

## Phycology Meeting in Jena

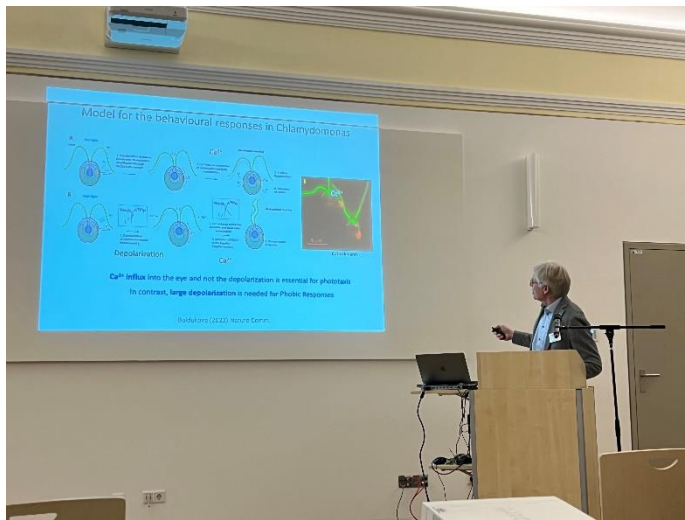


The participants of the 20<sup>th</sup> Phycology Meeting in front of the old city tower in Jena. Photo: Sandra Künzel

The 20<sup>th</sup> scientific meeting of the [Sektion Phykologie](#) took place from March 12 – 15, 2023 in the Rosensäle in Jena. Prof. Dr. Maria Mittag and PD. Dr. Volker Wagner organized the meeting, for which 91 algal researchers registered. They presented and discussed up to date topics of phycology. Maria Mittag, chair of the Section Phycology, welcomed all participants on the first day and presented the topics of the individual Sessions of the Meeting. She acknowledged the following institutions on behalf of the Section for their support: the German Society for Plant Sciences, Friedrich Schiller University Jena with its Cluster of Excellence *Balance of the Microverse*, as well as the companies (in alphabetic order) Agrisera, New England Biolabs, Walz and Zeiss. Maria Mittag mentions the topics of the meeting in her Report and describes the price for high school students under the theme „Shaping the Future with Algae“, which was awarded for the second time. She reports about further prizes for students including PhD students as well as about the Pringsheim price awarded for the best presentation of a PhD thesis. Finally, she reports about the von Stosch Award presented to an outstanding phycologist who enthused the audience with his critical questions about photosynthesis and phycology and inspired the people with a poem on evolution.

The meeting took place in the Rosensäle in Jena, a historical place where famous guests like Franz Liszt or Clara Wiek gave academic concerts in the early 19<sup>th</sup> century. All places for excursions were readily reachable within walking distance from the Rosensäle. Guided tours were offered to the Botanical Garden, to Schiller’s Garden house, to the Ernst Haeckel house or to the Phyletic Museum.

## Honorary talk on Optogenetics



The talk of sen. Prof. Dr. Peter Hegemann, who participated in promoting the young field of optogenetics with his fundamental research on a green alga. Photo: Trang Vuong

sen. Prof. Dr. Peter Hegemann (HU Berlin) gave the 2023 honorary lecture on a topic about algae that reaches far beyond phycology, entitled: „*Algal photoreceptors as drivers of Optogenetics*“. The new field of Optogenetics expanded rapidly based on a better understanding of the photoreceptor Channelrhodopsin 1 from the green alga *Chlamydomonas reinhardtii* that is located in the plasma-membrane of its eyespot. This photoreceptor was biophysically characterized by Peter Hegemann and colleagues. The knowledge was soon transferred to animal systems and recently also to humans. Based on these insights, a blind person has been given back partial vision recently.

## Broad Scientific Program

The further talks of the meeting, all held in English, dealt with different contemporary areas of phycology. About half of the talks were given by PhD students, corroborating one of the major aims of the Phycology Section, which is promoting motivated early career scientists. The topics included:

### *Biotic Interactions*

The interactions of micro- and macroalgae with microorganisms such as bacteria were part of several talks. Natural products that are involved in chemical communication and influence the algae in a positive and negative way, respectively, were introduced. Also, novel types cyanobacteria from lichens were introduced.

