CURRICULUM VITAE

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CURRENT POSITIONS

- Full-time Adjunct Professor
  Biochemistry Area. School of Agronomy, University of Buenos Aires (FAUBA).
- Assistant Researcher from the National Research Council (CONICET)
  Institute for Research in Agricultural and Environmental Biosciences" (INBA-CONICET). FUBA. Since 2019/04.

RESEARCH TOPICS

- Search, identification and application of microbial bioactive metabolites for the control of phytopathogens
- Biocontrol mechanisms of phytopathogens by endophytic bacteria from soybean.
- Insect gut microbiome

ACADEMIC DEGREES

- Ph.D. in Biological Sciences (2010)
- Microbiologist (2003)
- Laboratory-Technician (2004)

Institution: School of Exact, Physical and Natural Sciences. Universidad Nacional de Río Cuarto (UNRC), Argentina.

SCIENTIFIC PUBLICATIONS

- (2025) **Alvarez F**, Grispi JA, Montecchia MS, Draghi WO, Cabrera GM, Romero AM, Roberts IN, Simonetti E. "*Burkholderia gladioli* BNM349 as a promising source of bacterial metabolites for biocontrol of common bacterial blight of bean" BioControl 70, 131-144.
- (2022) **Alvarez F**, Simonetti E, Draghi WO, Vinacour M, Montecchia MS, Roberts IN, Ruiz JA. "Genome mining of *Burkholderia ambifaria* strain T16, a rhizobacterium able to produce antimicrobial compounds and degrade fusaric acid". *World Journal of Microbiology and Biotechnology*. In review.

- (2021) Oyuela Aguilar M, **Alvarez F**, Medeot D, Jofre E, Semorile L, Pistorio M. "Screening of epiphytic rhizosphere-associated bacteria in Argentinian Malbec and Cabernet-Sauvignon vineyards for potential use as biological fertilisers and pathogen-control agents". Oeno One, 55(4), 145-157.
- (2021) Simonetti E, **Alvarez F**, Feldman N, Vinacour M, Roberts IN, Ruiz JA. "Genomic insights into the potent antifungal activity of *B . ambifaria* T16" *Biological Control* 155, 104530-12.
- (2021) Draghi WO, **Alvarez F**, Russo DM, Lagares A, Wall LG, Zorreguieta A. "Root-associated *Burkholderia* spp. on the hairy vetch (*Vicia villosa* Roth.) cover crop vary depending on soil history of use" *Rhizosphere* 17, 100297.
- (2019) Iturralde ET, Covelli JM, **Alvarez F**, Perez-Gimenez J, Arrese-Igor C, Lodeiro AR. "Soybean-nodulating strains with low intrinsic competitiveness for nodulation, good symbiotic performance, and stress-tolerance isolated from soybean-cropped soils in Argentina" *Frontiers in Microbiology*, 10:1061.
- (2018) López JL, **Alvarez F**, Príncipe A, Salas ME, Lozano MJ, Draghi WO, Jofré E, Lagares A. "Isolation, taxonomic analysis, and phenotypic characterization of bacterial endophytes present in alfalfa (*Medicago sativa*) seeds" *Journal of Biotechnology*, 267: 55-62.
- (2017) Martina P, Leguizamón M, Prieto CI, Sousa SA, Montanaro P, Draghi WO, Stämmler M, Bettiol M, Carvalho CC, Palau J, Frigoli C, **Alvarez F**, Lejona S, Vescina C, Ferreras J, Lasch P, Lagares A, Bosch A. "*Burkholderia puraquae* sp. nov., a novel *Burkholderia cepacia* complex species from hospital settings and agricultural soils" *International Journal of Systematic and Evolutionary Microbiology*, 68 (1):14-20.
- (2017) Medeot D, Bertorello-Cuenca M, Liaudat JP, **Alvarez F**, Flores-Cáceres ML, Jofré E. "Improvement of biomass and cyclic lipopeptides production in *Bacillus amyloliquefaciens* $MEP_2$18 by modifying carbon and nitrogen sources and ratios of the culture media" *Biological Control*, 115: 119-128.
- (2017) Toniutti MA, Fornasero LV, Albicoro FJ, Martini MC, Draghi WO, **Alvarez F**, Lagares A, Pensiero JF, Del Papa MF. "Nitrogen-fixing rhizobial strains isolated from *Desmodium incanum* DC in Argentina: Phylogeny, biodiversity and symbiotic ability" *Systematic and Applied Microbiology*, 40: 297-307.
- (2017) Martina PF, Martínez M, Frada JG, **Alvarez F**, Leguizamón L, Prieto C, Barrias AC, Bettiol M, Lagares A, Bosch A, Ferreras JA, von Specht MH. "First time identification of *Pandoraea sputorum* in a young child with cystic fibrosis in Argentina: a case report" *BMC Pulmonary Medicine*, 17 (33) 1-5.
- (2016) Barbosa EA, Souza MT, Diniz RHS, Godoy-Santos F, Faria-Oliveira F, Correa LFM, **Alvarez F**, Coutrim MX, Afonso RJCF, Castro IM, Brandão RL. "Quality improvement and geographical indication of cachaça (Brazilian spirit) by using local selected yeast strains" *Journal of Applied Microbiology,* 121(4): 1038-1051.
- (2015) Pereira R, Castanheira D, Teixeira J, Bouillet L, Ribeiro E, Trópia MJ, **Alvarez F**, Correa LFM, Mota BEF, Conceição LEFR, Castro IM, Brandão RL. "Detailed search for protein kinase(s) involved in the regulation of plasma membrane H^+-ATPase activity of yeast cells" *FEMS Yeast Research*, 15 (2):1-10.

