Irma N. Roberts

PERSONAL INFORMATION

- Full Name: Irma Natalia Roberts
- Institutional Affiliation: Institute of Agricultural and Environmental Biosciences Research (INBA)
- Position: Researcher and Academic Staff Member
- Email: iroberts@agro.uba.ar

CURRENT POSITION

- CONICET Adjunct Researcher since 01/01/2014.
- Practical Applications Teacher to the Agricultural Microbiology course, School of Agronomy, University of Buenos Aires since 03/20/2020.

POSITIONS HELD

Research

- 2007-2013. Assistant Researcher at Institute of Agricultural and Environmental Biosciences Research (INBA-CONICET/FAUBA).

Teaching

- 2010-2020. Teaching Assistant, Agricultural Microbiology course, School of Agronomy, University of Buenos Aires, Argentina.
- 2013-2013. Adjunct Professor, Biotechnology of Medicines and Food course, Bachelor's in Biotechnology, National University of San Martín, Argentina.
- 2007-2008. Teaching Assistant, Morphology and Plant Physiology course, Faculty of Exact and Natural Sciences, University of Belgrano, Argentina.

Institutional Management

- Member of the INBA Direction Board 2015-2023.
- Member of the INBA CPA Evaluation Committee 2014-2025.

ACADEMIC TRAINING

- 2013-2022 Teaching career at FAUBA.
- 2008-2010 Postdoctoral research at Umeå University, Sweden.
- 2005-2007 Postdoctoral research at INBA-CONICET/FAUBA.
- 1999-2005 PhD in Biology, FCEyN/UBA.
- 1993-1998 Bachelor's in Biological Sciences, FCEyN/UBA.

ACADEMIC ACTIVITIES AND TEACHING EXPERIENCE

Courses taught at the undergraduate and graduate levels, including Agricultural Microbiology, Environmental Microbiology, Microbiology for Organic Crops Production, Biology of Soil Fungi of Interest for Agriculture, Biotechnology of Medicines and Food, Morphology and Plant Physiology, Efficient Nitrogen Use by Cereal Crops, Plant Mineral Nutrition, Introduction to Molecular Biology and others.

RESEARCH INTERESTS

- Molecular mechanisms of plant senescence.
- Senescence and germination associated proteolysis in cereal crops.
- Nutrient use efficiency and stress responses in cereal crops.

- Interaction between plants and microorganisms.
- Plant-microbe interactions and their influence on plant health and productivity.

PUBLICATIONS

In peer-reviewed international journals

(**corresponding author*)