### *Perception of Abiotic Factors*

This session focused on the positive and toxic effects of light on microalgae. Moreover, the characterization of novel photoreceptors and carotenoids was shown. Strategies and proteins

that protect from light stress and unusual wavelengths for photosynthesis were presented as well. Finally, adaptations of algae to life on land connected with sexual reproductions were shown.

### *Ecology*

Timely ecological themes such as climate change and its influence on algae were in the focus of this session as well as wastewater treatment, the diversity of diatoms and their molecular analysis in Arctic and Antarctic Regions and the diversity of Chrysophyceae.

### *Applied Phycology and Physiology*

Numerous exciting themes were introduced like the biosynthesis of apocarotenoids and stress responses of Charophyta, physiological changes of zygospore formation in *Chlamydomonas*, polyphosphates in a freshwater diatom, the development of a model alga for Coccolitophores and first approaches to automated 'machine learning' for the identification of microalgal species in phytoplankton.

### *Algal Tool Box*

Interesting approaches like the characterization of enhancer elements or progress in nuclear genome editing of microalgae were presented as well as novel proteome methods for studying cyanobacterial exoproteins or news on the gliding movement of diatoms were discussed.

Altogether, the program spanned the fascinating diversity of phycological themes, promoting numerous vivid discussions and ideas among the participants. The final afternoon of the meeting was reserved to get inspired by historical places in Jena that were influenced by Goethe, Schiller and Haeckel (see excursions above).

## **School price awarded for the second time**



The price for high school students of the Section Phycology was awarded to Hanna Reichinger (middle) by Prof. Dr. Maria Mittag and Prof. Dr. Andreas Holzinger. Photo: Trang Vuong

The meeting started with the promotion of the very young people. For the second time, the price for the best school project as recognized by the Section Phycology was awarded to Hanna Reichinger, a graduate of the “Gymnasium (BORG) Straßwalchen” in Austria. She cultivated *Haematococcus* to produce astaxanthin for biotechnological use. She fascinated the audience by describing the influence of nitrogen and phosphate compounds on astaxanthin production.

The very interesting projects of the top three high school students under the topic „Shaping the Future with Algae“ were as follows:

1. Place: H. Reichinger „Kultivierung von *Haematococcus* zur Gewinnung von Astaxanthin für den biotechnologischen Nutzen“ (Gymnasium BORG Straßwalchen)
2. Place: M. Löhr, T. Koch und R. Spohrleder „Green Filters: Wie Algen zur Säuberung von Wasser beitragen können“ (Otto-Hahn-Gymnasium Göttingen)
3. Place: L. Hafermann und H. Hoang „Algae vs. Metals: die Detoxwirkung der *Chlorella vulgaris*“ (Andreas-Gymnasium Berlin)

## Excellent scientific talks and posters

Within the frame of the meeting, the following prices were awarded to early career scientists:

The Pringsheim Price recognizes the best presentation of a PhD thesis and was awarded to Charlotte Permann, Innsbruck, for her outstanding talk on the topic: *Sexual reproduction in Zygnematophyceae – a key to terrestrialization?*



The Pringsheim Price awarded to Charlotte Permann (f.l.t.r.): Charlotte Permann, MSc., Prof. Dr. Andreas Holzinger, Dr. Petra Meyerhoff, Prof. Dr. Claudia Büchel, Prof. Dr. Maria Mittag. Photo: Trang Vuong

The Student Promotion Award for the best Bachelor-/Master Thesis was given to Nina Rittmeier, Innsbruck, for her topic „*Control of cell division and chromosome countings in three strains of the filamentous green alga Zygnema (Zygnematophyceae, Charophyta)*“.



