

University Academic Curriculum Vitae

Personal information Name: **Mónica Yorlady Alzate Zuluaga**
E-Mail: **monicayorlady.alzatezuluaga@unibz.it**

- Education since leaving school**
- **2008** Bachelor's Degree in Chemical technology; Technological University of Pereira (Colombia)
 - **2014** Specialization Degree in Applied Biochemistry; State University of Londrina (Brazil)
 - **2016**, Master's Degree in Biotechnology; State University of Londrina (Brazil)
 - **2020**, Ph.D Degree in Biotechnology; State University of Londrina (Brazil)

- Certification**
- **2022**, Metabarcoding in Microbial Ecology. 30 hours of course from 6-10 July. Physalia Courses, Berlin.

- Present appointment**
- Technologist at the Faculty of Agricultural, Environmental and Food Sciences
 - Start of appointment: July, 2024
 - End of appointment: June, 2027
 - Level of appointment (in national / international context): Technologist
 - Employer (University, research institute): Prof. Dr. Stefano Cesco, Faculty of Agricultural, Environmental and Food Sciences, Free University of Bolzano
- Brief description of responsibilities: Supporting experiments in growth chambers (hydroponics), greenhouses, and field trials; performing chemical, biochemical, and molecular analyses on plant and soil samples; assisting with data collection and statistical analysis; and contributing to the preparation of technical reports and scientific papers.

Professional experience

From / to	Job title	Name of academic Institution	Academic level	responsibilities
July 2005 – June 2006	Lab instructor	Technological University of Pereira	Bachelor's Degree	Reviewing experiments, demonstrating specific lab techniques, and

				monitoring students work.
July 2007 – Nov 2007	Lab instructor	Technological University of Pereira	Bachelor's Degree	Analysis of trace metals in water by using the atomic absorption spectrometer
March 2014 – Feb 2016	Master student	State University of Londrina	Specialist Degree	Isolation and identification, of beneficial bacteria associated with the rhizosphere of crop plants: characterization of PGP traits and their interaction with plants
March 2016 - 2020	PhD student	State University of Londrina	Master's Degree	Metabolomic investigation of roots exudates profile and their influence on the functional diversity of rhizosphere microbial communities in crops
Oct 2018 – March 2019	Visitant scientist	Free University of Bolzano	Master's Degree	Study of the effectiveness of PGPR in promoting the growth of cucumber and maize plants exposed to abiotic stresses by exploiting a combined physiological-transcriptomic approach
April 2020 – Feb 2021	Research fellowship awarded	Free University of Bolzano	Beginning of contract delayed to March 1 st , 2021, due to COVID pandemic	
March 2021– Feb 2023	Research Fellow	Free University of Bolzano	Post-Doc	Evaluation of physiological and molecular mechanisms triggered by protein hydrolysates and beneficial

				bacteria applied in horticultural crops. Characterization of differential modulation of transcriptome, metabolome, and plant-associated microbiome
March 2023–Feb 2024	Research Fellow	Free University of Bolzano	Post-Doc	Evaluation of the possible use of alternative fertilizers for the sustainable management of vineyards by carrying out field and greenhouse experiments. Recording of ecophysiological parameters and molecular investigations.

Experience in academic teaching

Academic year 2023/24

- Teaching assistant for the course of “**Production chain management/Mineral nutrition**”, International Master in Horticulture Science, Free University of Bolzano. Teaching language: English.

Academic year 2022/23

- Teaching assistant for the course of “**Environmental chemistry towards food processing**”, Master in Food Science for Innovation and Authenticity, Free University of Bolzano. Teaching language: English.
- Teaching assistant for the course of “**Protection and valorization of viticultural systems in mountain areas**”, Master in Viticulture, Enology and Wine Marketing, Free University of Bolzano. Teaching language: English.

Teaching assistant for the course of “**3Biochemistry and physiology of agricultural plants**”, Bachelor in Agricultural, Food and Mountain Environmental Sciences, Free University of Bolzano. Teaching language: English.

Academic year 2021/22

- Teaching assistant for the course of “**Protection and valorization**

of viticultural systems in mountain areas", Master in Viticulture, Enology and Wine Marketing, Free University of Bolzano. Teaching language: English.

- Teaching assistant for the course of "**Environmental chemistry towards food processing**", Master in Food Science for Innovation and Authenticity, Free University of Bolzano. Teaching language: English.

