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Conference Report

Swiss Summer School on Chemical Biology, Les Diablerets, September 11–15, 2022

Part A: Scientific Exchange in an Alpine Environment

Hans P. Lüthi*[a] and Jean-Louis Reymond*[b]

*Correspondence: Dr H. P. Lüthi[a], E-mail: luethi@scg.ch; Prof. Dr. J.-L. Reymond[b], E-mail: jean-louis.reymond@unibe.ch
[a]SCS Foundation1, c/o Swiss Chemical Society, Laupenstrasse 7, CH-3008 Bern, [b]Department of Chemistry, Biochemistry and Pharmaceutical Science, University of Bern, Freiestrasse 3, CH-3012 Bern

The Swiss Summer Schools, a five-day course for master, doctoral and postdoctoral students, originate from the *séminaires hors-ville du 3ème cycle* of the 1960s, organized by the Universities of French Speaking Switzerland. Since 2019, this Summer School program is organized by the Swiss Chemical Society (SCS) in collaboration with its Divisions of Fundamental Research (DFR) as well as of Medicinal Chemistry and Chemical Biology (DMCCB). The topic of the Summer School alternates between organic synthesis and chemical biology. With the pandemic, this order was shaken up, and, after two Summer Schools on organic synthesis,[1,2] it is only now that the first chemical biology school could take place.

The Swiss Summer Schools aim to provide students and industrial scientists from Switzerland and abroad with an interactive seminar week in beautiful alpine settings to expand their scientific horizon with latest developments, present their own work as posters and short presentations, and interact with speakers from academia and industry for networking and career development.

Lecturers and Students

The panel of speakers included established researchers from academia and industry in the area of proteomics (***Edward Tate***, Imperial College London / ***Tamara Reyes Robles***, MSD / ***Sascha Hoogendoorn***, University of Geneva), drug discovery (***Jean Quancard***, Novartis Basel / ***Christoph Boss***, Idorsia) and RNA biology (***Claudia Höbartner***, Universität Würzburg / ***Andrea Rentmeister***, Universität Münster).

This panel was extended by speakers from industry presenting their company and research activities (***Mark Schäfer*** / Bachem, ***Markus Löweneck*** / Senn Chemicals, ***Erika Lüthi and Daniel Latassa*** / Valsynthese). HR delegates (***Xenia Martinelli*** / Senn Chemicals, ***Dominik Ebner*** /Bachem) gave more background on professional opportunities, their approach to integrate young professionals, and their companies' corporate culture.

For a more detailed introduction of the lecturers, please visit the Summer School website.[3]

Fifty-one students from twenty different institutions attended the Summer School. Next to thirty-nine students of Swiss universities, there were students from Belgium (1), Brazil (1), Denmark (1), Germany (5), Italy (1), the UK (2) and the Ukraine (1).

Student involvement is one of the key recipes to success of the Swiss Summer Schools: Next to student Short Communications

Lecturers and organizers: Jean-Louis Reymond, Ed Tate, Claudia Höbartner, Sascha Hoogendoorn, Tamara Reyes-Robles, Andrea Rentmeister, and Hans P. Lüthi. Jean Quancard is missing on this picture.

Poster Session A: Markus Löweneck (Senn Chemicals) and Mark Schäfer (Bachem).

Poster Session B: Rui Moreira, EFMC President, with students.

(two sessions, 15 presentations) and two evening Poster Sessions (21 presentations), the young participants also acted as session chairs. Furthermore, scientific, technical or societal topics were discussed in small groups coached by the lecturers. These team assignments promoted the exchange between students on the one hand, and between students and lecturers on the other hand. They also contributed to a more relaxed atmosphere – given the good weather we enjoyed, the teams were able to meet outside the hotel building – and the presentation of the results gave rise to a laugh or two.

Team Assignments (indoor): Jean Quancard coaching his group of students.

Team Assignments (outdoor): Christoph Boss coaching his group of students.

Finally, for the first time, the students present their own report of the Summer School (see article on the next page).

Scientific Content, a Short Review

The scientific program aimed to present a broad coverage of chemical biology such that students had the opportunity to broaden their horizons. Several talks highlighted the impact of using protein modifying tool compounds such as photoaffinity labels, covalent inhibitors or protein degraders for target identification. Drug development programs involving the identification and validation of new biological targets addressing unmet medical needs were also presented, as well as an insight into RNA biology and the impact of modified bases and methods to decipher their biological mechanisms.

