

BOOK REVIEWS

The Biology and Medicine of Signal Transduction. Advances in Second Messenger and Phosphoprotein Research, Vol. 24. Series edited by P. GREENGARD and G. A. ROBISON. Volume edited by Y. NISHIZUKA, M. ENDO and C. TANAKA. Published 1990 by Raven Press, New York. No. of pages: 784. ISBN: 0-88167-670-5. Price at June 1990: US \$119.

This volume is the *Proceedings of the 7th International Conference on Cyclic Nucleotides, Calcium, and Protein Phosphorylation*, held in Kobe, Japan, on 8–13 October 1989.

One of the most important current topics in biology and medicine is that of intracellular signal transduction. The chapters in this volume cover many of the areas under intensive study and rapid development, such as the structure and modulation of various receptors and ion channels, receptor and effector coupling, generation and action of second messengers, cross-talk between various signalling pathways, gene expression and cell cycle control, and regulation of growth and differentiation.

Both chapters of general appeal and those covering specific research topics within a particular area have been included. As such, this book will be useful to all scientists interested in the mechanisms by which external signals are transmitted to the interior of cells, eventually leading to the processing and regulation of a variety of physiological and pathological cellular responses.

This volume will be particularly useful and interesting for people working in the fields of molecular biology, biophysics, biochemistry, biology, and physiology, as well as for advanced students.

Membrane Technology. Serono Symposia Publications from Raven Press, Vol. 64. Edited by R. VERNA. Published 1989 by Raven Press, New York. No. of pages: 168. ISBN: 0-88167-510-5. Price at May 1990: US \$79.50.

The use of biological systems has been known for centuries and applied to the chemistry of fermentation to produce beer, wine and milk derivatives. Only recently this technology has been directed towards the industrial preparation of antibiotics and enzymes for detergents.

Today, due to innovative techniques and the progress in basic knowledge of molecular biology and immunology, biotechnology is involved in an increasing number of applications. The most important new technologies which include genetic material manipulation, the generation of monoclonal antibodies and the manipulation of bacteria and animal cells have determined the present quality standards in the utilization of biological systems and confer to biotechnology a leading position in medicine.

Great importance is devoted, in this latter field, to the technology of plasma membranes which not only contain the cellular material but also regulate the communications of each cell with the rest of the body.

This book would be useful for people working in the fields of molecular biology, biophysics, biochemistry, biology, and physiology, as well as for advanced students.

Activation of Hormone and Growth Factor Receptors: Molecular Mechanisms and Consequences. NATO ASI (Advanced Science Institutes) Series, Series C: Mathematical and Physical Sciences, Vol. 295. Edited by M. N. ALEXIS and

C. E. SEKERIS. Published 1990 by Kluwer, Dordrecht, Netherlands. ISBN: 0-7923-0573-6. Price: US \$99; £63; DFI 190.

This volume contains the Proceedings of the NATO Advanced Research Workshop: *Activation of Hormone and Growth Factor Receptors: Molecular Mechanisms and Consequences* held in Nafplion, Greece, 25–30 September 1988.

The following main topics are covered:

- Signal transduction and control of cell proliferation and differentiation;
- The role of oncogene activation;
- Steroid receptors and transcriptional control;
- Structure and function of steroid receptors;
- Clinical implications of steroid receptor research.

This book would be useful for people working in endocrinology, molecular endocrinology, oncology, biology, molecular biology, biophysics, biochemistry, and physiology, as well as for advanced students.

Growth Factors—From Genes to Clinical Application, Karolinska Institute 17th Nobel Conference, Stockholm, 1989. Edited by V. S. SARA, K. HALL and H. LOW. Published 1990 by Raven Press, New York. No. of pages: 283. ISBN: 0-88167-627-6. Price at April 1990: US \$132.

Although the existence of growth-promoting factors in serum and tissue extracts has been recognized since the turn of the century, it was not until the 1970s that growth factors were isolated and characterized. The first two to be characterized were nerve growth factor (NGF) and epidermal growth factor (EGF). Rita Levi-Montalcini and Stanley Cohen were awarded the Nobel Prize in physiology or medicine in 1986 for their discovery of these two growth factors. At the first Nobel symposium on growth factors in 1974, the structures of both EGF and NGF were described. No other growth factor had as yet been characterized. The insulin-like growth factors (IGFs) were still not chemically characterized but could be quantitated by various assay techniques. The IGFs held great promise for clinical diagnostic and therapeutic applications. However, it was not until four years later that the primary structures of the IGFs were determined. Also in 1974, the terms platelet-derived growth factor (PDGF) and fibroblast growth factor (FGF) were heard for the first time, and the existence of additional growth factors with divergent biological activities was raised.

In this volume, four major areas of growth factor research are presented:

1. The characterization of growth factor genes and their protein products;
2. Growth factor receptors and signal transduction by the receptors to mediate biological action;
3. The biological actions of the various growth factors;
4. The role of growth factors in health and disease and their possible clinical application.

The topics covered include the following:

- Structure of the IGFs and their variants;
- Isoforms of PDGF receptor types;
- Tyrosine kinase activation;