CURRICULUM VITAE (CVA)

CV date	09/11/2025

Part A. PERSONAL INFORMATION

First name	**EMILIA ANTONIA**		
Family name	**LÓPEZ SOLANILLA**		
Open Researcher and Contributor ID (ORCID) (*)	0000-0002-8578-7433		

A.1. Current position

Position	**Full Professor in Biochemistry and Molecular Biology**		
Initial date	09/02/21		
Institution	Universidad Politécnica de Madrid		
Department/Center		Centro de Biotecnología y Genómica de Plantas (CBGP)	
Country	Spain		
Key words	Plant- bacteria interactions, phytopathogenic bacteria, bacterial functional genomics, bacterial disease control		

A.2. Previous positions

Period	Position/Institution/Country/Interruption cause
2010- 2021	Associate Professor. Dpto. de Biotecnología. E.T.S.Ingenieros Agrónomos (UPM). Centro de Biotecnología y Genómica de plantas
2004-2010	Associate Professor (PCD). Dpto. de Biotecnología. E.T.S.Ingenieros Agrónomos (UPM)
2001-2002	Postdoctoral Fellow (MECD) en el extranjero. Department of Plant Pathology (Cornell University). USA
1999-2004	Assistant Professor. Dpto. de Biotecnología. E.T.S.Ingenieros Agrónomos (UPM). Spain
1997-1999	Postdoctoral Fellow. Dpto. de Biotecnología. E.T.S.Ingenieros Agrónomos (UPM). Spain
1994-1997	Phd Fellow (FPI). Dpto. de Biotecnología. E.T.S.Ingenieros Agrónomos (UPM). Spain
1991-1993	Undergraduate Fellow. Dpto de Genética, Facultad de Biología (UCM). Spain

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
PhD in Biology	Universidad Politécnica de Madrid	1998
Bachelor thesis in Biology	Universidad Complutense de Madrid	1994
Graduated in Biology	Universidad Complutense de Madrid	1993

Part B. CV SUMMARY

My career has been dedicated to understanding the molecular basis of host-pathogen interactions, with a specific focus on how plant-associated bacteria cause disease and adapt to their environments. My research has consistently explored the mechanisms that govern virulence, host manipulation, and environmental perception.

My early work established foundational insights into bacterial pathogenesis, starting with my PhD thesis on resistance mechanisms to plant defenses. This research uncovered key parallelisms between the virulence mechanisms of plant and animal bacterial pathogens, a finding recognized with an editorial comment in The Plant Cell and a "paper alert" in Current Opinion in Plant Biology.

During my postdoctoral work at Cornell University, I was a key member of a pioneering initiative on bacterial functional genomics. I identified the function of effector proteins in manipulating cell death during bacterial speck disease in tomato, a core mechanism of disease development. As an independent PI in Spain, I continued to advance this area, describing how bacterial effectors interfere with the plant's photosynthetic machinery as a strategy for disease. My work also broadened to include the study of resistance to antimicrobial peptides, oxidative stress, and the role of multidrug resistance pumps in pathogenicity.

More recently, my research has shifted to understanding how phytopathogenic bacteria adapt to their hosts and new niches. My group has focused on the perception of environmental signals, including light and plant-derived chemical cues, as a critical switch to the pathogenic state. Key achievements in this area include: •Pioneering studies on chemoperception in plant pathogens: We identified and characterized the chemical perception mechanisms in the plant pathogens *Pseudomonas syringae* and *Dickeya dadantii*, demonstrating their crucial role in infection. •Biochemical and functional characterization of chemoreceptors, revealing their importance in how pathogens sense molecules like amino acids and sugars for motility and virulence. •Determination of the role of specific chemoreceptors in virulence gene expression, motility, and metabolism, advancing the understanding of pathogenicity in these organisms. •We have contributed to the development of a bioinformatic approach to analyze chemoreceptor repertoires in plant-associated bacteria, revealing that these systems are key to adaptation to different hosts and ecological niches.