Academic year 2018

- Lectures as teaching assistant (Bachelor level), within the course "Bioquímica" of Professor André Luiz Martinez de Oliveira, CCA – State University of Londrina (Brazil), (PhD). Teaching language: Portuguese.

Academic year 2017

- Lectures as teaching assistant (Master level), within the course "Biologia molecular aplicada à biotecnologia" of Professor André Luiz Martinez de Oliveira, CCE – State University of Londrina (Brazil), (PhD). Teaching language: Portuguese.

Other academic responsibilities

Reviewer for the scientific journals: Plant and Soil, Rhizosphere.

Member of Società Italiana di Chimica Agraria (SICA).

Member of the organizing committee of the VII Simpósio de Bioquímica e Biotecnologia (SIMBBTEC) held in Londrina, Brazil, 11-13 September, 2019

Member of the organizing committee of the VI Simpósio de Bioquímica e Biotecnologia (SIMBBTEC) held in Londrina, Brazil, 20-22 September, 2017.

Member of the organizing committee of the IV Simpósio de Bioquímica e Biotecnologia (SIMBBTEC) held in Londrina, Brazil, 26-29 August, 2014.

Research and scholarships

Date granted	Award Holder(s)	Funding Body	Title	Amount received
March 2014 – Feb 2016	Mónica Yorlady Alzate Zuluaga	CAPES (Coordination for the Improvement of Higher Education Personnel)	Master scholarship	1.500 Brazilian real per month
March 2016 – Sep 2018	Mónica Yorlady Alzate Zuluaga	CAPES (Coordination for the Improvement of Higher	PhD scholarship	2.200 Brazilian real per month

		Education Personnel)		
Oct 2018 – March 2019	Mónica Yorlady Alzate Zuluaga	CAPES/PSDE (Institutional Program for Scholarships for Sandwich Doctorates Abroad)	Overseas Visiting Doctoral Fellowship	1.300 Euro per month
April 2019 – Feb 2020	Mónica Yorlady Alzate Zuluaga	CAPES (Coordination for the Improvement of Higher Education Personnel)	PhD scholarship	2.200 Brazilian real per month
March 2021 – Feb 2023	Mónica Yorlady Alzate Zuluaga	MIUR - PRIN	Post-Doc	43.206,88 euro gross per 2 years
March 2023 – Feb 2024	Mónica Yorlady Alzate Zuluaga	MIUR - PRIN	Post-Doc	24.121,57 euro gross per year

Publications

Scientific production is documented by 31 scientific papers and 1 book chapter listed in Scopus (H-index: 12, total citations: 476. Updated at 11/09/25) and 2 scientific papers not listed in Scopus.

LIST OF PUBLICATIONS ON SCIENTIFIC JOURNALS:

1. Haydar MS, **Zuluaga MYA**, Astolfi S, Cesco S, Pii Y (2025) From synthesis to soil: transformations and impacts of nanoparticles in agroecosystems. *Science of the Total Environment* 1000:180374. <https://doi.org/10.1016/j.scitotenv.2024.180374>. ISSN: 0048-9697. Web of Science, Q1 (Environmental Sciences), IF 9.8.
2. Polotto L, Scalera F, Piccirillo C, Marchiol L, **Zuluaga MYA**, Pii Y, Cesco S, Civilini M, Fellet G (2024) Phosphorus release from nano-hydroxyapatite derived from biowastes in the presence of phosphate-solubilizing bacteria: a soil column experiment. *Journal of Agricultural and Food Chemistry*. <https://doi.org/10.1021/acs.jafc.4c09325>. ISSN: 0021-8561. Web of Science, Q1 (Food Science & Technology), IF 5.1.
3. Monterisi S, **Zuluaga MYA**, Senizza B, Cardarelli M, Rouphael Y, Colla G, Lucini L, Cesco S, Pii Y (2025) The integrated multi-omics analysis unravels distinct roles of *Malvaceae*-derived protein hydrolysate and its molecular fraction in modulating tomato resilience under limited nitrogen availability. *Plant Stress* 15:100771. <https://doi.org/10.1016/j.stress.2025.100771>. ISSN: 2667-064X. Web of Science, Q1 (Plant Science), IF 6.9.