- (2015) Conceição LEFR, Saraiva MAF, Diniz RHS, Oliveira J, Barbosa GD, **Alvarez F**, Correa LFM, Mezadri H, Coutrim MX, Afonso RJCF, Candida L, Castro IM, Brandão RL. "Biotechnological potential of yeast isolates from cachaça: the Brazilian spirit" *Journal of Industrial Microbiology & Biotechnology,* 42: 237-246.
- (2014) **Alvarez F**, Corrêa LFM, Araújo TM, Mota BF, Conceição LEFR, Castro IM, Brandão RL "Variable flocculation behavior in yeast strains isolated from *cachaça* distilleries" *International Journal of Food Microbiology*, 190: 97-140.
- (2012) **Alvarez F**, Castro M, Príncipe A, Borioli G, Fischer S, Mori G, Jofré E. "The plant-associated *Bacillus amyloliquefaciens* srains $MEP_2$18 and $ARP_2$3 capable of producing the cyclic lipopeptides iturin or surfactin and fengycin are effective in biocontrol of sclerotinia stem rot disease" *Journal of Applied Microbiology*, 112: 159-174.
- (2009) Príncipe A, Jofré E, **Alvarez F**, Mori G. "Role of a serine-type D-alanyl-D-alanine carboxypeptidase on the survival of *Ochrobactrum* sp. 11a under ionic and hyperosmotic stress" *FEMS Microbiology Letters*, 295: 261-273.
- (2007) Príncipe A, **Alvarez F**, Zacchi L, Castro M, Jofré E, Fischer S, Mori G "Biocontrol and PGPR features in native strains isolated from saline soils of Argentina" *Current Microbiology*, 55: 314-322.

Book Chapters

- (2025) "Genome-editing tools for biotic stress tolerance in plants" **Alvarez F**, Zavala JA. Chapter 16, 206-216. In "Gene-Edited Crops. The CRSPR Solution for Global Food Security". Ed. Taylor & Francis Group. Edited by Aftab Ahmad, Nayla Munawar, and Baohong Zhang. Pages:330. eBook ISBN 9781003500933.
- (2020) "Biogeochemical cycles". Caputo C, **Alvarez F**, Peton A. In: "Biochemistry Applied to Agricultural and Environmental Sciences". Pp 347-357. Facultad de Agronomía (ed.) ISBN: 9789873738296.
- (2013) "Fighting plant diseases through the application of *Bacillus* and *Pseudomonas* strains". Fischer S, Príncipe A, **Alvarez F**, Cordero P, Castro M, Godino A, Jofré E, Mori G. Symbiotic Endophytes. Series: Soil Biology. Pp 165-193. R. Aroca (Ed.). ISBN 978-3-642-39316-7.

SCIENTIFIC MEETINGS-COMMUNICATIONS (Last 5 years)

- Participation in the scientific event "40 years of LBCM: Fermenting Ideas and Developing People", held on September 26-27 at the Federal University of Ouro Preto, Brazil. Organized by Dr. Rogelio Lopes Brandão. Presentation type: Videoconference.
- VI Argentine Congress of Agricultural and Environmental Microbiology (CAMAyA). Bs As, September 24-26, 2025 "Antagonism against *Macrophomina phaseolina* in endophytic bacteria associated with soybean and *N. viridula"* Naranjo Rojas D.A., Rosso B., Simonetti E., Zavala J.A., Pagano E.A., **Alvarez F**. Presentation type: Poster.

