



EXCURSIONS AND OTHER NEWS

Small insights in BioS points of view, field trips, and other stuff we do.

The Herbarium Barbiense: A Botanical Heritage Goes Digital

A Guest Article by Helena Bertelmann

The historical subcollection of the *Herbarium Dresdense* has been the subject of extensive scientific research at the Chair of Botany at the Technical University of Dresden since July 1, 2023. At the heart of this third-party funded project is the *Herbarium Barbiense*, the oldest plant collection identified so far within the *Herbarium Dresdense*. The collection was created during the second half of the eighteenth century at the academy of the Moravian Church in Barby, in what is now Saxony-Anhalt, Germany, and comprises 1,260 preserved plant specimens.

The Moravian Church was founded in the eighteenth century as a Pietist community and soon established missionary stations around the world. Members collected natural history objects during their travels and left behind important botanical records. Of particular significance are the works of Friedrich Adam Scholler (1718-1785), head of the natural history cabinet in Barby. Alongside managing the collection, he undertook numerous excursions to study the flora of the Barby region. He documented his observations in an excursion diary, systematically collected and recorded plant specimens, and supplemented his notes with information on collection sites, morphology, flowering periods, and common uses of the species. His research resulted in the publication of the *Flora Barbiensis* (1775), followed by the posthumously published supplementary volume *Supplementum Florae Barbiensis* (1787).

The historical herbarium specimens and their accompanying textual sources represent a valuable body of knowledge for botany, cultural history, and biodiversity research. As part of the project, the collection is being digitized. Historical collection contexts, biographies of the people involved, and their networks of relationships are also being reconstructed. The long-term goal of the project is to make research data accessible according to the FAIR principles. Methods developed for digital collection indexing will be transferred to other holdings of the *Herbarium Dresdense*.

This project is being carried out in cooperation with the Interdisciplinary Centre for Pietism Research at Martin Luther University Halle-Wittenberg within the framework of the German Federal Ministry of Education and Research (BMFTR) funding initiative „Vernetzen - Erschließen - Forschen. Allianz für Hochschulsammlungen II“.

In an effort to make the digitized content of text sources and herbarium specimens accessible to a broad audience, an interactive website is currently under development. Until the platform is published, further information about the project is available via the [TU Dresden](#) and [Botmis](#) sites.



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Student Job Stories: An Interview with Hanna Dylong

Ezgi Ece Yavuz

This month's student job stories feature Hanna, a BioS graduate who only finished her degree a few months ago. Hanna is passionate about botany and has a special interest in plant breeding and bionic applications. Conveniently, she was able to carry out a few different jobs at the botany department. Before she graduated, she was working as a student assistant at the *Herbarium Dresdense*.

Hanna, can you tell us something about your student job?

I was responsible for the digitization and mounting of historical plant material. Most of the time, I worked with a platform called Jacq. It is used to combine images and information from the herbal sheets. My task was to fill in information and to look for errors.

What did you enjoy most about your job?

It is really interesting, especially learning about the historical background of plants that came to Dresden from all over the world. Additionally, the digitization of plant material involves a lot of data science. Although it was not really part of my job, I still find it interesting how all the data is handled in a way that it can be used meaningfully.

What are the biggest challenges you faced in your position?

I think the biggest challenge was to handle the job next to my studies. Thanks to good communication with my supervisor, it was quite easy to manage.

How exactly did you balance work with your academic responsibilities?

Usually, it was possible to at least work remotely. Also, I could take time off if it got too stressful during exam season.

Have you learned any unexpected skills or lessons from this job?

I learned a lot about digitization and how to collect plants for a herbarium. If it's not done the proper way, there will be difficulties to create entries for the database later on. I also admire Dr. Wagner's and Dr. Müller's dedication to their work and how they manage the mammoth task of historically and biologically processing, restoring and maintaining this collection. Plus, I also learned a lot about the *Herbarium Dresdense* and its troubled history.

Would you recommend this type of work to other students?

I would recommend it, because it's easy to combine with university studies. It is also a mix of hands-on work and computer tasks, which I personally like. Also, you'll experience a nice mix of biology and historical science. As a Biology in Society student, I appreciate discovering science communication over the course of centuries. With the information on the herbarium specimens, you'll get to know what was important in the context of plant collections.

How much did you earn?

I made the standard WHK rate set by TU Dresden.

Anything else you'd like to add?

I had such a bad experience with herbaria in school and I guess most of the German students can relate. I think our teachers failed to tell us that herbaria can be really useful and an interesting way to do science!

EXCURSIONS AND OTHER NEWS

Dresden's iGEM Tradition Continues with MOCHI

Jovana Delic

Students from multiple study programs at TU Dresden band together in a team called MOCHI to create yeast capable of producing antibodies for human use. They will present their project at the Grand Jamboree of the international competition in synthetic biology, iGEM, and continue the tradition of previous Dresden iGEM teams, such as the TRAPS and the ReFiba team. In an effort to follow in their footsteps, the students will not only need to conduct extensive lab work but also educate the public on their topic, interview experts, ensure funding, and document the entire journey on a wiki page.

Genetically engineering yeasts for this is no easy feat. The students must develop genetic constructs for all the components of the machinery required to produce the antibodies in a usable form. For this, they use BioBricks, building blocks meant for larger genetic circuit construction. These genetic circuits are able to organize and fulfill complex functions. There are also additional challenges. Every organism has distinct glycosylation patterns, the ways it attaches sugars to synthesized proteins to make them functional. *Komagataella phaffii*, the yeast used in this project, does this in the form of hypermannosylation, or the attachment of many mannose molecules to its proteins. This would make antibodies produced in this yeast unsuitable for human use. Through a knockout of the OCH gene, which initiates hypermannosylation, the glycosylation pattern could be altered, and the antibodies could be further processed for human use. The team is therefore called MOCHI - making OCH-1 controlled humanization inducible!

The world of iGEM is a lively one. During the year, there will be many events and opportunities to meet up with other iGEM teams, collaborate, and learn from each other. One of these was the Hamburg meetup in May, where MOCHI presented their project to other iGEM teams and even got second place for best booth. For the finale, they are aiming for special prizes in education, human practice, and the best synthetic BioBrick part.

To follow along, please visit our Instagram page [@igem.dresden](#) and our [wiki page](#). If you'd like to read more about the previous Dresden iGEM, check out issues [26](#), [30](#), and [42](#) of BioS Reports!

