Foreword

The consequences of the global changes affecting our planet are not limited to climate change or to changes in composition of the atmosphere. In perturbing all ecosystems, and thereby the species that constitute them, these changes affect all the dynamics of life. These effects in turn have impacts, notably on interactions between species or between individuals of a single species, interactions that are indispensable for the maintenance of communities and ecosystems, in which chemical mediation plays a predominant role.

Chemical ecology can be defined as the art of decrypting this invisible, impalpable chemical mediation that permits living organisms to communicate among themselves within their environment. A great diversity of molecules, ranging from very simple compounds to highly complex mixtures, is involved in organisms' perception of the environment, in communication between individuals, and in the defense mechanisms that have evolved in those interactions that are antagonistic. This scientific domain has successfully reconciled ecology and chemistry, a *tour de force* that has required a resolutely interdisciplinary approach.

Chemical ecology also provides us with a framework to better interpret, extend and use our knowledge about the diversity of natural substances. Researchers are beginning to understand the roles of these compounds in processes of communication in a diverse range of habitats, both aquatic and terrestrial, and between organisms in all the kingdoms of life: animals, plants, fungi, bacteria and archaea. Beyond such fundamental advances in

knowledge, chemical ecology is a source of inspiration for new biosourced applications and helps us conceive of the future ecotechnologies that will be necessary for the resolution of a number of environmental problems.

The research in chemical ecology discussed in this book has been conducted by an internationally recognized, dynamic and original community of French scientists. Chemical ecology has been clearly recognized in recent years as a field that promises to contribute pioneering research, situated at the crossroads of multiple competences shared not only by ecologists and chemists, but also by physiologists, biochemists, ethologists, and ethnologists, among others.

This book will allow the reader to explore the myriad facets of the language of molecules that unites biodiversity and chemodiversity, and thereby discover a new dimension of the living world.

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