

21st Conference of the Phycology Section of the German Society for Plant Sciences



The participants of the 21st Phycology Section Conference in front of the "Alte Mensa" in the heart of Göttingen. Photo: Samuel Gerent

From March 9th to 12th, 2025, the 21st scientific conference of the Phycology Section of the German Botanical Society took place in the venerable halls of the "Alte Mensa" at the University of Göttingen. The conference was organized by Dr. Maïke Lorenz, Prof. Jan de Vries, Prof. Thomas Friedl, and Dr. Janine Fürst-Jansen (University of Göttingen), and provided over 120 participants from Germany and abroad with the opportunity to present and discuss their current research in the field of algal studies. A wide range of phycological topics was covered in 44 talks and 50 posters. Most of these contributions were presented by PhD students and postdocs and stood out for their high scientific quality. One of the many highlights was the visit to the University of Göttingen's Culture Collection of Algae (SAG) on the final day of the conference. Additionally, participants had the opportunity to explore Göttingen's historic old town through guided tours in both German and English, with many references to the university city's fascinating history.

Opening and introduction to the scientific program

The conference opened with a welcome address by Dr. Maïke Lorenz and Prof. Dr. Claudia Büchel, speaker of the Phycology Section. Dr. Lorenz highlighted the University of Göttingen's long-standing tradition in algal research and set the tone for an exciting scientific program, engaging all attending phycologists.

Immediately afterward, the first scientific session kicked off with presentations on algal genetics. These talks covered topics such as genetic manipulation of algae, including nuclear genome editing in *Chlamydomonas reinhardtii* to enhance light tolerance, and the use of cis-regulatory elements to investigate gene functions. Additional presentations explored photoprotective mechanisms in diatoms and the identification of the genetic basis for the three sexual phenotypes in the green alga *Pleodorina starrii*.

Following the talks, the first poster session took place. As with the oral presentations, this session provided a platform for several early-career researchers—PhD students and postdocs in particular—to present and discuss their findings with conference attendees.

High School Student Prize presented for the third time

The Phycology Section is committed to fostering young talent and, as part of the conference, awards its biennial High School Student Prize to inspire early interest in algal research. This year, the prize was awarded to Maddox Srey-Ouch and Witalij Plett from the Immanuel-Kant-Gymnasium and the Student Research Center (Schülerforschungszentrum) in Tuttlingen (Baden-Württemberg) for their biotechnology project “Photopower – Energy from Algae.” Their project focused on the production of energy carriers using the green alga *Chlamydomonas*. In a 20-minute presentation, Maddox confidently showcased not only the project results but also the experimental design, the diverse application of methods, and a creative approach to experimental challenges.



Maddox Srey-Ouch (left) receives the 2025 Student Prize from Jun.-Professor Klaus Herburger on behalf of the Board of the Phycology Section. Photo: Samuel Gerent

Keynote lecture by Dr. Susana M. Coelho

The first day of the conference concluded with a highlight: the keynote lecture by Dr. Susana Coelho (Director, MPI for Biology, Tübingen) on *The curious world of brown algal mating rituals*. She presented her research on reproductive mechanisms in brown algae and their evolutionary significance. In her talk, Dr. Coelho illustrated how the journey from the earliest morphological descriptions of brown algal reproduction to genome sequencing of model algae such as *Ectocarpus* has led to fundamental insights into the regulatory mechanisms of their sexual life cycles. [Photo on next page]



Keynote lecture by Dr. Susana M. Coelho, whose research offers groundbreaking insights into the reproductive biology of brown algae. Photo: Samuel Gerent

Day 2 – Diverse scientific topics

Day 2 once again offered a high-quality program featuring three sessions of oral presentations and the second poster session. The schedule was lightened by guided city tours. In the evening, the general assembly of the Phycology Section took place, followed by the traditional auction of "phycological treasures." Sen. Prof. Christian Wilhelm, with support from Dr. Vivien Hotter, led the auction with great humor, further fueling the spirited bidding contests. Proceeds from the auction will be used by the Phycology Section to support early-career researchers.

Day 2, Session 2: Stress responses and adaptations in algae

Presentations in this session examined how photosynthetic efficiency in brown algal populations changes with warming, the protective mechanisms employed by diatoms under stress, and the role of phenolic compounds in the stress resistance of Zygnematophyceae. Other talks focused on the light-stress protection mechanisms in conjugating green algae and the activity of benthic diatoms in complete darkness.