1. **2024**- F Alvarez, JA Grispi, MS Montecchia, WO Draghi, GM Cabrerac, AM Romero, **IN Roberts,** E Simonetti. *Burkholderia gladioli BNM349 as a promising source of bacterial metabolites for biocontrol of common bacterial blight of bean*. BioControl (https://doi. org/10.1007/s10526-024-10284-z).
2. **2022**- F Alvarez, E Simonetti, WO Draghi, M Vinacour, MC Palumbo, D Fernández Do Porto, MS Montecchia, **IN Roberts**, JA Ruiz. *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(7): 114.
3. **2021**- E Simonetti, F Alvarez, N Feldman, M Vinacour, **IN Roberts**, JA Ruiz. *Genomic insights into the potent antifungal activity of B. ambifaria T16*. Biological Control 155: 104530.
4. **2020**- CG Veliz, MV Criado, MF Galotta, **IN Roberts**, C Caputo. *Regulation of senescence-associated protease genes by sulphur availability according to barley (Hordeum vulgare L.) phenological stage.* Annals of Botany 126(3): 435-444.
5. **2020**- FN Spagnoletti, M Cornero, V Chiocchio, RS Lavado, **IN Roberts**. *Arbuscular mycorrhiza protects soybean plants against Macrophomina phaseolina even under nitrogen fertilization.* European Journal of Plant Pathology 156(3): 839-849.
6. **2019**- MF Galotta, P Pugliese, FH Gutiérrez Boem, CG Veliz, MV Criado, C Caputo, M Echeverria, **IN Roberts***. *Subtilase activity and gene expression during germination and seedling growth in barley*. Plant Physiology and Biochemistry 139:197-206.
7. **2019**- MF Galotta, **IN Roberts***. *A method for in vivo determination of subtilase activity in germinating seeds*. Journal of Cereal Science 85:105-110.
8. **2018**- E Simonetti, **IN Roberts***, MS Montecchia, FH Gutierrez-Boem, FM Gomez, JA Ruiz*. *A novel Burkholderia ambifaria strain able to degrade the mycotoxin fusaric acid and to inhibit Fusarium spp. growth.* Microbiological Research 206:50-59.
9. **2018**- MV Criado, **IN Roberts**, CG Veliz, M Echeverria, FH Gutierrez Boem, C Caputo. *Phloem transport of assimilates in relation to flowering time and senescence in barley grown with different availabilities of nitrogen and phosphorus*. Archives of Agronomy and Soil Science 64(4): 492-504.
10. **2017**- **IN Roberts*,** CG Veliz, MV Criado, A Signorini, E Simonetti, C Caputo. *Identification and expression analysis of 11 subtilase genes during natural and induced senescence of barley plants*. Journal of Plant Physiology 211: 70-80.
11. **2017**- MV Criado, CG Veliz, **IN Roberts**, C Caputo. *Phloem transport of amino acids is differentially altered by phosphorus deficiency according to the nitrogen availability in young barley plants*. Plant Growth Regulation 82: 151-160.
12. **2017**- CG Veliz, **IN Roberts,** MV Criado, C Caputo. *Sulphur deficiency inhibits the remobilization of amino acids through the phloem and down regulates the gene expression of glutamine synthetase and amino acid transporters in barley plants*. Biologia Plantarum 61(4): 675-684.
13. **2015**- MV Criado, FH Gutierrez Boem, **IN Roberts**, C Caputo. *Post-anthesis N and P dynamics and its impact on grain yield and quality in mycorrhizal barley plants.* Mycorrhiza 25:229-235.
14. **2014**- CG Veliz, MV Criado, **IN Roberts**, M Echeverria, P Prystupa, P Prieto, FH Gutierrez Boem, C Caputo. *Phloem sugars and amino acids as potential regulators of hordein expression in field grown malting barley (Hordeum vulgare L.).* Journal of Cereal Science 60: 433-439.
15. **2012**- **IN Roberts**, XT Lam, H Miranda, T Kieselbach, C Funk. *Degradation of PsbO by the Deg protease HhoA is thioredoxin dependent.* PLoSONE 7(9): e4573.doi:10.1371/journal.pone.0045713
16. **2012**- **IN Roberts***, C Caputo, MV Criado, C Funk. *Senescence-associated proteases in plants.* Physiologia Plantarum 145(1): 130-139.

17. **2011**- **IN Roberts***, C Caputo, M Kade, MV Criado, AJ Barneix*. Subtilisin-like serine proteases involved in N remobilization during grain filling in wheat.* Acta Physiologiae Plantarum 33(5): 1997-2001.
18. **2009**- HF Causin, **IN Roberts**, MV Criado, SM Gallego, LB Pena, MC Ríos, AJ Barneix. *Changes in hydrogen peroxide homeostasis and cytokinin levels contribute to the regulation of shade-induced senescence in wheat leaves.* Plant Science 177(6): 698-704.
19. **2009**- MV Criado, C Caputo, **IN Roberts**, MA Castro, AJ Barneix. *Cytokinin-induced changes on nitrogen remobilization and chloroplast ultrastructure in wheat (Triticum aestivum L.)*. Journal of Plant Physiology 166(16): 1775-1785.
20. **2009**- C Caputo, MV Criado, **IN Roberts**, MA Gelso, AJ Barneix. *Regulation of glutamine synthetase 1 and amino acids transport in the phloem of young wheat plants*. Plant Physiology and Biochemistry 47: 335-342.
21. **2007**- MV Criado, **IN Roberts**, M Echeverria, AJ Barneix. *Plant growth regulators and induction of leaf senescence in nitrogen-deprived wheat plants*. Journal of Plant Growth Regulation 26: 301-307.
22. **2006**- **IN Roberts***, S Passeron, AJ Barneix. *The two main endoproteases present in dark-induced senescent wheat leaves are distinct subtilisin-like proteases*. Planta 224: 1437-1447.
23. **2003**- **IN Roberts**, P Fernández-Murray, C Caputo, S Passeron, AJ Barneix*. Purification and characterisation of a subtilisin-like serine protease induced during the senescence of wheat leaves.* Physiologia Plantarum 118(4): 483-490.
24. **2002**- **IN Roberts**, P Fernández-Murray, S Passeron, AJ Barneix. *The activity of 20S proteasome is maintained in detached wheat leaves during senescence in darkness.* Plant Physiology and Biochemistry 40:161-166.

