptors as well an in-depth analysis "in vitro" and "in vivo" of the structural biology of chemoreceptors which mediate chemotaxis toward these compounds would be also a goal for my near future. Therefore, my future research studies will aim to understand the role of microbial chemosensing and motility in response to damaged tissue using a pseudo "in vivo" model.

Resumen del Currículum Vitae:

I obtained a Degree in Pharmacy at the University of Granada in 1999. Since then, I started my scientist career in which I gained and interdisciplinary background during the last 14 years.
I began my research career at the Estación Experimental del Zaidín (EEZ, CSIC), (Pre-doctoral FPU fellowship from the MEC). During my PhD studies I also worked at the Instituto de la Grasa (CSIC, Sevilla) (3 months) and at the University of Tucsia (Italy) (3 months) through MEC short fellowships. After obtaining my PhD in Pharmacy by the University of Granada, Spain (2005), I took a Post-doctoral position at the Department of Agrobiology and Agrochemistry at the University of Tuscia (Italy) for 24 months with a postdoctoral fellowship (MEC). During this period I also worked in collaboration with the Academy of Sciences of the Czech Republic (Prague) and the University of Perugia (Italy).
In 2009, I took a JAE-Doc competitive contract at the EEZ (36 months). In 2012, I took a Post-doctoral position at the University of Vermont (Burlington, VT, USA) (12 months). Currently I work as Research Associate at Dartmouth College (Thayer School of Engineering, Hanover, NH, USA), member of the Ivy League and consistently ranks among the world's greatest academic institutions.
In my research career, I have participated in 14 projects: one from NASA- EPSCoR, one from NIH NCRR COBRE, 6 from the national Spanish government, 4 from the Junta de Andalucia, one from CONICYT (Chile) and one project associated to a Hispano-German Integration Action from the MICINN. I have been the principal investigator of a project with the company Symbiom (Czech Republic). I have published 42 SCI articles, being the first author of 15 and the senior author of 3. Out of the total 42, 25 of them rank within the first quartile of the total of journals in their category. These papers have received a total of 431 citations setting an h value of 12. Currently, I have one article under revision and 2 in preparation. I am the co-author of 3 book chapters and the senior author of one of them.
I have participated in a total of 34 congresses and conferences with 29 posters, and 7 oral presentations, including an invited lecture in an international conference and two invited local conferences. My research gets me the opportunity to obtain 2 national patents. My research work has received the Environment Award 2009 granted by the Fundación Caja Rural.
In my role as a supervisor, I have co-directed 2 PhD Thesis (EEZ), 3 Bachelor theses (University of Tuscia, Italy) and one master thesis (EEZ). I have also supervised students from Brasil, Mexico and Colombia. Currently, I am co-supervising at Dartmouth College 2 PhD thesis and the

work of 7 undergraduate students.
I worked at the University of Tuscia (Italy) as an Associate Professor and I have participated in a Master's Course at the University of Granada (Spain). I am member of three research networks. I participate as external referee in SCI journals. I've involved in transference of knowledge and divulgation meetings for the regional government. I have published 2 popular science articles. I have also participated in the award winning project "Innovation for the Education in High School" (PIISA 2012). I would like to point out as a final note that I passed the two phases of the Competitive Examination for Associate Scientist Tenure at CSIC.

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AYUDAS RAMÓN Y CAJAL
CONVOCATORIA 2014

Turno de acceso general

Nombre: **RODRIGUEZ CALCERRADA, JESUS**
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Área Científica: Agricultura
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Título:

Acclimation of functional processes to environmental factors as a basis for modeling tree mortality and managing Mediterranean forests

Resumen de la Memoria:

In this document I detail the general axes integrating my scientific career and mention some related scientific achievements and research impact indicators. Overall, the overarching goal of my research concerns the study of tree acclimation to environmental factors at different scales, with the objectives of i) understanding how functional processes operate and shape tree performance (i.e. growth, reproduction output and survival), ii) anticipating future responses of trees to ongoing global changes, and iii) providing managers with helpful recommendations for driving particular forest processes and mitigating current forest problems.

In the next section I describe the 5 aspects that I think can best reflect my capacity to lead a research line and a work group in the future. I focus on relatively quantifiable merits: 1) expertise and efficiency in conducting research, 2) leadership in research activity, 3) ability to work in distinct multidisciplinary teams, 4) international projection, and 5) academic projection.

Then I describe my research career chronologically in four sections corresponding to: 1) pre-doctoral stage funded by an FPI grant (2003 – 2007), 2) first post-doctoral stage funded by a grant from the Technical University of Madrid (2008), 3) second post-doctoral stage funded by the Spanish Ministry of Science and Innovation and the French National Centre for Scientific Research (2009 – 2012), and 4) third post-doctoral stage, as a "Juan de la Cierva" research fellow (2012 – to date). I summarize the research projects and main results obtained at each stage.

In the following sub-sections I present a graphic summary of my research career that outlines the main conducing themes of past and present activities; a brief description of how I intend to continue my research career follows in another section; and finally, I describe some scientific impact indicators increasingly used in evaluation of scientists, such as the number of publications, the number of publications referenced in the Science Citation Index, and number of citations and h-index according to different sources.

Resumen del Currículum Vitae:

The CV has five sections: 1) professional status, 2) official training, 3) academic activity, 4) experience in science and technology, and 5) scientific achievements.

