

CURRICULUM VITAE

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

Part A. PERSONAL INFORMATION		CV date	30/01/2024
First name	María Victoria		
Family name	Aguilar Pontes		
Gender (*)	Female	Birth date (dd/mm/yyyy)	
Social Security, Passport, ID number			
e-mail	mvaguilarpontes@gmail.com	URL Web	https://linktr.ee/mvaguilarpontes
Open Researcher and Contributor ID (ORCID) (*)	0000-0002-3174-8834		

(*) Mandatory

A.1. Current position

Position	Postdoctoral Researcher		
Initial date	01/01/2024		
Institution	University of Córdoba		
Department/Center	Genetics		
Country	Spain	Teleph. number	957218981
Key words	Bioinformatics, Fungal pathogen, Metabolic modeling, Transcriptomics, Proteomics, Metabolomics, Comparative genomics		

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

Period	Position/Institution/Country/Interruption cause
01/01/2022 - 31/12/2023	María Zambrano Postdoctoral Fellow / University of Córdoba / Spain
01/10/2019 - 30/09/2021	Postdoctoral Fellow / Concordia University / Montreal, Canada
01/01/2014 - 30/06/2018	Predoctoral candidate / Westerdijk Institute / Utrecht, The Netherlands

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
PhD	Utrecht University / The Netherlands	2018
Master's degree in Biotechnology	University of Córdoba / Spain	2012
Degree in Biology	University of Córdoba / Spain	2011

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

Postdoctoral researcher at the Department of Genetics of the University of Córdoba (UCO), studying fungal pathogenomics.

Preceding my formal scientific career, I obtained a competitive undergraduate student fellowship from the Spanish Ministry of Science and Education to join the Department of Genetics at UCO (2010/11). After graduating in Biology from UCO (2011), I performed a 3-month research stay at the Technische Universität Braunschweig, Germany, before enrolling in the Master's degree in Biotechnology (UCO, 2012). In 2013 I completed the course “**Master's degree in Bioinformatics and Computational Biology**” at the Institute of Health Carlos III (90 credits).

In 2014 I joined the group of Prof. Ronald de Vries at the Westerdijk Fungal Biodiversity Institute (The Netherlands) to perform a PhD on **carbon metabolism** in the biotechnologically relevant fungus *Aspergillus niger*. I participated in the functional annotation of the *A. niger* **telomere-to-telomere gold-standard genome**, which I used to build a carbon metabolic model. The **model predicts fungal catabolic capacities based on the genome sequence** (Aguilar-Pontes et al. 2018, *Stud Mycol*). In 2016, I visited the group of Prof. Mikael Andersen at the **Technical University of Denmark** (2 weeks) and the Center for Structural and Functional Genomics at **Concordia University**, Canada (3 months), to annotate carbon metabolic pathways in *A. niger* strains with industrial relevance (Brandl, Aguilar-



Pontes, et al. 2018, *Fungal Biol and Biotechnol*). Additionally, I was involved in several other projects studying carbon degradation by fungi, resulting in 16 publications. In December 2018 I obtained my PhD degree from Utrecht University.

In 2019, I joined the group of Prof. Adrian Tsang at the Concordia University as a postdoc to explore the **genomic mechanisms of thermophilia in fungi**. My motivation was to expand my technical knowledge to approach biological questions from a genomic perspective. During my two years as a postdoc at Concordia University I continued developing my skills in genome assembly and annotation. Early in the project I became aware of new data generated at Department of Energy Joint Genome Institute together with the Sandia National Laboratory and the University of New Mexico (US) resulting in a long-lasting collaboration. This project resulted in the publication of **23 new genomes** from thermophilic fungi (Steindorff, María Victoria Aguilar-Pontes, et al, *in preparation*). Moreover, I participated in two international consortia. For this work I was awarded a Top-up Salary Grant from Concordia University.

