

## EDITORIAL

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## Pharmaceutical Chemistry

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Gerd Folkers

Pathological processes in our organism are becoming more clearly understood at the molecular level. Hence, when dealing with molecules, chemical engineering is the methodology to intervene in such processes. Rational design of biologically active compounds that actively prevent and/or interrupt detrimental chemical reactions is one of the major tasks of a chemistry that is focussed on therapeutics or pharmaceuticals: pharmaceutical chemistry.

All of us who are active in the field, know however very well, that a newly designed bioactive compound is at best an optimal ligand for one single target, but not a drug. A drug has to be absorbed, distributed within the organism to reach the target tissues, metabolized and excreted to avoid toxic concentrations. This requires in addition to the knowledge of the address, the unique property pattern of recognition elements for binding and eliciting an effect at the target, the knowledge of properties that govern pharmacokinetic factors. It is not only the physico-chemistry of passive transport, such as diffusion through and travelling within membranes, or dissociation behavior in different solution environments, it is also the interference with p-glycoproteins, causing 'drug-resistance', or interaction with metabolic chains, causing accumulation of competing metabolites.

The term 'pharmaceutical chemistry' rather than 'medicinal chemistry' reflects the broad variety of methodological approaches on the molecular level that is necessary to find and optimize a ligand to become a beneficial drug. There are further terms such as 'therapeutic chemistry', 'bio-organic chemistry', 'molecular medicine', 'molecular pharmacy', *etc.* where many scientists strive for the very same goals as medicinal chemists and pharmaceutical chemists do.

Thus, regardless of any linguistic hair-splitting, the present special issue of CHIMIA gives you an excellent overview of what is 'Pharmaceutical Chemistry' in Switzerland. You will see that it encompasses biophysical analytics as well as synthesis and molecular design. Development of virtual screening technology is undertaken as well as protein and peptide engineering. There are contributions from both industry and academia, from institutes of pharmaceutical sciences and organic chemistry, and from both sides of the 'Röschigraben'.

Therefore, I am quite sure that we have really addressed the phenomenon of 'Pharmaceutical Chemistry' rather than the inner courtyard of a historical academic discipline. I hope that you enjoy the following pages and hopefully gain some inspiration for your own work from it.

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With great pleasure the Editorial Board of CHIMIA warmly thanks the coordinating guest editor Prof. Gerd Folkers (Department of Applied BioSciences, Institute of Pharmaceutical Sciences, ETH Zürich) for his enormous effort in planning and successfully compiling the present attractive selection of contributions on the topic of 'Pharmaceutical Chemistry'.