

Conference Report

The Swiss Summer School on Chemical Biology, Bergün/Bravuogn,
August 25–29, 2024

Part A: Inspiring Science in an Inspiring Environment

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The Swiss Summer Schools provide master, doctoral, and postdoctoral students an opportunity to expand their scientific horizon within the framework of an interactive seminar week in a beautiful alpine setting. Presenting their own work as a poster or short presentation, and by interacting with lecturers from academia and industry, the students also have excellent opportunities for networking and career development.

The Swiss Summer Schools originate from the *séminaires hors-ville du 3^{ème} cycle* of the 1960s, organized by the universities of French-speaking Switzerland. Since 2019, this Summer School program has been organized by the Swiss Chemical Society (SCS) in collaboration with its Divisions of Fundamental Research (DFR) as well as Medicinal Chemistry and Chemical Biology (DMCCB). The topic of the Summer School alternates between organic synthesis,^[1,2] and chemical biology.^[3] This Summer School, held at the Kurhaus in Bergün, was the second school on the latter topic.

Lecturers and Students

The panel of speakers included established researchers from a broad swath of Chemical Biology sub-disciplines including transcription factor targeting, glycobiology, screening technologies, structural biology, protein degradation, and photopharmacology. Prof. Stefan Arold, King Abdullah University of Science and Technology, KAUST (SA)

Prof. Anna Mapp, University of Michigan (USA)

Prof. Brian Paegel, University of California, Irvine (USA)

Dr. Olivia Rossanese, Inst. of Cancer Research, London (UK)

Prof. Ben Schumann, Imperial College London (UK)

Prof. Dirk Trauner, University of Pennsylvania (USA)

This panel was extended by speakers from industry presenting their companies and research activities:

Dr. Sacha Javor, Space Pharmaceuticals, Bern (CH)

Dr. Guido Koch, Amphelix, Bettingen (CH)

Dr. Ahmed Mahmoud, Chemspeed, Füllinsdorf (CH)

For a more detailed introduction of the lecturers, please visit the Summer School Website.^[4]

Fifty students from twenty different institutions attended the Summer School. In addition to forty one students of Swiss universities, there were students from Austria (1), Belgium (1), Egypt (1), Germany (3), India (1), and the United Kingdom (2).



Presenting a lecture in a special setting: Dr. Olivia Rossanese.

Student involvement is one of the key ingredients to the success of the Swiss Summer Schools: Next to student Short Communications and two evening Poster Sessions, the young participants also acted as session chairs. Furthermore, scientific, technical, or societal topics were discussed in small groups coached by the lecturers. And, finally, students also contributed to this report by presenting their view of the event (see Part B).



In front of an attentive audience (Location: Speisesaal of the Kurhaus).

Scientific Content, a Short Review

The scientific program aimed to display the full diversity of chemical biology such that students had the opportunity to broaden their knowledge and network with people outside of their core area. The talks covered synthesis and photopharmacology (Trauner), transcription factor targeting in cancer (Mapp), novel screening technologies (Paegel), molecular glues for degrading oncogenic proteins (Rossanese), how to learn from structural biology (Arold), as well as new chemical biology tools for untangling glycobiology (Schumann). That each lecturer could deliver two sessions allowed them to give a more educational background for the students than a typical scientific seminar – the quality of

the presentations and the learning was extraordinary and received enthusiastic feedback from the participants.



For a change of scenery: Some of the lectures were held at the Bergün Railway Museum in its wonderful auditorium. Prof. Ben Schumann presenting.

Awards

Based on the recommendation of the Award Jury formed by lecturers and organizers, prizes were given for the ‘best’ poster and short communications. The prizes, sponsored by *Helvetica Chimica Acta*, a journal looking back on more than one-hundred years of service to the Swiss chemistry community, and Chemistry Europe. The awards were presented by Dr. Richard J. Smith, Executive Editor of *Helvetica Chimica Acta* and Associate Editor of *Chemistry – A European Journal*.

Best Contributed Talks:

Winner:

Marie-Désirée Schlemper-Scheidt, University of Neuchâtel
‘Combining Comparative Metabolomics and Molecular Networking to Study Secondary Metabolism of *Caenorhabditis Elegans* and *Briggsae*’.

Runners-up:

Karolis Norvaisa, Université libre de Bruxelles
‘Development of Synthetic Transmembrane Phosphate Transporters’.
Andrei Zhauniarovich, École Polytechnique Fédérale de Lausanne
‘Exploring the Crosstalk Between Tubulin Post-Translational Modifications’.

