LOCATING SOFTWARE FOR MOLECULAR BIOLOGISTS

***Software Directory for Molecular Biologists: A Complete Guide to the Selection of Computer Software for the Analysis and Management of Molecular Sequences.* By Christopher J. Rawlings. ISBN 0-943818-37-0. $80.00. (MacMillan, London/Stockton, New York: 1986).**

Most molecular biology and biochemistry laboratories spend a great deal of their time collecting and analyzing DNA and protein sequences. Government-funded agencies such as Genbank, The Protein Identification Resource and the European Molecular Biology Laboratory search the literature for new sequences and enter these sequences into large databases. All this activity, both in the laboratory and in the database facilities, requires a great deal of skill in preparing computer software. Considerable effort has been put into the development of commercial software packages designed to provide most of the necessary computer programs and databases to individual research groups. In addition, many laboratories have developed software for their own purposes and have made such software available at a modest cost or no cost to others.

There are two questions which arise, however, in obtaining and using either commercial or noncommercial software. First, how does a laboratory pick one or more sets of programs really suitable for their purposes? Second, is the analysis performed correctly and are the provided data, such as sequence databases, accurate? This book will assist laboratories in solving the first of these two problems.

Rawlings gives a very complete list of the commercial and noncommercial software available, including price, target computer on which it will run, where to obtain the program, types of sequence analysis performed and sequence databases provided. Helpful comments are present when the author has obviously used the software, but very few comments are made overall, leaving most of the program comparison to the reader.

The first part of the book contains a description of general purpose computer methods and software, including information on building and using DNA sequence databases, selecting hardware and using file transfer programs such as KERMIT. The second part is a software directory listed in alphabetical order by name of author or vendor. The final part contains several cross indexes by author, program function, target computer system or programming language used in the software. A list of author and vendor addresses is also given.

These sections are reasonably accurate and up-to-date at the time of publication. Although I would have liked to see more information on setting up computer graphics systems, accessing structural databases, and using additional methods to predict secondary structure of proteins, the book should nonetheless be particularly useful to laboratories with special computing needs, with budget limitations so that they want to obtain inexpensive noncommercial software, or with a need to compare and choose among the more expensive and extensive software packages.

David W. Mount, Ph.D., is professor of molecular and cellular biology at the University of Arizona, Tuscon, AZ.

NEW APPROACHES TO AN OLD PROBLEM

***Innovative Approaches to Plant Disease Control.* Edited by Ilan Chet. Pp. 372. ISBN 0-471-80962-4. $49.95. (John Wiley and Sons, New York: 1987).**

While plant disease has always been with us, an understanding of the complex interactions between plants, pathogens, and microorganisms in the environment is just beginning to emerge. In natural plant communities, systems of checks and balances evolved over time between plants and microorganisms. These systems have been upset by human intervention in the form of agriculture, sometimes resulting in a pathogen gaining the upper hand and the development of plant disease epidemics. *Innovative Approaches to Plant Disease Control*, a volume in the Wiley Series in Ecological and Applied Microbiology, is a collection of articles that addresses three approaches to disease control: Biological control, induced plant resistance, and molecular manipulation of plant genes for improved resistance to pathogens. Much of this work is in its infancy, and a number of chapters are fairly speculative, drawing on work in related fields. Some of the chapters provide a general review of one of the above topics, such as the editor's contribution on the use of *Trichoderma* as a biological control agent. Cook and Weller's chapter on the management of Take-all disease of wheat and barley is an excellent review of a classic disease suppression story, including discussions of inoculum potential and microbial competition as they relate to this disease. The chapters on soil solarization (Katan), fluorescent Pseudomonads (Schippers, Lugtenberg and Weisbeek), biochemical responses of plants to pathogens (Hahlbrock and Scheel), and control of plant viruses (Dunez) are also excellent overviews.

The majority of the chapters in this volume deal with biological control systems. Most of the better-known biological control agents are covered, and several authors explore the mechanisms whereby these agents help protect plants against disease. There are also a number of discussions of the practical applications of biological control agents, although it becomes clear upon reading these articles that a great deal more work is needed before most of these methods can be used routinely to control disease. Improvement of these agents by genetic manipulation is addressed in several instances, but again, this type of work is just beginning. The chapter by G. Papavizas provides a glimpse of the possibilities for genetically manipulating biocontrol fungi, but utilizes examples from genetic engineering of industrial strains of fungi such as *Neurospora crassa* and *Aspergillus nidulans*. Practical considerations of strain selection and characterization, inoculum production and scale-up, and formulation are described in I. Chet's chapter on *Trichoderma*.

The remaining chapters relate to the role played by plants in plant-pathogen interactions and the potential for genetically manipulating plants to improve resistance to dis-