

# CAROLINA LOBATO

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 [carolina-lobato](#) |  [cbclobato](#) |  [cbclobato](#)

Düsseldorf, North Rhine-Westphalia, Germany

## EDUCATION

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- **PhD. Molecular Biosciences and Biotechnology, defended with distinction** Apr 2021 - Mar 2025  
*Supervision: Univ.-Prof. Dipl.-Biol. Dr.rer.nat. Gabriele Berg*  
◦ Institute of Environmental Biotechnology – Graz University of Technology  Graz, Austria
- **MSc. Molecular Biomedicine** 2014 - 2016  
*Supervision: Prof. Dr. Gabriela Moura*  
◦ Institute of Biomedicine – University of Aveiro  Aveiro, Portugal
- **Internship LLLP-Erasmus** May - Sep 2013  
*Supervision: Prof. MVDr. Vladimír Celer, Ph.D.*  
◦ Infectious Diseases and Microbiology – University of Veterinary Sciences Brno  Brno, Czechia
- **BSc. Biotechnology** 2009 - 2013  
*Supervision: Prof. Dr. Paula Amador*  
◦ Higher School of Agriculture – Polytechnic University of Coimbra  Coimbra, Portugal

## PROFESSIONAL EXPERIENCE

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- **Postdoctoral Researcher** Jun 2025 - ongoing  
*Supervision: Prof. Dr. Björn Usadel*  
◦ Institute for Biological Data Science – Heinrich Heine University Düsseldorf  Düsseldorf, Germany
- **Graduate University Assistant** Jan 2021 - Dec 2024  
*Supervision: Univ.-Prof. Dipl.-Biol. Dr.rer.nat. Gabriele Berg*  
◦ Institute of Environmental Biotechnology – Graz University of Technology  Graz, Austria
- **Research Assistant** Apr - Dec 2020  
*Supervision: Univ.-Prof. Dipl.-Biol. Dr.rer.nat. Gabriele Berg & Dr. Tomislav Cernava*  
◦ Institute of Environmental Biotechnology – Graz University of Technology  Graz, Austria
- **Research Fellow** Apr 2018 - Nov 2019  
*Supervision: Prof. Dr. Leonor Morais-Cecílio*  
◦ Plant Science and Crop Production – ISA, University of Lisbon  Lisbon, Portugal
- **Research Fellow** May 2017 - Mar 2018  
*Supervision: Prof. Dr. José Carlos Rodrigues & Dr. Ana Alves*  
◦ Forest Ecology – ISA, University of Lisbon  Lisbon, Portugal
- **Graduate Research Intern** Sep 2013 - Jun 2014  
*Supervision: Dr. Sandra Gamboa*  
◦ CERNAS – Polytechnic University of Coimbra  Coimbra, Portugal

## TEACHING & MENTORSHIP

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- **Guest Lecturer "The Seed Microbiome"**  
*Environmental Microbiology Seminar (MOL.963UF)*  
Institute of Environmental Biotechnology  
2023 & 2024
- **Teaching Assistant**  
*Laboratory Course Microbiome Analysis (MOL.972UF)*  
Institute of Environmental Biotechnology  
2023 & 2024  
*Laboratory Course Environmental Biotechnology (MOL.935UF)*  
2023 & 2024  
*Biodiversity and Applied Microbiology Lecture (MOL.731UF)*  
2021 - 2024  
*Biodiversity and Applied Microbiology Lecture (PLA.221UF)*  
2021 - 2024  
*Laboratory Course Biotechnology (CHE.177UF)*  
2021 - 2024  
*Environmental Microbiology Seminar (MOL.963UF)*  
2021 & 2022  
*Laboratory Course Microbiology (MOL.209UF)*  
2022  
*Laboratory Course Bioinformatics (MOL.923UF)*  
2021
- **Undergraduate Preceptor**  
*Laboratory Course Genetic Engineering*  
Higher School of Agriculture  
2013
- **Mentorship**  
Institute of Environmental Biotechnology  
◦ Daniel Shelegy (Bachelor) 2024  
◦ Daniel Habich (Master) 2021-2023  
◦ Daniela Dreisiebner (Master) 2021-2023  
◦ Matevž Zlatnar (Bachelor) 2022  
◦ Anna Mitterrutzner (Bachelor) 2021  
◦ Magdalena Egger (Master) 2021  
◦ Zahra Azizi (Bachelor) 2021  
◦ Bettina Semler (Master) 2020

