Book Reviews

Chemogenomics in Drug Discovery. A Medicinal Chemistry Perspective. Vol. 22 in Methods and Principles in Medicinal Chemistry. Edited by H. Kubinyi and G. Muller (Axxima Pharmaceuticals). Wiley-VCH, Weinheim. 2004. xxiv + 463 pp. 17 × 24.5 cm. $180.00. ISBN 3-527-30987-X.

This multiauthor volume addresses the question, what can the basic science discipline of chemical genomics do for the applied discipline of medicinal chemistry? For the *Journal of Natural Products* audience, the question might also be, how does chemical genomics relate to natural products?

The answer to the first question is, increasingly, quite a lot. When rational drug design emerged several decades ago, it was hampered by a very small knowledge base of protein structures and a limited understanding of how proteins might be perturbed by small molecules. Selection of the target was hit or miss, usually depending on the fortuitous availability of structural information for a given target. This has now changed, in large part due to the advances in understanding the human genome. Thus, chemical genomics can quite properly be turned to practical use. The best examples in this volume are those dealing with kinases. This very large and important family of proteins can be addressed in a systematic fashion by medicinal chemists, since a ligand for one kinase can often lead the way into a ligand for a related kinase. Chapters by Klebl et al. on chemical kinomics and by Buijsman on kinase protein and inhibitor structure illustrate this point well. Other classes of druggable target families that are discussed include ion channels and phosphodiesterases.

Three sections group the 15 chapters by (1) general aspects, (2) target families, and (3) chemical libraries. In the last section there is a chapter by Koch and Waldmann entitled "Natural Product-derived Compound Libraries and Protein Structure Similarity as Guiding Principles for the Discovery of Drug Candidates", which will be of the greatest interest to natural products scientists. Starting from natural products such as nakijiquinone and dysidiolide, which presumably have been elaborated by their source organisms through evolution to interact with specific protein families, the authors discuss them as privileged structures for the design of inhibitors of related targets. The implication is that there are many more natural products awaiting discovery that will interact in a specific fashion with the target of choice. We have only to search them out.

The authors of most of the chapters are by and large nonnative English writers, and the volume would have benefited from more stringent editing for clarity and better word usage. However, the scientific rewards to be found within make the journey worth that modest price.

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Florida Ethnobotany. By Daniel F. Austin (Fairchild Tropical Gardens, Coral Gables). CRC Press, Boca Raton. 2004. 909 pp. 8 1/2 × 11 in. $149.95. ISBN 0-8493-2332-0.

This excellent text is based upon work that the author began in the early 1970s in interactions with indigenous people of the state of Florida. The rationale for this study is the fact that, even though Florida was the first region in the United States to be explored by Europeans, a comprehensive review of the flora has not previously been published. This compilation represents a cross-cultural study of plants that were shared by different people. Details are provided for 888 species of flowering plants that are native to Florida. The introductory material provides a history of Florida and the methods used for this study. Also included in the Introduction is information about Florida's lost ethnobotany, the Florida people, neighboring peoples, Southeastern tribes, Mexico's people, northern South American people, Old World newcomers, and the ethnoflora.

Table 1 (pp 20−41) is provided at the end of the introductory section and lists the scientific name and family of each of the 888 species of plants (from *Abutilon permolle* to *Zornia bracteata*). Summary information of the uses of 813 of these species of plants is provided in Table 2 (pp 42−47). Table 3 (pp 48−49) provides a list of plants for which no known use has been found, while Table 4 (pp 50−52) provides a list of genera within Florida that have related species known to be used in nearby areas.

The main body of this work is devoted to providing more descriptive details in regard to the plant species that have been included in Table 1. For each plant, the scientific name and the common names are provided. In addition, a translation of the common name is given when available. Each of the descriptive sections also provides details in regard to when the Europeans first identified them and how the plant was introduced to Florida. Also, the use of the plants by indigenous people is presented with special emphasis upon how the plant might have been utilized for medical purposes. This text provides a host of references that makes it an invaluable resource for all scientists in the area of natural products and ethnobotanical research and a must buy for all libraries.

The author of this book is to be commended for this excellent work. It is obvious that the effort involved was tremendous, because of the numerous interactions with other scientists and local people that were required to bring this book to press. One can recommend this book without reservation because the author thoroughly researched each piece of information included and even sent portions of the text out to world experts for a review of the accuracy of information. Thus, this book combines a wealth of information gathered locally and forms a comprehensive review of the early literature. I highly recommend this book to scientists and the general public alike,

because not only does it provides botanical information, but it is also an intriguing look at the history of the State of Florida.

