CVA

CV date	02/04/2025

Part A. PERSONAL INFORMATION

First name	Paula
Family name	García Fraile

A.1. Current position

Position	Profesora Titular Universidad		
Initial date	October 2020 – **Maternity leave interruption: 16 weeks**.		
Institution	University of Salamanca		
Departament/Center	Microbiology and Genetics/Faculty of Pharmacy		
Country	Spain	Teleph. number	
Key words	Bacterial biofertilizers, plant growth promotion, N fixation, plants-bacterial interaction, plants-insects-bacterial interactions, massive parallel sequencing, genome sequencing, (meta)genomics		

A.2. Previous positions (research activity interruptions, art. 45.2.c))

Period	Position/Institution/Country/Interruption cause
2019-2020	Postdoctoral researcher Junta de Castilla y León. Univ. of Salamanca. Spain
2017-2019	Postdoctoral researcher Marie Curie. Univ. of Salamanca. Spain
2016-2017	Researcher. MealFood Europe. Spain
2015-2016	Researcher. Czech Academy of Science. Czech Republic
2012-2015	Postdoctoral researcher. Czech Academy of Science. Czech Republic. **Maternity leave interruption, 24 weeks.**
2010-2012	Postdoctoral researcher. John Innes Center. United Kingdom
2010-2010	Coordinator of R&D projects. National Center for Food Security and Tech. Spain
2008-2010	Postdoctoral researcher. Univ. of Salamanca. Spain
2004-2008	PhD student. Univ. of Salamanca. Spain

A.3. Education

Year	*University*	*Degree*	*Title*
2003	*U. of Salamanca*	*Bachelor*	*Environmental Sciences*
2004	*U. of Salamanca*	*Master thesis*	*Master thesis in Environmental Sciences*
2005	*U. of Salamanca*	*DEA*	*Diploma of Advance Studies*
2008	*U. of Salamanca*	*PhD*	*Microbiology and Genetics*
2009	*U. of Salamanca*	*Bachelor*	*Agricultural Engineering Technology*

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

I have made scientific contributions in several research lines:

1. Taxonomy, phylogeny, and diversity of microorganisms associated to plants, soils, and other niches: I have described 17 new species and 4 new genera, and contributed to several taxonomic, phylogenetic, phylogenomic and microbial diversitystudies, including a reclassification of the genus *Pseudomonas* based on phylogenomic analysis, published in *Biology* (last author).
2. Rhizobia-legumes interactions: During my postdoc at the John Innes Centre, I discovered several genes implicated in the capability of rhizobia to compete in peas rhizosphere, published in *Plant and Soil* (1st author).
3. PGP bacteria-non-legume plants interactions: during my Marie Curie Fellowship (EU Funds) I studied bacterial endophytes with capability to promote canola, with some discoveries published in journals as *Agronomy* or *Microorganisms* (last author). Also, I got funds from the Spanish Government (co-PI) to study microbial communities associated with blueberries and blackberries, with the aim to select bacterial fertilizers increasing yields and quality (on going). Moreover, I am WP coordinator of a PRIMA project related to sustainability of olive groves, being the WP I lead related to microbial bioinoculants; Finally, I am PI of a project focused on the final development of a bacterial inoculant to be transferred to the socioeconomic sector, plus another one related to reveal the role of bacterial polyamines in plant-bacterial interactions (both: Spanish Government). Related to this research line, I have supervised 4 PhDs and 4 postdoctoral

researchers, organized 13 specialization courses and 18 scientific seminars. I am also coordinating a scientific network funded by the Ministry of Science and Innovation (Spanish Government).

4. Application of bacterial inoculants in plants: I have participated in many studies on the effects of diverse PGP bacteria in the promotion of several crops, highlighting a publication related to the potential of rhizobia to increase cropsquality published in *PLOS One* (1st author).
5. Insect-Plant-Microbe interactions: at the Czech Academy of Sciences I studied microbial diversity in bark beetles and as Torres Quevedo grantee, I researched microbiota in T.molitor faces and its potential as PGP. I have several publications as last author in Q1 journals related to this research line, including *STOTEN* or *Appl Soil Ecol*. Supervision of a PhD and 3 postdocs.

