



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	22/01/2024
First name	Melani		
Family name	Mariscal Gómez		
Gender (*)	Female	Birth date (dd/mm/yyyy)	
e-mail	b22magom@uco.es	URL Web	
Open Researcher and Contributor ID (ORCID) (*)	0000-0001-9179-1001		

(*) Mandatory

A.1. Current position

Position	Postdoctoral Researcher		
Initial date	01/01/2024		
Institution	University of Cordoba		
Department/Center	Genetics		
Country	Spain	Teleph. number	673713290
Key words	Fungal genetics, plant pathogen, chemotropism, <i>F. oxysporum</i>		

A.2. Previous positions (research activity interruptions, see call)

Period	Position/Institution/Country/Interruption cause
2022-2023	Researcher, University of Córdoba, Spain
2018-2022	PhD student (<i>FPI program</i>), University of Córdoba, Spain

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
PhD	University of Cordoba, Spain	2023
MSc degree in Genetics and Cell Biology	Complutense University of Madrid/ Autonomous University of Madrid/ University of Alcalá, Spain	2017
BSc degree in Biology	University of Cordoba, Spain	2016

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

I obtained my degree in Biology at the University of Cordoba in 2016. Between 2015 and 2016 I joined the Fusarium Lab at the Department of Genetics as an internship student under the supervision of Prof. M^a Carmen Ruiz Roldán, to study the role of G protein coupled membrane receptors in signal perception and pathogenicity of *Fusarium oxysporum* (BSc Thesis project).

In 2017, I did a Master's Degree in Genetics and Cell Biology at the Complutense University of Madrid. My MSc Thesis in the research group of Acute Lymphoblastic Leukemia (ALL) at the Faculty of Medicine of the Complutense University focused on the role of astrocytes in the relapse of acute lymphoblastic leukemia in the central nervous system and involved mainly techniques of cell culture, genetic analysis and immunohistochemistry.

In 2018 I returned to the University of Córdoba to start my PhD thesis with an FPI PhD fellowship from the Spanish Ministry of Science and Innovation (MICINN) in the group of Prof. Antonio Di Pietro. My PhD project focused on the role of pH homeostasis in MAP kinase signaling and pathogenicity of *F. oxysporum*. In particular, I studied master regulators of



cytosolic pH such as the essential plasma membrane H⁺-ATPase Pma1, using a combination of genetic and biochemical approaches to manipulate Pma1 expression and activity and to characterize the role of several upstream regulators of Pma1. During my PhD Thesis, I performed a 4-month stay funded by MICINN in the group of Prof. Robert Arkowitz at the University of Nice, France to deepen my skills in confocal microscopy and image analysis. In March of 2023, I obtained my PhD within the “Biosciences and Agrifood Sciences” program of the University of Cordoba with “Cum Laude” and International Mention. So far I have a first-author publication in *J Fungi* (2022) on the role of casein kinase in H⁺-ATPase regulation, hyphal chemotropism towards plant roots and pathogenicity) and a second-author paper in *mBio* (2023) on the role of cytosolic pH in the regulation of MAPK signaling and its potential as a new target to control fungal growth and virulence. Furthermore, I am co-author of a review on the relevance of extracellular and cytosolic pH in fungal pathogenesis, published in the volume “Plant Relationships” of the prestigious *Mycota* series edited by Springer (2023).

Currently, I am continuing my research in the same group as a Postdoc to complete and publish the findings of my PhD work (In preparation). Besides, I am involved in three international collaborative projects with Profs. David Turrà (University Federico II Naples, Italy), Nir Osherov (Tel Aviv University, Israel) and Norio Takeshita (Tsukuba University, Japan) that have allowed me to expand my knowledge in pH homeostasis to other fungal pathogens such as *Aspergillus fumigatus* and develop innovative strategies to tackle fungal pathogenesis, as well as to increase my international network of scientific contacts.

