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Research Institute: Instituto de Investigaciones en Biociencias Agrícolas y Ambientales (INBA-CONICET). Facultad de Agronomía. UBA.
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Date of birth: 05/04/1974

ACADEMIC DEGREES

August 2005. PhD. Biological Chemistry Department. Faculty of Exact and Natural Sciences. Buenos Aires University. Argentina.
PhD thesis: "Role of polyhydroxyalkanoates degradation in stress resistance in *Pseudomonas putida*".
Grade: Excellent

March 1999. Diploma in Biological Sciences. Buenos Aires University. Argentina

RESEARCH INTERESTS

Molecular microbiology of soil bacteria, bacterial physiology, production of antifungal metabolites, mycotoxin detoxification, mycotoxin biodegradation.

PRESENT ACADEMIC POSITIONS

Independent researcher. National Research Council (CONICET). Argentina.

Head of the research group of physiology and molecular microbiology of rhizobacteria.

<http://inba.agro.uba.ar/integrantes.html>

Teaching instructor. Department of Applied Biology and Food Science. Faculty of Agronomy, Buenos Aires University. Argentina.

Main tasks: Teaching of practical courses in Agricultural and Environmental Microbiology. Lecturer (Bachelor degrees in Agronomy and Environmental Sciences).

PUBLICATIONS IN INTERNATIONAL JOURNALS

Vinacour, M., Moiana, M., Forné, I., Jung, K., Berteá, M., Calero Valdayo, P., Nickel, P.I., Imhof, A., Palumbo, M., Fernández Do Porto, D. and Ruiz, J.A. 2023. Genetic dissection of the degradation pathways for the mycotoxin fusaric acid in *Burkholderia ambifaria* T16. *Applied and Environmental Microbiology*. 89:e00630-23.

Alvarez, F., Simonetti, E., Draghi, O.W., Vinacour, M., Palumbo, M.C., Fernández Do Porto, D., Montecchia, M.S., Roberts, I.N., Ruiz, J.A. 2022. Genome mining of *Burkholderia ambifaria* strain T16, a rhizobacterium able to produce antimicrobial compounds and degrade the mycotoxin fusaric acid. *World Journal of Microbiology and Biotechnology*. 38: 114.

Simonetti, E., Alvarez, F., Feldman, N., Vinacour, M., Roberts, I.N., Ruiz, J.A. 2021. Genomic insights into the potent antifungal activity of *B. ambifaria* T16. Biological Control. 155: 104530.

Díaz Peña, R., Alvarez, D., Egoburo, D., Ruiz, J., Pettinari, M.J. 2020. Genomic and metabolic insights into solvent production by *Thermoanaerobacterium thermosaccharolyticum* GSU5. *Biofuel Research Journal*. 26: 1149-1158.

Drehe, I., Simonetti, E., Ruiz, J.A. 2018. Contribution of the siderophores pyoverdine and enantio-pyochelin to fitness in soil of *Pseudomonas protegens* Pf-5. *Current Microbiology*. 75: 1560-1565.

Simonetti, E., Roberts, I., Montecchia, M., Gutierrez-Boem F.H., Gomez, F.M., Ruiz, J.A. 2018. A novel *Burkholderia ambifaria* strain able to degrade the mycotoxin fusaric acid and to inhibit *Fusarium* spp. growth. *Microbiological Research*. 206:50-59.

Ruiz, J.A., Bernar, E.M., Jung, K. 2015. Production of siderophores increases resistance to fusaric acid in *Pseudomonas protegens* Pf-5. *PLoS ONE* 10 (1): e0117040. doi:10.1371/journal.pone.0117040.

Catone, M.A., Ruiz, J.A., Castellanos, M., Segura, D., Espin, G., López N.I. 2014. High polyhydroxybutyrate production in *Pseudomonas extremaustralis* is associated with differential expression of horizontally acquired and core genome polyhydroxyalkanoate synthase genes. *PLoS ONE* 9(6): e98873. doi:10.1371/journal.pone. 0098873

Ruiz, J.A., Almeida, A.D., Godoy, M.S., Mezzina, M.P., Bidart, G.N., Méndez, B.S., Pettinari, M.J., Nickel, P.I. 2012. *Escherichia coli* redox mutants as microbial cell factories for the synthesis of reduced biochemicals. *Computational and Structural Biotechnology Journal*. 3 (4): e201210019.