In 2022, I obtained a **competitive María Zambrano contract** from the Spanish Ministry of Universities to join the group of Prof. Antonio Di Pietro at UCO to work in the fungal cross-kingdom pathogen *Fusarium oxysporum*. My project focuses on the use of **-omics data to address fungal pathogenicity**. Since my incorporation to the group, I obtained a competitive **UCOLidera 2023 project** to study transcriptional regulation (10.000 €), **led a collaboration** with Nicholas Geoffrion at **McGill University** (Canada) (Geoffrion, Aguilar Pontes, under revision in *Front Bioinform*) and collaborated with Dr. Amey Redkar, at **National Centre for Biological Science** (India) (Srivastava, et al *Ann Rev Phytopathol*). Additionally, I am **leading a new *F. oxysporum* telomere-to-telomere genome annotation effort** with the group of Prof. Toni Gabaldón at IRB, Barcelona. I collaborate daily with pre- and postdoctoral researchers of the group and have generated several bioinformatic applications for *in-house* use. Additionally, I implemented the group's Data Management Plan.

I am **accredited as assistant professor by ANECA (PAD)** and am actively collaborating in **teaching** in the **Biology Degree** (5 credits, 2022/23 and 2023/24) and in the **Master of Biotechnology** (1 credit, 2022/23 and 2023/24) as well as in the Postgraduate program of the Netherlands Bioinformatics and Systems Biology Research School (2022 and 2024). Together with **another Professor** at the Department I am **developing a new course** entitled “Computación, interpretación y presentación de datos en Biología” which will be taught in the Biology Degree (4th year) starting in **2024/25**. I currently co-supervise 1 TFM and 1 TFG at the Department of Genetics.

I am the author of 28 scientific articles, 4 as first author, including 3 reviews and I am corresponding author of a book chapter. Currently I have a total of 603 citations, h-index = 12 by WOS and 886 citations, h-index = 15 by Scholar. I have presented my research at 19 national and international conferences, including one invited and four selected talks. I am Principal Investigator of 1 project and have participated in 13 national and international projects. As an independent researcher I am keen to contribute to the advance of knowledge on the mechanisms of fungal pathogenicity as well as to develop new strategies for studying fungal virulence.

Part C. RELEVANT MERITS

C.1. Publications

1. Srivastava, V; Patra, K; Pai, H; **(4/8) Aguilar-Pontes, MV**; Berasategui, A; Kamble, A; Di Pietro, A; Redkar, A. 2024. Molecular dialogue during host manipulation by the vascular wilt fungus *Fusarium oxysporum*. *Ann. Rev. Phytopathol.* (*in press*) <https://doi.org/10.1146/annurev-phyto-021722-034823>.
2. Li, J; Chroumpi, T; Garrigues, S; et al; de Vries, RP; **(7/19) Aguilar-Pontes, MV**. 2022. The sugar metabolic model of *Aspergillus niger* can only be reliably transferred to fungi of its Phylum. *J. Fungi*. 8-12. <https://doi.org/10.3390/jof8121315> Cit = 5, Avg. = 1.67
3. Mendoza, SN; Calhoun, S; Teusink, B; **(4/4) Aguilar-Pontes, MV (AC)**. 2021. Metabolic Modeling of Fungi. *Encyclopedia of Mycology*. Oxford. Elsevier. 2, pp.394-405. ISBN 978-0-323-85180-0. <https://doi.org/10.1016/B978-0-12-809633-8.21068-6>
4. Chroumpi, T; **(2/9) Aguilar-Pontes, MV**; Peng, M; et al; de Vries, RP. 2020. Identification of a gene encoding the last step of the *l*-rhamnose catabolic pathway in *Aspergillus niger* revealed

