

## BOOK REVIEWS

**Structure and Function of Nucleic Acids and Proteins.** Edited by F. Y.-H. WU and C.-W. WU. Published 1990 by Raven Press, New York. No. of pages: 352. ISBN: 0-88167-678-0. Price at Dec. 1990: \$102.00.

This book contains the proceedings of an international symposium held at the Institute of Biomedical Sciences, Taiwan, Republic of China, in 1989 and covers recent advances in basic and clinical research in the very important field of nucleic acids and proteins.

The chapters are included under the following main topics:

- Structure of nucleic acids and proteins.
- Nucleic acids and protein interactions.
- Transcriptional regulatory mechanisms.
- DNA replication and viral gene expression.
- Gene expression in various systems.

Advanced techniques and methodologies, such as X-ray crystallography and two-dimensional NMR spectroscopy, have played a major role in structural studies, and progress in chemical and biochemical synthesis as well as recombinant DNA technology have been instrumental in providing the necessary material for high-resolution studies of nucleic acids and proteins.

This volume would be very useful for biochemists, biophysicists, molecular biologists, physiologists, virologists and geneticists, as well as for advanced students in this field.

**Advances in Second Messenger and Phosphoprotein Research,** Vol. 23. Edited by P. GREENGARD and G. A. ROBISON. Published 1990 by Raven Press, New York. No. of pages: 300. ISBN: 0-88167-687-X. Price at Jan. 1991: \$131.50.

This volume contains invited reviews by leading authorities on basic aspects and physiological applications of signal transduction research. It includes an in-depth study of protein phosphatases and detailed analyses of the structure, function, and regulation of two multipotential serine protein kinases, casein kinase I and II. A review of signalling mechanisms in micro-organisms: common themes in the evolution of signal transduction pathways, reflects the increasingly sophisticated understanding of how cell regulatory mechanisms have evolved in lower organisms. Other contributors present recent findings on transmembrane signal transduction pathways in *Dictyostellium* and examine the regulation of ciliary motility in *Paramecium* by calcium and cyclic nucleotides.

The timely information presented in this volume is of vital interest to pharmacologists, cell biologists, endocrinologists, biochemistry, physiologists, as well as advanced students in this field.

**Endocrine Hypertension.** Comprehensive Endocrinology series. Edited by E. G. BIGLIERI; associate editor: J. C. MELBY. Published 1990 by Raven Press, New York. No. of pages: 298. ISBN: 0-88167-587-3. Price at Dec. 1990: \$119.00.

Endocrine hypertension is, with certain notable exceptions, adrenal hypertension. The pathophysiology of arterial hypertension associated with hyperparathyroidism and acromegaly is not sufficiently understood to be included in this volume. Endocrine hypertension is a relatively new discipline that did not exist as an organized body of knowledge until the 1950s. Prior to that time, the original descriptions of pheochromocytoma in 1927 and Cushing's syndrome in 1932 constituted endocrine hypertension, although it was known that deoxycorticosterone (DOC) could produce high blood pressure. The "single hormone" hypothesis that one hormone secreted by the adrenal cortex had both mineralocorticoid and glucocorticoid activity was rapidly dismissed by the discovery of aldosterone by James and Sylvia Tait in the mid-fifties. It is fitting that the first chapter of this volume is written by Professor and Mrs Tait and provides us with fascinating detail of the scientific circumstances which led to their landmark discovery. Within a year of the Tait's pioneering works, Jerome Conn described primary aldosteronism. About the same time, the hypertensive form of congenital adrenal hyperplasia was recognized; the  $11\beta$ -hydroxylase deficiency type. Originally, the cause of the hypertension was not clear. However, within several years, DOC was established as the hypertensive mineralocorticoid.

The following chapters are contained in this book under three main topics:

- A decade (and even more) of aldosterone and other adrenal steroids.
- Rat models of experimental hypertension: their adrenocortical components.

### The Adrenocortical Zona Glomerulosa Hormones

- Primary aldosteronism.
- Dexamethasone-suppressible hyperaldosteronism.

### The Adrenocortical Zona Fasciculata Hormones.

- Cushing's syndrome: diagnostic evaluation.
- Hypertension of Cushing's syndrome.
- $17\alpha$ -Hydroxylase deficiency: implications on steroidogenesis.
- $11\beta$ -Hydroxylation deficiency.
- The hypertension of apparent mineralocorticoid excess (AME) syndrome.

- The syndrome of hyperdeoxycorticosteronism.
- 19-Nor-deoxycorticosterone in genetic and experimental hypertension in rats and in human hypertension.
- Androgen- and estrogen-producing adrenocortical tumors causing hypertension.

**The Adrenomedullary Hormones: Pheochromocytoma.**

- Pheochromocytoma from the biochemical, pharmacokinetic, and pathophysiologic point of view.
- Localization of functioning sympathoadrenal lesions.
- Atrial natriuretic peptide (ANP) in human hypertension.

