

Date of the CVA	26/09/2018
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## Section A. PERSONAL DATA

Name and Surname	María Angeles Castillejo Sánchez		
DNI	30808672	Age	45
Researcher's identification number	Researcher ID	L-7431-2014	
	Scopus Author ID		
	ORCID	http://orcid.org/0000-0003-2017-1029	

### A.1. Current professional situation

Institution	Universidad de Córdoba		
Dpt. / Centre	Biochemistry and Molecular Biology / Campus Universitario Rabanales Biochemistry and Molecular Biology		
Address	C/Acera de los Eucaliptos numero 47, Cerro Muriano-Córdoba, 14350, Córdoba		
Phone	(+34) 655821626	Email	<a href="mailto:bb2casam@uco.es">bb2casam@uco.es</a>
Professional category	Investigador Ramón y Cajal	Start date	2019
UNESCO spec. code			
Keywords			

### A.2. Academic education (Degrees, institutions, dates)

Bachelor/Master/PhD	University	Year
Programa Oficial de Doctorado en Bioquímica y Biología Molecular	Universidad de Córdoba	2005
Licenciado en Biología Especialidad Biología Fundamental	Universidad de Córdoba	1997

### A.3. General quality indicators of scientific production

Source: Google Scholar on 24.09.2018

Total citations: **1185**

Average citations/year in the last 5 years: **129**

Total publications: **38** Total ISI publications **28** (14 in relevant position, as first or last author): 9 (D1), 15 (Q1)

H-index: **16**, i10-index: **21**

Normalized Impact\*: **1.5**

\*The normalized impact factor has been calculated according to the methodology applied for the 2017 call of "Centros de Excelencia Severo Ochoa" and "Unidades de Excelencia María de Maeztu" with data from global citation averages of WOS categories (Web of Science-Clarivate Analytics) and citations of IP articles to date 09/20/2018.

## Section B. SUMMARY OF THE CURRICULUM

I have been continuously implicated in plant research, including model systems and crops for more than 15 years. These corresponded to the PhD period (4 years at the Agricultural and Plant Proteomics and Biochemistry lab, ETSIAM-UCO), earlier Postdoc (2 years at SCAI-UCO, 4 years at Institute for Sustainable Agriculture-CSIC, Córdoba), Postdoc abroad (2 years at University of Vienna, Austria), and return (4 years at IAS-CSIC, Cordoba, Spain).

My investigations have a double character, basic and translational. Basic as I have implemented techniques and protocols for Omics and computational analyses, and translational as I have generated knowledge of potential application in plant breeding and biotechnology. During my PhD I discovered some of the pathways activated during defense mechanisms in plant by using biochemistry, physiology and proteomics, allowing me to continue and focus my investigations. The scientific impact of the results has been recognized by high-impact publications, as well as being awarded with two of the most competitive grants from Spanish MICINN: **Juan de la Cierva to join IAS-CSIC** (Spain), and the **Postdoctoral**

**Mobility Program fellow to join MoSys lab (University of Vienna, Austria).** During my postdocs (in Spain and Austria) I mainly focused on the study of defense mechanisms in legumes to biotic and abiotic stresses. These findings did not only provide new insights in defense mechanisms in plants, but also provided a new series of potential targets that can be used in breeding programs. I also implemented methods and developed workflows based on quantitative mass spectrometry. Besides, I actively collaborated on the implementation of software (for automated protein turnover calculations based on partial metabolic labeling), as well as on the 'Plant Peptide Spectra Database Promex'. Currently, I lead my research line focused to identify biomarkers of resistance in plant species by using cross-disciplinary approaches (from physiology to omics). So far I also have actively contributed as researcher in 12 national and 6 international projects. Last year I was awarded with the competitive **European Marie Skłodowska-Curie fellowship**. My research is now directed to study forest species. Specifically, I'm working in the project titled 'Pine protection against Pitch canker through genetic resistance and plant immunization' carried out in the University of Aveiro (Portugal) in close collaboration with the University of Cordoba (Spain). The current year I have been awarded with the most competitive national contract for researchers (**Ramón y Cajal program**) to join the University of Cordoba next January 2019.