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Biopesticides of Plant Origin. Edited by C. Regnault-Roger, B. G. R. Philogène, and C. Vincent (Universitè de Pau et des Pays de l'Adour, Universitè d'Ottawa, and Agriculture et Agro-alimentaire Canada, respectively). Lavoisier, Paris, France. 2005. xxi + 313 pp. 15.5 × 23.5 cm. $136.00. ISBN 2-7430-0675-7.

Prior to the advent of powerful synthetic insecticides, plants and plant extracts were the primary means used to control pests that limited agricultural production or to protect crops once harvested. This was a logical application of such botanical formulations because the raison d'être for biosynthesis of active constituents must be to protect the source plant from insect or fungal attack or to allow it to survive against competitive species. It is somewhat ironic that the major thrust of natural products chemistry at present is to discover constituents with biomedical properties, a peripheral outcome of their inherent bioactivity, rather than to elucidate the role of such compounds in the plant. Nevertheless, the increasing consumer demand for organic crop production in developed countries and problems with expense and distribution of synthetic pesticides elsewhere in the world have combined to create a resurgence of interest in application of biopesticides for crop protection.

This book is the English version of a multiauthor volume, originally published in French, dealing with many of the issues surrounding the identification, mode of action, and application of pesticidal constituents from plant sources. The translation is excellent, but, unfortunately, the opportunity has not been taken to update the chapters or references since the original publication date in 2002. The production quality is excellent, with a very readable typeface and high-grade paper that probably accounts for the relatively high cost. Authorship comprises 34 individuals from nine countries, with France, and to a lesser extent Canada, predominating. The book consists of a preface, foreword, list of contributors, and 17 chapters. A minor annoyance with the layout is that the table of contents does not provide the authorship for each chapter and the chapters themselves, while listing the authors, do not provide their affiliations, necessitating a hunt through three different sections of the book to uncover these details.

The first four chapters are essentially "position papers", dealing with historical aspects of biopesticides, their current potential, and the role of phytochemistry in the discovery and application of botanical pesticides and organic chemistry in capitalizing on lead compounds. While contributing little in the way of new knowledge, these chapters provide a useful overview of the topic, arguing cogently for a search for new compounds with desirable properties such as specificity, selectivity, and biodegradability. These introductory contributions are followed by a series of 11 chapters dealing with specific topics on plant-derived crop protective compounds. Included are synergistic lignans, sulfur compounds from *Allium* and crucifers, toxicity of phytoecdysteroids to phytophagous insects, and the role of phenolic compounds in plant defense. A relatively short chapter on allelopathy is illustrated by the situation with benzoxazolinones. This topic warrants much more attention than has been devoted to it in the current volume because, despite the large amount of research that has been done in identifying allelopathic substances, the promise of such compounds has yet to be realized. A thorough discussion of the reasons for such failure could point the way to new approaches to capitalizing on the phenomenon.

An important chapter deals with the impact of transgenic plant proteins on beneficial insects. Since one of the drawbacks of synthetic pesticides is their effect on desirable insects such as pollinators, the lack of a companion chapter on whether plant biopesticides may be more selective is notable by its absence. Another chapter on molecular targets for odorant receptor suppression agents provides an unconventional approach to the field of pheromone chemistry.

The longest chapter in the book presents a very comprehensive discussion of nematicidal and nematode-resistant plants. Worldwide, nematodes are probably responsible for greater crop losses than any other class of insect pest, and pending bans on conventional nematicides require that ecologically acceptable replacements be found. This chapter discusses the use of nematode nonhost plants from six plant families for crop rotations and a number of plant species suitable for nematode control by soil amendment as plant wastes. While the chapter offers numerous opportunities for research investigation with respect to the identification of active constituents, it is marred by an absence of chemical structures, even though a tabulation of compounds of many different structural types is given. In fact, this paucity is apparent throughout the book, even in some of those chapters where structures are presented. Structures are the language of natural products chemistry—surely they are no more costly to include than other illustrations, tables, or graphs, especially in a relatively expensive book? An absence of structures suggests a fundamental lack of understanding of the relationship between structural features and biological activity.

Two final chapters deal with the criteria for commercialization of botanical insecticides and the use of biopesticides in Africa. The latter, which is labeled as an appendix, is highly appropriate, as it suggests that the

greatest opportunity for application of biopesticides is on that continent, where the availability and expense of conventional synthetic pesticides are prohibitive. This volume is highly recommended as a resource for research groups focused on the identification and application of natural products in the control of agricultural pests.

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