4. Monterisi S, Rebollo Vicioso C, **Zuluaga MYA**, Melchior S, Senizza B, Zengin G, Fattorini R, Lanza U, Caretta TO, Manzocco L, Lucini L, Cesco S, Pii Y (2025) Optimizing *Valerianella locusta* L. growth and metabolism by combining red and blue LED light: insights into plant physiology, biochemistry, and nutraceutical value. *Plants* 14:1887. <https://doi.org/10.3390/plants14121887>. ISSN: 2223-7747. Web of Science, Q1 (Plant Sciences), IF 4.1.

5. Lucchetta M, **Zuluaga MYA**, Monterisi S, Fattorini R, Gaiotti F, Cesco S, Pii Y (2025) Innovative approaches to soil health: evaluating pruning waste compost, inoculated compost, and mineral fertilizer in a controlled growth chamber for sustainable vineyard practices. *Frontiers in Sustainable Food Systems* 9:1504761. <https://doi.org/10.3389/fsufs.2025.1504761>. ISSN: 2571-581X. Web of Science, Q1 (Food Science), IF 5.2.

6. Caretta TO, Unterholzner M, **Zuluaga MYA**, Spitaler U, Ceccon A, Cesco S, Pii Y (2025) Antifungal activity of surfactin produced by *Bacillus subtilis* against phytopathogenic fungi in apple and strawberry: an *in vitro* and *in vivo* study. *International Journal of Food Science and Technology* 60(1):vvaf087. <https://doi.org/10.1093/ijfood/vvaf087>. ISSN: 0950-5423. Web of Science, Q1 (Food Science & Technology), IF 3.7.

7. **Zuluaga MYA**, Fattorini R, Cesco S, Pii Y (2024) Plant-microbe interactions in the rhizosphere for smarter and more sustainable crop fertilization: the case of PGPR-based biofertilizers. *Frontiers in Microbiology* 15:1440978. <https://doi.org/10.3389/fmicb.2024.1440978>. ISSN: 1664-302X. Web of Science, Q1 (Microbiology), IF 5.2.

8. Polotto L, Zuluaga MYA, Scalera F, Piccirillo C, Marchiol L, Civilini M, Pii Y, Cesco S, Fellet G (2024) Sustainable crop fertilization by combining biogenic nano-hydroxyapatite and P solubilizing bacteria: Observations on barley. *Plant Nano Biology* 9:100091. <https://doi.org/10.1016/j.plnan.2024.100091>. ISSN: 2772-8490. Web of Science, Q1 (Plant Science), IF 6.0.

9. Monterisi S, Garcia-Perez P, Buffagni V, **Zuluaga MYA**, Ciriello M, Formisano L, El-Nakhel C, Cardarelli M, Colla G, Rouphael Y, Cristofano F, Cesco S, Lucini L, Pii Y (2024) Unravelling the biostimulant activity of a protein hydrolysate in lettuce plants under optimal and low N availability: a multi-omics approach. *Physiologia Plantarum* 176:e14357. <https://doi.org/10.1111/ppl.14357>. ISSN: 0031-9317. Web of Science, Q1 (Plant Science), IF 5.1.

10. Monterisi S, Zhang L, Garcia-Perez P, **Zuluaga MYA**, Ciriello M, El-Nakhel C, Buffagni V, Cardarelli M, Colla G, Rouphael Y, Cesco S, Lucini L, Pii Y (2024) Integrated multi-omic approach reveals the effect of a *Graminaceae*-derived biostimulant and its lighter fraction on salt-stressed lettuce plants. *Scientific Reports* 14:10710. <https://doi.org/10.1038/s41598-024-61576-4>. ISSN:

2045-2322. Web of Science, Q1 (Multidisciplinary Sciences), IF 4.6.

