

3rd International Conference and Exhibition on Metabolomics & Systems Biology

March 24-26, 2014 Hilton San Antonio Airport, San Antonio, USA



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Natural product analysis in chemical ecology

Chemical ecology investigates the role of natural products in the interaction between plants, animals and their environment, as well as the evolutionary and behavioural consequences of such interactions. As a genetic and molecular science, chemical ecology tries to understand the function of genes of interacting organisms and their coevolution in complex cross-linked ecosystems. As a biochemical discipline, chemical ecology investigates defensive traits, their enzymatic formation and the involved regulation mechanisms. Since many ecological interactions are mediated by natural compounds, detailed knowledge about relevant chemical structures and their physical and biological properties are required. Therefore, analytical natural product chemistry is one of the main pillars of chemical ecology. Analytical tools, especially NMR spectroscopy, the most informative method in natural products chemistry, and mass spectrometry, are essential for elucidating chemical structures and stereo configuration, biogenetic and metabolic pathways, metabolic fluxes, tissue-specific localization, the composition in the tissue and other aspects relevant to chemical ecology. Quantitative measures are of special interest in this context and important to understanding the ecological function of metabolites in inter- and intra-species interaction in nature.

The presentation aims to draw attention to recent developments in metabolomics and other analytical platforms and how they can contribute to extend our understanding of the role of natural compounds in the complexity of interactions that occur in nature.

Biography

Bernd Schneider is head of the Biosynthesis/NMR research group of the Max Planck Institute for chemical Ecology, Jena, Germany, since 1997. Between 1982 and 1996 he was a researcher at the Institute of Plant Biochemistry Halle, Germany. In 1991 he was awarded with an Alexander von Humboldt fellowship to work at Munich University. He has published approximately 235 papers and review articles. He holds a doctoral degree in chemistry from the University of Halle and did his habilitation at the Universities of Halle and Jena.

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