I have secured significant funding from national and international sources, including a recent partnership in a European Union project (EU program HORIZON-CL6-2024-FARM2FORK-02). I have served on the editorial boards of major journals, including Molecular Plant Pathology and the European Journal of Plant Pathology. I have held leadership roles as a collaborator (2018-2020) and coordinator (2020-2023) of the Agricultural and Forestry subarea of the Spanish National Research Agency (AEI). My service extends to evaluating grants for international agencies such as BBSRC (UK), ANR (France), GRF (Germany), ANEP (Spain) or FIS (Italy). I am also a member of several prominent scientific boards, including: •Scientific Board of the International Network "*Pseudomonas syringae*" (Since 2018). •Scientific Advisory Board of the CBGP (Since 2015). •Scientific Advisory Board of the CEBAS-CSIC (Since 2024). I have supervised numerous students (6 PhDs, 6 MS, and 28 undergraduate/intern projects)

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

C.1. Publications *(selected publications 10 last years)*

1. Gavira, J.A., Gilabert, M.J., Santamaría-Hernando, S., Molina-Ollero, A., Rico-Jiménez, M., Cabrera, J.J., **López-Solanilla, E.**, Matilla, M.A. 2025. Acetylcholine chemotaxis in global bacterial plant pathogens. **Microbiological Research** 300, 128294. DOI: 10.1016/j.micres.2025.128294

2. Munar-Palmer. M., Santamaría-Hernando, S., Liedtke, J., Ortega, D.R., López-Torrejón, G., Rodríguez-Herva, J.J., Briegel A. and **López-Solanilla,E***. **(2024)**. Chemosensory systems interact to shape relevant traits for bacterial plant pathogenesis. **mBio**. 15:e0087124.

3. Molina A*, Sánchez-Vallet A, Jordá L, Carrasco-López C, Rodríguez-Herva JJ, **López-Solanilla E. (2024).** Plant cell walls: source of carbohydrate-based signals in plant-pathogen interactions. Curr Opin Plant Biol 82:102630.

4. Rodríguez del Río,A., Giner-Lamia, J., Cantalapiedra, C.P., **(15/17)** , **López-Solanilla,E** , Coelho, L.P. and Huerta-Cepas, J.* **(2024)**. Functional and evolutionary significance of unknown genes from uncultivated taxa. **Nature** 626:377–384

5. Gálvez-Roldán, C., Cerna-Vargas, J.P., Rodríguez-Herva, J.J., Krell, T., Santamaría-Hernando, S.*, **López-Solanilla, E* (2023)**. A Nitrate-Sensing Domain-Containing Chemoreceptor Is Required for Successful Entry and Virulence of *Dickeya dadantii* 3937 in Potato Plants **Phytopathol.**, 113 (3), pp. 390-399.DOI: 10.1094/PHYTO-10-22-0367-R

6. Santamaría-Hernando, S., López-Maroto, A., Galvez-Roldán, C., Munar-Palmer, M., Monteagudo-Cascales, E., Rodríguez-Herva, JJ., Krell,T. and **López-Solanilla E* (2022).** *Pseudomonas syringae* pv. tomato infection of tomato plants is mediated by GABA and L-Pro chemoperception. **Mol. Plant Pathol**. 23 (10), pp. 1433-1445. DOI: 10.1111/mpp.13238.

7. Sanchis-López C., Cerna-Vargas J.P., Santamaría-Hernando S., **(7/9)**, **López-Solanilla,E** , Huerta-Cepas J.*, Rodríguez-Herva JJ* **(2021)**. Prevalence and Specificity of Chemoreceptor Profiles in Plant-Associated Bacteria. **mSystems**. 6(5):e0095121.

8. Santamaría-Hernando, S., Cerna-Vargas,J.P., Martínez-García. P.M., De Francisco-de Polanco, S., Nebreda, S., Rodríguez-Palenzuela, P., Rodríguez-Herva, J.J. and **López-Solanilla, E.*(2020)**. Blue light perception by epiphytic *Pseudomonas syringae* drives chemoreceptor expression enabling efficient plant infection. **Mol. Plant Pathol**. 21(12): 1606-16192.

9. Cerna-Vargas, J.P., Santamaría-Hernando, S., Matilla, M.A., Rodríguez-Herva, J.J., Daddaoua, A., Rodríguez-Palenzuela, P., Krell, T., **López-Solanilla, E.*(2019)**. Chemoperception of specific amino acids controls phytopathogenicity in *Pseudomonas syringae* pv. tomato. **mBio** 10 (5): e01868-19.

10. Santamaría-Hernando, S., Rodríguez-Herva, J.J., Martínez-García, P.M., **(9/9) López-Solanilla, E.*(2018)**. *Pseudomonas syringae* pv. tomato exploits light signals to optimize virulence and colonization of leaves. **Environ. Microbiol**. 20(12):4261-4280.

11. Isabel Río-Alvarez, Cristina Muñoz-Gómez, Mariela Navas-Vásquez, Pedro M. Martínez- García, María Antúnez-Lamas, Pablo Rodríguez-Palenzuela and **E. López-Solanilla*(2015)**. Role of *Dickeya dadantii* 3937 chemoreceptors in the entry to Arabidopsis leaves through wounds. **Molecular Plant Pathol.** 16(7):685-98.