Other type of publications

1. **2016**- CG Veliz, **IN Roberts**, MV Criado, M Echeverria, C Caputo. *Revisión Breve: Relevancia de la disponibilidad de azufre y removilización de asimilados sobre la calidad de la cebada cervecera.* Revista Química Viva, número 2, año 15. ISSN 1666-7948.
2. **2014**- **IN Roberts**, C Ottaviano, M Muschietti, J Ruiz. *Aislamiento de una rizobacteria con capacidad de prevenir el efecto toxico del ácido fusárico en plántulas de cebada*. En: Hongos y otros organismos que mejoran la producción agraria. Ed. Facultad de Agronomía. Editores: M. Díaz-Zorita, O. S. Correa, M. V. Fernández Canigia, R. S. Lavado. ISBN 978-987-3738-00-5, pág. 145-151.
3. **2013**- **IN Roberts**, H Miranda, L X Tâm, T Kieselbach, C Funk. *Psbo Degradation by Deg Proteases under Reducing Conditions.* En: Photosynthesis Research for Food, Fuel and the Future. Editores: T. Kuang, C. Lu, L. Zhang. Springer Berlin Heidelberg.ISBN 978-3-642-32033-0, pág. 599-602.
4. **2012**- **IN Roberts**. *El rol de las proteasas en la removilización de nitrógeno durante la senescencia foliar en trigo y cebada*. En: Cereales de Invierno. Editores: S.A. Stenglein, W. J. Rogers et al. ISBN 978-950-658-301-9, pág. 111-118.
5. **2018**- FN Spagnoletti, M Cornero, VM Chiocchio, RS Lavado, **IN Roberts**. *Impacto de la fertilización nitrogenada en la severidad de la podredumbre carbonosa del tallo en plantas de soja y el efecto protector de las micorrizas arbusculares*. Revista Técnica Soja 2018, Aapresid, ISSN 1850-0633, pág. 70-75.
6. **2011**- **IN Roberts**, MV Criado, C Caputo. *Estas enzimas tienen la llave.* Chacra, AÑO 81, número 966:74-76.
7. **2010**- MV Criado, C Caputo, **IN Roberts.** *Las citocininas. Nueva herramienta para mejorar la removilización de carbono y nitrógeno en trigo y la eficiencia de fertilización*. Fertilizar, AÑO V, número 15:25-26.
8. **2009**- C Caputo, MV Criado, **IN Roberts**. *Removilización del nitrógeno en plantas de trigo como herramienta para el mejoramiento de la eficiencia de uso*. Informaciones Agronómicas, número 42:16-18.

Contributions to conference proceedings and oral communications

More than 70 since 1999

FUNDED RESEARCH PROJECTS

Participation in more than 25 grants supported by CONICET, Agencia I+D+i, University of Buenos Aires and University of Villa María as research fellow, researcher, collaborator or PI (3 projects) since 2005.

SUPERVISION AND TRAINING OF GRADUATE AND UNDERGRADUATE STUDENTS

I have supervised and co-supervised several undergraduate students, doctoral and postdoctoral fellows as well as junior researchers in the areas of agricultural microbiology, plant–microbe interactions, plant biology and biochemistry and cereal crops senescence and germination. Mentoring activities include thesis direction, training in experimental design and implementation, and guidance in scientific writing and publication.

OTHER PROFESSIONAL ACTIVITIES

- Active participation as a reviewer for international journals (Plant Physiology and Biochemistry, Plant Science, Journal of Soil Science and Plant Nutritio, BMC Plant Biology, Plos One, Plant Physiology, BMC Plant Biology, Crop Science, among others).
- Evaluation of research project proposals for funding agencies (CONICET, Agencia I+D+i, BARD and several universities in Argentina).
- Assessment of research personnel and candidates for scientific positions, doctoral thesis projects, candidates in academic faculty selection processes and member of undergraduate thesis evaluation committee.