



CURRICULUM VITAE (CVA)

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Part A. PERSONAL INFORMATION

CV date 25/06/2022

First name	Carmen Rosario		
Family name	Beuzón López		
Gender (*)	Female	Birth date (dd/mm/yyyy)	
Social Security, Passport, ID number			
e-mail			
Open Researcher and Contributor ID (ORCID) (*)			

(*) Mandatory

A.1. Current position

Position	Full Professor (Catedrática)		
Initial date	13/10/2017		
Institution	Universidad de Málaga		
Department/Center	Instituto de Hortofruticultura Subtropical y Mediterránea “La Mayora” (IHSM-UMA-CSIC)		
Country	Spain	Teleph. number	
Key words	Plant-pathogen interactions, bacteria, <i>P. syringae</i> , type III secretion systems, effectors, gene regulation, gene silencing, resistance, virulence, plant defence, defence suppression, pathogenesis		

A.2. Previous positions (research activity interruptions, art. 14.2.b))

Period	Position/Institution/Country/Interruption cause
2010-2017	Profesora Titular Universidad
2007-2010	Profesor Contratado Doctor
2003-2007	Contratada Ramón y Cajal
2000-2002	Postdoctoral Research Associate, Imperial College London, UK
1998-1999	EMBO Postdoctoral Fellow, Imperial College London, UK
1991-1997	Contratada predoctoral, Departamento de Genética, España

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
BSc in Biology	Universidad de Sevilla	1991
PhD. in Biology	Universidad de Sevilla	1996

Part B. CV SUMMARY (max. 5000 characters, including spaces)

I carried out my **PhD thesis work (09/1991-09/1996)** in the **Department of Genetics at the University of Seville**, under the supervision of Prof. **Josep Casadesús**. on the structural and functional analysis of IS200, an insertion element from *Salmonella enterica*, where I stayed until December 1997. During this period, I attended several national and international meetings and did two short stays (2 months in 1993 and 2 weeks in 1995) at Dr. Rubino's lab at U. di Sassari in Italy, funded by an Acción Integrada Hispano-Italiana to apply knowledge generated from my PhD work to epidemiology. The work resulted in co-authorship of several ISI articles (1992-2004) being first author for 5 of them, including a couple published in a prestigious journal (NAR), and several additional not indexed publications. In January 1998, I joined



Prof. David Holden's group to work on the molecular basis of pathogenesis in *Salmonella*, at **Imperial College London (ICL), UK**. This represented a pivotal point from bacterial molecular genetics to bacterial pathogenesis, the topic under which I have worked since. The postdoctoral period at ICL was first funded by an **EMBO Long-Term Fellowship (1/1998 to 12/1999)**, followed by an **MRC (Medical Research Council) contract (01/2000 to 05/2002)** within the same group at the **Centre for Molecular Microbiology and Infection (CMMI), at ICL**. The work focused on the *Salmonella* SPI2 type III secretion system and its role in allowing intracellular replication and systemic infection in mice. The group had just recently identified its role in these two processes and many lines of research opened from there following effector identification and functional characterization. My work from early within that state allowed me to be involved in many of them and was central to the establishment of a new paradigm in the field with the discovery of an effector that maintains the integrity of the *Salmonella*-containing vacuole. The production of this period was very good, with over a dozen co-authored ISI articles (1999-2004), 5 of them as first author, published in relevant (Mol Microbiol, Cell Microbiol, Infect & Immun, Microbes & Infect, J Bact, Microbiology-SGM), and prestigious journals (EMBO J, J Cell Sci, J Biol Chem). The relevance of this work is supported with more than 10 of the publications with over a hundred citations each, and more than 1700 citations accumulated for the publications from the postdoctoral period.