Awards

Based on the recommendation of the Award Jury formed by lecturers and organizers, prizes were given for the 'best' poster and short communication presenters. The prizes, sponsored by *Helvetica Chimica Acta*, a journal looking back on more than one hundred years of service to the Swiss chemistry community. Richard J. Smith, Executive Editor of *Helvetica Chimica Acta*, presented the prizes with Jean-Louis Reymond.

The winner of the best short communication award, Pauline Franz, with Richard Smith (*Helvetica Chimica Acta*) and Jean-Louis Reymond.

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

The Summer School had 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. We had the honor to host the EFMC President, Rui Moreira of the University of Lisbon.

With the support of the EFMC, the Summer School will have the potential to become more international. Clearly, the presence of the twelve international students did make a difference, and there is the option to invite more students to attend. However, to preserve the 'family atmosphere' created at the Summer School, and

Table 1. Award winners (shaded) and runners-up of the short communications and poster sessions

Name	Advisor, Affiliation	Title of Presentation
Pauline Franz	Beat Fierz, EPFL	A chemical biology approach to decipher chromatin ubiquitylation by RNF168
Adam Eordogh	Pablo Rivera-Fuentes, Zurich	Single-Molecule Imaging in Live Cells with Photoregulated Fluxional Fluorophores
Christoph Popp	Henning Jessen, Freiburg, Germany	Delivery of Caged Magic Spot Nucleotides into Escherichia coli
Marie-Lena Jokisch	Kathrin Lang, ETHZ	Developing genetic code expansion tools to study acidic protein post-translational modifications

to mark a clear difference to an international congress, the event should not grow much larger.

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 feature very much appreciated by both parties.

The survey taken at the end of the school showed that the vast majority felt that the event was a very rewarding experience, that they enjoyed four days of great science, and that they made many new scientific acquaintances. The hike from Col De Pillon to Lac Retaud and the Fondue Night at the nearby Châlet came as a welcome break during an otherwise very *intense* week. Still, many said they feel happy but *exhausted*.

The next Summer School on Chemical Biology will take place in 2025.

Acknowledgements

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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] https://summer-school22.scg.ch/

Part B: The Students' Experience

Marie-Désirée Scheidt*[a], Mario de Capitani*[b], Marina Russo*[c], and Jiajun Ren*[c]

*Correspondence: M.-D. Scheidt[a], E-Mail: marie-desiree.scheidt@unine.ch; M. de Capitani[b], E-Mail: mario.decapitani@unibe.ch; M. Russo[c], E-Mail: marina.russo@uzh.ch; J. Ren[c], E-Mail: Jiajun.ren@uzh.ch
[a]Université de Neuchâtel, Avenue des Bellevaux 51, CH-2000 Neuchâtel; [b]Universität Bern, Departement für Chemie, Biochemie und Pharmazie, Freiestrasse 3, CH-3012 Bern; [c]University of Zurich, Department of Chemistry, Winterthurestrasse 190, CH-8057 Zurich

Summer School season is back, and back in style. After a number of such events could not be held due to reasons we know only too well now, actually attending a meeting with all the trappings and trimmings was a great prospect. And for many students a first-time kind of experience. Having started their work at a time so that no nicely presentable results were ready before 2020, this was their first time presenting in front of a public crowd and in person, in some cases with only weeks or months before having to defend their thesis. For others it would be a fantastic opportunity to show their projects and themselves, get inspirations, ideas and maybe a critical input at an early stage. The relatively small size of the venue of about 50 students and a dozen lecturers would enable a much more thorough networking than is usual at large conferences. We thus made our way to picturesque Les Diablerets in happy anticipation of a few days of science and company.

Lecturers

At the Swiss Summer School we heard a large panel of speakers from academia and industry. ***Prof. Edward Tate*** held talks on 'spinning out of control: from malaria to cancer *via* the common cold', 'getting the chemical handle on post-translational modification' and 'probes and PROTACs: linking drug discovery to protein degradation'. ***Dr. Jean Quancard*** explained the best practices for chemical probe validation and held a talk on context dependent inhibition or rescue of the MALT1 protease. ***Prof. Claudia Höbartner*** and ***Prof. Andrea Rentmeister*** introduced us to ribozyme research through different examples. ***Dr. Tamara Reyes Robles*** showed us insights on proximity labelling of membrane proteins and ***Prof. Sascha Hoogendoorn*** showed her discoveries on the Hedgehog Signalling Pathway.

