

Editorial

Chemoecology – a new journal

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A growing science

The elaboration of analytical techniques in recent years has made it possible to characterize natural products in micro-quantities, leading to an enormous increase of interest in and knowledge of “infochemicals”, “semiochemicals”, “allelochemicals”, “ecomones” – or whatever one likes to name compounds governing interactions among organisms. Not only have new chemicals been identified, but considerable information on the biological significance of such substances and their unexpectedly complex relationships has also been established which demonstrates the overwhelming importance of chemical interactions in nature. We are witnessing the growth of a new discipline, and we hear and read the term “chemical ecology” increasingly often. “Chemical Ecology” was used as early as 1970 as the title of a pioneering book edited by Ernest Sondheimer and John B. Simeone, and additional epithets such as “ecological chemistry” or “molecular ecology” have been used in a seemingly synonymous way. Specialists debate the question of where the emphasis for this interdisciplinary field should be placed, and there is misunderstanding and questioning within both the scientific community and the public about the philosophy of chemical ecology. Fortunately, neither semantic problems, nor differences of opinion, diminish interest in the subject, which attracts more and more researchers and receives increasing, but not nearly adequate, funds for research.

The German Science Foundation (DFG) has recently funded a special research programme entitled “Chemical ecology – natural products modifying behaviour”. The interest generated by this initiative has attracted much attention to this upcoming and rapidly growing discipline, including the publishers *Thieme**. One idea suggested was the need for a journal to assemble the presently widely scattered papers which have an evolutionary perspective and emphasize the adaptive significance of chemically mediated interactions. *Thieme* is ready to provide its facilities and know-how in the publishing business, and M. B. has been asked to serve as Edi-

tor-in-Chief. As a result of intensive discussions with friends and colleagues, M.B. has finally accepted the challenge and S. B. M. has agreed to assist as Associate Editor.

A new journal

With this issue we present the new interdisciplinary journal, **Chemoecology**. It is our desire to promote and stimulate the field by providing an international forum for rigorous and conceptual research that integrates ecology and chemistry to aid our understanding of the biological significance of natural products. The scope of **Chemoecology** is the evolutionary biology of chemically mediated interactions among organisms at all levels of organisation, from individuals and populations to ecosystems. Manuscripts on trophic relationships, intra- and interspecific communication, competition, and other kinds of chemical communication (*sensu* E. O. Wilson) in all types of organismic interactions, will be considered suitable for publication, provided they contribute significantly to understanding the evolutionary and ecological significance of chemically mediated interactions. Evolutionary considerations of connections between chemical and other sensory physiologies, where ecologically relevant, will also be welcome.

Chemoecology will appear quarterly and publish not only research papers, short communications, and reviews, but also papers introducing or redefining concepts, news and commentary, and from time to time book reviews and announcements. **Chemoecology** should not only assist specialized researchers but should also provide an overview on important questions, findings, and concepts in chemical ecology for a broad scientific readership. **Chemoecology** has no page charges, and reduced rates for personal subscriptions are available (for details see front cover).

Some general considerations

Chemical ecology depends on concepts and techniques derived from a wide variety of disciplines including ethology and behaviour, natural product chemistry, plant and animal physiology, taxonomy, genetics, histology, as well as molecular and cellular biology. Accordingly, it deals with methods and techniques as different as, for example, electron microscopy and mass spectrometry, and with concepts as different as sociobiology and cladistics. Chemical ecology must be understood to be not only interdisciplinary but also multidisciplinary. In consequence, a specialized study in one of the

* The Georg Thieme Verlag Group, with several subsidiaries including Thieme Medical Publishers, Inc., New York, has served the life sciences as a publisher for more than 100 years, and chemistry for 60 years. It produces about 60 journals and distributes them worldwide, and their offices in many countries facilitate the servicing of congresses around the world.

basic disciplines alone will not be chemical ecology. This is because chemical ecology only gains significance and relevance through the *integration* of knowledge, aimed to try to unravel complex ecological systems from different perspectives, and to understand the adaptive significance of both the elements and their interplay.

Chemoecology will promote rigour in both ecology and chemistry and ensure that conceptual rapport advances by leaps and bounds.