**indicates corresponding author*

C.2. Congress (selected)

• "Bacterial chemoperception and pathogenesis: beyond the control of motility". Emilia López-Solanilla. 10th International Conference on *Pseudomonas syringae*. (Oporto, Portugal). June 4th-7th, 2024. (Key note speaker).

• "Bacterial chemoreceptors: learning about the dialogue between bacteria and plants". Emilia López Solanilla. The Institute for Mediterranean and Subtropical Horticulture "La Mayora". (Málaga, Spain). May17th, 2024. (Invited speaker).

• "Bacterial chemosensing in the adaptation to plant environment and its function in pathogenesis". Emilia López Solanilla. Bacterial Locomotion and Signal Transduction meeting (BLAST) (Charleston, SC, USA). January 16th-19th, 2023. (Oral Communication).

•"Chemoperception and plant pathogenesis". 15th Plants Bacteria Meeting (Toulouse, the LIPME & LRSV). January 25th-27th, 2022. On-line (Key note speaker).

•"Bacterial perception and the interaction with plant host". Emilia López Solanilla. First Spanish/Chinese Workshop - Centre of Excellence for Plant-Environment Interactions (CEPEI) 2021. May 31st and June 1st, 2021. On line. (Key note speaker).

• "Characterization of the involvement of the plant cell wall and its derived compounds in the virulence of *Dickeya dadantii*". Gálvez-Roldán, C., Mélida-Martínez, H., Molina-Fernández, A. & López-Solanilla, E. Phyllosphere Fortnight 2021. UC Davis. July 16th to 28th. On Line (Oral Communication).

•"Bacterial adaptation to host environment during the onset of the infection". Emilia López Solanilla. When development meets stress: Understanding developmental reprogramming upon pathogenesis in plants. International Center for scientific debate. September 3rd and 4th, 2018. Barcelona, Spain. (Key note speaker).

C.3. Research projects (last 10 years)

• **PID2024-161357OB-I0**. "Chemosensory systems in bacterial phytopathogens: unraveling complexity and exploiting novel targets for disease control (CHEMPATH)". PI: **Emilia López Solanilla**, Co-PI: José Juan Rodríguez Herva. Budget: 237,500 €

• **EU Project (Call: HORIZON-CL6-2024-FARM2FORK-02).Project ID: 101181658** (Project granted, at the stage of Grant Agreement preparation)."Effective management strategies to tackle *Clavibacter sepedonicus* and *Ralstonia solanacearum* outbreaks on POtato and toMATO crops": co-PIs: José Juan Rodríguez Herva, Gema López Torrejón and **Emilia López Solanilla**. 2025-2029. Total budget : 6,498,944 €. Individual partner budget CBGP/UPM: 467,868 €.

• **PDC2022-133895-I00** " Evaluation of D-Asp as a chemotaxis interfering agent for the control and prevention of bacterial plant disease".**PI: Emilia López Solanilla.** Budget: 132,250,00 €

• **TED2021-130793B-I00.** "Multilevel interference of seed transmission for a sustainable management of crop viral diseases" PI: Israel Pagán and **Emilia López Solanilla**. Budget: 251,850 €

• **PID2021-125673OB-I00. "**La quimiopercepcion bacteriana en la adaptacion al ambiente de la planta y su funcion en la patogénesis". **PI: Emilia López Solanilla** and José Juan Rodríguez Herva. Budget: 290,400 €

• **MIT-UPM seed projects.** "Plant-Pathogen Biotechnology and Genomics Meet Fluid Dynamics". Massachusetts Institute of Technology, Boston, USA. 2020-2022. **PI: Emilia López Solanilla** and Lydia Borouiba. Budget: 25,000 $

• **RTI2018-095222-B-I00**. "Relevance of chemosensory functions during the infection process of phytopathogenic bacteria". Ministerio de Ciencia, Innovación y Universidades. **PI: Emilia López Solanilla**. 2019-2021. Budget: 278,300 €

• **AGL2015-63851-R** "Light and plant-derived signals as modulators of life style in phytopathogenic bacteria". Ministerio de Economía y Competitividad (MINECO). **PI: Emilia López Solanilla**. 2016-2018. Budget: 242,000€

C.4. Contracts, technological or transfer merits

I am constituent partner and current shareholder of the company belonging to the Biotechnology area, **Plant Response Biotech** (date of creation: March 5, 2008). Technology-based company created as a spin-off at the Polytechnic University of Madrid.