11. Lozano-González JM, **Zuluaga MYA**, Lucena JJ, López-Rayó S, Monterisi S, Cesco S, Pii Y (2024) Cultivating resilience: Harnessing pyoverdine-producing *Pseudomonas* to contrast iron deficiency in cucumber plants. *Plant Stress* 14:100565. <https://doi.org/10.1016/j.stress.2024.100565>. ISSN: 2667-064X. Web of Science, Q1 (Plant Science), IF 6.30.
12. Lucchetta M, Romano A, **Zuluaga MYA**, Fornasier F, Monterisi S, Pii Y, Marcuzzo P, Lovat L, Gaiotti F (2023) Compost application boosts soil restoration in highly disturbed hillslope vineyard. *Front. Plant Sci.* 14:1289288. <https://doi.org/10.3389/fpls.2023.1289288>. ISSN: 1664-462X. Web of Science, Q1 (Plant Science), IF 6.31.
13. Zhang L, **Zuluaga MYA**, Pii Y, Barone A, Amaducci S, Miras-Moreno B, Martinelli E, Bellotti G, Trevisan M, Puglisi E, Lucini L (2023) A *Pseudomonas* plant growth promoting rhizobacterium and arbuscular mycorrhiza differentially modulate the growth, photosynthetic performance, nutrients allocation, and stress response mechanisms triggered by a mild zinc and cadmium stress in tomato. *Plant Science*. 337, 1. <https://doi.org/10.1016/j.plantsci.2023.111873>. ISSN: 0168-9452. Web of Science, Q1 (Agronomy and crop science), IF 5.36.
14. **Zuluaga MYA**, Oliveira ALM, Valentinuzzi F, Souza N, Monterisi S, Fattorini R, Cesco S, Pii Y (2023) An insight into the role of the organic acids produced by *Enterobacter* sp. strain 15S in solubilizing tricalcium phosphate: in situ study on cucumber. *BMC Microbiology*. 23, 184. <https://doi.org/10.1186/s12866-023-02918-6>. ISSN: 1471-2180. Web of Science, Q2 (Microbiology), IF 4.46.
15. Monterisi S, **Zuluaga MYA**, Porceddu A, Cesco S, Pii Y (2023) The Application of High-Resolution Melting Analysis to trnL (UAA) Intron Allowed a Qualitative Identification of Apple Juice Adulterations. *Foods*. 12, 1437. <https://doi.org/10.3390/foods12071437>. ISSN: 2304-8158. Web of Science, Q1 (Food Science), IF 5.56.
16. **Zuluaga MYA**, Monterisi S, Rouphael Y, Colla G, Lucini L, Cesco S, Pii Y (2023) Different vegetal protein hydrolysates distinctively alleviate salinity stress in vegetable crops: A case study on tomato and lettuce. *Front. Plant Sci.* 14:1077140. <https://doi.org/10.3389/fpls.2023.1077140>. ISSN: 1664-462X. Web of Science, Q1 (Plant Science), IF 6.31.
17. **Zuluaga MYA**, Cardarelli M, Rouphael Y, Cesco S, Pii Y, Colla G (2023) Iron nutrition in agriculture: From synthetic chelates to biochelates. *Scientia Horticulturae*. 312:111833. <https://doi.org/10.1016/j.scienta.2023.111833>. ISSN: 0304-4238.

Web of Science, Q1 (Horticulture), IF 3.46.

18. Feil S, **Zuluaga MYA**, Cesco S, Pii Y (2023) Copper toxicity compromises root acquisition of nitrate in the high affinity range. *Front. Plant Sci.* 13:1034425. <https://doi.org/10.3389/fpls.2022.1034425>. ISSN: 1664-462X. Web of Science, Q1 (Plant Science), IF 6.31
19. **Zuluaga MYA**, Miras-Moreno B, Monterisi S, Rouphael Y, Colla G, Lucini L, Cesco S, Pii Y (2022) Integrated metabolomics and morpho-biochemical analyses reveal a better performance of *Azospirillum brasilense* over plant-derived biostimulants in counteracting salt stress in tomato. *International Journal of Molecular Sciences.* 23:14216. <https://doi.org/10.3390/ijms232214216>. ISSN: 1422-0067. Web of Science, Q2 (Molecular Biology), IF 6.20.
20. Trentin E, Cesco S, Pii Y, Valentinuzzi F, Celletti S, Feil S, **Zuluaga MYA**, Ferreira PAA, Klein FR, Oliveira L, Conti L, Brunetto G, Mimmo T (2022) Plant species and pH dependent responses to copper toxicity. *Environmental and Experimental Botany.* 196:104791. <https://doi.org/10.1016/j.envexpbot.2022.104791>. ISSN: 0098-8472. Web of Science, Q1 (Agronomy and Crop Science), IF 5.84.
21. Feil S, Rodegher G, Gaiotti F, **Zuluaga MYA**, Carmona FJ, Masciocchi N, Cesco S, Pii Y (2021) Physiological and Molecular Investigation of urea uptake dynamics in *Cucumis sativus* L. plants fertilized with urea-doped amorphous calcium phosphate nanoparticles. *Front. Plant Sci.* 12:745581. <https://doi.org/10.3389/fpls.2021.745581>. ISSN: 1664-462X. Web of Science, Q1 (Plant Science), IF 6.31.
22. **Zuluaga MYA**, Oliveira ALM, Valentinuzzi F, Tizziani R, Mimmo T, Pii Y, Cesco S (2021) Can inoculation with the bacterial biostimulant *Enterobacter* sp. strain 15S be an approach for the smarter P fertilization of maize and cucumber plants? *Frontiers in Plant Science* 12:719873. <https://doi.org/10.3389/fpls.2021.719873>. ISSN: 1664-462X. Web of Science, Q1 (Plant Science), IF 6.31.
23. **Zuluaga MYA**, Milani KML, Miras-Moreno B, Lucini L, Valentinuzzi F, Mimmo T, Pii Y, Cesco S, Rodrigues EP, Oliveira ALM (2021) Inoculation with plant growth-promoting bacteria alters the rhizosphere functioning of tomato plants. *Applied Soil Ecology* 158, 1-12. <https://doi.org/10.1016/j.apsoil.2020.103784>. ISSN: 0929-1393. Web of Science, Q1 (Agricultural and Biological Sciences), IF 5.31.
24. **Zuluaga MYA**, Milani KML, Miras-Moreno B, Lucini L, Valentinuzzi F, Mimmo T, Pii Y, Cesco S, Rodrigues EP, Oliveira ALM (2021)