This book would be very useful for general clinicians, cardiologists, physiologists, and advanced students.

**The Thyroid Gland.** Comprehensive Endocrinology series. Edited by M. A. GREER. Published 1990 by Raven Press, New York. No. of pages: 608. ISBN: 0-88167-668-3. Price at Dec. 1990: \$119.00.

This book covers in detail areas of current interest including the development, structure and function of the thyroid, its regulation by and interaction with the nervous and immune systems, the metabolism and cellular interactions of thyroid hormone, the relative merits of clinical tests of thyroid function, and contemporary concepts of the etiology, pathogenesis, and treatment of common thyroid diseases. It provides in-depth critical reviews of recent breakthroughs in the understanding of the thyroid, as well as the clinical evaluation and management of thyroid disorders, the embryology, phylogeny, anatomy and physiology of the thyroid gland and the biochemistry of thyroid hormone formation and secretion. A detailed analysis of the regulation of thyroid function highlighting current concepts of thyrotropin-releasing hormone and the immune system is also included. There is an extensive section on extra-thyroidal hormone metabolism and thyroid hormone action including the latest research on plasma transport of thyroid hormone, cellular transport systems regulating thyroid hormone bioactivity, deiodination and conjugation in the hepatic metabolism of thyroid hormone, identification and structural analysis of thyroid deiodinases, and structure and mechanisms of action of thyroid hormone receptors. Other contributors discuss current approaches to diagnosis and management of nontoxic goiter, hyperthyroidism, hypothyroidism and thyroid cancer.

The chapters are gathered under three main headings:

- Control of thyroid function.
- Extrathyroidal hormone metabolism and thyroid hormone action.
- Diseases of the thyroid.

This volume will be valuable to anyone interested in a more complete understanding of the thyroid gland than is available in standard introductory texts, in particular to the basic scientist and clinician, as well as to pathologists and advanced students.

**The Endocrine Pancreas.** Comprehensive Endocrinology series. Edited by E. SAMOLS. Published 1990 by Raven Press, New York. No. of pages: 554. ISBN: 0-88167-722-1. Price at Jan. 1991: \$150.00.

This volume is a unique compendium of the latest information about the endocrine pancreas in mammals, including man, covering the structure of the endocrine pancreas; the physiology and pathophysiology of islet hormone synthesis and secretion; neural, hormonal, and metabolic regulation of the endocrine pancreas; immunologic factors in the pathogenesis, diagnosis, and treatment of insulin-dependent diabetes mellitus; and improved methods of pancreatic transplantation. The studies presented support the emerging view of the endocrine pancreas as a co-ordinated organ rather than a collection of individual cells in islets scattered throughout the exocrine pancreas.

The chapters are collected under four main headings:

- Structure of the endocrine pancreas;
- Hormone synthesis and secretion—normal physiology and pathophysiology;
- Regulatory mechanism—neural, hormonal, and metabolic;
- Prognosis and therapy when the endocrine pancreas decompensates.

A description of the anatomy of the islets of Langerhans is followed by a detailed analysis of the anatomy of islet innervation, with remarkable illustrations showing immunostained islets, nerves, and ganglia. The section on hormone synthesis and secretion includes studies on the biosynthesis of glucagon, the heterogeneity of islet hormones, and the many "novel" islet peptides other than insulin, glucagon, and somatostatin, as well as seminal research work on the metabolism of nutrients in islet cells, the key metabolic regulatory mechanisms in insulin secretion, abnormal glucagon secretion in diabetes, pancreatic islet abnormalities in the hypoglycemias, and insulin secretory abnormalities in non-insulin-dependent diabetes mellitus. Other chapters explain the significance of intra-islet and islet-acinar portal systems for metabolism and describe the functioning of the endocrine pancreas during pregnancy.

Important studies examine the influence of the intestine and central nervous system on the endocrine pancreas, analyze the regulation of pulsatile islet hormone secretion, and show that the major long-term clinical action of the sulfonyleureas is achieved through their effects on the pancreatic islets. A discussion of counterregulation when the endocrine pancreas is defective sheds new light on the cause of hypoglycemia during insulin therapy. Also included are new findings on the adverse effects of hyperglycemia on the islets and on phospholipid-derived regulators of insulin secretion.

The section on prognosis and therapy of diabetes mellitus highlights the value of autoantibodies as markers for identifying individuals at risk for insulin-dependent diabetes mellitus and demonstrates that the immunogenicity of isolated islets can be altered *in vitro* prior to transplantation. Full consideration is given to the applications, problems, and promise of the artificial pancreas and the benefits of pancreatic transplantation. The book also presents experimental and clinical data on new methods of islet isolation and transplantation.

This volume would be very useful for endocrinologists, physiologists, and diabetologists, as well as for advanced students.