

## PREFACE

The Beilstein workshops address contemporary issues in the chemical and related sciences by employing an interdisciplinary approach. Scientists from a wide range of areas - often outside chemistry - are invited to present aspects of their work for discussion with the aim of not only to advance science, but also, to enhance interdisciplinary communication.

To set the stage for the workshop, it is useful to consider the development of both natural and life sciences from their early origins in natural philosophy. Technical equipment and methodologies, as well as, the systematizing and cataloguing of phenomena and entities, have always underpinned scientific advances. However, even in science, there can be resistance to change, and it has often taken a generation of overwhelming experimental evidence to swing opinion, and allow new paradigms to be accepted into the collective scientific wisdom. Whilst technology and information are the driving forces for advances, it is interesting to note that the most significant developments often take place at the intersections of different lines of thought.

In the natural sciences the search for a "life-force" has given way to the generalization that biology can be defined as being interdependent "complicated chemistry". To gain the insights that lead to the understanding of complex processes, the usual scientific method is to break down the problem into smaller units, create a model for each of them, and through refinement of the models attempt to develop a unified theory. Whereas initial insight into biological systems can be obtained by modelling the chemistry of the parts of the system, the properties and functions of the components of a biological system are not those of discrete molecular entities; they are dependent on the presence or absence of other components and their behaviours in relation to one another. Thus modelling the system as a whole is a very complicated if not a highly complex task.

One of the most current challenging problems of the natural and life sciences is the understanding and prediction of the biological chemistry of the cell, with particular reference to the role of organic compounds therein. These molecules are the products of highly refined *in-vivo* and *in-vitro* organic syntheses; they have complex biological functions - making up the systems themselves as well as interacting with and perturbing them. It is our belief that advances can only realistically be achieved in an interdisciplinary environment, where the lines of thought of different scientific cultures are related sufficiently to each other that given the right circumstances, interactions can take place and new developments can follow.

Preface

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By raising the curtain on the *Chemical Theatre of Biological Systems* and through the performances of players invited from the areas of chemical, biological and information sciences, our aim is that this workshop, supported by the active participation of the audience, will afford new insights into contemporary scientific issues.

We would like to thank particularly the authors who provided us with written versions of the papers that they presented. Special thanks go to all those involved with the preparation and organization of the workshop, to the chairmen who piloted us successfully through the sessions, and to the speakers and participants for their contribution in making this workshop a success.

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