The adaptive metabolomic profile and functional activity of tomato rhizosphere are revealed upon PGPB inoculation under saline stress. *Environmental and Experimental Botany* 189, 1-14. <https://doi.org/10.1016/j.envexpbot.2021.104552>. ISSN: 0098-8472. Web of Science, Q1 (Agronomy and Crop Science), IF 5.84.

25. **Zuluaga MYA**, Milani KML, Gonçalves LSA, Oliveira ALM (2020) Diversity and plant growth-promoting functions of diazotrophic/N-scavenging bacteria isolated from the soils and rhizospheres of two species of *Solanum*. *PLOS one* 15(1): e0227422, 1-25. <https://doi.org/10.1371/journal.pone.0227422>. ISSN: 1932-6203. Web of Science, Q1 (Agricultural and Biological Sciences), IF 2.776.
26. Ferreira NP, Ximenez GR, Chiavelli LUR, Lucca DL, Santin SMO, **Zuluaga MYA**, Oliveira ALM, Pastorini L, Pomini AM (2020). Acyl-Homoserine Lactone from Plant-Associated *Pseudomonas* sp. Influences *Solanum lycopersicum* Germination and Root Growth. *Journal of chemical ecology* 46, 699-706. DOI: <https://doi.org/10.1007/s10886-020-01186-2>. ISSN: 0098-0331. Web of Science, Q2 (Biochemistry), IF 2.793.
27. Ferreira NP, Chiavelli LUR, Lucca DL, Oliveira SM, Pavli F, Nychas G, **Zuluaga MYA**, Oliveira ALM, Pomini AM (2019) Identification and characterization of a long-chain N-acyl homoserine lactone from *Rhizobium* sp. isolated from *Zea mays* rhizosphere. *Rhizosphere* 9, 34-37. DOI: <https://doi.org/10.1016/j.rhisph.2018.11.003>. ISSN: 2452-2198. Web of Science, Q2 (Agronomy and Crop Science), IF 1.840.
28. Ramos LL, Rodrigues EP, Silva MB, Oliveira JE, **Zuluaga MYA**, Milani KML, Oliveira ALM (2018) Ammonium excretion, auxin production and effects of maize inoculation with ethylenediamine-resistant mutants of *Pseudomonas* sp. *Bragantia* 77, 415-428. DOI: <http://dx.doi.org/10.1590/1678-4499.2017190>. ISSN: 1678-4499. Web of Science, Q1 (Agricultural and Biological Sciences), IF 1.058.
29. Oliveira ALM, Santos OJAP, Marcelino PRF, Milani KML, **Zuluaga MYZ**, Zucareli C, Gonçalves LSA (2017) Maize inoculation with *Azospirillum brasilense* Ab-V5 cells enriched with exopolysaccharides and polyhydroxybutyrate results in high productivity under low N fertilizer input. *Frontiers in Microbiology* 8, 1-18. DOI: <https://doi.org/10.3389/fmicb.2017.01873>. ISSN: 1664-302X. Web of Science, Q1 (Microbiology), IF 4.259.
30. Oliveira ALM, Costa KR, Ferreira DC, Milani KML, Santos OJAP, Silva M, **Zuluaga MYA** (2014) Biodiversity of soil bacteria and its applications for a sustainable agriculture. *BBR - Biochemistry and Biotechnology Reports* 3, 56-77. DOI: <http://dx.doi.org/10.5433/2316-5200.2014v3n1p56>. ISSN: 2316-5200.

