

ERFAHRUNGSBERICHT ÜBER STUDIENERFAHRUNGEN IN BAYERN [Report on study experiences in Bavaria]

Herkunftsland [county of origin]:	Russia
Studium in Bayern [program in Bavaria]:	von [from] 10.2018 bis [until] 03.2022
Hochschule in Bayern [university in Bavaria]:	LMU München
Studienfach [subject of study]:	Biology
Abschluss [degree]:	PhD in Bavaria

Academic experiences

During my doctoral studies at LMU, I had the opportunity to attend **various workshops and seminars** offered by the Graduate Center Workshops and the Writing Center (Schreibzentrum) that were particularly helpful in improving my writing, presentation, and communication skills.

In the early stages of my academic career, I focused on **improving my writing and presentation skills**. To fulfill this goal, I attended several workshops, such as Academic Writing in English: Abstracts & Conference Papers (2019), Making Presentations in English (2019), Elements of Academic Style (WS20_FW31), Structuring Your Paper-Organizing Your Thoughts Onto Paper (2020), and Sharpening the Research Question in Experimental Studies (2020). These workshops have been invaluable to my growth and development as a student.

In the second half of my PhD program, I focused more on **improving my communication skills**. To do this I attended two workshops, "Working in International Teams - Strategies for Intercultural Collaboration" and Project Management - Create and manage sustainable projects", which took place in 2021.

To improve the visual aspect of my presentation and build my confidence for my upcoming defense, I attended two workshops: Voice Training (2021) and Vital Presentation and Rhetorical Skills (AHS02, 2021).

As I approached the end of my PhD program, I became increasingly interested in my **future career options**, what I learnt, for example, by attending a workshop on "How to Become a Professor" (2022).

Involvement at the department

At the beginning of my PhD studies in 2018, I received the Senckenberg Taxonomy Fellowship, which allowed me to work on the **herbarium collections of Caucasian lichens** in the herbarium of the Senckenberg Museum für Naturkunde Görlitz (GLM). I investigated the species diversity using a microscopic approach and selected for the phylogenetic analyses a number of specimens that showed a very high diversity of characters. The main goal of the phylogenetic project was to find out if the species from the Caucasus differ from those collected in Europe and Asia. The result of this research was a joint article with colleagues from Germany and Russia, in which we discuss a great diversity of *Bacidia* species in the Caucasus and describe a new species to science.

During my studies, I came to realize that **bioinformatics skills** are very important in the rapidly growing field of data science. To advance my research, I received a travel grant from the LMU Graduate Center in 2021 to travel to Graz, Austria. The goal of the trip was to collaborate with colleagues at the University of Graz who specialized in analyzing high-quality genomic data. This project gave me the basis and inspired my interest in future

genomic studies of potential genome-level traits associated with ecological adaptations in lichens. The skills and knowledge I gained during this research experience have improved my bioinformatics skills, given me a focus for my future research, and greatly increased my potential for a post-doctoral career. This experience has been invaluable in completing the final chapters of my dissertation and resulted in a joint publication in a high-impact scientific journal.

In addition, during my doctoral studies, I had the opportunity to participate in weekly seminar series of the Institute, where I had interesting discussions with speakers from all over the world.

Further professional qualification

At the beginning of my scientific career, I was a classically trained taxonomist. In my current research, I **integrate various tools and approaches** based on field and herbarium collections, including phylogenetics, bioinformatics, (meta-)genomics, and more recently (meta-)transcriptomics.

At the beginning of my PhD studies, I conducted extensive work with **herbarium material** and examined over a thousand specimens based on a microscopic examination of morphological and anatomical features. The study focused mainly on Europe, the Caucasus, and the Russian Far East. The latter two regions have unique environmental conditions favorable to lichens and therefore harbor many species of the genus *Bacidia*, which was the focus of my work.

I applied a wide range of **molecular techniques** using different primers (for nuclear and protein-coding genes) to obtain data for phylogenetic analyses (DNA extraction, PCR amplification, and Sanger DNA sequencing). *Bacidia* species originating from Europe, the Caucasus, and the Far East of Russia represent all species currently known in Russia. Based on morphological and phylogenetic studies, together with my colleagues we discovered and described six new species for science.

In the **final stage of my PhD**, I switched from traditional systematics to bioinformatics. Particularly, in recent years, I have been interested in secondary lichen compounds, altitudinal and heat/cold adaptation of lichens, and the complexity of lichen association with a focus on cyanobacteria in lichen symbiosis. I plan to investigate these questions using next-generation sequencing data. In particular, during the second half of my PhD studies, I investigated the diversity of secondary compounds in the *de novo* sequenced genome of *Bacidia rubella* in a two-step comparative genomic framework. We provided an overview of the diversity of biosynthetic genes in lichen-forming fungi and the most comprehensive phylogeny of lichen-forming fungi to date, comprising 624 sequences. As part of this work, I received a travel grant from the LMU Graduate Center in 2021 to travel to Graz, Austria, where I cooperated with colleagues from the University of Graz who specialized in the analysis of high-quality genomic data.

As part of my PhD, I have published six articles as first author and four as co-author.

Assessment of the results of your study visit in Bavaria and its effects on your future career

Throughout my career as a graduate student and now as a researcher, I have made a smooth transition to bioinformatics from my previous background in classical systematics. This has given me the confidence to guide students with traditional biology backgrounds and incorporate computational methods into their learning. During my research career, I have had the opportunity to assist students with lichen identification and computational analysis of genomic data. In addition, my studies and professional experiences allowed me to expand my network of collaborators from different countries, including Austria, Germany, Estonia, Finland, Russia, and Sweden, resulting in a number of publications (see my CV).

The PhD program gave me the opportunity to gain scientific knowledge, but also a lot of experience in communication and organizational management. This gave me the confidence to take up my current position as laboratory head. Our lab provides all Senckenberg scientists, visiting researchers, students, and technicians with access to the lab to work on their ongoing projects on a variety of organisms, including invertebrates, insects, freshwater arthropods, lichens, and fishes. We also handle the purchase of materials, maintenance and repair of equipment, and general laboratory operations.

Plans or activities after the BAYHOST-funding

After the BAYHOST fellowship, I started my **postdoctoral career**, initially with my PhD supervisor in a one-year project. I conducted field research, designed and set up stress experiments, and collected samples for subsequent metatranscriptome sequencing and analysis. This project was a great starting point to learn how postdoctoral research is organized, and I had some time to look for and apply for a job. To get a job outside of my institute was an important step in gaining more experience and expanding my scientific network.

As a result, I successfully applied for a position at the **Senckenberg Research Institute and Natural History Museum in Frankfurt** in August 2022 and currently have a position as head of the molecular laboratory at the Department of Botany and Molecular Evolution of Plants and Fungi. Since this position is limited to two years, I plan to apply for a permanent position inside of Germany with the goal of becoming a professor.

As a part of my first postdoc, I applied for a **SYNTHEsys+ grant** for my own project together with a colleague from Helsinki. I was interested in the association with free-living cyanobacteria in the lichen *Toniniopsis separabilis* and its possible influence on its adaptation and further distribution in the Alps. Funding included a one-month research stay in Helsinki (November 2022) and additional financial support for sequencing.

Currently, I am working on analyzing the data from my several ongoing projects and in a near future, together with my new colleagues, I am planning to apply for a bigger project such DFG or annual Leibniz competition.