SEBASTIAN CORREA-GALLEGO

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Research Interests

Microbial ecology and evolution, environmental microbiology, subterranean and extreme environments, and community structure across environmental gradients. I am especially interested in how microbial communities organize, persist, and evolve under ecological and energetic constraint. I am also drawn to quantitative and computational approaches to biological systems, including community-level data analysis and integrative frameworks that connect fieldwork with analytical rigor.

Education

Universidad EAFIT, B.Sc. in Biology   *2022–2026 (expected)*

- Undergraduate researcher in microbial ecology and evolution.
- Thesis: cultivable microbial communities in a tropical volcanic cave system from the Northwestern Andes, Colombia.

Research Experience

Visiting Student Intern   *Aug 2025–Jan 2026*
ECSO Lab, Department of Biological Sciences, Purdue University

- Participated in research on evolutionary and cellular biology using yeast as a model system, with emphasis on mitochondrial function, proteome allocation, and cellular organization across physiological conditions.
- Contributed to the organization, interpretation, and downstream analysis of biological datasets derived from proteomics-based workflows, including annotation-linked and comparative data exploration.
- Gained practical training in yeast biology, cell physiology, and integrative analysis across molecular, cellular, and evolutionary scales.

Undergraduate Thesis Researcher   *2024–Present*
Universidad EAFIT

- Conduct thesis research on cultivable microbial communities associated with the Organal San Antonio cave system, a tropical volcanic subterranean environment in Antioquia, Colombia.
- Design and implement field and laboratory workflows for ecological zonation, environmental characterization, microbial cultivation, morphotype-based community assessment, and quantitative analysis.
- Investigate how cultivable community structure and diversity vary across light, nutrient, and microclimatic gradients in an oligotrophic cave system under strong ecological constraint.

Research Monitor   *Jul 2024–Dec 2024*
Universidad EAFIT

- Contributed to the project *Positioning of Microorganisms as Fundamental Actors for the Maintenance of Andean Forests*, supporting project development through scientific systematization, written reporting, and research communication.

Early Research Projects in Environmental and Extreme Microbiology   *2022–2024*
Universidad EAFIT

- Conducted exploratory work on volcanic cave ecosystems, thermophilic-acidophilic microorganisms from thermal springs, and environmental halophilic isolates.

Academic Service

Student Director, Research Group on Microbiology and Astrobiology   *Oct 2023–Present*
Universidad EAFIT, affiliated with the Research Group on Geosciences and Biodiversity (GEBI)

- Coordinate a student-led research group focused on microbiology, astrobiology, scientific discussion, and undergraduate research initiatives.

Conferences and Presentations

Research Proposal Presentation   2024
2nd Symposium of Biology, Universidad EAFIT (awarded Second Place)

Honors and Recognition

Visiting Student Intern, Purdue University (UREP-C Program)   2025–2026

Undergraduate Scholarship, Comfama and Fundación Fraternidad Medellín   2022

Technical Skills

Laboratory and biological methods: microbial cultivation, environmental sampling, ecological field records, morphotype characterization, yeast handling, basic cell physiology, growth-related analysis, and microscopy-based observation.

Quantitative and computational tools: R, Python, Linux/bash, LaTeX, QGIS, biological data analysis, data visualization, and introductory bioinformatics workflows.

Scientific and digital workflows: scientific writing, research communication, literature synthesis, figure preparation, and AI-assisted academic workflows for analysis, writing support, and project organization.

Languages: Spanish (native), English (working proficiency).

References

Nicolás Pinel Peláez, Ph.D.
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