31. Castro L, **Alzate M**, Guerrero GE (2010) Estudio preliminar de la bioactividad de extractos de semillas de *Annona cherimolia* de la familia Annonaceae. *Scientia et Technica* 16, 326-330. DOI: <http://dx.doi.org/10.22517/23447214.1859>. ISSN: 0122-1701.

BOOK CHAPTERS:

1. Mantovan J, Marim BM, Giraldo GAG, Pereira JF, Kishima JOF, **Zuluaga MYA**, Resta VG. Nanomaterials for nutraceuticals and preservative agents (2022). In: *Research and Technological Advances in Food Science*. Academic Press, Chapter 17, pp 425-445. DOI: <https://doi.org/10.1016/C2020-0-01552-5>. ISBN: 978-0-12-824369-5

CONFERENCE ABSTRACTS AND POSTERS:

1. Monterisi S, **Zuluaga MYA**, Miras-Moreno B, Rouphael Y, Colla G, Lucini L, Cesco S, Pii Y (2022). Plant-derived foliar biostimulants vs. root-colonizing plant growth-promoting rhizobacteria: ameliorative effects in salt-stressed tomato plants. XL SICA Congress - Conciliating Sustainability, Resilience, and Food Quality New challenges for a 2030 agriculture, 5-7 September, Pisa, Italy.
2. **Zuluaga MYA**, Monterisi S, Rouphael Y, Colla G, Lucini L, Cesco S, Pii Y (2022). Plant-derived biostimulants differentially mitigate salinity stress in lettuce and tomato plants. III Convegno AISSA under40, 14-15 July, Bolzano, Italy.
3. **Zuluaga MYA**, Cardarelli M, Rouphael Y, Cesco S, Colla G, Pii Y (2022). Plant-derived protein hydrolysates biostimulants as biochelates for Fe nutrition of crops. 20th International Symposium on Iron Nutrition and Interactions in Plants (ISINIP), 4-8 July, Reims, France.
4. **Zuluaga MYA**, Valentinuzzi F, Tiziani R, Mimmo T, Pii Y, Cesco S, Oliveira ALM (2019) Plant growth promoting bacteria *Enterobacter* sp. 15s enhance P mobilization and uptake in monocot and dicot plants. VII Simpósio de Bioquímica e Biotecnologia, 11-13 September, Londrina, Brazil.
5. Vasconcelos MF, **Zuluaga MYA**, Milani KML, Paula MT, Constantino LV, Ferreira DC, Oliveira ALM (2018) Microscopic study to determine the colonization pattern of plant growth-promoting *Bacillus* sp. (ZK) and *Rhizobium* sp. (8.1.2.1) in maize and tomato seedlings. III Congresso Paranaense de Microbiologia, 12-14 September, Londrina, Brazil.
6. **Zuluaga MYA**, Milani KML, Vasconcelos MF, Paula MT, Oliveira ALM (2018) Functional diversity of the microbial community in the rhizosphere of tomato in response to saline stress and inoculation with PGPB. XVI symposium of biological nitrogen fixation with non-legumes together with the IV latin-america workshop on PGPR, 26-31 August, Foz do Iguaçu, Brazil.
7. **Zuluaga MYA**, Oliveira ALM, Milani KML, Ramos LL, Silva MB,

Oliveira JE, Rodrigues EP (2018) Effects of maize inoculation with ethylenediamine-resistant mutants of *Pseudomonas* sp. XVI symposium of biological nitrogen fixation with non-legumes together with the IV latin-america workshop on PGPR, 26-31 August, Foz do Iguaçu, Brazil.