Bidart, G.#, Ruiz, J.#, de Almeida, A. Méndez, B., Nickel, P. 2012. Manipulation of the anoxic metabolism in *Escherichia coli* by ArcB deletion variants in the ArcBA Two-Component System. *Applied and Environmental Microbiology*. 78:8784-8794.# equal contribution

Ruiz, J., Haneburger I., Jung, K. 2011. Identification of ArgP and Lrp as transcriptional regulators of *lysP*, the gene encoding the specific lysine permease of *E. coli*. *Journal of Bacteriology* 193: 2539-2548.

Raiger-lustman, L.J., Ruiz, J.A. 2008. The alternative sigma factor, σ^S , affects polyhydroxyalkanoate (PHA) metabolism in

Pseudomonas putida". *FEMS Microbiology Letters*. 284: 218-224.

Pettinari, M.J., Nikel, P.I., Ruiz, J.A., Méndez, B.S. 2008. ArcA redox mutants as a source of reduced bioproducts. *Journal of Molecular Microbiology and Biotechnology*. 15:41-47.

Ruiz, J.A., Fernández, R.O., Nikel, P.I., Méndez, B.S., Pettinari, M.J. 2006. *dye (arc)* mutants: Insights into an unexplained phenotype and its suppression by the synthesis of poly (3-hydroxybutyrate) in *Escherichia coli* recombinants. *FEMS Microbiology Letters*. 258: 55-60.

Ayub, N.D., Pettinari, M.J., Ruiz, J.A., López, N.L. 2004. A polyhydroxybutyrate-producing *Pseudomonas* sp. isolated from Antarctic environments with high stress resistance. *Current Microbiology*. 49: 170-174.

Ruiz, J.A., López, N.I., Méndez, B.S. 2004. *rpoS* gene expression in carbon-starved cultures of the polyhydroxyalkanoate accumulating species *Pseudomonas oleovorans*. *Current Microbiology*. 48: 396-400.

Ruiz, J.A., López, N.I., Fernández, R.O., Méndez, B.S. 2001. Polyhydroxyalkanoates degradation is associated with nucleotide accumulation and enhances stress resistance and survival of *Pseudomonas oleovorans* in natural waters microcosms. *Applied and Environmental Microbiology*. 67: 225- 230.

López, N.I., Ruiz, J.A., Méndez, B.S. 1998. Survival of poly-3-hydroxybutyrate producing bacteria in soil microcosms. *World Journal of Microbiology and Biotechnology*. 14:681-684.

PUBLICATIONS IN NATIONAL JOURNALS

Bernar, E.M., Ruiz, J.A. 2016. El ácido fusárico, micotoxina producida por *Fusarium* spp., afecta negativamente el crecimiento de *Pseudomonas protegens* Pf-5 mediante el secuestro de hierro y la producción de especies reactivas de oxígeno. *Química Viva*. Vol 15 n°3, December 2016. (ISSN 1666-7948. <http://www.quimicaviva.qb.fcen.uba.ar>)

de Almeida, A., Ruiz, J., López, N., Pettinari, J. 2004. Bioplásticos: una alternativa ecológica. *Química viva*. Vol 3 n° 3, September 2004. (ISSN 1666-7948. <http://www.quimicaviva.qb.fcen.uba.ar>)

Ruiz, J.A., López, N.I., Méndez, B.S. 1999. Polyhydroxyalkanoates degradation affects survival of *Pseudomonas oleovorans* in river water microcosms. *Revista Argentina de Microbiología*. 31: 201- 204

BOOK CHAPTERS

Ruiz, J.A. 2025. Detoxification of mycotoxins by microorganisms. *Advances in Applied Microbiology*. Academic Press. Vol 131:21-64. Editors: Geoffrey M. Gadd, Sima Sariaslani.

Roberts, I.N., Ottaviano, C., Muschietti, M., Ruiz, J.A. 2014. Aislamiento de una rizobacteria con capacidad de prevenir el efecto tóxico del ácido fusárico en plántula de cebada. In: Martín Díaz-Zorita, Olga S. Correa, María, V. Fernández Canigia and Raúl Lavado, eds. pp. 145-151.

PATENTS

de Almeida, A., Fernández, R.O., Galvagno, M. A., Méndez, B. S., Nikel, P. I., Pettinari, M.J., Ruiz, J. A. 2011. National Research Council (CONICET). Number P06010061.