Furthermore, we had the chance to hear several industrial contributions. ***Dr. Christoph Boss*** introduced us to drug discovery at Idorsia. ***Dr. Markus Löweneck*** showed us how Senn Chemicals develops their processes. ***Dr. Mark Schäfer*** explained how Bachem evolved new technologies from peptidic API's using Green Chemistry and ***Dr. Erika Lüthi*** showcased the production of nitrate esters at Valsynthese.

To round up the Summer School, ***Xenia Martinelli***, ***Dominik Ebner*** and ***Dr. Daniel Latassa*** introduced their respective companies – Senn Chemicals, Bachem and Valsynthese – to us and explained possible career options.

Student Contributions (Talks, Posters and Teams)

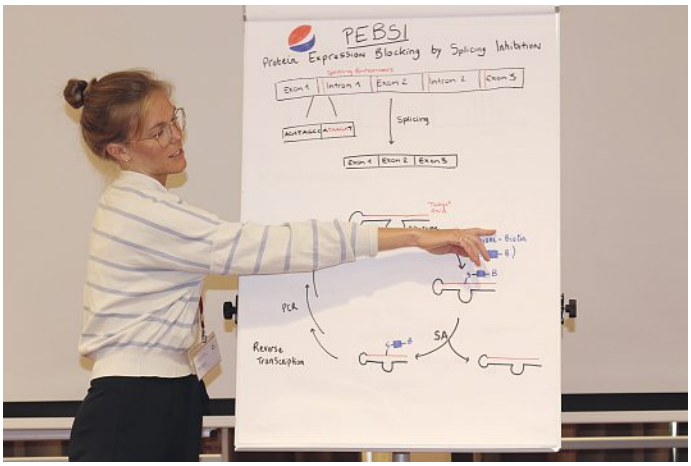
In the poster session there were 21 posters, and it was divided into two evenings, giving space for long and deep discussions. Hence, students had the double chance to learn from other students, as well as to talk about their research. The variety of topics covered by the posters was large, giving a great inspiration to young scientists.

Posters are arguably the most interactive way of communicating science in a professional way. Over 20 candidates had the privilege to present their research in the open area of the hotel, while everyone in the hotel including tourists in the area had the chance to take a glimpse of what is happening at the forefront of chemical biology. As a summer school usually accommodates a smaller group of visitors compared to a conference/symposium, everyone had the opportunity to discuss with the poster present-

Poster session ambiance.

ers in detail about the project they were presenting. During these fruitful discussions, many of us received valuable feedback. We sincerely appreciate SCS for the opportunity to share our latest research with such a vibrant community in this post-pandemic world.

As part of the program, the participants were involved in a group activity called 'Teams'. Each student could choose between five different mentors, both from industry and academy, with a variety of backgrounds. The aim was to come up with a scientific project that would be interesting to possible investors or a detailed analysis of a relevant topic for society. During this meeting we brainstormed interesting ideas, as well as thinking about how to solve potential problems. Such an experience brought enrichment to the students, not only from the scientific point of view, but also from a personal perspective. Indeed, during this activity we were much more in contact with each other, having the opportunity to exchange our knowledge and our experiences.



Presentation of the team's proposition.

Before the poster sessions in the evening, we also had 15 short presentations from more senior students, where they concisely described the key achievements and challenges in their science. The science span broadly across the field of chemical biology, where various chemical tools and approaches were used to interrogate biological questions in physiological and pharmacological contexts. A lot of burning questions and discussion were triggered after each presentation. Many inspirations came from the collisions of the brilliant minds in such a vivid atmosphere. And this was indeed what we love the most in the summer school.

Conclusion

Looking back, this year's SCS Summer School leaves two strong impressions. On one hand the high proportion of participants sharing their work and contributing. Of about 50 students, 37 shared their work either in a short presentation or on a poster. Together with the team assignment and time to let the day settle at the bar, it allowed us to connect with many young scientists of similar age and stage of their career. These acquaintances and contacts are the basis for our professional future in science.

In addition, the barriers between participants and lecturers were very low. Being allowed and encouraged to challenge established, accomplished scientists without much interference and getting the possibility to have them challenge and comment on your own work is a possibility not found very often outside such venues. These opportunities are as rare as they are valuable during studies, especially if a contentious point can be elaborated at length. All told, it has been a great few days up high in the alps. For us and our research.

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