8. Vasconcelos MF, **Zuluaga MYA**, Milani KML, Paula MT, Silva MB, Oliveira ALM (2018) Colonization of maize and tomato seedlings by plant growth promoting *Bacillus* sp. (ZK) and *Rhizobium* sp. (8.1.2.1). XVI symposium of biological nitrogen fixation with non-legumes together with the IV latin-america workshop on PGPR, 26-31 August, Foz do Iguaçu, Brazil.
9. **Zuluaga MYA**, Milani KML, Lezier D, Oliveira ALM (2017) Melhoria da eficácia de inoculantes formulados com *Azospirillum brasilense* (Abv5) para aplicação no solo. VI Simpósio de Bioquímica e Biotecnologia, 20-22 September, Londrina, Brazil.
10. **Zuluaga MYA**, Milani KML, Lezier D, Zimmer CA, Paula MT, Vasconcelos MF, Gonçalves LSA, Oliveira ALM (2017) Seleção de bactérias com potencial como inoculantes isoladas utilizando duas espécies de solanáceas como plantas-isca. VI Simpósio de Bioquímica e Biotecnologia, 20-22 September, Londrina, Brazil.
11. Moreira AA, Paula MT, Bilck AP, **Zuluaga MYA**, Milani KML, Yamashita F, Oliveira SM, Oliveira ALM (2017) Influência da incorporação de tanino em composto biodegradável na viabilidade de *Azospirillum brasilense* AbV5, uma bactéria promotora do crescimento de plantas. VI Simpósio de Bioquímica e Biotecnologia, 20-22 September, Londrina, Brazil.
12. Paula MT, Moreira AA, Milani KML, **Zuluaga MYA**, Moriwak MT, Ventura UM, Oliveira ALM (2016) Desenvolvimento de um fermentador e meio de cultura de baixo custo para produção de inoculante de *Azospirillum brasilense* AbV5. 2º Paraná Agroecológico, 21-16 November, Maringá, Brazil
13. **Zuluaga MYA**, Milani KML, Kock K, Moriwak MT, Paula MT, Moreira AA, Oliveira ALM (2016) Diversidade de rizóbios não simbiotes isolados da rizosfera de tomate cultivado em solos sob diferentes manejos. XXVII Reunião Latinoamericana de Rizobiologia, 06-09 June, Londrina, Brazil.
14. **Zuluaga MYA**, Milani KML, Kock K, Moriwak MT, Paula MT, Moreira AA, Oliveira ALM (2016) Diversidade de bactérias diazotróficas associativas na rizosfera de lulo cultivado em solos sob diferentes manejos. XXVII Reunião Latinoamericana de Rizobiologia, 06-09 June, Londrina, Brazil.
15. Milani KML, Noguero D, Paula MT, **Zuluaga MYA**, Oliveira ALM (2016) Estratégia para desenvolvimento de inoculante para cana-de-açúcar: uma abordagem sequencial. XXVII Reunião Latinoamericana de Rizobiologia, 06-09 June, Londrina, Brazil.
16. **Zuluaga MYA**, Milani KML, Moreira AA, Kock K, Oliveira ALM, Lezier D, Noguero D (2015) In vitro production of indol acetic acid

(IAA) by associative bacteria isolated from tomato plants (*Solanum lycopersicum*). 28^o Congresso Brasileiro de Microbiologia, 18-22 October, Florianópolis, Brazil.

17. Milani KML, Lezier D, Noguero D, **Zuluaga MYA**, Santos OJAP, Silva MB, Oliveira ALM (2015) Polyhydroxybutyrate (PHB) production in different culture medium formulations by *Azospirillum brasilense* AB-V5. 28^o Congresso Brasileiro de Microbiologia, 18-22 October, Florianópolis, Brazil.
18. Noguero D, Milano KML, Lezier D, **Zuluaga MYA**, Santos OJAP, Oliveira ALM (2015) Culture age of *Azospirillum brasilense* Ab-v5 influences the initial development of maize. 28^o Congresso Brasileiro de Microbiologia, 18-22 October, Florianópolis, Brazil.
19. **Zuluaga MYA**, Milani KML, Moreira AA, Lezier D, Noguero D, Kock K, Oliveira ALM (2015) Produção *in vitro* de auxinas por bactérias associadas à rizosfera de lulo (*Solanum quitoense*). V Simpósio de Bioquímica e Biotecnologia, 05-07 August, Londrina, Brazil.
20. Nasser AM, Oliveira AJ, Giraldo GAG, Mantovan J, Gundi JS, **Zuluaga MYA**, Machado AC (2014) Produção de Lipase *Beauveria bassiana* CG481 em Cultivo Submerso Suplementado com Óleo de Milho. IV Simpósio de Bioquímica e Biotecnologia, 26-29 August, Londrina, Brazil.
21. **Zuluaga MYA**, Oliveira ALM, Gonçalves LSA (2014) Efeito do solo e da espécie vegetal sobre a densidade populacional de bactérias associativas em tomate (*Solanum lycopersicum*) e lulo (*Solanum quitoense*). I Congresso Paranaense de Microbiologia, 04-06 August, Londrina, Brazil.