Afterwards, I joined the **Genetics Unit of the University of Malaga**, first as an Associate Lecturer (6 months in 2002), and then with a **Ramón y Cajal Contract (2003-2007)**. Since then, I have been Associated Professor (**Profesor Contratado Doctor 2007-2010; Profesor Titular 2010-2017, and Full Professor/ Catedrática since 2017**). Since joining the Genetics Unit at UMA, I developed an independent research line on plant pathogens from scratch, changing from *Salmonella* and animal pathogenesis to *Pseudomonas syringae* and plant-pathogen interaction, and starting my research management activity becoming a PI in 2003. As **PI**, I have received uninterrupted funding from the National Plan in the Biotech Area from 2003 till the present, (**BIO2003-03262, BIO2006-00673, BIO2009-11516, BIO2012-35641, BIO2015-64391R; RTI2018-095069-B-I00**), and **Junta de Andalucía (P07-CVI-2605; P18-RT-2398; PY18-2398; UMA20-FEDERJA-021)**. As a **collaborator** I have also participated in projects funded by Junta de Andalucía (**P06-CVI-02088 and P05-AGR-876**). These projects have focused on the central role of the type III secretion system and its effectors in evasion and suppression of plant defences both from the bacterial and the plant side. During this time, I also opened a more applied line of work, in olive trees, which began with the Contract with **Genoma España (OLEAGEN 8.06-5.72.3022)**, being the PI of one of the biggest subprojects, and dedicated to "Development of genomic tools in olive trees and their application to the analysis of the quality of the fruit and the oil, and characters of agronomic interest". I have been a member of **3 COST Actions: COST-SUSTAIN (FA1298), COST-CAMo (FA1405); and COST-HUPLANT (CA16110)**. My active and early involvement in CA16110 aided in the establishment of collaborations in the interaction of *Salmonella* with plants as alternative hosts, a hot topic in food security within the One Health initiative. Throughout these years, I have presented **over 100 communications to national and international scientific meetings**. I have **supervised/co-supervised 9 Ph.D Thesis**, 5 with the Mención Internacional, 3 awarded the Doctorate Extraordinary Prize, and am currently supervising 5 PhD Thesis. I have also supervised many experimental TFEs apart of my teaching duties. Most of our PhD students have continued with a scientific career, but Alberto Macho (our second PhD student) it is worthy of special mention, since he currently leads a highly competitive lab, publishing in top journals, at the Shanghai Center for Plant Stress Biology in China. We maintain a stable and long-term collaboration with this researcher. We also maintain stable collaborations with several national and international researchers. Those relevant to the current proposal are detailed in the proposal, which includes several as members of the Equipo de Trabajo. I have co-authored more than 30 ISI publications (29 in the last 10 years), acting as corresponding author in two thirds of them, published in relevant and prestigious journals (New Phytologist, mBio, J Exp Bot, Plant J, Plant Cell & Environ, etc), that have collectively received well over 700 citations. The number of publications and profile of the journals have steadily increased with time, particularly in the last 5-10 years. I have participated in various scientific committees and evaluation panels, both national and abroad (RyC-2007, JdC-2007, RyC-2008, JdC-2008, BIO-2015, BIO-BTC2019; Proyectos Excelencia Junta de Andalucía 2021; ANR France 2017, 2018 & 2019). I have engaged in collaboration with companies such as Chemical Iberica, HuertaValleHibri2 as EPOs to our projects and Bayer CropScience through a collaboration agreement. We also have material transfer agreements with a company that acts as repository and distributor for our many molecular tools. I participate in dissemination activities to young people through school and high school programs to inspire young people and girls in particular to pursue careers in STEM, through school talks and workshops (e.g. Inspiring Girls or COMOTÚ initiatives) and practical courses (PIISA, ScienceIES, Campus Científicos de Verano, Campus AndalucíaTech). I have also participated in the organization of scientific events of national and international

character and acted as Editor for *Frontiers in Plant Biology* and *Frontiers in Microbiology*, and as Reviewer for numerous high-visibility journals. I coordinate the Postdoctoral Program in Advance Biotechnology since 2017 and am a member of the Comité de Ética de la UMA since 2014.