During my research career I have gained a multidisciplinary background in diverse areas of biology including genetics, cellular and molecular biology, biochemistry, microscopy and plant pathology. I have also co-directed two Master Theses, one Bachelor Thesis and supervised one incoming PhD exchange student from Romania. I also have taught a total of 100 h of laboratory courses to students in the Biochemistry, Biology and Veterinary degrees.

I have presented my work at international and national Congresses such as the 31st Fungal Genetics Conference (Asilomar USA 2021, Poster), the 16th European Conference on Fungal Genetics (Innsbruck, Austria 2023, selected talk), the XXVIII Congress of the Spanish Society of Microbiology (2021 online, selected talk) or the 1st International Agrienvironment Symposium (Salamanca 2023, selected talk) as well as in a Seminar series organized annually by the Departments of Genetics of the Universities of Cordoba and Seville since 2020.

Part C. RELEVANT MERITS

C.1. Publications (*indicates equal contribution; (#) indicates corresponding author)

1. Miki, H.*; **Mariscal, M.***, Itani, A., Sato, Y., Di Pietro, A. (#), Takeshita, N. (#). 2023. Cell wall remodeling is required for invasive growth into microspace and pathogenicity of plant pathogenic fungus. *In preparation close to submission*.
2. Fernandes, T. R., **Mariscal, M.**, Serrano, A., Segorbe, D., Fernández-Acero, T., Martín, H., Turrà, D., Di Pietro, A(#). 2023. Cytosolic pH controls fungal MAPK signaling and pathogenicity. *mBio*, e0028523. <https://doi.org/10.1128/mbio.00285-23>
3. **Mariscal, M.**, Fernandes, T.R., Di Pietro, A(#). 2023. Role of pH in the control of fungal MAPK signalling and pathogenicity. In: Scott, B., Mesarich, C. (eds) **Plant Relationships**. The Mycota, vol 5. Springer, Cham. https://doi.org/10.1007/978-3-031-16503-0_9. ISBN: 978-3-031-16503-0
4. **Mariscal, M.**, Miguel-Rojas, C., Hera, C., Fernandes, T.R., Di Pietro, A(#). 2022. *Fusarium oxysporum* casein kinase 1, a negative regulator of the plasma membrane H⁺-ATPase Pma1, is required for development and pathogenicity. *J. Fungi*, 8, 1300. <https://doi.org/10.3390/jof8121300>
5. Lopez-Díaz, C., Aguilar-Pontes, M. V., Masachis, S., *et al.*, Di Pietro, A(#). (5/12) 2022. Plasticidad genética y celular de los patógenos fúngicos durante la adaptación al huésped. IX Jornadas de Divulgación de la Investigación. **UCOPress**, 39-42. ISBN: 978-84-9927-717-2



6. **Mariscal, M.**, Fernandes, T.R., Di Pietro, A^(#A). 2021. Papel de la H⁺-ATPasa Pma1 en la homeostasis de pH citoplasmático del hongo patógeno *Fusarium oxysporum*. Nuevos desafíos, nuevas oportunidades. **UCOPress**, 155-158. ISBN: 978-84-9927-640-3

C.2. Congresses (presenting author)