## PROFESSIONAL DEVELOPMENT & SERVICE

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- **Workshops & Training**
  - [CEPLAS workshop: Genome reconstruction from metagenomic data](#) Sep 2025
  - [Reproducible Research with R and quarto: Workflows for data, projects, and publications](#) Sep 2024
  - [Teaching Academy: University Didactics 1 & 2 \(Basic Module\)](#) Jul - Sep 2022
  - [Bacterial Metagenomics: from experimental design to data analysis](#) May 2021
  - [Code Academy: Learn the Command Line Course](#) Feb 2021
  - [Metagenomics applied to surveillance of pathogens and antimicrobial resistance](#) Feb 2020
  - [Programming Initiation Course for Biologists](#) Jan 2019
  - [Theoretical-practical course in Cytogenetics and Genomics in Diagnosis and Research](#) Sep 2018
- **Co-founder and Coordinator**  
Seed Microbiome Working Group (SMWG)   
*The group enables early-career researchers to present their work, receive feedback, and build a collaborative academic network to advance seed microbiome science.* 2022-ongoing
- **Peer Review**
  - Environmental Microbiome Journal 2024 - ongoing
  - Scientific Reports 2025 - ongoing
- **Session Chair**
  - 10th Theodor Escherich Symposium on Microbiome Research (Graz) Jan 2024
  - 9th Theodor Escherich Symposium on Microbiome Research (Graz) Nov 2022

### ◦ **Speaker**

TU Graz Science Day 2023: New Worlds in Production

Sep 2023

Science communication seminar "Healthy seed microbiome, healthy Cannabis plants".

### ◦ **Organizer**

TU Graz Long Night of Research 2024

May 2024

Planned and coordinated public engagement activities showcasing microbiome research carried out at the Institute of Environmental Biotechnology.

PEC 282 - Growth, Cellular Renovation, and Reproduction: From Theory to Practice

2014

Engaging high school students through lectures and practical activities on recombinant DNA in bacteria, and in animal fertilization.

## RESEARCH OUTPUT

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### Peer-reviewed Publications

**Lobato C., Abdelfattah A., Berg G. & Cernava T., "Defining the Cultured and Uncultured Bacterial Fractions in Cannabis Seeds" Environmental Microbiome, 2025**

*This study emphasizes the role of microbial abundance and interspecies interactions in seed microbiome culturing and the need for tailored strategies to retrieve seed microorganisms under laboratory conditions.*

**Lobato C., Freitas J.M., Habich D., Kögl B., Berg G. & Cernava T., "Wild Again: Recovery of a Beneficial Cannabis Seed Endophyte from Low Domestication Genotypes" Microbiome, 2024**

*This study examines the bacterial seed microbiomes of 46 Cannabis genotypes spanning a spectrum of domestication levels and reveals that less domesticated genotypes harbor greater microbial diversity. The study also presents a concrete case of restoration of beneficial microbial alliances lost during domestication.*

**Abdelfattah A., Tack A., Lobato C., Wassermann B. & Berg G., "From Seed to Seed: The Role of Microbial Inheritance in the Assembly of the Plant Microbiome" Trends in Microbiology, 2023**

*This paper proposes a three-stage framework of microbial inheritance, from plant to seed, through seed dormancy, to seedling, and highlights its key role in shaping plant evolutionary potential and host microbiome co-evolution while outlining critical factors influencing assembly at each stage.*

**Inácio V., Lobato C., Graça J. & Morais-Cecílio L., "Cork Cells in Cork Oak Periderms Undergo Programmed Cell Death and Proanthocyanidin Deposition" Tree Physiology, 2021**

*This paper elucidates the cellular and molecular processes underlying first and wound-induced periderm formation in cork oak, revealing shared and distinct pathways of suberization, polyphenolic accumulation and programmed cell death that shape cork's unique protective and industrially valuable tissue.*