I have 1185 paper citations, an h-index of 16 and 36 publications, 28 in SCI (14 in relevant position, as first or last author): 9 (D1), 15 (Q1), 6 book chapters and 6 scientific outreach articles. I have published in some of the most prestigious journals in their field: 'Molecular & Cellular Proteomics', 'Journal of Experimental Botany', 'BMC Genomics' and 'Proteomics'. I am regular reviewer in top journals of my research field. I have 55 participations in national and international conferences, and invited as speaker to several meetings and seminars. I supervised several students (undergraduate, master, PhD) and postdoc, and also teach regularly (mainly in Master's Degree of UCO). I am certified as teacher (Prof. Contratado Doctor) by the National Agency for Quality Assessment and Accreditation (ANECA).

## **Section C. MOST RELEVANT MERITS** (ordered by typology)

### **C.1. Publications**

- 1 Scientific paper.** C. López Hidalgo; et al. 2018. A multi-omics analysis pipeline for the metabolic pathway reconstruction in the orphan species *Quercus ilex* FRONTIERS in Plant Sciences. 9-935, pp.1-16.
- 2 Scientific paper.** Cristina Romero Rodríguez; Jesús Valentín Jorrín Novo; María Angeles Castillejo Sánchez. 2018. Towards characterizing seed germination and seedling establishment in the non-orthodox forest tree species *Quercus ilex* through complementary gel and gel-free proteomic approaches Journal of Proteomics. Elsevier. Under revision.
- 3 Scientific paper.** David Lyon\*; et al. (6/2). 2016. Drought and recovery: independently regulated processes highlighting the importance of protein turnover dynamics and translational regulation in *Medicago truncatula* Molecular & Cellular Proteomics. 15.6, pp.1921-1937.
- 4 Scientific paper.** María Angeles Castillejo; et al. (4/1). 2016. Label-free quantitative proteomic analysis of tolerance to drought in *Pisum sativum* Proteomics. 16, pp.2776-2787.
- 5 Scientific paper.** Palak Chaturvedi; et al. (10/6). 2015. Heat treatment responsive proteins in different developmental stages of tomato pollen detected by targeted mass accuracy precursor alignment (tMAPA) Journal of Proteome Research. 14-11, pp.4463-4471.
- 6 Scientific paper.** M. Angeles Castillejo; Moustafa Bani; Diego Rubiales. (3/1). 2015. Understanding pea resistance mechanisms in response to *Fusarium oxysporum* through proteomic analysis Phytochemistry. 115, pp.44-58.
- 7 Scientific paper.** Rubiales D.; et al. (/6). 2014. Achievements and Challenges in Legume Breeding for Pest and Disease Resistance Critical Reviews in Plant Sciences. Taylor and Francis Inc.. 34, pp.195-236. ISSN 0735-2689.
- 8 Scientific paper.** Lyon D.; et al. 2014. Automated protein turnover calculations from 15N partial metabolic labeling LC/MS shotgun proteomics data PLOS One. PUBLIC LIBRARY SCIENCE. 9-e94692. ISSN 0735-2689.