- the inducer of the pathway regulator. *Microbiol Res.* 234, 126426. <https://doi.org/10.1016/j.micres.2020.126426>. Cit = 9, Avg. = 2.25
5. Nemeth, Z; Kulcsar, L; Flipphi, M; Orosz, A; **(5/8) Aguilar-Pontes, MV**; de Vries, RP, Karaffa, L; Fekete, E. (2018). L-Arabinose induces D-galactose catabolism via the Leloir pathway in *Aspergillus nidulans*. *Fungal Genet Biol*, 123, 53-59. <https://doi.org/10.1016/j.fgb.2018.11.004>. Cit. = 7, Avg. = 1.17
 6. **(1/14) Aguilar-Pontes, MV**; Brandl, J; McDonnell, E; et al; de Vries, RP. 2018. The gold-standard genome of *Aspergillus niger* NRRL 3 enables a detailed view of the diversity of sugar catabolism in fungi. *Stud Mycol.* 91, pp.61-78. <https://doi.org/10.1016/j.simyco.2018.10.001>. Cit = 42, Avg. = 6
 7. Brandl, J; **(2/10) Aguilar-Pontes, MV**; Schape, P; et al; Andersen, MR. 2018. A community-driven reconstruction of the *Aspergillus niger* metabolic network. *Fungal Biol Biotechnol.* 5-16. <https://doi.org/10.1186/s40694-018-0060-7> Cit. = 10
 8. Benocci, T; **(2/5) Aguilar-Pontes, MV**; Zhou, M; Seiboth, B; de Vries, RP. 2017. Regulators of plant biomass degradation in ascomycetous fungi. *Biotechnol Biofuels.* 10. <https://doi.org/10.1186/s13068-017-0841-x> Cit. = 122, Avg. = 15.25
 9. Dilokpimol, A; Makela, MR; **(3/6) Aguilar-Pontes, MV**; Benoit-Gelber, I; Hilden, KS; de Vries, RP. 2016. Diversity of fungal feruloyl esterases: updated phylogenetic classification, properties, and industrial applications. *Biotechnol Biofuels.* 9. <https://doi.org/10.1186/s13068-016-0651-6> Cit = 106, Avg. = 11.78
 10. **(1/6) Aguilar-Pontes, MV**; Zhou, M; van der Horst, S; Theelen, B; de Vries, RP; van den Brink, J. 2016. Sexual crossing of thermophilic fungus *Myceliophthora heterothallica* improved enzymatic degradation of sugar beet pulp. *Biotechnol Biofuels* 9. <https://doi.org/10.1186/s13068-016-0460-y> Cit = 6, Avg = 0.67

C.2. Congress

Conferences with peer-review committee. *Speaker.

1. 16th European Conference of Fungal Genetics. Universität Innsbruck. Austria 2023. *Oral presentation*: Role of the transcription factor MacA in *Fusarium oxysporum* pathogenicity. Palos-Fernández, R*; **Aguilar-Pontes, MV**; Berger, H; Studt-Reinhold, L; Strauss, J; Di Pietro, A.
2. I Congreso y XII Jornadas de Usuarios de R. Universidad de Córdoba. Spain 2022. *Poster*: Identificación de elementos similares a retrotransposones en el genoma de un patógeno fúngico utilizando karyoplotR. **Aguilar-Pontes, MV***; Palos-Fernández, R; Rodríguez-López, A; López-Díaz, C; Sánchez López-Berges, M; Di Pietro, A.
3. KNVM Section Mycology. The Netherlands. 2018. *Oral presentation*: A detailed view of the diversity of sugar catabolism in fungi. Fungi; just around the corner. **Aguilar-Pontes, MV***.
4. 12th Annual DOE Joint Genome Institute, Walnut Creek, USA, 2017. *Poster*: From genome content to substrate conversion: a case of orthology inside the fungal kingdom. **Aguilar-Pontes, MV***; Wiebenga, A; Snel, B; de Vries, R. P.
5. 14th International Aspergillus Satellite Workshop. Genetics Society of America. USA 2017. *Oral presentation*: McDonnell, E; Strasser, K; Fulton, D; Tsang, A; de Vries, RP. Expression data integration in an *Aspergillus niger* genome-scale metabolic model. **Aguilar-Pontes, MV***.
6. SuBiCat 3rd Annual Workshop. University of Helsinki. Finland. 2016. *Invited talk*: The jinni that escaped from the jar: informatics at the service of molecular biology. **Aguilar-Pontes, MV***.
7. 2nd Dutch Bioinformatics & Systems Biology Conference. National Bioinformatics and Systems Biology Research School. The Netherlands. 2016. *Oral presentation*: Identification of beneficial enzymes for plant biomass degradation using -omics data. **Aguilar-Pontes, MV***; Zhou, M; van der Horst, S; Theelen, B; de Vries, RP; van den Brink, J.