Session 3: Algae in extreme environments and applications

This session opened with a presentation on the potential use of stranded algae as a nutrient source for coastal plants. Further topics included the adaptations of glacier algae to extreme light conditions and metabolic shifts in darkness, as well as studies on the impact of nutrient uptake on algal pigmentation. Applied research covered the use of native algal proteins as a serum replacement in cell culture and cyanobacteria-driven biocatalysis as a sustainable method for producing chemical precursors in synthetic biology.

Session 4: Algae in biotechnology and environmental management

Talks in this session provided an overview on the current status of industrial microalgae biotechnology in Germany, the carbon storage potential of red algae, and the role of algae-bacteria consortia in bioremediation and wastewater treatment. One presentation on the green alga *Botryococcus braunii* showcased a scalable method for extracting extracellular oils for use in biofuels.

Following Session 4, participants enjoyed city tours, poster presentations, and the attended the general assembly of the Phycology Section and auction.



General assembly and board elections

The board of the Phycology Section is elected by its members every two years. This year, three long-standing board members did not stand for re-election: Dr. Thomas Leya (2nd Chair), Prof. Severin Sasso (1st Assessor), and Dr. Charlotte Permann (Graduate Representative). During the general assembly held on March 10, 2025, a new board was elected for a two-year term: Prof. Andreas Holzinger – 1st Chair; Jun.-Prof. Karin Glaser – 2nd Chair; Dr. Maïke Lorenz – Treasurer; Jun.-Prof. Klaus Herburger – Secretary, Prof. Claudia Büchel – 1st Assessor; Prof. Peter Kroth – Representative of FEPS and 2nd Assessor; Dr. Vivien Hotter – Graduate Representative. [Photo on next page]



The newly elected board of the Phycology Section (from left to right): Prof. Peter Kroth, Prof. Claudia Büchel, Dr. Maike Lorenz, Dr. Vivien Hotter, Jun.-Prof. Karin Glaser, Jun.-Prof. Klaus Herburger, Prof. Andreas Holzinger. Photo: Janine Fürst-Jansen

Day 3 – Extensive scientific program and Conference dinner

Day 3 featured 4 sessions with oral presentations, interspersed with the third poster session. In the evening, the conference dinner was held in the halls of the “Alte Mensa”.

Day 3, Session 5: Cyanobacteria and algae in ecosystems

This session covered topics such as nitrogen fixation in cyanobacteria under far-red light and their ability to remain active in saline soil crusts through specialized chlorophylls. Further presentations discussed changes in the biodiversity of soil algae in agriculturally used land areas. Additional talks explored interactions between marine *Chlamydomonas* species and beneficial bacteria, as well as the isolation and characterization of chemically resistant extracellular polymers from the zygospores of this algal group and their importance for the biomechanical properties of the cells.

Session 6: Algal evolution and biodiversity

Progress in DNA metabarcoding for freshwater red algae was presented, along with new species delineations within the *Achnanthydium minutissimum* complex. Taxonomic revisions of the Prasiolaceae were also discussed, alongside phylogenomic insights into charophyte algae. One talk critically examined the discovery of new *Streptofilum* strains and their phylogenetic positioning. Another presentation focused on the Alga of the Year 2025, *Draparnaldia*, and explored how this organism could become a model system for studying the colonization of land by algae.

Session 7: Algal pigments and photoreceptors

This session covered the role of specific glycolipids as diagnostic tools for the phylogeny of cyanobacteria, the metabolic plasticity of algae under stress, and photoprotective mechanisms

such as the diadinoxanthin cycle. Other talks addressed carotenoids in the deep red reproductive structures of Charophyceae and the function of aureochromes as photoreceptors in diatoms.

Session 8: Algal culture collections, computational approaches in phycology, and historical excursions in algal research

The final session opened with a talk on Nathanael Pringsheim, who was the first to directly observe the fusion of male and female algal cells, demonstrating the universal importance of sexuality in life. Other presentations focused on the historical and taxonomic significance of algal collections and the use of deep learning for the classification of microalgae based on their morphology, with the goal of developing a species identification app. This session closed with a tribute to the influential phycologist Klaus Lüning, who spent a significant part of his research life on the island of Helgoland, which remains an important site for algal field research.