1. Oral presentation. **Mariscal, M.**, Fernandes, T.R., Di Pietro, A. Cytosolic pH as a new fungal virulence signal. 1st International Agrienvironment Symposium. 17-18 July 2023. Salamanca, Spain. International.
2. Oral presentation and Poster. **Mariscal, M.**, Romero, M.T., Fernandes, T.R., Di Pietro, A. Role of the plasma membrane H⁺-ATPase Pma1 in pHcyt homeostasis of the fungal pathogen *Fusarium oxysporum*. 16th European Conference on Fungal Genetics. 5-8 March 2023. Innsbruck, Austria. International.
3. Workshop assistance. "Fusarium Workshop". 16th European Conference on Fungal Genetics. 5-8 March 2023. Innsbruck, Austria. International.
4. Poster. **Mariscal, M.**, Fernandes, T.R., Serrano, A., Arkowitz, R.A., Di Pietro, A. Role of the plasma membrane H⁺-ATPase Pma1 in pH homeostasis, development and virulence of the fungal pathogen *Fusarium oxysporum*. 31st Fungal Genetics Conference. 15-20 March 2022. Asilomar (United States). International.
5. Oral presentation. **Mariscal, M.**, Fernandes, T.R., Serrano, A., Di Pietro, A. Papel de la H⁺-ATPasa Pma1 en la homeostasis del pH, señalización y virulencia del hongo patógeno *Fusarium oxysporum*. XXVIII Congress of the Spanish Society of Microbiology. 28 June - 2 July 2021. Online. National.
6. Oral presentation. **Mariscal, M.**, Fernandes, T.R., Di Pietro, A. Papel de la H⁺-ATPase Pma1 en la homeostasis del pH citoplasmático del hongo patógeno *Fusarium oxysporum*. IX Congreso Científico de Investigadores en Formación de la Universidad de Córdoba. 3-6 May 2021. Online. National.
7. Poster. **Mariscal, M.**, Fernandes, T.R., Di Pietro, A. Role of the plasma membrane H⁺-ATPase Pma1 in pH_i homeostasis of the fungal pathogen *Fusarium oxysporum*. Microbial stress 2020. 16-18 November 2020. Online. International.
8. Oral presentation. Fernandes, T. R., **Mariscal, M.**, Serrano, A., Fernández-Acero, T., Turrà, D., Molina, M., Di Pietro, A. Understanding the role of pH in the control of MAPK signaling. 30th Fungal Genetics Conference. 12-17 March 2019. Asilomar (United States). International.

C.3. Research projects

1. **PID2022-140187OB-I00**. Reprogramación genética y del desarrollo en patógenos fúngicos durante su adaptación al huésped. Ministerio de Ciencia e Innovación. 350,000€. 01/09/2023-31/08/2026. PIs: Antonio Di Pietro and Manuel Sánchez López-Berges. Member of the working team.
2. **PDC2022-133749-I00**. Genomics-assisted directed evolution-based development of microbial biocontrol consortia for the control of plant vascular wilt diseases (EVOBIOCONTROL). MICINN Proyectos de Prueba de Concepto. 2022-2024. 143.750 €. Researcher employed by the project.
3. **TED2021-130262BI00**. Descodificando el diálogo molecular entre los patógenos fúngicos y los microorganismos de la rizosfera para mejorar el biocontrol. Ministerio de Ciencia e Innovación. 316,250 €. 01/12/2022 –31/11/2024. PIs: Antonio Di Pietro and M^a Carmen Ruiz Roldan. Member of the working team.
4. **P20_00179**. Mecanismos de adaptación celular y genética en el hongo patógeno *Fusarium oxysporum*: nuevas estrategias de control (FUSICONTROL). Conserjería de Economía, Conocimiento, Empresas y Universidad (Junta de Andalucía). 100,000 €. 05/10/2021 –31/03/2023. PI: Antonio Di Pietro. Member of the working team.



5. **PID2019-108045RB-I00.**Plasticidad celular y genética en la adaptación al huésped de los patógenos fúngicos. Ministerio de Ciencia, Innovación y Universidades. 314,600 €. 01/06/2020 –31/12/2023. PI: Antonio Di Pietro. Researcher employed by the project.
6. **27374-R.** El pH intracelular como mecanismo de señalización y diana antifúngica (PHUNGIPAT). Conserjería de Economía, Conocimiento, Empresas y Universidad (Junta de Andalucía). 48,189€. 01/01/2020 – 31/12/2021. PI: Antonio Di Pietro. Member of the working team.
7. **BIO2016-78923-R.** Mecanismos genéticos de la infección fúngica inducidos por el hospedador. Ministerio de Economía y Competitividad. PIs: Antonio Di Pietro, M^a Isabel González Roncero (University of Córdoba). 30/12/2016 - 31/12/2020. 423,500 €. FPI PhD fellowship (BES-2017-082775).

C.4. Contracts, technological or transfer merits