Chemical ecology not only combines two large research disciplines in a special way, but also brings together two kinds of researchers, each with quite different academic backgrounds and traditions. In our eyes, chemical ecology has an integrative claim seeking to overcome old-fashioned, subject-specific and subject-restricted thinking. Such integration is forcing biologists and chemists to meet and collaborate in attempts to understand chemical ecology. Purely biological or purely chemical studies are in no way devalued; instead there is a new synthesis of ideas to be generated by the integration of expertise of these disciplines, which have peculiar power when complementing each other.

Cooperative multidisciplinary research is a potent tool for the integration of a wide range of information, and the synthesis of ideas about interactions mediated by natural products. Such new insights are of wide interest and should be published together. We do not consider that **Chemoecology** should contain all kinds of "bits and pieces", however exciting and important they might be in their immediate contexts, or however relevant to a chemoecological approach they might eventually prove. This would mean unnecessary competition with more specifically orientated journals, such as those devoted to biochemistry, physiology, ecology or behaviour. Instead, the emphasis of **Chemoecology** will be on a conceptual as well as on an evolutionary approach to chemical ecology. Comparative studies involving questions about "how" and "why", and the adaptive significance and selective advantages of chemicals in given ecological conditions are most likely to achieve this emphasis. This philosophy also explains why studies on environmental or toxicological issues, insofar as they seek only to elucidate the effects of chemicals, natural or otherwise, on what we perceive as our environment, will not normally be considered for publication; neither do we intend to deal with studies only concerned with the application of chemical ecology to pest control. Nevertheless, basic research on the understanding of chemicals governing interactions among organisms is seen to have an increasing impact on solving a variety of environmental problems.

Editorial considerations

The question of whom to ask to assist in managing **Chemoecology** and join the Editorial Advisory Board has been particularly difficult. In order to avoid any conflict, we have not asked the pioneers of chemical ecology to assist formally. Instead, we have asked "second generation" chemical ecologists to help launch **Chemoecology**. Fortunately, many of the well-known first generation chemical ecologists have offered to help behind the scenes.

The most influential trends in chemical ecology have emphasized insect-plant and insect-insect interac-



An ecologist (trapped in chicken-wire chemistry) and an organic chemist (trapped in eco-teleology) discovering common grounds. (Courtesy of Arthur M. Shapiro)

tions, and these themes will undoubtedly continue to be major topics. However, despite such prior emphasis, studies on terrestrial arthropods by no means exhaust the field and more and more new contributions are concerned with vertebrates, aquatic organisms, and plant-plant interactions. The initial Editorial Advisory Board is slightly biased – but this situation is not intended to last. Rather, we hope to make **Chemoecology** a forum for studies on the entire range of biotic diversity. In due course, we shall be only too happy to extend the Board and include representatives of all the special branches of science involved.

Manuscripts will be published as quickly as possible; *Thieme* guarantees a production time of less than three months. The editorial policy will be rigid in order not to produce a backlog of manuscripts which would delay publication. Of course, a restriction is given by publishing only four issues per year; however, since we are hoping for a good number of subscriptions, an increase in the number of issues per year is possible. If this is successful, we can publish more, and be more topical at the same time.

With this editorial, we call for the submission of high-quality manuscripts, subscriptions (institutional and personal) and comments on this new initiative. Hopefully, the scientific community will appreciate our efforts to provide a forum for chemical ecology as outlined above, and will assist the launching of **Chemoecology**.

We are greatly indebted to many friends and colleagues for stimulating advice and suggestions. In particular we want to thank the members of the Editorial Advisory Board of **Chemoecology** but also *Murray S. Blum* (Athens/GA), *Lincoln P. Brower* (Gainesville/FL), *Thomas Eisner* (Ithaca/NY), *Larry E. Gilbert* (Austin/TX), *Jerrold Meinwald* (Ithaca/NY), *Miriam Rothschild* (Ashton Wold), *Dietrich Schneider* (Seewiesen), *Richard I. Vane-Wright* (London) and others for their encouragement as well as for their readiness to assist **Chemoecology**. Last but not least we owe thanks to *Thieme* for giving us the chance to establish a new journal in our field of research.