Editorial

Amandine Kolleth

Vlad Pascanu

Chemical Biology is an inherently diverse discipline that draws on expertise from a multitude of research fields. It applies a chemical mindset towards elucidating and manipulating the inner workings of complex biological systems. This fascinating discipline represents a catalyst for new discoveries across life sciences. From pharmaceuticals to agrochemicals, major companies and startups alike have realized the immense potential of Chemical Biology tools to unlock innovation.

This CHIMIA issue celebrates 2024 as an outstanding year for Chemical Biology in Switzerland. The year started on an enthusiastic note with the **DMCCB Symposium** in February in Basel, with focus on '*Therapeutics by Computational Design*'. Over the summer, early career researchers could attend the **Swiss Summer School on Chemical Biology**, hosted in beautiful Bergün in the Graubünden Alps, with an exceptional line-up of international lecturers. The summer offer was complemented by the **Peptide Therapeutics Forum** at the Biozentrum in Basel, bringing together peptides enthusiasts from academia and industry. The year concluded with the **SCS-Syngenta Symposium** '*Unlocking Innovation through Chemical Biology*' organized in October at the Syngenta site in Stein, AG. This exciting event signalled a paradigm shift in Crop Protection Research, with Chemical Biology taking a central role in the discovery of safe-by-design agrochemicals. The momentum is carried forward into 2025 with Chemical Biology once again taking centre stage in front of a global audience in February, at the **EFMC International Symposium on Chemical Biology** in Basel.

This special issue brings together highlights in *Chemical Biology* from the different events that have taken place over the last year in Switzerland, offering an assortment of academic and industrial research. ***M. Dockerill*** and ***N. Winssinger*** from the University of Geneva, explore the use of nucleic acids as scaffolds for creating programmable supramolecular assemblies to control therapeutic activity. ***C. Nevado*** and co-workers from the University of Zurich describe the group's TPD program, developing PROTACS that dissect the function of epigenetic master-regulators CBP and p300, which are often misregulated in oncologic malignancies. ***A. Zafar*** and ***B. Schumann*** from Imperial College London discuss the critical role of glycosylation in glycoprotein function and disease and present a case study on O-GalNAc glycosylation to highlight the acute need for more precision tools to study glycosylation processes. ***I. Kerschgens*** and colleagues from Novartis Biomedical Research investigate the reactivity profiles of diverse aldehydes and salicylaldehydes towards a lysine surrogate, revealing valuable insights into the application of reversible covalency to target lysine residues with reactive warheads. ***D. Gillingham*** and coworkers from University of Basel present the DELSTAR system, a unique, solution-phase DEL selection platform that overcomes many of the open challenges in DEL screening while using 100-fold less protein than a typical affinity selection. ***O. W. Rossanese*** and her team at the Institute of Cancer Research in London discuss how lessons learned from the study of Cyclin K degraders can pave the way towards the rational design of molecular glues and lay the foundation for new discoveries in monovalent degraders. Finally, ***C. N. Weller*** and ***J. Hall*** from ETH Zurich present RNA-PROTACs, a novel modality with therapeutic potential consisting of oligonucleotide conjugates, that bind RNA-binding proteins with a modified oligonucleotide linked to a ligand for a ubiquitin E3 ligase.

We extend our gratitude to all authors for accepting our invitation to share their work in CHIMIA. As you explore this Special Issue, we hope you will let yourself be inspired by these latest advances in *Chemical Biology*. Furthermore, we acknowledge the valuable contributions of all the speakers at the SCS-Syngenta Symposium, whose presentations catalysed many of the discussions reflected in this issue.

Dr. Amandine Kolleth, *Syngenta Crop Protection*
Dr. Vlad Pascanu, *Syngenta Crop Protection*

The CHIMIA Editorial is very grateful to Drs. Amandine Kolleth and Vlad Pascanu for their great efforts in organizing this issue on *Innovation through Chemical Biology*. Highlighting the recent developments in Chemical Biology in Switzerland and beyond.
Cover image created using DALL-E 3 with the following input prompts: "Create an illustration in the style of an abstract surrealist painting to encapsulate the concept of chemical biology. Include elements to represent cellular components, the immensity of multiomics datasets, and the precision of computer-aided drug design. Do not include any form of laboratory equipment or any explicit chemical structures. Avoid the use of text. Use a muted, earth-toned color palette."