Title: "A recombinant strain of *Escherichia coli*, producer of intracellular biopolymers. Procedure to obtain at least one heterologous polypeptide in an *E. coli* strain grown in micro-aerobic conditions".

RESEARCH GRANTS

OBTAINED AS

RESPONSIBLE RESEARCHER

2022-2025. PICT-2020-SERIEA-02598. National Agency for Scientific and Technological Promotion. Ministry of Science and Technology. Argentina. "Catabolism of fusaric acid: Identification and characterization of genes and enzymes involved"

2020-2025. Research Group Linkage Programme. Alexander von Humboldt Foundation. Germany. "Unraveling the fusaric acid degradation mechanisms in *Burkholderia ambifaria* T16"

2019-2022. National Research Council (CONICET). Argentina. PIP 11220170100307CO. "Genetic, metabolic and physiological studies of the tolerance and degradation of fusaric acid in *Burkholderia ambifaria*"

2018-2021. National Agency for Scientific and Technological Promotion. Ministry of Science and Technology Argentina. PICT-2017-1500. "Genetic, metabolic and physiological studies of the tolerance and degradation of fusaric acid in *Burkholderia ambifaria* T16"

September 2014. Equipment Grant. Alexander von Humboldt Foundation. Germany. "Genetics studies of fusaric acid degradation and production of antifungal metabolites in *Burkholderia ambifaria* T16".

2014-2017. Buenos Aires University. Argentina. UBACyT 20020130200117BA. "Genetic and physiological characterization of a native *Burkholderia* sp. strain able to detoxify fusaric acid."

2008-2010. Buenos Aires University. Argentina. UBACyT X632. "Regulatory factors involved in polyhydroxyalkanoates (PHAs) metabolism in *Pseudomonas putida*."

2006-2008. National Agency for Scientific and Technological Promotion. Ministry of Science and Technology. PICT 2004 N° 20628. "Role of the stationary sigma factor (RpoS) in regulation of polyhydroxyalkanoates synthesis in *Pseudomonas putida* GPo1."

RESEARCH FELLOWSHIPS

July 2017-October 2017. Fellowship for a renewed research stay in Germany. Alexander von Humboldt Foundation. Title of the project: "Proteomic studies of fusaric acid degradation in *Burkholderia ambifaria* T16"
Host: Dr. Kirsten Jung
Research institute: Department Biologie I. Bereich Mikrobiologie. Ludwig-Maximilians-Universität. Munich. Germany.

April 2013-July 2013. Travel fellowship for Assistant Researchers. National Research Council (CONICET). Title of the project: "Proteomic analysis of the biocontrol strain *P. fluorescens* Pf-5 after exposure to fusaric acid, mycotoxin produced by *Fusarium* spp."
Host: Dr. Kirsten Jung
Research institute: Department Biologie I. Bereich Mikrobiologie. Ludwig-Maximilians-Universität. Munich. Germany.

April 2013-June 2013. Fellowship for a renewed research stay. Alexander von Humboldt Foundation. Title of the project: "Proteomic analysis of the biocontrol strain *P. fluorescens* Pf-5 after exposure to fusaric acid, mycotoxin produced by *Fusarium* spp."
Host: Dr. Kirsten Jung
Institution: Department Biologie I. Bereich Mikrobiologie. Ludwig-Maximilians-Universität. Munich. Germany.

2011-2012. Return fellowship. Alexander von Humboldt Foundation. Title of the project: "Identification and characterization of genes involved in fusaric acid (FA) resistance in *Pseudomonas fluorescens*"
Host: Dr. Kirsten Jung
Research Institute: Instituto de Investigaciones en Biociencias Agrícolas y Ambientales. National Research Council (CONICET). Buenos Aires. Argentina.

2008-2010. Postdoctoral fellowship. Alexander von Humboldt Foundation.

Title of the project: "Factors and mechanisms involved in the transcriptional regulation of the *lysP* gene, encoding the specific lysine permease of *Escherichia coli*".

Host: Dr. Kirsten Jung

Research Institute: Department Biologie I. Bereich Mikrobiologie. Ludwig-Maximilians-Universität. Munich. Germany.

1999-2003. PhD fellowship. Buenos Aires University. Argentina. Research topic: "Role of polyhydroxyalkanoates (PHAs) degradation in survival and stationary stress resistance in *Pseudomonas oleovorans*".

Supervisor: Dr. Beatriz Méndez

Research Institute: Bacterial Genetics Lab. Biological Chemistry Department. Faculty of Exact and Natural Sciences. Buenos Aires University. Argentina.