This scientific production has been disseminated in 115 publications: 70 JCR articles, 16 book chapters, 18 proceedings, 2 articles in non-indexed scientific journals, 11 dissemination articles. This gives me an H-index: 38, i10-index: 68, Citations: 4320 (Google Scholar). Author of >70 contributions to national and international conferences, 5 keynote speeches and 30 oral presentations. Author of a patent. Participation in 25 competitive R&D&I projects, PI in 9, raising national and international funds for ~1.5M€. Participant in 19 contracts with companies, raising as PI ~90K€.

My knowledge spams plant microbiology, ecology, in vitro/in silico/in planta analysis of bacterial PGP traits, bacterial taxonomy, microscopy, root colonization and infection processes, genetics, mutants' generation and phenotypes analyses, genomes and 'omics' data analysis.
Project manager at the CNTA and administrator of a collection of bacterial germplasm. Part of the working group to get the Human Resources Excellence in Research Award for the USAL. Conferences: organizer of 4, member of the scientific committee in 3, session moderator in 5. Reviewer of manuscripts for different indexed journals and editor of 3 special issues. Currently editor of *Frontiers in Microbiology and AIMS Microbiology.* Examiner in 8 PhD dissertations.

Currently, I am coordinator of a scientific network, and member of the Management Board of the Scientific Society SEFIN. From 2019 to 2023 I was Secretary of the Quality Committee of the Doctorate program in Microbiology and Genetics and member of the Internationalization Committee of the Research Excellent Unit "Agrienvironment" (USAL). From 2022 I am Associate Director of the Institute for Agrobiotechnology Research (CIALE).

I have supervised 7 Postdoctoral Researchers, 7 PhDs (2 ongoing), 20 TFMs and 15 TFGs. All 5 Doctors of the ended thesis I supervised are in Academia, as Associate Professors, or postdoctoral researchers.

Numerous international collaborations, most derived from my 5,5 years of research abroad.

Contributions to the society: >1500 teaching h, 2 transfer agreements to the Agricultural sector, participant in numerous scientific dissemination activities (Summer Scientific Campus, Scientific Spring, Agricultural Fair SALAMAQ, European Researchers' Night, etc.), outreach publications, and scientific advisor of 2 microbial biofertilizer companies.

Prizes: i. master thesis, ii. PhD, iii. accessit to the prize of the council of pharmaceutical colleges, iv. "V Antonio Palomares Prize" (SEFIN), awarded to young researchers with relevant contributions in the field of plant-microbial interactions.

Part C. RELEVANT MERITS *(sorted by typology)*

C.1. **Publications.** *Ten high-lighted publications in the last 10 years:*

1. Saati-Santamaría, Z., González-Dominici, L.I., Jiménez-Gómez, A., Morais, D., Tláskal, V., Benada, O., Qi, L., Sheng, Y., Rivas, R., Baldrian, P. and **García-Fraile, P.**, 2023. Revealing new bacterial functions in the plant rhizoplane. Research Square – Preprint. https://www.researchsquare.com/article/rs-3438462/v1 (Under review in Microbiome).
2. Saati-Santamaría Z, Vicentefranqueira R, Kolařik M, Rivas R, **García-Fraile P,** 2023. Microbiome specificity and fluxes between two distant plant taxa in Iberian forests. Environmental microbiome, 18(1).
3. Saati-Santamaría, Z., Selem-Mojica, N., Peral-Arenega, E., Rivas, R., **García-Fraile, P.** 2022. Unveiling the Genomic Potential of Pseudomonas type Strains for Discovering New Natural Products. Microbial Genomics 8(2). 10.1099/mgen.0.000758

4. Saati-Santamaría, Z., Baroncelli, R., Rivas, R. and García-Fraile, P., 2022. Comparative genomics of the genus Pseudomonas reveals host-and environment-specific evolution. Microbiology spectrum, 10(6), pp.e02370-22.