Part C. RELEVANT MERITS (sorted by typology)

C.1. Publications (2012-2022)

1. López-Márquez D, Del Espino A, López-Pagán N, Rodríguez-Negrete EA, Ruibo-Somoza I, Ruiz-Albert J, Bejarano ER*, **Beuzón CR*** (2021) MiR825-5p targets TIR-NBS-LRR gene *MIST1* and downregulates basal immunity against *Pseudomonas syringae* in *Arabidopsis* *J Exp Bot.* doi: 10.1093/jxb/erab354. Online ahead of print. IF **6,992** (En el **top 5%** del Área de *Plant Sciences*).
2. Rufián JS, Rueda-Blanco J, López-Márquez D, Macho AP, **Beuzón CR**, Ruiz-Albert J.* (2021) [The bacterial effector HopZ1a acetylates MKK7 to suppress plant immunity.](#) *New Phytol.* doi: 10.1111/nph.17442. IF **10,151** (En el **top 3%** del Área de *Plant Sciences*).
3. Rufián J, Elmore J, Bejarano ER, **Beuzón CR**, Coaker G*. (2021) [ER bodies are induced by Pseudomonas syringae and negatively regulate immunity.](#) *Mol Plant Microbe Interact.* doi: 10.1094/MPMI-11-20-0330-SC. Online ahead of print. IF **4,171** (En el **top 15%** del Área de *Plant Sciences*).
4. López-Márquez D, Del-Espino Ángel, Bejarano ER, **Beuzón CR***, Ruiz-Albert J* (2020) Protocol: low cost fast and efficient generation of molecular tools for small RNA analysis. *Plant Methods.* doi: 10.1186/s13007-020-00581-PLME-D-19-00303R2. IF **4,3** (En el **top 10%** del Área de *Plant Science*).
5. Jiménez-Ruiz J, Ramírez-Tejero JA, Fernández-Pozo N, Leyva-Pérez MO, Yan H, De la Rosa R, Belaj A, Montes E, Rodríguez-Ariza MO, Navarro F, Barroso JB, **Beuzón CR**, Valpuesta V, Bombarely A*, Luque F* (2020) Transposon activation is a major driver in the genome evolution of cultivated olive tree (*Olea europea L.*). *Plant Genome.* 2020;e20010. <https://doi.org/10.1002/tpg2.20010>. IF **4,042** (En el **top 10%** del Área de *Plant Science*).
6. Zarkani AA, López-Pagán N, Grimm M, Sánchez-Romero MA, Ruiz-Albert J, **Beuzón CR** Schikora A* (2020) [Salmonella Heterogeneously Expresses Flagellin during Colonization of Plants.](#) *Microorganisms* 8:815 doi:10.3390/microorganisms8060815 IF **4,167** (En el top 25,5% (Q2) del Área de Microbiology).