SHORT STAYS AS VISITING RESEARCHER

January-March, 2024. Short stay research. Title of the project: "Purification of proteins involved in fusaric acid biodegradation".

Host: Dr. Kirsten Jung

Research Institute: Ludwig-Maximilians-Universität-München. Germany.

October 2017-January 2018. Short research stay. Title of the project: "Construction of a pSEVA plasmid collection with resistance to the antibiotic thrimetroprim"

Host: Dr. Pablo I. Nikel

Research Institute: Center for Biosustainability-Novo Nordisk Foundation. Copenhagen. Denmark.

SPEAKER AND LECTURER IN CONFERENCES AND SEMINARS

2025. Ruiz, J.A. From the rhizosphere to the lab: Deciphering the biodegradation of the mycotoxin fusaric acid in *Burkholderia ambifaria* T16. Invited speaker. Molecular Microbiology and Physiology Symposium. XX Congress of the Argentinean Society of General Microbiology (SAMIGE). Puerto Madryn. Argentina.

2023. Ruiz, J.A. From the rhizosphere to the lab. Invited speaker. Seminar. Institute of Biotechnological Research. UNSAM. Buenos Aires. Argentina.

**RESEARCH WORKS
PRESENTED IN NATIONAL
AND INTERNATIONAL
MEETINGS**

A total of forty research works have been presented in national and international meetings.

**SUPERVISION OF YOUNG
RESEARCHERS AND
POST-DOCS**

2017-2021. Supervisor of the assistant researcher Dr. Florencia Alvarez. National Research Council (CONICET). Argentina.
Research Topic: "Molecular mechanisms of fusaric acid degradation in *Burkholderia ambifaria* T16".

2017. Supervisor of the post-doc Dr. Florencia Alvarez. National Research Council (CONICET). Argentina.
Research Topic: "Molecular mechanisms of fusaric acid degradation in *Burkholderia ambifaria* T16".

2015-2022. Co-advisor of the assistant researcher Dr. Ester Simonetti. National Research Council (CONICET). Argentina.
Research Topic: "Analysis of the antifungal activity of *Burkholderia ambifaria* T16".

SUPERVISION OF STUDENTS

Sep. 2024 to date. Supervisor of the under-graduate student Florencia Belén Dalmasio. Diploma in Biological Sciences. FCEyN. UBA.
Research topic: "Biodegradation of fusaric acid in *Burkholderia ambifaria* T16".

Sep. 2024 to date. Supervisor of the under-graduate student Julieta Isabella Giusto. Diploma in Biological Sciences. FCEyN. UBA.
Research topic: "Effect of *mIaD* deletion in fusaric acid tolerance of *Burkholderia ambifaria* T16".

Sep.-Dec. 2023. Supervisor of the under-graduate student Stênio Assis de Alves. Minerva University. USA.

2022-2024. Supervisor of the undergraduate student Andrés Milito.
Diploma Thesis: "Role of the *oprQ* gene in the iron limitation response in the bacterium *Pseudomonas protegens* Pf-5".

2019-2023. Supervisor of the under-graduate student Micaela Berteá.
Diploma thesis: "Role of the 2-methylcitrate cycle in phenotypes regulated by *quorum sensing* in *Burkholderia ambifaria* T16"

2017-2023. Supervisor of the PhD student Matias Vinacour. National Research Council (CONICET). Argentina.

PhD thesis: "Genetic studies of fusaric acid degradation in *Burkholderia ambifaria* T16".

2017-2018. Supervisor of the Diploma thesis of the under-graduate student Nicolás Feldman.

Diploma thesis: "Identification of genes involved in the antagonism against *Fusarium oxysporum* in *Burkholderia ambifaria* T16"

2015-2019. Supervisor of the under-graduate student Ignacio Drehe.

Diploma thesis: "Survival of *Pseudomonas protegens* Pf-5 in soil microcosms".

2015. Supervisor of the professional practice stay and host of the under-graduate student Ismael Enrique García Ochoa.

School of Biotechnological Engineering. Francisco de Paula Santander University. San José de Cúcuta. Colombia.

Research Topic: "Generation of a transposon insertional library for identification of genes involved in fusaric acid degradation in *Burkholderia ambifaria* T16".

