

## CURRICULUM VITAE (CVA)

**IMPORTANT – The Curriculum Vitae cannot exceed 4 pages. Instructions to fill this document are available in the website.**

### Part A. PERSONAL INFORMATION

CV date 09/01/2025

First name	EMILIA ANTONIA		
Family name	LÓPEZ SOLANILLA		
Gender (*)	Female	Birth date (dd/mm/yyyy)	28/10/1970
Social Security, Passport, ID number			
e-mail	emilia.lopez@upm.es	<a href="https://www.cbgp.upm.es/index.php/es/?option=com_content&amp;view=article&amp;id=159">https://www.cbgp.upm.es/index.php/es/?option=com_content&amp;view=article&amp;id=159</a>	
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	Teleph. number	910679192
Key words	Plant- bacteria interactions, phytopathogenic bacteria, bacterial functional genomics, bacterial disease control		

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

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 (max. 5000 characters, including spaces)

The molecular aspects of microorganisms and plant physiology captured my attention during my undergraduate studies in Biology. I did a **bachelor thesis** on the **genetic control of aluminum tolerance in cereals**. Afterwards I did my **PhD thesis** on the study of **resistance mechanisms to plant defense in phytopathogenic bacteria**. I showed the **parallelisms between virulence mechanisms of plant and**

**animal bacterial pathogens** which was object of the editorial comments (The Plant Cell) and mentioned in the “paper alert” section in Current Opinion in Plant Biology.

During a postdoctoral phase at Cornell University, working with Dr. Alan Collmer, I was part of the initiative responsible for carrying out pioneering studies on **bacterial functional genomics of plant pathogens**. I described the function of effector proteins in the **manipulation of the cell death** during the disease development of the bacterial speck disease in tomato.

As IP in Spain, I was able to continue this research contributing with the description of the **interference of the photosynthetic machinery as one of the manipulation mechanisms used by bacteria to cause disease**. During this initial phase as IP, I analyzed other aspects regarding pathogenicity mechanisms during the **early stages of infection** in different bacterial models. This activity allowed us to contribute on: **the genetic control of the resistance to plant antimicrobial peptides, the study of the transcriptomic response induced by these peptides, the resistance to plant acid pH, the resistance to oxidative stress, or the role of multidrug resistance pumps during disease development**.

About ten years ago I began to be interested in the **mechanisms involved in the entry and adaptation to the host in phytopathogenic bacteria**. The switch to a pathogenic stage upon host perception determine the output of the infection and this switch is necessarily coupled to the perception of environmental signals. I was convinced that the **interference of these processes could be used as an alternative tool to fight bacterial diseases**. Therefore, during this time, the group have followed two main scientific challenges: 1) The study of **light perception during the infection process** and 2) The study of the **perception of plant signals through the chemotaxis pathway**. Among the most relevant achievements on these aspects are: •Characterization of the exploitation by *Pseudomonas* of cues based on the **presence, absence, and quality of light during leaf invasion**. •Description of **chemorreceptors and chemotaxis profiles in phytopathogenic bacteria**. •Description of the involvement of specific chemoreceptors in the **perception of plant derived compounds**. •Description of **chemoperception of amino acids** as part of the regulation network of virulence in *P. syringae*.

The group also perform a **bioinformatics approach aimed to study bacterial factors** involved in the interaction with the plant.

In the frame of collaborations, I have been involved in **functional studies** related to bacterial pathogenesis in **different pathosystems** (*P. savastanoi*-olive, *Erwinia amylovora*-fruit trees and others) as well as in functional studies in **soil bacteria**.

I collaborate with many scientists from Spain and abroad, generating joint publications. I have participated in one **European project (BIO98-1611-CE)** and one project from de **NFS (DBI-0077622)**. I have leaded one project from the Pathogen Functional Genomics Resource Center (**TIGR**). I am leading a collaborative project with the Massachusetts Institute of Technology (**MIT**), USA, and we have recently secured funding from the **EU program HORIZON-CL6-2024-FARM2FORK-02** as partners in a collaborative project.

I participate in the **Week of Science activities**. I have collaborated in **courses on molecular biology** to train **teachers at secondary schools**. Regularly I publish summaries of the main results of our works on official media (i.e. CBGP divulgation channels or Madri+d).

I have supervised **6 PhD students (plus 3 ongoing)**. I have supervised **6 Ms projects, 14 graduation projects and 12 internship projects** from **national and international programs**.

I have reviewed numerous articles in SCI journals. I have been **associated editor** of the European Journal of Plant Pathology (2017-2020) and I have been member of the **editorial board** of Molecular Plant Pathology (2018-2023).

I have been **collaborator (2018-2020) and coordinator (2020-2023) of the Agricultural and Forestry subarea of the Spanish National Research Agency (AEI)**. **Member of evaluation committees** for the following agencies: the **BBSRC** (Biotechnology and Biological Research Council UK), the **GRF** (German Research Foundation), the **ANR** (Agence Nationale de la Recherche), **BARD** (US-Israel Binational Agricultural Research and Development fund), Italian Science Fund (**FIS**), and the Spanish National Evaluation and Foresight Agency (**ANEP**). I have also participated as scientific advisor in several project **evaluation committees** at the **Spanish Ministry of Economy and Competitiveness**.

**Member of the Scientific Board of the International Network “*Pseudomonas syringae*”** (Since 2018).

**Member of the Scientific Advisory Board of the CBGP** (Since 2015).

**President of the group “Plant Microbiology”** of the National Society of Microbiology (**SEM**). (Since 2019).

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

##### **C.1. Publications** (*10 selected publications*)

1. 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.
2. 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.
3. 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
4. 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
5. Santamaría-Hernando, S., López-Maroto, A., Galvez-Roldán, C., Munar-Palmer, M., Monteagudo-Cascales, E., Rodríguez-Herva, J.J., 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.
6. 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.
7. 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.
8. 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.
9. 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.
10. 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). May 17th, 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 31<sup>st</sup> and June 1<sup>st</sup>, 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., Mérida-Martínez, H., Molina-Fernández, A. & López-Solanilla, E. Phyllosphere Fortnight 2021. UC Davis. July 16th to 28th. On Line (Oral Communication).
- “Amino acids perception drives *Pseudomonas syringae* pv. tomato pathogenesis”. Cerna-Vargas, JP., Santamaría-Hernando, S., Nebreda, S., Rodríguez-Herva, JJ., Matilla, MA., Rodríguez-Palenzuela, P., Krell, T. & López-Solanilla, E. The 10<sup>th</sup> International *Pseudomonas syringae* Conference. June 15<sup>th</sup> to 19<sup>th</sup>, 2020. 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 3<sup>rd</sup> and 4<sup>th</sup>, 2018. Barcelona, Spain. (Key note speaker).

### C.3. Research projects (selected)

- **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 quimiopercepción bacteriana en la adaptación al ambiente de la planta y su función 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€
- **AGL2012-32516**. “Role of plant and environmental signals on the establishment of bacterial diseases of plants” Ministerio de Economía y Competitividad (MINECO). **PI: Emilia López Solanilla**. 2013-2015. Budget: 198,900€

### 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.