Conference dinner and awards for scientific presentations and posters

The conference dinner kicked off with a fun activity, where small groups were formed to answer creative questions about algae in an app-based quiz. The highlight of the dinner was the awarding of prizes to early-career scientists:

The Pringsheim Prize for the best presented PhD thesis was awarded to Yuliia Lihanova, MSc (University of Leipzig), for her outstanding talk titled *Using the power of cis-regulatory elements to study gene function in green algae*. (PhD thesis topic: *Elucidation of gene function in Chlamydomonas reinhardtii: from forward to reverse genetics*).

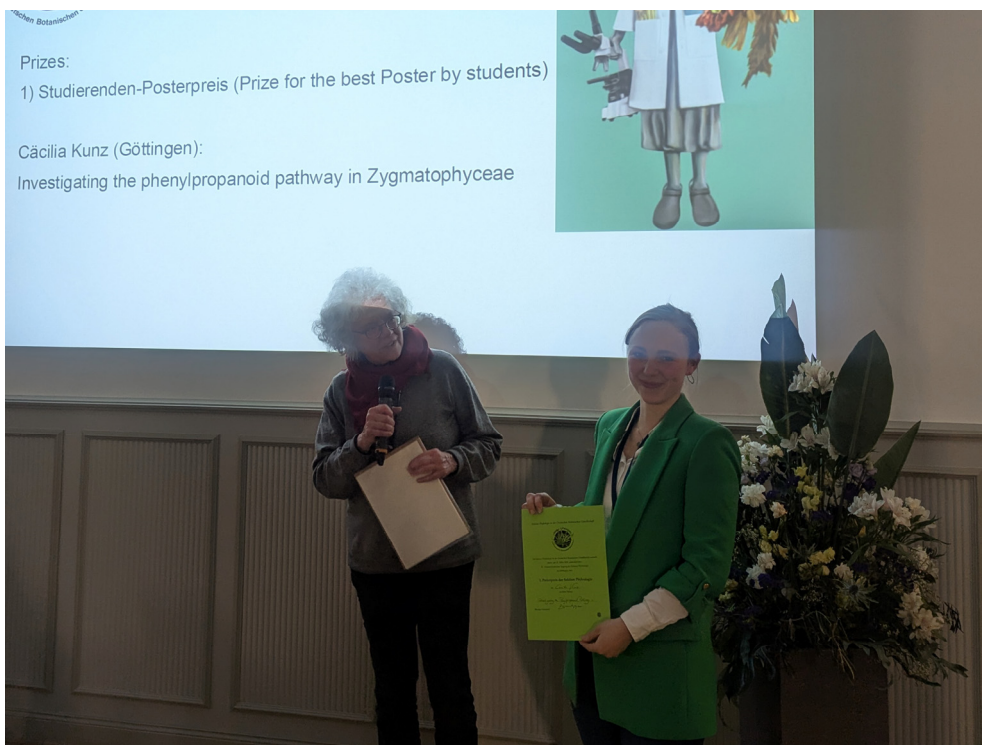


The Student Award for the best Bachelor's/Master's thesis was awarded to Mimoza Dani, BSc (University of Duisburg-Essen) for her presentation on the topic: *Species delimitation within the Achnantheidium minutissimum complex, based on morphological, molecular, and ecophysiological approaches*. [Photo on next page]



Presentation of the Student Award to Mimoza Dani (left) by Prof. Claudia Büchel. Photo: Janine Fürst-Jansen

The prize for the best poster by a PhD student was awarded to Cäcilia Kunz, MSc (University of Göttingen) for her poster: *Investigating the phenylpropanoid pathway in Zygnematophyceae*.



Presentation of the Poster Award to Cäcilia Kunz (right) by Prof. Claudia Büchel. Photo: Janine Fürst-Jansen

Day 4 – Excursion to the Algal Culture Collection at the University of Göttingen (SAG)

A final highlight of the conference was the visit to the Algal Culture Collection at the University of Göttingen on the last day of the conference. Over 70 participants took part in the tours, gaining valuable insights into the preservation and research of algae – including those that begin to glow when shaken.



View into the Algal Culture Collection at the University of Göttingen (SAG), which was visited during the conference and serves as an important resource for phycologists in Germany and beyond. Photo: Prajwal Karki

Conclusion and outlook

The 21st Phycology Section Conference was a great success, also due to its excellent organization, and showcased the broad, vibrant and interdisciplinary research in this field in Germany and beyond. The presentations, both in the form of talks and posters, were of very high scientific quality. This made the conference an excellent platform for scientific exchange and the support of early-career researchers.

The next Phycology Section Conference will take place in 2027 in Rostock.

April 2025, Jun-Prof Dr Klaus Herburger, Secretary of the Phycology Section