5. Saati-Santamaría, Z., Rivas, R., Kolařik, M., & **García-Fraile, P**. 2021. A New Perspective of Pseudomonas—Host Interactions: Distribution and Potential Ecological Functions of the Genus Pseudomonas within the Bark Beetle Holobiont. Biology, 10(2), 164.

6. Saati-Santamaría, Z., Peral-Aranega, E., Velázquez, E., Rivas, R., & **García-Fraile, P**. 2021. Phylogenomic Analyses of the Genus Pseudomonas Lead to the Rearrangement of Several Species and the Definition of New Genera. Biology, 10(8), 782.

7. Jiménez-Gómez A, Saati-Santamaría Z, Kostovcik M, Rivas R, Velázquez E, Mateos PF, Menéndez, E, García-Fraile P. 2020. Selection of the root endophyte *Pseudomonas brassicacearum* CDVBN10 as plant growth promoter for *Brassica napus* L. Crops. Agronomy, 10(11), p.1788.

8. Jiménez-Gómez A, Saati-Santamaría Z, Igual JM, Rivas R, Mateos PF, **García-Fraile P**. 2019. Genome insights into the novel species *Microvirga brassicacearum*, a rapeseed endophyte with biotechnological potential. 10.3390/microorganisms7090354

9. Poveda J, Jiménez-Gómez A, Saati-Santamaría Z, Usategui-Martin R, Rivas R, **García-Fraile P**. 2019. Mealworm frass as a potential biofertilizer and abiotic stress tolerance-inductor in plants. Applied Soil Ecology 142: 110 – 122

10. **Garcia-Fraile, P.**, Seaman, J.C., Karunakaran, R., Edwards, A., Poole, P.S. and Downie, J.A., 2015. Arabinose and protocatechuate catabolism genes are important for growth of *Rhizobium leguminosarum* biovar *viciae* in the pea rhizosphere. Plant and Soil, 390, pp.251-264.

C.2. Congresses

P. García-Fraile has contributed to more than 100 national and international conferences. Some selected contributions are listed below:

1. Roles of PGP bacteria in the plant holobiont. Keynote. XVII Spanish Congress on Nitrogen Fixation.Madrid, España. 07/2019. Speaker: **García-Fraile, P**.

2. I microrganismi e l'interazione con la pianta ed il terreno. Keynote. I Microrganismi, nuova frontieradell' Agricoltura sostenible. Vittoria, Italia. 05/2019. Speaker: **García-Fraile, P**.

3. Boosting microbial biocontrol products by efficient formulations. Keynote. 2nd Biocontrol LATAMMeeting. Medellín, Colombia. 11/2018. Speaker: **García-Fraile, P**.

4. Allelopathic interactions between White Nose Syndrome fungal strains and bacteria isolated from bat's skin and description of *Serratia myotis* and *Serratia vespertilionis* sp. nov. Keynote. BIOPOL Prague, Czech Republic. 05/2015. Speaker: **García-Fraile, P**.

5. External bacterial microbiota of Czech Republic Bats: diversity, pathogenesis potential and interactions with white nose syndrome fungal strains. Keynote speech. BIOCEV Meeting. Vestec, Czech Republic. 05/2015. Speaker: **García-Fraile, P**.

C.3. Research projects

P. García-Fraile has been researcher in over 20 research projects. Those with her contribution as **Principal investigator** (PI) are listed below:

1. Estudio la importancia de las poliaminas bacterianas en la simbiosis entre el canola y Pseudomonas. Ministerio de Ciencia e Innovación, Gobierno de España. Ref: PID2023-150384NB-I00. IP: Paula García-Fraile. 250.000€. 01/09/24-31/08/2028

2. Caracterización del potencial de la cepa P. brassicacearum CDVBN10 como biofertilizante, bioestimulante y biopesticida para cultivos de importancia agronómica. Ministerio de Ciencia e Innovación, Gobierno de España. Ref: TED2021-129157B-I00. IP: Paula García-Fraile. 147.085€. 01/12/2022-20/11/2024

3. Modelling integrated biodiversity-based next generation Mediterranean farming systems.

Fundingentity: PRIMA-AEI. Dates: 2022-2025. Paula García Fraile partner PI (132.250 €) and WP coord.