7. Arce-Leal AP, Bautista R, Rodríguez-Negrete EA, Manzanilla-Ramírez MA, Velázquez-Monreal JJ, Santos-Cervantes ME, Méndez-Lozano J, **Beuzón CR**, Bejarano ER, Castillo AG, Claros MG, Leyva-López NE* (2020) Gene expression profile of Mexican lime trees in response to inoculation with *Candidatus Liberibacter asiaticus*. *Microorganisms* 7;8(4). pii: E528. doi: 10.3390/microorganisms8040528. IF **4,167** (En el top 25,5% (Q2) del Área de Microbiology).
8. Rufián JS, Rueda-Blanco J, **Beuzón CR***, Ruiz-Albert J* (2019) Protocol: an improved method to quantify activation of systemic acquired resistance (SAR). *Plant Methods* 15:16. doi: 10.1186/s13007-019-0400-5). IF **4,3** (En el **top 10%** del Área de *Plant Sciences*).
9. Calvo-Polanco M, Ruiz-Lozano JM, Azcón R, Molina S, **Beuzón CR**, García JL, Cantos M, Aroca R* (2019) [Phenotypic and molecular traits determine the tolerance of olive trees to drought stress.](#) *Plant Physiol Biochem.* 2019 139:521-527. doi:10.1016/j.plaphy.2019.04.017. IF **2,718** (En el top 25% del Área de *Plant Sciences*).
10. Rufián JS, Lucía A, Rueda-Blanco J, Zumaquero A, Guevara CM, Ortiz-Martín I, Ruiz-Aldea G, Macho AP, **Beuzón CR***, Ruiz-Albert J* (2018) Suppression of HopZ effector-triggered plant immunity in a natural pathosystem. *Frontiers in Plant Science* 14:977. doi: 10.3389/fpls.2018.00977). IF **3,7** (En el **top 10%** del Área de *Plant Sciences*).
11. Rufián JS, Macho AP, Corry DS, Mansfield JW, Ruiz-Albert J, Arnold DL, **Beuzón CR*** (2018) Confocal microscopy reveals in planta dynamic interactions between pathogenic, avirulent and non-pathogenic *Pseudomonas syringae* strains. *Molecular Plant Pathology.* doi: 10.1111/mpp.12439. IF **4,335** (En el **top 10%** del Área de *Plant Sciences*).
12. Charova SN, Gazi AD, Mylonas E, Pozidis C, Sabarit B, Anagnostou D, Psatha K, Aivaliotis M, **Beuzón CR**, Panopoulos NJ, Kokkinidis M* (2018) Migration of Type III Secretion System Transcriptional Regulators Links Gene Expression to Secretion. *mBio.* doi: 10.1128/mBio.01096-18. IF **6,689** (En el **top 10%** del Área de *Microbiology*).