- 35th AAPRESID Congress. Bs As, August 6-8, 2025. "A new bacterium for the biological control of lepidopterans?" Robles Zúñiga V.N., Jacobi V., Simonetti E., Pagano E.A., Zavala J.A., **Alvarez F**. Presentation type: Poster.
- XVI Argentine Congress of Microbiology. CABA, August 21-23, 2024: "Mycophagy as a biocontrol mechanism in *Burkholderia gladioli* pv. *gladioli* BNM349". **Alvarez F**, Grispi JA, Simonetti E. Presentation type: Oral communication.
- Frontiers in Bioscience 4 Symposium. IBioBA-Max Planck Society.Bs As, September 13-15, 2023:

  "Identification and comparation of bacterial isolates from soybean (*Glycine max*) and southern green stinkbug (*Nezara viridula*). Rosso B, **Alvarez F**, Jacobi V, Lagares A, Pagano EA, Soria M, Zavala JA,

  "*Burkholderia gladioli* strain BNM349 is a source of bioactive metabolites with potential application in plant disease management". Grispi J, **Alvarez F**, Montecchia M, Cabrera G, Romero A, Roberts IN, Simonetti E.
- XII Young Researchers Conference. Faculty of Veterinary Sciences, University of Buenos Aires. July 8-9, 2023 "Biocontrol of Common Bacterial Blight in *Phaseolus vulgaris* through the application of secondary metabolites from *Burkholderia gladioli* pv. *gladioli".* Grispi JA, **Alvarez F**, Montecchia M, Cabrera G, Romero A, Simonetti E.
- REDBIO Argentina 2021-XII National Symposium, June 7-11. Online Modality: "Antimicrobial activity of strains of the genus Burkholderia against phytopathogens of agronomic relevance". Grispi JA, **Alvarez F**, Simonetti E.

RECENTLY FUNDED RESEARCH PROJECTS

- (2022-2025) Pluriannual Research Project (PIP): "Search, identification and application of bioactive metabolites produced by *Burkholderia* strains for the control of phytopathogens". Code: 11220210100381CO. Role: Co-Director. Director: Dr. Ester Simonetti.
- (2022-2024) "Search, identification and application of bioactive metabolites produced by *Burkholderia* strains for the control of phytopathogens" (PICT-2020-SERIEA-00286). Role: Member of the responsible group. Director: Dr. Ester Simonetti.
- (2023-2025) UBACyT 2023 (20020220300030BA) "New molecular and biological control tools to protect soybean crops from adverse conditions". Role: Senior Researcher. Director: Dr. Eduardo Pagano.
- (2023-2025) UBACyT 2023 (20020220300109BA) "Importance of systemic defenses in soybean crops". Role: Senior Researcher. Director: Dr. Jorge A. Zabala.
- (2020-2022) PICT Young Researcher (PICT-2017-3192): "Antifungal metabolites in *Burkholderia ambifaria*: gene screening and identification of potential inducers of expression secreted by *Fusarium* spp." Role: Principal Researcher. Status: Final Technical Report submitted.

TRAINING AND SUPERVISION OF YOUNG RESEARCHES

- (2024-Preset) Supervisor of UBACyT Fellow Daniel A. Naranjo Rojas, conducting research within the project UBACyT 2023 (20020220300030BA). Tittle "Mechanisms of plant growth promotion and biocontrol of phytopathogens in soybean endophytic bacteria"
- (2023-Preset) Supervisor of Agronomy student Valeria N. Robles Zúñiga. Tittle: "Biocontrol of Spodoptera frugiperda by B. gladioli BNM349".
- (2023-2024) Supervisor of UBACyT Fellow Juan Angel Grispi (Research Incentive Category).
- (2021-2024) Co-Supervisor of the undergraduate thesis of Agronomy student Juan Angel Grispi (FAUBA).
- (2022-2024) Academic advisor of Karen Alba Hoyos, student of the Bachelor's Degree in Environmental Sciences, recipient of a Sarmiento Scholarship.
- (2011-2013) Co-supervisor of postgraduate student Thalita Macedo Araújo in the Master's Program in Biotechnology. Research topic: "Biochemical-molecular characterization of strains of *Saccharomyces cerevisiae* isolated from *cachaça* fermentation flasks for beer production". ICEB, UFOP, Brazil.
- (2012-2013) Co-supervisor of undergraduate student Anna Clara Silva Campos, UFOP, Brazil.