### Submitted Manuscripts

**Chen X., Olimi E., Lobato C., Berg G. & Cernava T., "The Tomato Seed Microbiome is Mainly Shaped by Host Genotype and Production Site" mSystems, 2025**

*This research paper demonstrated that plant genotype is the primary driver of the tomato seed microbiome, identifying a small core microbiome and predictive links between host traits, environment, and microbial composition.*

**Olimi E., Wuggenig R., Lobato C., Bickel S., Kusstatscher P., Wicaksono W. A., Battisti A., Coyne D., Adriko J., Cernava T. & Berg G., "Linking the Microbiome and Metabolome of *Mondia whitei*, a Medicinal Climber Plant" Environmental Microbiology Reports, 2025**

*This paper characterizes the root microbiome and metabolome of *Mondia whitei*, revealing core microbial taxa, geographic signatures, and metabolite-microbe correlations relevant for bio-prospecting.*

### Thesis

**Lobato C., "The Microbiome of Cannabis Seeds: Insights into Microbiome-Driven Sustainability" TU Graz diglib, 2025**

**Lobato C., "A Study of Alternative Initiation Codons in *Candida cylindracea*" RIA, 2016**

### Oral Presentations

**Lobato C., Freitas J.M., Habich D., Kögl B., Berg G. & Cernava T., "Symbiotic Futures: Leveraging Seed Microbiomes for Sustainable Cannabis Cultivation", LANDSCAPE, Berlin 2024**

**Lobato C., Freitas J.M., Habich D., Berg G. & Cernava T., "Healthy Cannabis Seeds Harness a Geno- and Chemotype Specific Microbial Signature" Slovenian Microbiome Network Symposium (SMNS), Maribor 2023**

**Lobato C., Freitas J.M., Habich D., Berg G. & Cernava T., "Exploring the microbiome of Cannabis Seeds Through Domestication and Breeding Stages" 2nd Young AMICI Symposium, 2023 (online)**

**Lobato C., Cuadros-Patiño K., Cernava T. & Berg G., "Characterization of the Cannabis Seed Microbiome for the Development of Improved Cultivation Strategies" Virtual Cannabis Research Conference, 2021 (online)**

### Poster Presentations

**Lobato C.**, Freitas J.M., Habich D., Kögl B., Berg G. & Cernava T., "Symbiotic Futures: Leveraging Seed Microbiomes for Sustainable *Cannabis* Cultivation", 5th Plant Microbiome Symposium (PMS), Amsterdam 2024

**Lobato C.**, Freitas J.M., Habich D., Berg G. & Cernava T., "Uncovering *Cannabis* Seed Endophytic Diversity and Composition Across Varieties" 16th Symposium on Bacterial Genetics and Ecology (BAGECO), Copenhagen 2023

**Lobato C.**, Cernava T. & Berg G., "Exploring the *Cannabis* Seed Microbiome" 10th ISS Congress & 3rd International Conference on Holobionts, Lyon 2022

**Lobato C.**, Cernava T. & Berg G., "Exploring the *Cannabis* Seed Microbiome" miCROPe International Symposium, Vienna 2022

**Lobato C.**, Cuadros-Patiño K., Cernava T. & Berg G., "Characterization of the *Cannabis* Seed Microbiome for the Development of Improved Cultivation Strategies" 8th Theodor Escherich Symposium on Medical Microbiome Research (TES) & 4th AMICI Symposium, Graz 2021

Inácio V., **Lobato C.**, Graça J. & Morais-Cecílio L., "How cork cells differentiate: The Role of Programmed Cell Death and Proanthocyanidin Deposition in Cork Oak Periderm" PADiBa, Bonn 2019

Gamboa S., **Lobato C.**, Oliveira H., Oom M.M. & Bahcevandziev K., "Flow Cytometry for the Assessment of Equine Sperm Chromatin" GTIE, Golegã 2015

## ADDITIONAL INFORMATION

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**Languages:** Portuguese (Native), English (Proficient), Spanish (Intermediate), German (A2)  
**Programming Languages:** R (Experienced), Bash - Unix Shell (Experienced), Python (Beginner)  
**Driver's license:** B1