- 9 **Scientific paper.** Carrillo E.; Rubiales D.; Castillejo M.A.(3/3). 2013. Proteomic analysis of pea (*Pisum sativum* L.) response during compatible and incompatible interactions with pea aphid (*Acyrtosiphon pisum* H.) *Plant Molecular Biology Reporter*. Springer US. 32, pp.697-718. ISSN 1572-9818.
- 10 **Scientific paper.** Sghaier-Hammamia B.; et al. (/3). 2012. Proteomics analysis of date palm leaves affected at three characteristic stages of brittle leaf disease *Planta*. Springer-Verlag. 236-5, pp.1599-1613.
- 11 **Scientific paper.** Barilli E.; Rubiales D.; Castillejo M.A.(3/3). 2012. Comparative proteomic analysis of BTH and BABA-induced resistance in pea (*Pisum sativum*) toward infection with pea rust (*Uromyces pisi*) *Journal of Proteomics*. 75-17, pp.5189-5205. ISSN 1876-7737.
- 12 **Scientific paper.** Castillejo M.A.; Fernández-Aparicio M.; Rubiales D.(3/1). 2012. Proteomic analysis by two-dimensional differential in gel electrophoresis (2D DIGE) of the early response of *Pisum sativum* to *Orobanche crenata* *Journal of Experimental Botany*. OXFORD UNIV PRESS. 63-1, pp.107-119. ISSN 0022-0957.
- 13 **Scientific paper.** Rubiales D.; et al. (/2). 2011. Legume breeding for rust resistance: lessons to learn from the model *Medicago truncatula* *Euphytica*. SPRINGER. 180-1, pp.89-98. ISSN 0014-2336.
- 14 **Scientific paper.** Castillejo M.A.; et al. (5/1). 2010. Differential expression proteins of pea (*Pisum sativum*) in responses to *Mycosphaerella pinodes* *Journal of Agricultural and Food Chemistry*. AMER CHEMICAL SOC. 58-24, pp.12822-12832. ISSN 0021-8561.
- 15 **Scientific paper.** Castillejo M.A.; et al. (6/1). 2010. Two-dimensional gel electrophoresis-based proteomic analysis of the *Medicago truncatula*-rust (*Uromyces striatus*) interaction *Annals of Applied Biology*. WILEY-BLACKWELL. 157-2, pp.243-257. ISSN 0003-4746.
- 16 **Scientific paper.** Castillejo M.A.; Kirchev H.K.; Jorrín J.V.(3/1). 2010. Differences in the triticale (*X Triticosecale* Wittmack) flag leaf 2-DE protein profile between varieties and nitrogen fertilization levels *Journal of Agricultural and Food Chemistry*. AMER CHEMICAL SO. 58-9, pp.5698-5698-570. ISSN 0021-8561.
- 17 **Scientific paper.** Castillejo M.A.; Jorrín J.V.; Rubiales D.(/1). 2010. Proteome profile analysis of *Medicago truncatula* leaves in response to *Uromyces striatus* *Proteómica*. 5, pp.150-151. ISSN 1888-0096.
- 18 **Scientific paper.** Castillejo M.A.; et al. (4/1). 2009. Comparative proteomic analysis of *Orobanche* and *Phelipanche* species inferred from seed proteins *Weed Research*. WILEY-BLACKWELL PUBLISHING. 49, pp.81-87. ISSN 0043-1737.
- 19 **Scientific paper.** Pérez-de-Luque A.; et al. (/7). 2009. Understanding *Orobanche* and *Phelipanche*-host plant interactions and developing resistance *Weed Research*. 49, pp.9-22. ISSN 0043-1737.
- 20 **Scientific paper.** Castillejo M.A.; et al. (7/1). 2009. Differential expression proteomics to investigate responses and resistance to *Orobanche crenata* in *Medicago truncatula*. *BMC Genomics*. BIOMED CENTRAL LTD. 10-294, pp.1-17. ISSN 1471-2164.
- 21 **Scientific paper.** Jorrín J.V.; et al. (/5). 2009. Plant proteomics update (2007-2008). Second generation proteomic techniques, appropriate experimental design and data analysis to fulfil MIAPE standards and increase plant proteome coverage and biological knowledge *Journal of Proteomics*. Elsevier. 72-3, pp.285-314. ISSN 1874-3919.
- 22 **Scientific paper.** Rubiales D.; et al. (/4). 2009. Breeding approaches for crenate broomrape (*Orobanche crenata* Forsk.) management in pea (*Pisum sativum* L.) *Pest Management Science*. Wiley Interscience. 65-5, pp.553-559. ISSN 1526-498X.
- 23 **Scientific paper.** Valledor L.; et al. (/2). 2008. Proteomic analysis of *Pinus radiata* needles: 2-DE map and protein identification by LC/MS/MS and substitution-tolerant database searching *Journal of Proteome Research*. AMER CHEMICAL SOC. 7-7, pp.2616-2631.
- 24 **Scientific paper.** Castillejo M.A.; et al. (4/1). 2008. Proteomic analysis of responses to drought stress in sunflower (*Helianthus annuus*) leaves by 2DE gel electrophoresis and mass spectrometry *The Open Proteomics Journal*. Bentham Science Publishers B.V.. 1, pp.59-71. ISSN 1875-0397.
- 25 **Book chapter.** M.A. Castillejo; M. Fernandez-Aparicio; D. Rubiales. (3/1). 2017. Characterization of defense mechanisms to parasitic plants in the model *Medicago truncatula* *The model legume Medicago truncatula*. Wiley/Blackwell. pp.1-28.