EXTENSION AND TECHNOLOGY TRANSFER

- (2022-Present) Laboratory of Genomics and Molecular Markers, Chair of Biochemistry, FAUBA. Role: Collaborating staff-consultant.
- (2020-Present) Coordinator and participant in the INBA Seminars

High-Level Technological Services (STAN)

- (2015-2017) Technical Supervisor of four STANs related to microbial identification. Institute of Biotechnology and Molecular Biology (IBBM) CONICET-UNLP. Director: Antonio Lagares

Participation in Cooperation Agreements

- (2011-2013) Agreement between UFOP and "Falke Bier" brewery. Project: Use of yeasts isolation in Brazil for beer production"
- (2008-2010) Agreement between UNRC and NITRAP S.R.L. Project: Development and viability control of inoculants"

TEACHING IN POSRGRADUATE COURSES AND PROGRAMS

- (2023-Present) Co-director of the biennial course "Introduction to Ecological Biochemistry" within the Master's Program in Terrestrial Renewable Natural Resources, Graduate School "Ing. Agr. Alberto Soriano".
- (2025) Invited lecturer in the Master's and Specialization Program in Innovation Management, Faculty of Economic Sciences, University of Buenos Aires (UBA). Topic "Plant Biotechnology". June 2, 2025.
- (2024) Invited lecturer in the Medical Specialization Program in Health and Environmental, Faculty of Medical Sciences, University of Buenos Aires (UBA). Topic: "Importance of genetic diversity". August 30, 2024.
- (2016) Invited lecturer in the course "Multi-omics approaches for the study of microorganism-host interactions: Theorical and practical bases". Organized by the IBBM (CONICET-UNLP). Topic: "MALDI-TOF mass spectrometry: its application in the microbial identification". October, 27, 2016.

RESEARCH FELLOWSHIPS AND PARTICIPATION IN PROJECTS

- (2017) Postdoctoral Fellowship for National Research Council (CONICET)
  Project: Molecular mechanisms involved in the degradation of fusaric acid in *Burkholderia ambifaria.*
  Supervisor: Dr. Jimena Ruiz. Institution: INBA, FAUBA.
- (2014-2016) Postdoctoral Fellowship for National Agency for Scientific and Technological Promotion (ANPCyT).
  Project: "Microbial identification by MALDI-TOF mass spectrometry. Its application to the characterization and analysis of bacterial communities of natural environments". "Centro de Estudios Químicos y Biológicos por Espectrometría de Masa (CEQUIBIEM)" (PPL-2 2011-2-0009). Supervisor: Dr. Antonio Lagares. Research institute: Institute of Biotechnology and Molecular Biology (IBBM). CONICET- University of La Plata (UNLP).
- (2013) Postdoctoral Fellowship for National Council for Scientific and Technological Development (CNPq) (Brazil)
  Research topic: "Application of the QTL mapping methodology for the identification of more specific yeasts to bioethanol production"
  Supervisor: Dr. Rogelio Lopes Brandão
  Institution: Laboratory of Cellular and Molecular Biology, Institute of Exact and Biological Sciences (ICEB), Federal University of Ouro Preto (UFOP), Brazil
- (2011-2013) Postdoctoral Fellowship for Minas Gerais State Research Support Foundation (FAPEMIG), Brazil
  Project: "Development of the fermentative process for the production of high-quality sensory alembic cachaça" Supervisor: Dr. Rogelio Lopes Brandão.
  Institution: Laboratory of Cellular and Molecular Biology, Institute of Exact and Biological Sciences (ICEB), UFOP, Brazil.
- (2005-2010) Postdoctoral fellowship for CONICET

Project: "Selection of rhizobacteria with biocontrol potential against phytopathogenic fungi: in vitro and in vivo antagonism studies and identification of involved genes". Supervisors: Dr. Gladys Mori, Dr. Edgardo Jofré.
Research Institute: Department of Natural Sciences, School of Exact Sciences, Physics-Chemical and Natural. National University of Río Cuarto (UNRC), Argentina.

- (2003-2004) Research Fellowship for Science and Technical Secretariat- UNRC
  Research topic: "Characterization of salinity-tolerant rhizobacteria isolated from native soils of Córdoba province"
  Supervisor: Dr. Gladys Mori
  Research Institute: Department of Natural Sciences, School of Exact Sciences, Physics-Chemical and Natural. UNRC.