I am currently working in the Technical University of Madrid, in the Department of Natural Resources and Systems as a "Juan de la Cierva" fellow. I obtained my PhD in the same University in 2008 and afterwards made a long post-doctoral stay at the Center of Functional and Evolutionary Ecology, in Montpellier (France). I co-direct the PhD thesis of a Chinese student and the Master's degree final projects of two Spanish students; all are planned to finish their projects in this year. I have also participated in the reading committee of 2 PhD theses and will be again a member for another one planned for the 12th of February 2015.

My experience in scientific activity is demonstrated by the collaboration in 12 R&D&I projects, including one European project (in 2012) and another one funded by the French Research Agency (since 2009 through 2010); the presentation of 17 works in national and international meetings; and the publication of 41 scientific publications, 34 of which referenced in the Science Citation Index (SCI). My experience in science evaluation is demonstrated by the role as reviewer of articles for 21 journals, 17 excluding non-SCI journals. I finally summarize the four short and long stays I have made in research centers in France, United Kingdom, Denmark and USA, as an additional merit.

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AYUDAS RAMÓN Y CAJAL
CONVOCATORIA 2014

Turno de acceso general

Nombre: **GEA IZQUIERDO, GUILLERMO**
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Área Científica: Agricultura
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Título:

Assessment of performance and vulnerability of Mediterranean forests to global change: a data and process model approach

Resumen de la Memoria:

In my research I develop scientific applications with an applied purpose for forest management to help improve the interaction between humans and the environment. My research deals with different aspects of forest functional ecology, global change ecology and forest modeling. I am interested to understand how forests have responded to changes in the physical environment in the past to simulate how they could respond in the future to the expected scenarios of climate change and enhanced water stress. I work to analyze how different biotic and abiotic factors (including CO2) interact with climatic variability to determine forest acclimation and vulnerability in response. I have worked in temperate, boreal and especially Mediterranean ecosystems. In my pre-doctoral period I analyzed the sustainability of forestry practices in Southern temperate forests by analyzing forest dynamics. During my PhD and post-doctoral years I have developed empirical and process-based models of forest performance at different spatio-temporal scales and with different levels of complexity. This includes models of growth and photosynthesis as functions of environmental forcing, particularly climate, and the analysis of different functional traits along environmental gradients. Additionally in my PhD I studied ecological relationships between grasslands and trees in Mediterranean open woodlands to gain a more complete overlook of ecosystem functioning. All these models can be used to better manage forests under climate change. In these studies I have provided original tools to understand the historical dynamics and actual performance of forest ecosystems, particularly those dominated by Mediterranean oaks. Within the analysis of forest dynamics, I am interested to investigate the actual factors driving the increase in mortality of certain species and vulnerability with climate change observed in recent years in the Mediterranean. Additionally, I developed a process-based photosynthesis model in boreal ecosystems to evaluate how carbon is fixed in forests and how it is ultimately allocated to the different plant compartments. We showed how photosynthesis recovery in spring depends on temperature in boreal ecosystems and how photosynthesis and carbon allocation to the stem can be decoupled in time in certain species, in agreement with the C-sink hypothesis. This links directly with my ongoing research line where I work to develop a mechanistic model of forest productivity using multiproxy data including eddy covariance CO2 flux and dendroecological data. I combine different proxies and methodologies, including stable isotopes, to better understand the response of forests to global change and the processes involved. In my current research line these methods are implemented to assess different hypotheses regarding adaptability and vulnerability of Mediterranean forests along environmental gradients in space and time with an applied purpose for management.

Resumen del Currículum Vitae:

I finished my studies as "Ingeniero de Montes" in 2002 in the Universidad Politécnica de Madrid (UPM) in Spain. In 2006 I finished a Master of Science in Range Management in UC, Berkeley (California, USA) while I completed my PhD in UPM in July 2008. During my doctoral and predoctoral years I worked in Argentina (Ushuaia, CADIC-CONICET), in Spain (Madrid, INIA-CIFOR) and the USA (California, UC-Berkeley). Later, during my post-doctoral years I have worked in Canada (Montreal, UQAM), in Switzerland (Birmensdorf, WSL), Spain (INIA-CIFOR) and, currently, France (Aix-en-Provence, CEREGE-CNRS). I have worked in more than 10 projects during these years in these different Universities and Research Institutes, including those in Switzerland and France where I was PI and got funding for my own research. These years I used English, French or Spanish in my daily work and also through my participation in seminars and teaching at the universities (University of Zurich, Aix-Marseille-University, University of Valladolid). These research have yielded 26 ISI papers in which 18 I am the first author and 4 I am the last author (h-index=12). Additionally I am coauthor of three book chapters and several other articles non-included in the ISI. I have co-tutored the master thesis of 6 students in three universities (University of Zurich, UPM, University of Valladolid) and two of those students got an ISI paper from their thesis. I currently co-tutor a fourth-year PhD student who has already submitted two papers of those to be included in her dissertation. Additionally I have been active during these years as a reviewer both in journals and research agencies, including up to 22 ISI journals since 2009. I got two outstanding awards for my PhD from UPM and IUFRO and I am currently Deputy Coordinator of section 4.01.04 "Effects of environmental changes on forest growth" of IUFRO (International Union of Forest Research Organisations).