4. Análisis de la biodiversidad microbiana funcional con aplicación para la mejora en la producción de arándano y mora. Ref.: PID2019-109960RB-100. Call: Proyectos RETOS I+D+i 2019. Funding entity: Ministerio de Ciencia, Innovación y Universidades. Project title: PIs: Rivas, R and García-Fraile, P.Dates: 2020 – 2024. Amount: 170.610€.

5. Study of the roles of microbial symbionts in the bark beetle holobiont. Beneficiary: Czech Academy of Sciences. Ref.: 19-09072S. Call: GACR Senior. Funding Entity: Czech Agency for Science. PI: García-Fraile, P. Dates: 2019 – 2022. Amount: 280.000€.

6. Preparation of an ERC-Consolidator Grant. Ref.: EUIN2017-88199. Call: Europa Investigación. Funding Entity: Spanish Government. Beneficiary: University of Salamanca. IP: García- Fraile, P. Dates: 2018 – 2019. Amount: 8.000€.

7. Role of bacterial cellulases in the transition from free living to root endophytes in rapeseed crops and in the design of efficient biofertilizers "BIOFERTICELLULASER". Ref: 750795. Call: H2020-MSCA-IF. Funding Entity: European Commission. Beneficiary: University of Salamanca. IP: García-Fraile, P. Dates: 2017 – 2019. Amount: 170.121€.

8. Factors shaping microbial communities of ecologically important bark beetles. Ref: 16-15293Y. Call: GACR Junior. Funding Entity: Czech Agency for Science. Beneficiary: Czech Academy of Sciences. IP: García-Fraile, P. Dates: 2016 – 2019. Amount: 250.000€.

9. Assay and validation of the potential and qualities of the Tenebrio molitor frass as biofertilizer, biophytostrengthener and biopesticide. Ref: PTQ-14-07381. Call: Torres Quevedo. Funding Entity: Spanish Government. Beneficiary: MealFood Europe Ltd. IP: García-Fraile, P. Dates:2016 – 2017. Amount: 90.300€.

C.4. Contracts, technological or transfer merits

- Participation in 22 contracts with companies, being PI of the following:

1. Selection of a bacterial endophytic Plant Growth Promoting (PGP) strain/consortia of strains with capability to promote canola and tomato and be formulated as plant probiotics. Funding entity: ICL Ltd.**PI: Paula García Fraile**.07/05/2021-07/06/2022. 70,909,73€

2. Análisis de la capacidad endofítica de una cepa de *Azotobacter* spp. en plantas de maíz y trigo. Funding entity: Ceres Biotics S.L. **PI: Paula García-Fraile**. 01/02/2022 – 31/07/2022. 8.250,01€

3. Análisis de la capacidad endofítica de una cepa de Bacillus spp. en plantas de maíz y trigo. Funding entity: Ceres Biotics S.L. **PI: Paula García-Fraile.** 28/03/2022 – 31/07/2022. 5.225,00€

- Participation (as coordinator) in thematic scientific networks:

Biotecnología de las interacciones beneficiosas entre plantas y microorganismos: importancia de las interacciones planta-microorganismo en la resiliencia de los cultivos. **P. García Fraile Coordinator.** 01/07/2023-30/06/2025. 18.000€.

- Author of the patent:

Mezcla de cepas de *Rhizobium leguminosarum* con utilidad como fertilizante en plantas no leguminosas.E Velázquez; **P García-Fraile**; L Carro; MH Ramírez-Bahena; PF Mateos-González; R Rivas; E Martínez Molina. Priority country: Spain. Nº: 201131656. Publication Date: 2013