- 26 Book chapter.** Castillejo M.A.; et al. (/1). 2012. Medicago truncatula Proteomics for Systems Biology: Novel Rapid Shotgun LC-MS Approach for Relative Quantification Based on Full-Scan Selective Peptide Extraction (Selpex) Plant Proteomics: Methods and Protocols, Methods in Molecular Biology. Springer Science+Business Media, LLC 2014. 1072, pp.303-313. ISBN 978-1-62703-630-6.
- 27 Book chapter.** Jorrín-Novo J.V.; et al. (/3). 2012. From 2003 to 2011: Proteomics Investigation at the Agroforestry and Plant Biochemistry and Proteomics Research Group (University of Córdoba, Spain).Frontiers in Agriculture Proteome Research. Contribution of Proteomics Technology in Agricultural Science. OECD. pp.130-137.
- 28 Review.** A.P. Martínez González; et al. 2018. What proteomic analysis of the apoplast tells us about plant–pathogen interactions Plant Pathology. 67, pp.1647-1668.

## C.2. Participation in R&D and Innovation projects

- 1 Estudios de variabilidad poblacional y respuesta a estreses en encina mediante una aproximación multiómica (transcriptómica, proteómica, metabolómica) BIO2015-64737-R (Universidad de Córdoba). 2016-2018. 150.000 €.
- 2 ABSTRESS, FP7-KBBE-2011-5, Improving the resistance of legume crops to combined abiotic and biotic stress Dr. Adrian Charton. (Instituto de Agricultura Sostenible). 01/01/2012-31/12/2016. 3.000.000 €. Team member.
- 3 Identificación y Caracterización de fuentes de resistencia a estreses bióticos y abióticos en guisante Plan Nacional. Dr. Diego Rubiales Olmedo. (Instituto de Agricultura Sostenible). 01/01/2012-31/12/2015. 231.000 €. Others.
- 4 MEDILEG: Breeding, agronomic and biotechnological approaches for reintegration and revalorization of legumes in Mediterranean agriculture ARIMNET Coordination of the Agricultural Research in the Mediterranean Area (Algeria, Egypt, France, Italy, Morocco, Portugal, Spain and Tunis). Dr. Diego Rubiales. (Instituto de Agricultura Sostenible). 2012-2015. 500.000 €. Team member.
- 5 Establishing joint and sustainable strategies for the legume stress tolerance in Spain and Serbia Acción Integrada España-Serbia. Dr. Diego Rubiales. (Instituto de Agricultura Sostenible). 2012-2013. 8.000 €. Others.
- 6 Manejo de enfermedades en cereales y leguminosas mediante mejora genética y control biológico en la cuenca mediterránea AECID. Dr. Diego Rubiales. (Instituto de Agricultura Sostenible). 2012-2012. 10.500 €. Others.
- 7 Resistencia a plagas en habas y guisantes para secanos mediterráneos AECID. Dr. Diego Rubiales. (Instituto de Agricultura Sostenible). 2012-2012. 9.500 €. Others.
- 8 Resistance against biotic and abiotic estresses in pea, grasspea and chickling pea Plan Nacional. Dr. Diego Rubiales Olmedo. (Instituto de Agricultura Sostenible). 01/01/2009-31/12/2011. 217.000 €. Others.
- 9 RF2008-00031-00-00, Recolección y caracterización primaria de ecotipos locales de anís verde (Pimpinella anisum) Plan Nacional. Elena Prats Perez. (Instituto de Agricultura Sostenible). 30/09/2008-29/09/2011. 12.840 €. Team member.
- 10 Mejora de guisantes, almortas y titarros por resistencia a estreses bióticos y abióticos Diego Rubiales. (Instituto de Agricultura Sostenible). 2009-2011. Team member.
- 11 Consolidación de una red interuniversitaria de formación de investigadores, agricultores y técnicos sobre nuevas estrategias de protección de cultivos y mejora genética para la producción sostenible de cereales y leguminosas para alimentación humana y para piensos animales Proyectos AECID. Dr. Diego Rubiales. (Instituto de Agricultura Sostenible). 2008-2010. Others.
- 12 FP7-KBBE-2013-7, LEGumes for the Agriculture of TOMorrow (LEGATO) Richard Thompson. (Instituto de Agricultura Sostenible). From 01/01/2013. Team member.

## C.3. Participation in R&D and Innovation contracts

## C.4. Patents