2015. Supervisor of the professional practice stay and host of the under-graduate student Yeily Adriana Rangel Basto. School of Biotechnological Engineering. Francisco de Paula Santander University. San José de Cúcuta. Colombia.

Research Topic: "Generation of a transposon insertional library for identification of genes involved in fusaric acid degradation in *Burkholderia ambifaria* T16".

2015-2017. Supervisor of the under-graduate student Mauro Moiana.

Diploma thesis: "Identification of genes involved in fusaric acid degradation and antifungal activity against *Fusarium oxysporum* in *Burkholderia ambifaria* T16."

2013-2015. Co-supervisor of the under-graduate student Clarisa Ottaviano.

Diploma thesis: "Isolation and characterization of a rhizobacterium able to degrade fusaric acid and to inhibit *Fusarium* growth".

2012-2013. Supervisor of the under-graduate student Evangelina Bernar.

Diploma thesis: "Effects of fusaric acid on *Pseudomonas protegens* Pf-5".

DISTINCTIONS OBTAINED

2005. Distinction from the National Research Council (CONICET-Argentina) and Monsanto Argentina for the participation in the project: "Production of polyhydroxyalkanoates in recombinant *Escherichia coli* using milk whey".

2006. Distinction from the National Research Council (CONICET-Argentina) and Dupont Argentina for the quality and relevance of the project: "Utilization of unregulated redox mutants of *Escherichia coli* for the production of biomaterials: bio-plastics and evaluation of ethanol synthesis as a sub-product".

SCIENCE COMMUNICATION

August 2012. Speaker and participation in research activities in the Science and Technology Fair "Tecnópolis". Topic: Environmental working bacteria. Buenos Aires. Argentina.

May 2012. Participation in research demonstrations in the 38th Book Fair. Buenos Aires. Argentina.

October 2011. Participation in research demonstrations for secondary school students. Chemistry's Week. Biological Chemistry Department. Faculty of Exact and Natural Sciences. Buenos Aires University. Argentina.

November 2010. Participation in research demonstrations for secondary school students. Chemistry's Week. Biological Chemistry Department. Faculty of Exact and Natural Sciences. Buenos Aires University. Argentina.

September 2010. Participation in research demonstrations in the Buenos Aires University Fair "ExpoUBA". Topic: Environmental working bacteria. Buenos Aires. Argentina.

August 2004. Speaker during the Chemistry's Week. Biological Chemistry Department. Faculty of Exact and Natural Sciences. Buenos Aires University. Argentina.

PARTICIPATION IN THE ORGANIZATION OF SCIENTIFIC MEETINGS

Member of the organization committee of the Humboldt Kolleg: "Current Advances on Neurodegeneration: from Molecular Biology to Translational Medicine" September 28th to October 1st, 2017. Córdoba. Argentina

HONORARY APPOINTMENTS

2013-2018. Vertrauenswissenschaftlerin von Humboldt Stiftung/Ambassador Scientist von Humboldt Foundation.

TEACHING POSITIONS

2022 to date. Teaching instructor. Agricultural Microbiology Area. Faculty of Agriculture. Buenos Aires University. Argentina.

2004-2024. Teaching Instructor. Microbiology Area. Biological Chemistry Department. Faculty of Exact and Natural Sciences. Buenos Aires University. Argentina.

2011-2014. Lecturer. Faculty of Science and Biotechnology. San Martín University. Argentina.

1999-2003. Teaching assistant. Microbiology Area. Biological Chemistry Department. Faculty of Exact and Natural Sciences. Buenos Aires University. Argentina.

Graduate courses taught: Agricultural Microbiology, Environmental Microbiology, Biotechnology of Foods and Medicaments, Bacterial Genetics, General and Industrial Microbiology, Immunochemistry, Microbiology and Immunology, Industrial Biotechnology and Applied Microbiology.

Postgraduate courses taught: Bioinformatics, Analysis of environmental bacterial populations, Cell culture.

PROFESSIONAL EXPERIENCE

2003. Advisor in the conservation of bacterial strains. Pharmaceutical company Organon SA. Buenos Aires. Argentina.

2002. Analysis of polyhydroxyalkanoates-producing strains used as soil inoculants. BFP Company. Argentina.

LANGUAGES

Mother language: Spanish

English: First Certificate in English. England.

Italian: Level I. Instituto Universitario de Idiomas. Argentina.

Portuguese: Level I. Instituto Universitario de Idiomas. Argentina.

German: Levels A1 to A2. Did Institute. Germany.