

Book Reviews

Computer Games and Simulation for Biochemical Engineers

HENRY R. BUNGAY

John Wiley and Sons, Chichester, 1985, pp. 185, £25

This book covers computer simulation and teaching games for biochemical engineers and others interested in biological processing. The author has many years of experience in their use for teaching. His FERMT game, which simulates a batch fermentation, was published in 1971 and stimulated many others to use computers for teaching and in some cases to write their own programs.

While it is possible to convey to students an understanding and knowledge of much of biochemical engineering by lectures, it is difficult to give them a feel for the various interactions that occur between operating conditions and process behaviour and performance. Although this can be achieved through experimental work, the equipment required is expensive and students' time for this is inevitably limited. The strength of computer simulation is that it can give at least some understanding of these inter-

actions rapidly and inexpensively, and should it now be an integral part of any teaching course on biochemical engineering.

For anyone who is not familiar with computer simulation, this book is an excellent introduction. There are sufficient programs, in either BASIC or FORTRAN, to get someone started and in the various chapters there are many other suggestions and outlines of programs to encourage the reader to develop his interest further. These include programs on batch and continuous culture, sterilization and downstream processing. There are many useful references at the end of each chapter. Information on how to obtain some programs not listed is also given.

The book is the first of its kind and will be a useful addition to any library collection on biochemical engineering and biotechnology. It is a pity that the publishers could not have produced the book at a lower price to encourage its purchase by students.

M. D. LILLY

Immune Modulation Agents and their Mechanisms

R. L. FENICHEL and M. A. CHIRIGOS (Editors)

Marcel Dekker Inc., New York and Basel, 1984, pp. 678, \$99.50

This book consists of 31 articles written by 70 scientists working in the field of biological response modifiers. It provides concise reviews of the accumulated experimental evidence for immunomodulation and describes the clinical effects of many of these materials. In spite of the undoubted advances that have been made since the early, empirical descriptions of immune modifiers, the whole area is still typified by a lack of solid clinical evidence supporting their use. Inevitably this is reflected in this volume where much of the emphasis is placed on the prospective use of these agents, particularly in patients with some form of defined immunological imbalance, and rather less on the ambiguities and inconsistencies that have for so long been a feature of this work.

The first section considers the immune effects of biological response modifiers *in vivo* and *in vitro* with descriptions of animal experiments, isolated cell-culture techniques and, where appropriate, the preliminary results of clinical trials. Included are reviews on a number of chemically defined organic compounds such as tilorone, diethyl-dithiocarbamate and isoprinosine and there is a valiant attempt by Berd, Maguire and Mastrangelo to convince us of the utility of cytotoxic agents as immunopotentiators. The section on natural products and low-molecular-weight compounds describes familiar materials including tuftsin, 'a stimulator of all known functions of the macrophage', *Corynebacterium parvum* and various thymic extracts, and there is a chapter on the immunosuppressive effects of cyclosporin, one of the few materials that seems well on the way to fulfilling its early potential. The final chapters

in this section examine the effects of immunomodulating agents in tumour and metastatic disease and there is a particularly informative account by Freundlich and Zurier on their use in autoimmune and degenerative conditions.

In the second part of the book, various mechanisms by which biological response modifiers are believed to affect immune cell activity are discussed and the way in which the use of immunomodulators has developed in parallel with our knowledge of the immune system is rightly stressed. Detailed chapters on materials including levamisole, lentinan, glucan and muramyl dipeptide are interspersed with reviews of their effects on antibody production, the induction of soluble mediators such as interferon and the generation of cell cytotoxic responses. The concluding chapters deal with endocrine regulation of immunity, the activity of steroids and thymosin, and the role of prostaglandins and cyclo-oxygenase inhibitors as modulators of cell function.

Unfortunately there is considerable overlap between chapters, and the attempt to marry articles on basic immunology with descriptions of the clinical and experimental effects of biological response modifiers is not always successful. The ten-page index is too short for a book of this length and is inadequately cross-referenced. Natural killer cells, for example, do not warrant an entry in their own right despite being referred to by over half the authors. Despite these limitations, this book does provide a useful review of the current evidence in favour of the use of modulating agents in immunotherapy, and although perhaps of little relevance to specialist biochemists, it should be of general interest to clinicians, pharmacologists and immunologists.

R. M. COOK

The computer program can be considered an Intelligent Tutoring System (ITS) for the domain of Mathematical modelling and Simulation (MMS) of Food production (FP). The ITS has the goal of training new engineers in the complex task of modelling food production and then performing the right simulations to obtain the dynamical behaviors of the biochemical system. Food production is the resu. Institute of Computer Science and Technology. Institute of Metallurgy, Mechanical Engineering and Transport. Institute of Advanced Manufacturing Technologies. Institute of Applied Mathematics and Mechanics.Â Game Design: 3D Character Animation. Ask a question. Computer Modeling and Simulation for Engineers (Polytech â€“ UNED). 06 â€” 17 JULY, 2020.Â Introduction in Object-Oriented Modeling is based on two courses Â«Modeling and Simulation with Modelica for engineersÂ» (prof. Alfonso Urguia, Spain) and Â«Rand Model Designer for beginnersÂ» (prof. Yuri Senichenkov, Russia) developed for InMotion Project. Modelica and Model Vision Language are object-oriented, equation based modeling languages for modeling and simulation complex dynamical systems. Offline Computer â€“ Download Bookshelf software to your desktop so you can view your eBooks with or without Internet access. Learn More about VitalSource Bookshelf Â». Bookshelf Online Browser version support Â». System requirements for Bookshelf for PC, Mac, IOS and Android etc. Â»Â "A thorough book on modeling and simulation for different engineering fields that is augmented by case studies from a wide range of applications." â€”Jadran Vrabec, Mechanical Engineering, University of Paderborn, Germany. "The strength of the book is the diversity of topics covered starting with models based on simple laws and conservation laws illustrated for multiphase systems without and with reaction. â€”