13. Belaj A, de la Rosa R, Lorite IJ, Mariotti R, Cultrera NGM, **Beuzón CR**, González-Plaza JJ, Muñoz-Mérida A, Trelles O, Baldoni L (2018) [Usefulness of a New Large Set of High Throughput EST-SNP Markers as a Tool for Olive Germplasm Collection Management](#). *Frontiers in Plant Science*. 21:1320. doi: 10.3389/fpls.2018.01320. IF **4,495** (Revista dentro del **top 10%** del Área de *Plant Science*)
14. Rufián JS, López-Márquez D, López-Pagán N, Grant M, Ruiz-Albert J, **Beuzón CR*** (2018) [Generating Chromosome-Located Transcriptional Fusions to Fluorescent Proteins for Single-Cell Gene Expression Analysis in *Pseudomonas syringae*](#). *Methods Mol Biol*. 1734:183-199. doi: 10.1007/978-1-4939-7604-1_15.
15. Rufián JS, Sánchez-Romero M-A, López-Márquez D, Macho AP, Mansfield JW, Arnold DL, Ruiz-Albert J, Casadesús J, **Beuzón CR*** (2016) *Pseudomonas syringae* differentiates into phenotypically distinct subpopulations during colonization of a plant host. *Environmental microbiology*. doi: 10.1111/1462-2920.13497. IF **5,932** (En el **top 15%** del Área de *Microbiology*).
16. González-Plaza JJ, Ortíz-Martín I, Muñoz-Mérida A, García-López C, Sánchez-Sevilla JF, Luque F, Trelles O, Bejarano ER, De la Rosa R, Valpuesta V, **Beuzón CR*** (2016) Transcriptomic Analysis Using Olive Varieties and Breeding Progenies Identifies Candidate Genes Involved in Plant Architecture. *Frontiers in Plant Science*. 7:240. doi: 10.3389/fpls.2016.00240. IF **4,495** (Revista dentro del **top 10%** del Área de *Plant Sciences*)
17. Calvo-Polanco M, Sánchez-Castro I, Cantos M, García JL, Azcón R, Ruiz-Lozano JM, **Beuzón CR**, Aroca R* (2016) [Effects of different arbuscular mycorrhizal fungal backgrounds and soils on olive plants growth and water relation properties under well-watered and drought conditions](#). *Plant Cell Environ*. 39:2498-2514. doi: 10.1111/pce.12807. IF **6,169** (Revista dentro del **top 5%** del Área de *Plant Sciences*)
18. Rosas-Díaz T, Macho AP, **Beuzón CR**, Lozano-Durán R, Bejarano ER*. (2016) [The C2 Protein from the Geminivirus Tomato Yellow Leaf Curl Sardinia Virus Decreases Sensitivity to Jasmonates and Suppresses Jasmonate-Mediated Defences](#). *Plants* 15;5(1). pii: E8. doi: 10.3390/plants5010008. IF **3,263** (Revista dentro del 25% superior del Área de *Plant Sciences*)
19. Aussel L, **Beuzón CR**, Cascales E* (2016) [Meeting report: Adaptation and communication of bacterial pathogens](#). *Virulence*. 18:481-90. doi: 10.1080/21505594.2016.1152441. IF **4,216** (Revista dentro del 25% superior de las Áreas de *Microbiology e Immunology e Infectious Diseases*)
20. Macho AP, Rufián JS, Ruiz-Albert J, **Beuzón CR*** (2016) [Competitive Index: Mixed Infection-Based Virulence Assays for Genetic Analysis in *Pseudomonas syringae*-Plant Interactions](#). *Methods Mol Biol*. 1363:209-17. doi: 10.1007/978-1-4939-3115-6_17.
21. Rufián JS, Lucía A, Macho AP, Orozco-Navarrete B, Arroyo-Mateos MA, Bejarano ER, **Beuzón CR***, Ruiz-Albert J* (2015) Auto-acetylation on K289R is not essential for HopZ1a-mediated plant defence suppression. *Frontiers in Microbiology*. doi: 10.3389/fmicb.2015.00684. IF **3,941** (En el top 25% de *Microbiology*).
22. Muñoz-Mérida A, González-Plaza JJ, Cañada A, Blanco AM, García-López MC, Rodríguez JM, Pedrola L, Sicardo MD, Hernández ML, De la Rosa, R, Belaj A, Gil-Borja M, Martínez-Rivas JM, Luque FJ, Pisano DG, Trelles O, Valpuesta V, **Beuzón CR*** (2013) *De novo* assembly and functional annotation of the olive (*Olea europaea*) transcriptome. *DNA Research* 20:93-108. IF **5,164** (En el **top 15%** de *Genetics and Heredity*)
23. Leba LJ, Cheval C, Ortiz-Martín I, Ranty B, **Beuzón CR**, Galaud JP, Aldon D* (2012) [CML9, an Arabidopsis calmodulin-like protein, contributes to plant innate immunity through a flagellin-dependent signalling pathway](#). *Plant J*. 71:976-89. doi: 10.1111/j.1365-313X.2012.05045.x. IF **6,16** (En el **top 5%** de *Plant Science*)
24. Macho AP, Zumaquero A, Gonzalez-Plaza JJ, Ortiz-Martín I, Rufián JS, **Beuzón CR*** (2012) Genetic Analysis of the Individual Contribution to Virulence of the Type III Effector Inventory of *Pseudomonas syringae* pv. *phaseolicola*. *PLoS ONE* 7: e35871. IF **4,095** (En el **top 15%** de *Biology*)