Best Poster Presentations:

Winner:

Laura Marie Poller, ETH Zurich
‘Evaluating Lysyl Oxidase Activity with Turn-On Fluorescent Probes’

Runners-up:

Claire Griggstone, University of Zurich
‘Phosphorylation of Alcohol Aildechains’
Xinyan Lu, University of Basel
‘A Chemical Degron System for Exploring PALB2 Synthetic Le-thal Combinations’

Summer School Development: Sponsoring, EFMC Certification, and Student Satisfaction

The Summer School received certification by the European Federation of Medicinal Chemistry. The EFMC advertised the event on its channels (Web and newsletter) and provided a small financial contribution.

Clearly, the presence of the international students did make a difference. To preserve the ‘family atmosphere’ created at the Summer School, and to mark a clear difference to an international congress, with fifty students, the event reached an ideal size.

The generous contributions of our sponsors were important in two ways: First, their financial support allowed us to keep the registration fees low, essentially covering the cost of the hotel accommodation. Secondly, the presence of the sponsor representatives, some giving lectures on their companies and on their research, created opportunities for person-to-person exchange in a relaxed atmosphere, a quality very much appreciated by both parties.

The survey taken at the end of the school showed that most participants felt that the event was a very rewarding experience (9.4 out of 10 points maximum), that they enjoyed five days of inspiring science, great company, and interesting discussions with the lecturers.

The hike along the Panorama route from Chant to La Diala came as a welcome break during an otherwise very intense week. (See also Part B). For a change of environment and the opportunity to have a peek at another Bergün jewel, the session on Tuesday morning was held in the Railway Museum’

The next Summer School on Chemical Biology will take place in 2026.



Acknowledgements

The organizers as well as the lecturers would like to thank the students for their active participation and the excellent atmosphere created. We would also like to thank the Kurhaus Bergün and its staff for making us feel welcome and comfortable. Janine Westenberger, head of Bergün-Filisur Tourism, and Christof Steiner, director of the Kurhaus and president of Swiss Historic Hotels, gave us interesting background on Bergün and on the history of the hotel. Finally, the president of the Bergün-Filisur municipality, Luzi Schutz, gave a warm welcome to all of us before the conference dinner.

Received: October 14, 2024

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- [2] H. P. Lüthi, M. F. Lagadec, L. Gamp, C. Wittwer, B. Morandi, J. Waser, *CHIMIA*, **2021**, *75*, 1071, <https://doi.org/10.2533/chimia.2021.1071>.
- [3] H. P. Lüthi, J.-L. Raymond, *CHIMIA*, **2022**, *76*, 970, <https://doi.org/10.2533/chimia.2022.970>.
- [4] <https://summer-school24.scg.ch/>

Part B: The Student Experience

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Introduction

The Swiss Summer School on Chemical Biology was held at the Kurhaus Bergün, an idyllic place, which gave one the feeling of being transported into a novel. This enchanting place had lots to offer for curious students: beautiful scenery, enchanting train ride, but especially, new insights into Chemical Biology. It was a fantastic opportunity for everyone ranging from senior researchers in academia and industry to PhD students to tell the tales of their adventures in research. Innovative ideas were planted into the young minds, and new networks were made between the lecturers and students alike. The venue was an excellent place to engage in inspiring conversations and enjoy the summer with science.

The Historic Hotel

The summer school participants from all over Europe met in the historic Swiss hotel, Kurhaus Bergün. To reach the destination participants took a breath-taking train ride on the Rhaetian railway route that is more than a hundred years old and officially included on UNESCO's World Heritage List. The picturesque journey included various sights like the 'Landwasser Viaduct', which felt like the 'Hogwarts Express' from the Harry Potter series. Still mesmerized by the landscape of the glorious Swiss Alps, participants reached Bergün where they were greeted by the historic Kurhaus Hotel appearing on the horizon. The antique exterior and interior of the hotel evoked the feeling of being in the Wes Anderson movie, 'Grand Budapest Hotel'. In particular, the bright blue venue hall where most of the summer school events were held was picturesque.