The student promotion award for Nina Rittmeier (f.l.t.r.): Nina Rittmeier, BSc. Prof. Dr. Andreas Holzinger, Prof. Dr. Claudia Büchel, Prof. Dr. Maria Mittag. Photo: Trang Vuong

Moreover, the best posters prepared by PhD students were awarded:

1. Place: Trang Vuong, Jena, for her poster on: *Life of Chlamydomonas reinhardtii in a 3-D structured environment.*



Best poster price award to Trang Vuong (f.l.t.r.): Trang Vuong, MSc., Prof. Dr. Andreas Holzinger, Prof. Dr. Claudia Büchel. Photo: Volker Wagner

2. Place: Cynthia Medwed, Rostock, for her poster on: *Not dead yet: historical Cyanobacteria in sediment cores survived over decades and can be revived.*



The second poster prize was given to Cynthia Medwed (f.l.t.r.): Cynthia Medwed, MSc., Prof. Dr. Andreas Holzinger, Prof. Dr. Claudia Büchel, Prof. Dr. Maria Mittag. Photo: Trang Vuong

### **Honorary ceremony with the van Stosch Medal**

The Hans-Adolph von Stosch Medal is awarded to an outstanding phycologist, who promoted phycology and its standing in an extraordinary way. Several members of the Section Phycology suggested sen. Prof. Dr. Christian Wilhelm. This was confirmed unanimously as voted by a Phycology Jury.



Medal winner sen. Prof. Dr. Christian Wilhelm challenged the audience with critical questions to central themes of photosynthesis and phycology during his honorary talk. Photo: Andreas Holzinger

The laudation was held by Prof. Dr. Claudia Büchel. In an impressive way, she presented the broadness of the contributions of Christian Wilhelm to phycological research and pointed out his engagement in inspiring students and coworkers for algal research.

In his talk, Christian Wilhelm critically questioned central dogmas of photosynthesis regarding the entire cell, the plastids, CO<sub>2</sub> fixation and the consequences for algal growth. To close his memorable talk, he fascinated the audience not only with his scientific expertise and critical questions on algal research but also with a poem on the evolution of photosynthetic microorganisms:



The green alga *Draparnaldia*. Photo and Poem: sen. Prof. Dr. Christian Wilhelm

### *Draparnaldia*

Lange bevor Licht das Landleben nährte  
Verkroch es sich dicht unter Wasser  
Darüber lag Strahlentod

Lange bevor ächzende Äste  
Sich dem Wind entgegen stellten  
Verknäulte sich haarkleines Fadenwerk im gurrenden  
Wasser.

Wäre da nicht aus kleinsten Körpern ausgeströmt  
Was anfangs beißend und scharf schmeckte  
Nie hätte ein Wesen atmen oder bluten können.

Wie jeder Forstschritt seinen Anfang nimmt im Versuch  
So sind Schmerz und Glück Geschwister.

*Prof. Dr. Christian Wilhelm*

## Election of the Phycology Board

Three members of the Board, who have contributed for many years, decided not to stand again for election and made also place for younger phycologists. These are the graduate speaker Dr. Karin Glaser, the secretary Prof. Dr. Andreas Holzinger und the chair Prof. Dr. Maria Mittag. In the General Assembly Meeting, held March 13, 2023, the following members standing for election were voted for:

Prof. Dr. Claudia Büchel (chair), Dr. Thomas Leya (deputy chair), Jun.-Prof. Klaus Herburger, PhD (secretary), Dr. Maike Lorenz (treasurer), Prof. Dr. Severin Sasso (assessor), Charlotte Permann (graduate assessor) and Prof. Dr. Peter Kroth (representative of the *Federation of European Phycological Societies (FEPS)*).



The new Board of the Section Phycology (f.l.t.r.): Dr. Maike Lorenz, Dr. Thomas Leya, Jun.-Prof. Klaus Herburger, PhD, Prof. Dr. Claudia Büchel, Charlotte Permann, Prof. Dr. Severin Sasso, Prof. Dr. Peter Kroth. Photo: Trang Vuong

## Outlook

The next meeting of the Section Phycology will take place in Göttingen in spring 2025.

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In March, 2023

Prof. Dr. Maria Mittag, Friedrich Schiller University Jena, Matthias Schleiden Institute  
[<https://www.schleiden.uni-jena.de/molekulare-botanik>]