Further data

Presentations at scientific conferences over past 5 years (invited or selected, keynote, nature and status of conference)

1. Invited speaker: Beneficial bacteria as crop biofertilizers: from the lab to the field. Agricultural chemistry winter school: "The use of bio-based material in the agroecosystem: plant-soil-microbiome", 10-13 February, Perugia, Italy, 2025.
2. Invited speaker: The Role of Plant Growth-Promoting Bacteria in Alleviating Abiotic Stresses. Agricultural chemistry winter school: "Stresses" in the rhizosphere, the role of agricultural chemistry in solving challenges occurring in the plant-soil system", 6-9 February, Udine, Italy, 2023.
3. Oral presentation: Plant-derived biostimulants differentially mitigate salinity stress in lettuce and tomato plants. XL SICA Congress - Conciliating Sustainability, Resilience, and Food Quality New challenges for a 2030 agriculture, 5-7 September, Pisa, Italy, 2022.

4. Invited speaker: Transcriptomic analysis for a better understanding of biostimulants-induced biological processes. **Alzate Zuluaga MY**, Pii Y. 1st International Electronic Conference on Agronomy. 10th May 2021
5. Invited instructor at the 4th Edition of Science Clubs Colombia. Science Club “Bactéria Amiga”. 18-23 June, Pereira, Colombia, 2018.

Awards at Scientific conferences

Best Poster Award at XLII SICA Congress, Alghero 9-11 September 2024. “Enhancing salt tolerance in tomato plants: Integrative roles of nitrogen fertilization and *Azospirillum brasilense* inoculation on growth dynamics and antioxidant defense”

Best Poster Award at XL SICA Congress, Pisa 5-7 September 2022. “Plant-derived foliar biostimulants vs. root-colonizing plant growth-promoting rhizobacteria: ameliorative effects in salt-stressed tomato plants”

Statement of interest

The scientific formation and research interests of Dr. Mónica Y.A. Zuluaga are mainly focused on the interactions between plants and biostimulants (*i.e.* beneficial microorganisms and protein hydrolysates) in order to obtain promising ways to boost environmental sustainability by decreasing the use of synthetic agricultural inputs. For this purpose, she has almost 10 years' experience in the application of multidisciplinary approaches combining different areas such as microbiology (e.g. isolation, growing, and biochemical and molecular characterization of bacterial isolates), molecular biology (e.g. DNA and RNA extraction and purification, electrophoresis, PCR, RT-qPCR), omics techniques (e.g. transcriptomics, metagenomics), biochemistry (e.g. IAA production, P solubilization, N-fixation, siderophores production, enzymatic methods), plant physiology and morphology, analytical methodologies, as well as metabolomic studies of root exudates, aimed at enlighten the processes between plants and biostimulants that can be exploited for biotechnological applications.

In details, the research activity of Dr. Mónica Y.A. Zuluaga has been focused on:

- a) Isolation, screening, and biochemical and molecular characterization of plant growth-promoting bacteria (PGPB);
- b) Interaction between plants and PGPB to improve plant nutrients uptake;
- c) Rhizosphere interactions;
- d) Metabolic profiling of root exudates and functional diversity of rhizosphere microbial communities in response to PGPB inoculation and abiotic stresses.
- e) Transcriptomic investigation of crop plants exposed to abiotic stresses and treated with biostimulants (either microorganisms or plant-derived protein hydrolysates)
- f) Investigation of rhizosphere and epiphytic microbial communities in crop plants exposed to abiotic stresses and treated with biostimulants.

**Language
competence**

Spanish: First language
Portuguese: Second language
Italian: (C1 Level, Unibz 2023)
English: (C1 Level, Unibz 2022)