

**Cell Separation Science and Technology.** [*ACS Symposium series*, No. 464]. Edited by D. S. KOMPALA and P. TODD. Published June 1991 by the American Chemical Society, Washington. No. of pages: 302. Price 1992: \$69.95. ISBN: 0-8412-2090-5.

Large populations of separated cells are needed for many applications in biotechnology and biomedicine, including biochemical study, product analysis in nonclonogenic cells, selection of fused cells, isolation of rare cell types for cloning, preparation of pure cells for transplantation, and bioreactor maintenance. Any cell type that has limited or no proliferative capabilities but is needed in pure form must be separated by a technique that provides adequate purity, adequate yield, adequate relationship to cell function and adequate function after separation.

Optical sorting, inertial methods (sedimentation and field-flow fractionation), affinity-based methods (adhesion, extraction, field-flow, and magnetic), and electrophoresis are the four principal modern methods of cell separation. Approximately 99% of all cell separations are performed in a centrifuge as part of a research experiment. Other methods, such as magnetic separation, affinity adsorption (panning), electrophoresis, and single-cell selection, have existed for at least 50 years. However, only recently has the demand for large populations of separated cells in biotechnology and biomedical applications needed the development and application of a wider variety of methods. Biotechnology and biomedicine have now become significant activities in industrial and engineering chemistry. This book covers nearly all the methods now used in the separation of living cells, included in the following chapters:

- separation of living cells;
- high-resolution separation of rare cell types;
- rare-earth chelates as fluorescent markers in cell separation and analysis;
- automated cell separation techniques based on optical trapping;
- separation techniques used to prepare highly purified chromosome populations: sedimentation, centrifugation, and flow sorting;
- separation of cells by sedimentation;
- high-capacity separation of homogeneous cell subpopulations by centrifugal elutriation;
- cell separations using differential sedimentation in inclined settlers;
- separation of cells by field-flow fractionation;
- separation of cells and measurement of surface adhesion forces using a hybrid of field-flow fractionation and adhesion chromatography;
- high-capacity cell separation by affinity selection on synthetic solid-phase matrices;
- factors in cell separation by partitioning in two-polymer aqueous-phase systems;
- population heterogeneity in blood neutrophils fractionated by continuous flow electrophoresis (CFE) and by partitioning in aqueous polymer two-phase systems (PAPS);
- separation of lymphoid cells using combined countercurrent elutriation and continuous flow electrophoresis;
- comparison of methods of preparative cell electrophoresis;
- separation of small-cell lung cancer cells from bone marrow using immunomagnetic beads;
- analytical- and process-scale cell separation with bioreceptor ferrofluids and high-gradient magnetic separation.

This book would be useful for people working in the fields of biochemistry, biology, histology, cell culture, and molecular biology.

**Endocrine-dependent Tumors.** K.-D. VOIGHT and C. KNABBE, Eds, *Comprehensive Endocrinology series*. Edited by L. MARTINI. Published 1990 by Raven Press, New York. No. of pages: 260. Price as of August 1991: \$162.50. ISBN: 0-88167-721-3.

The clinical importance of endocrine-dependent tumors like breast and prostate cancer is very well known because of the high frequency with which they occur and the poor prognosis. It was only in the middle of our century, however, that Charles Huggins published his famous articles on the effect of androgen withdrawal in the growth of human prostatic carcinoma, thus providing the first insights into hormone action. The therapeutic principles derived from these early observations still represent the basis for treatment of hormone-dependent cancer. With the advances of cellular and molecular biology during the last decade, newer and deeper insights have been obtained into how steroids regulate the growth of malignant cells. It can be expected, therefore, that better strategies for prevention, diagnosis, and cure of these diseases will be available before the turn of the millennium. Given this situation, it seems necessary to compile the present knowledge in this field. Consequently, various experts from different countries have reviewed the current state-of-the-art, with particular emphasis on important and promising new developments in epidemiology, basic research, and clinical application in breast, prostate, endometrium, and renal and bladder carcinoma. Shorter contributions concern questions of special scientific and clinical impact. In all chapters, significant attention has been paid to the biology, i.e. the relevance of the data obtained both for tumor growth and patient care.

This book would be useful for clinicians, researchers in biology, molecular biology, and endocrinology, as well as for advanced students.

**Hyperlipidaemia in Practice.** DAVID GALTON and WILHELM KRONE. Published 1991 by Gower Medical Publishing, Philadelphia. No. of pages: 128. Price at publication: \$49.95. ISBN: 0-397-44762-0.

This book describes some of the practical problems that arise when managing patients with lipid disorders, and sets out the theoretical background to the subject. It provides an introduction for those wanting to learn about this complex and often confusing area of clinical medicine. The use of an atlas approach was designed to get away from the intricate terminology that has grown up around the subject and to avoid a text interspersed with long lists of abbreviations. Whenever possible, pictures of clinical cases are presented and diagrams have been made as simple as possible by omitting unnecessary detail.

