

## Preface

The transduction of signals from the extracellular space across the plasma membrane into the interior of cells and ultimately to the nucleus, where in response to such external signals the transcription of the genetic code is influenced, belongs to the most fundamental and important events in the regulation of the life cycle of cells. During recent years several signal transduction cascades have been elucidated which regulate, for instance, the growth and the proliferation of organisms as diverse as mammals, flies, worms and yeast. The general picture which emerged from these investigations is that nature employs a combination of non-covalent ligand/protein and protein/protein interactions together with a set of covalent protein modifications to generate the signals and transduce them to their destinations. The ligands which are recognized may be low molecular weight compounds like lipids, inositol derivatives, steroids or microbial products like cyclosporin, they may be proteins like, for instance, growth factors or intracellular adaptor proteins which carry SH2 or SH3 domains, and they may be specific DNA stretches which are selectively recognized by transcription factors. The covalent modifications employed in general are glycosidation which is of particular importance for glycoproteins functioning on the cell surface as receptors, lipidation which is used to anchor lipoproteins in membranes, phosphorylation and dephosphorylation by which the downstream signalling in the different pathways often is controlled, and finally the attachment of oligonucleotides to proteins which may be important in the transcription of the genetic code.

These and other aspects of biological signal transduction provide an open and rewarding field for investigations by scientists from various different disciplines in the realm of biology, medicinal research and chemistry working in academic research institutions or in industry. In particular, it is full of opportunities for bioorganic studies in which the expertises of biologists and chemists have to be merged, and it is highly relevant to medicinal chemistry since 'signal transduction therapy' is a new and promising approach for the treatment of various diseases including cancer.

It is the aim of this Symposium-in-Print to provide a forum for the discussion and publication of the various aspects of the bioorganic and medicinal chemistry signal transduction. The papers cover nearly all disciplines which are involved in its study and use. The authors who have contributed include biologists, biochemists, medicinal chemists and synthetic organic chemists and work in universities, governmental research institutions and in industry. The topics which are covered span all events involved in the transduction of chemical signals in biological systems as summarized above. It was my intention to bring together scientists from the various subdisciplines mentioned whom I regard to be among the leaders in their field and to prepare a Symposium-in-Print of high scientific quality. In reviewing the papers which now finally appear in print in this issue of *Bioorganic & Medicinal Chemistry* I am confident that I have succeeded in my attempt.

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