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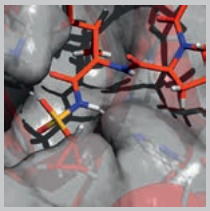

Medicinal Chemistry and Chemical Biology Highlights

Division of Medicinal Chemistry and Chemical Biology

A Division of the Swiss Chemical Society

Chemical Biology and Drug Discovery Symposium at the LS² Annual Meeting 2021

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Under the theme 'Mechanisms in Health, Disease and Aging', the LS² Annual Meeting took place from the 17th to 19th February 2021. Due to the Covid-19 pandemic, all the talks and sessions were online. Despite the different format, the event attracted more than 400 participants also this year and was a great success.

One of the 10 scientific e-Symposia had the topic 'Chemical Biology and Drug Discovery' and was jointly organized by the Division of Medicinal Chemistry and Chemical Biology (DMCCB) of the Swiss Chemical Society (SCS) and Life Sciences Switzerland (LS²). Since several years, the two Swiss societies work closely together to organize and promote scientific meetings in Switzerland that cover the fields of chemical biology and medicinal chemistry.

The following conference report describes the exciting science that was presented by the four speakers at the symposium (Fig. 1), the two invited speakers ***Prof. Nina Hartrampf*** and ***Prof. Stefan Knapp***, a speaker selected from the submitted abstracts, ***Dr. Lorenzo Lafranchi***, and a speaker from industry (Promega), ***Dr. Vanessa Pierroz***.

Prof. Nina Hartrampf from the University of Zurich presented a powerful approach based on flow chemistry to synthesize long peptides and proteins. She had developed the technique as a post-doc in the laboratory of Prof. Brad Pentelute at MIT and published it recently in Science (N. Hartrampf, *et al., Science*, **2020**, *368*, 980). In her talk, she showed several examples of proteins that were obtained at an impressively good quality, and she undoubtedly convinced the audience of the advantages flow chemistry offers for peptide and protein synthesis. Since spring 2020, Prof. Nina Hartrampf is an Assistant Professor at the Department of Chemistry of the University of Zurich and her presentation was an excellent opportunity for the LS² community to hear about the inspiring research of the new Swiss faculty member.

Prof. Stefan Knapp, Professor of Pharmaceutical Chemistry at the Goethe University Frankfurt and head of the Frankfurt node of the Structural Genomics Consortium (SGC) shared compelling new data on kinases, kinase inhibitors, their structures and mechanisms of action. He showed unusual binding modes of kinase inhibitors and novel allosteric binding sites. From the presented data, it was obvious that the new insights into the world of kinases gained by Prof. Knapp and his team will offer novel opportunities for therapeutics development. Presenting science at the interface of biology, chemistry and drug discovery, he offered exactly what attendees of this themed symposium were looking for.

Fig. 1. Speakers of the LS² Chemical Biology and Drug Discovery symposium from left to right and top to bottom. Prof. Nina Hartrampf (University of Zurich), Prof. Stefan Knapp (University of Frankfurt), Dr. Lorenzo Lafranchi (Karolinska Institute) and Dr. Vanessa Pierroz (Promega).

Dr. Lorenzo Lafranchi, currently post-doc in the group of Prof. Simon Elsässer at the Karolinska Institute in Stockholm, presented a new protein labeling technique that he developed and published recently in *JACS* (L. Lafranchi, *et al., JACS* **2020**, *142*, 20080). With his method, non-canonical amino acids carrying a label are introduced at the N- or C-terminus of a protein of interest using amber suppression. The incorporation of the amino acid is facilitated by ubiquitin that is fused to the same protein and is tracelessly cleaved by the action of cellular deubiquitinases. Dr. Lafranchi showed that the approach is of particular interest to label microproteins for which a small tag offers a great advantage.

Dr. Vanessa Pierroz, scientist at Promega, presented a scientific talk about a new technique for studying autophagy in cells using luminescence or fluorescence as a readout. The technique is based on microtubule-associated protein light chain 3 (LC3) as a marker of autophagy that is fused to HaloTag and a luminescence reporter system. She showed that the tool works efficiently to track different stages of autophagy in cell lysates as well as in live cells.

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Can you show us your Medicinal Chemistry and Chemical Biology Highlight?
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