C.3. Research projects

Reference: UCOLidera2023 **Project title:** Implementación del modelo metabólico y regulatorio del hongo fitopatógeno *Fusarium oxysporum* durante la infección. 10/2023-9/2023. 10.000 € Córdoba University. **PI.:** María Victoria Aguilar Pontes.

Reference: PID2022-140187OB-I00 **Project title:** Reprogramación genética y del desarrollo en patógenos fúngicos durante su adaptación al huésped (REPROFUN). Ministerio de Ciencia e Innovación. **PIs.:** Antonio Di Pietro / Manuel Sánchez López-Berges. 01/09/2023-31/08/2026. 350.000 €. **Type of participation:** Working team member. Postdoctoral senior bioinformatician. Identification of new metabolic pathways.

Reference: ProyExcel_00488 **Project title:** Characterization of fungal transcription factors regulating vascular wilt disease (FUNPATHOREG) 02/12/2022-31/12/2025. 159.410 € Consejería de Transformación Económica Industria Conocimiento y Universidades. **PI.:** Manuel Sánchez López-Berges. **Type of participation:** Working team member. Postdoctoral senior bioinformatician. RNA-seq and ChIP-seq analysis and enforcing Data Management Plan.

Reference: TED2021-130262B-100 **Project title:** Descodificando el diálogo molecular entre los patógenos fúngicos y los microorganismos de la rizosfera para mejorar el biocontrol. 01/12/2022-30/11/2024. 316.250 € Ministerio de Ciencia e Innovación. **PI.:** Antonio C. Di Pietro / M. Carmen Ruiz Roldan. **Type of participation:** Working team member. Postdoctoral senior bioinformatician. Metabolic pathway analysis.

Reference: P20_00179 **Project title:** Mecanismos de adaptación celular y genética en el hongo patógeno *Fusarium oxysporum*: nuevas estrategias de control (FUSICONTROL). Consejería de economía conocimiento, empresas y universidad. **PI.:** Antonio Di Pietro. 05/10/2021-31/03/2023. 100.000 €. **Type of participation:** Working team member. Postdoctoral senior bioinformatician. Analysis and discussion of omic data.

Reference: Genome Canada GAPP Program **Project title:** Lysozyme feed additives to improve gut health and productivity of food animals. Genome Quebec & Genome Canada, Canada. **PI.:** Adrian Tsang. 2018-2022. 6.000.000 \$. **Type of participation:** Postdoctoral junior bioinformatician. Manual curation of genome functional annotation and comparative genomic analysis.

Reference: FICUS 10.46936/fics.proj.2018.50379/60006403 **Project title:** Validation of metabolic models, extrapolated from the reference sugar catabolism genetic network of *Aspergillus niger* by using an orthology based approach of evolutionary diverse fungi. 1/7/2018-31/6/2021. 300.000 € DOE JGI and EMSL, USA. **PI.:** Ronald P. De Vries **Type of participation:** VICI predoctoral fellow. Contributed writing the grant and analyzing *Aspergillus niger* metabolism.

Reference: NOW/ALWOP.233 **Project title:** An experimentally validated model for central carbon metabolism in *Aspergillus niger* to elucidate fungal flexibility in conversion of plant-biomass derived sugars. 1/4/2017-31/3/2021. 200.000 € Netherlands Organization for Scientific Research. **PI.:** Ronald P. De Vries **Type of participation:** VICI predoctoral fellow. Contributed writing the grant and analyzing *A. niger* RNA-seq data.

Reference: NWO/VICI 016.130609/210-C88012 **Project title:** Harvesting nature's bounty Efficient prospecting of fungi for the bio-based economy. 1/1/2013-31/3/2021. 200.000 € Netherlands Organization for Scientific Research. **PI.:** Ronald P. De Vries **Type of participation:** VICI predoctoral fellow. Building *A. niger* metabolic model, manually curate gene annotation and RNA-seq analysis.

Reference: EDU/1464/2011 **Project title:** Expression of polygalacturonases during the infection of tomato plants by *Fusarium oxysporum* f. sp. *lycopersici*. 1/9/2010-31/7/2011. 2.700 € Ministerio Español de Ciencia y Educación. **PI.:** M. Isabel González Roncero **Type of participation:** Undergraduate student. Study of the expression of poligalacturonases during *Fusarium oxysporum* plant infection.