Participants felt like the center of Bergün as they enjoyed the panoramic view of magnificent mountain terrain from the top of the hotel. While the summer school program was busy, starting early each morning, the 30-minute breaks between the sessions were just enough for some of the courageous participants to sneak in a quick visit to the incredible Sauna and outdoor pool area offered by the hotel. The phenomenal breakfast included a wide range of choices, from the popular pancake and waffle stations to a vast selection of Swiss cheeses. At the end of the day, all the participants enjoyed a three-course dinner in the charming, old-fashioned dining area. The participants also had the chance to learn about the rich history of the hotel from our gracious hosts.

Lecturers and Lectures

The 2024 edition of the Summer School on Chemical Biology had an array of speakers with special expertise, from both aca-



Kurhaus Bergün – The hotel and the view from its tower.

ademia and industry. *Prof. Dirk Trauner* spoke about the clinical relevance of photopharmacology and total synthesis. The focus was on the synthesis of photoswitchable molecules and understanding their mechanisms. *Dr. Olivia Rossanese* gave talks on 'Protein degradation as a therapeutic strategy in oncology: exploring monovalent degraders' and 'Monovalent degraders in cancer therapy: BCL6 as a case study'.

Prof. Stefan Arold introduced us to structural biology, and how certain protein kinases work in cellular signalling. *Prof. Brian Paegel* explained how the proteome can be probed using selective translation modulation and specializing DNA for pharmacokinetic analysis. *Prof. Anna Mapp* discussed strategies for drugging transcription factors, natural scaffolds for modulating protein-protein interactions. *Prof. Ben Schumann* talked about the bioorthogonal tagging of glycoproteins and design of tools to manipulate proteoglycans in mammalian cells. We also had the chance to listen to interesting talks from industry, *Dr. Guido Koch* gave a talk on 'Medicinal Chemistry of Kinase Drug Discovery.' *Dr. Ahmed Mahmoud* introduced us to new ways to automate chemical processes to accelerate research and development. *Dr. Sacha Javor's* discussion was on the advancement of drug discovery with computational chemistry.

Student Contributions (Talks, Posters)

As part of the summer school, all the participants had the opportunity to chair a session, allowing young researchers to gain first-hand insights into the importance and responsibilities of session chairing. Students and post-docs presented 11 short talks and 18 posters. The small number of participants allowed for a deeper focus on each research project. The diverse range of topics, from supramolecular chemistry to enzymology, nurtured an excellent environment for in-depth discussions, knowledge sharing, and broadening research horizons. The invaluable feedback from fellow researchers in this vibrant community sparked fruitful connections between industrial partners and universities in Switzerland and abroad.



Impressions from the excursion taken at La Diala above Bergün, and from the teams preparing their presentation of the solution to their workshop topic.

Team Building and Networking

As part of the program, participants could choose from a variety of workshops led by mentors from both industry and academia. Each mentor offered an engaging workshop on a unique topic, with participants selecting from eight different options. These covered a broad range of themes, covering topics from open science and the art of public speaking to finding a solution on a difficult scientific issue such as protein and drug screening for peculiar conditions, like the blood-brain barrier, or the devel-

opment of a smart protein delivery system. Part of the challenge for the participants was to think up innovative answers in less than two hours. The teams also had a chance to use AI creatively in their solutions and even the presentations. The goal was to foster better teamwork, making interactive presentations and effectively communicate their ideas to the audience. This event also mixed-up pre-existing groups formed before the summer school, fostering new connections.

The program included a memorable excursion, offering participants the choice of either a hike or a visit to a renowned railway museum. Those who chose the hike embarked on a courageous 8.5 km trail with a 590-meter altitude gain, returning by chairlift to the valley. This adventure provided an excellent opportunity to strengthen relationships with fellow participants and deepen connections with group leaders while enjoying the breathtaking mountainous scenery.

Conclusions

In retrospect, this year's Summer School was a great podium for people to exchange their ideas, connect and contribute. The students were given the chance to actively participate in the event by presenting their research with talks and posters, interacting with the lecturers and peers during the team workshops and building connections that will prove to be essential to their future careers. The Summer School has made people from different universities across countries meet at this juncture, which would not have been possible otherwise. The event was not all about science, there were many opportunities to unwind given the location of the Kurhaus among the Swiss Alps. Five days of learning, sharing, and conversing at the Swiss Summer School 2024 will be a memory to relish.

Acknowledgements

The success of the event could not have been possible without the people who have relentlessly worked on organizing it. We wholeheartedly thank the SCS, organizing committee, and the sponsors for their efforts.

Photo credits: Hans P. Lüthi, Abinaya Subramaniyan, Karolis Norvaisa.

Received: October 14, 2024