C.2. Congress (as invited speaker only)

1. **Beuzón CR**. Novel defense and defense evasion mechanisms in *Pseudomonas syringae*-plant interactions. WHEN DEVELOPMENT MEETS STRESS. B-DEBATE CONFERENCE. BARCELONA. 3-4 SEPTEMBER 2018
2. **Beuzón CR**. Phenotypic heterogeneity during plant colonization. SATELLITE MEETING AT THE IS-MPMI XVIII CONGRESS Glasgow

3. Beuzón CR, Rufián JS, Lucía A, Guevara CM, Macho AP, Ruiz-Albert J. Suppression of HopZ-effector triggered defence responses. 5TH ISHS INTERNATIONAL SYMPOSIUM ON TOMATO DISEASES. MÁLAGA, 13-16 DEL 06, 2016
4. Rufián JS, López-Márquez D, Ruiz-Albert J, Beuzón CR. Dodging the bullet: effector-mediated of defense evasion in *Pseudomonas syringae*. CURRENT TRENDS IN BIOMEDICINE WORKSHOP: ADAPTATION AND COMMUNICATION OF BACTERIAL PATHOGENS. UNIA. BAEZA, OCTUBRE, 2015
5. Rufián JS, López-Márquez D, Ruiz-Albert J, Beuzón CR. Phenotypic heterogeneity and other mechanisms of defence evasion in *Pseudomonas syringae*. SEB MEETING, PRAGUE (CHECK REPUBLIC), 2-4 DE 07, 2015
6. Rufián JS, López-Márquez D, Ruiz-Albert J, Beuzón CR. Phenotypic heterogeneity and other mechanisms of defence evasion in *Pseudomonas syringae*. 9TH INTERNATIONAL CONFERENCE ON *PSEUDOMONAS SYRINGAE* AND RELATED PATHOGENS, MALAGA, 2-5 DE 06, 2015

C.3. Research projects

1. Epigenetics and bacterial individuality within clonal pathogen populations: molecular mechanisms and adaptive value within plants. Proyectos de Investigación no orientada MCIN/AEI/10.13039/501100011033/ (PID2021-127245OB-I00). Co-PI Carmen R Beuzón & Javier Ruiz Albert. 1/09/2022-31/08/2025 (Active) Funding Awarded 140.000€
2. [Gene silencing-mediated regulation of the jasmonate pathway during the interaction with biotrophic pathogens](#). Proyectos I+D+I - Programa Operativo FEDER Andalucía 2014-2020 (UMA20-FEDERJA-021). Co-PI Dr. Carmen R Beuzón and Dr. Araceli Castillo. Universidad de Málaga. 1/7/2021-30/6/2023 (Active). Funding awarded 61.485€
3. Identification and Analysis of Salmonella Enterica Genes Involved in Plant Colonization. Junta de Andalucía (P18-RT-2398). PI Carmen R Beuzón. Universidad de Málaga. 01/01/2020-31/12/2022 (Active). Funding awarded 137.011€
4. Phenotypic heterogeneity in bacterial pathogens: underlying mechanisms and role in plant adaptation. Ministerio de Ciencia, Innovación y Universidades (RTI2018-095069-B-I00). Co-PI Carmen R Beuzón & Javier Ruiz Albert. Universidad de Málaga. 01/01/2019-31/12/2021 (Active). Funding awarded 120.000€
5. Novel mechanisms for host adaptation in *Pseudomonas syringae*: suppression of systemic defences and formation of bacterial lineages. MINECO (BIO2015-64391-R). Co-PIs Carmen R Beuzón & Javier Ruiz Albert. Universidad de Málaga. 1/01/2015-31/12/2018. Funding awarded 155.000€
6. Suppression of effector-triggered immunity and its role on the adaptation of *Pseudomonas syringae* to the host. MINECO (BIO2012-35641). PI Carmen R Beuzón. Universidad de Málaga. 1/01/2013-31/12/2015. Funding awarded 144.400€
7. *Pseudomonas syringae* type III effectors: a genetic approach to secretome-dependent plant defense suppression. MICINN (BIO2009-11516). PI Carmen R Beuzón. Universidad de Málaga. 1/01/2010-31/12/2012. Funding awarded 198.440€
7. Potential role of *Pseudomonas syringae* type III secretion system on epigenetic modification of plant chromatin during infection. Convocatoria de Proyectos de Excelencia, Consejería de Innovación, Ciencia y Empresa, Junta de Andalucía (P07-CVI-02605). PI Carmen R Beuzón. Universidad de Málaga. 1/05/2008-30/04/2012. Funding awarded 302.000€

C.4. Contracts, technological or transfer merits

1. Collaboration agreement between BAYER CROPSCIENCE and PIS Javier Ruiz Albert & Carmen R. Beuzón. Universidad de Málaga. 1/04/2012-31/10/2012
2. Biological Material Transfer Agreement. IP Carmen R. Beuzón with Addgene Inc. Acuerdo de colaboración para el depósito de plásmidos generados por el grupo y su distribución a través de Addgene. Fecha firma del convenio 07/2009. Fecha fin: Indefinido.