The following chapters are included:

- the chemistry of lipids;
- inherited defects of lipid metabolism;
- epidemiology of blood lipids and atherosclerosis;
- complications of hyperlipidaemia in the eye;
- complications of hyperlipidaemia at the arterial wall;
- secondary hyperlipidaemias;
- therapy;
- intervention trials;
- the lipid clinic.

This book would be useful for biologists, molecular biologists, and endocrinologists, as well as for advanced students.

**The Physiology of Reproduction, Volumes 1 and 2** (2-volume set), Second Edition. Editors-in-chief: E. Knobil and J. D. Neill, Associate Editors: G. S. Greenwald, C. L. Markert and D. W. Pfaff. Published December 1993, Raven Press, New York. Price: US\$454.00. No. of pages: 2750. ISBN: 0-7817-0086-8.

The revised, updated second edition of this classic work is a masterful distillation of breakthrough research on mammalian reproductive physiology. Among its nearly 100 contributors are many of the investigators directly responsible for the field's spectacular progress in recent years. Topics throughout the second edition have been added, condensed, expanded, or completely revamped to reflect new findings on reproductive physiology, endocrinology, and reproductive behaviour.

The 6 years that have elapsed between the first and second editions have seen dramatic and often unanticipated developments in some aspects of reproductive biology, with only little new understanding in others. But, as expected, the quantity and difficulty of the questions raised has increased manifold. We remain markedly ill-informed of the complex control systems that govern reproductive processes and surprised by the striking species differences in the accomplishment of common, fundamental reproductive tasks. The control of ovulation, the advent of puberty, and the initiation of parturition are but three cases in point.

The second edition provides extensive coverage of new research techniques and instruments; recent studies of interactions between hormones and genes; new findings on the structure of receptors; and newly identified endocrine and paracrine substances such as endothelins, interleukins, activins, inhibins, and prorenin. Included are accounts of the latest attempts to elucidate the neural mechanism underlying pulsatile secretion and identify the elusive pulse generator in the central nervous system. Close attention is also given to clinical advances, especially in manipulation of male and female reproductive systems to enhance or inhibit fertility. The main sections included are: *Volume 1*: the gametes, fertilization and early embryogenesis; the reproductive systems; the male; the pituitary and the hypothalamus; *Volume 2*: reproduction behavior and its control; reproductive processes and their control.

This two-volume set would be very useful for those working in the fields of physiology, reproduction, endocrinology, paediatrics, biochemistry, and biology, as well as being a very good textbook for advanced students.

**Major Advances in Human Female Reproduction.** Edited by E. Y. Adashi and S. Mancuso. Sero Symposia Publications from Raven Press, Volume 73. Published August 1991, Raven Press, New York. Price at publication: US\$122.50. No. of pages: 426. ISBN: 0-88167-652-7.

Research in the field of human reproduction is a rapidly expanding branch of modern biology and medicine. Starting from classical concepts of endocrinology, the regulation of the mechanisms involved in the control of female reproductive function have been extensively investigated but they still remain incompletely understood. Developments in molecular and cellular biology, as well as major technological advances have led, however, to a better understanding of these processes and to a more timely application in the clinical practice of new concepts derived from basic studies, thus the linkage between basic and clinical events has become closer. This volume represents the *Proceedings of the International Symposium on Major Advances in Female Reproduction* held in Rome, Italy, in May 1990 and includes the following topics: puberty (pubertal development, neuroendocrine and paracrine events, external-related factors, pathophysiological aspects and clinical management), the follicular function (endocrine and paracrine regulation, inhibitors and stimulators), the corpus luteum (pulsatile secretion of hormones, factors modulating synthesis or function), achievements in neuroendocrinology, and female hyper-androgenism (pathophysiological events involved, and clinical management from a multidisciplinary approach).

This book would be useful for those working in the fields of gynecology, reproduction, endocrinology, biology and clinics, as well as for advanced students.

**The New Biology of Steroid Hormones.** Edited by R. B. Hochberg and F. Naftolin. Sero Symposia Publications from Raven Press, Volume 74. Published July 1991, Raven Press, New York. Price at publication: US\$131.50. No. of pages: 376. ISBN: 0-88167-653-5.

This volume contains the proceedings of a Sero Foundation Symposium held in Budapest, Hungary, in 1990.

In 1957, Elwood Jensen synthesized carrier free 6,7-<sup>3</sup>H-labelled estradiol, which allowed him to demonstrate that estradiol was concentrated in estrogen sensitive tissues against a blood gradient. This important discovery permitted experiments that shed light on the mechanism by which steroid hormones acted and thus the estrogen receptor was discovered. Later studies with other <sup>3</sup>H-steroids uncovered a common mechanism involving what is now known as the steroid/thyroid/vitamin receptor superfamily, and the role of steroid receptors in the activation of genomic transcription has been the subject of many recent meetings and publications. This volume presents extensive studies of newly discovered mechanisms of steroid hormone action that modulate the effects of these hormones independently of, or in addition to, classical steroid hormone receptor mechanisms. A major focus of the book is the ways in which the metabolism of the steroid molecule can modulate the hormonal signal. Important studies describe the metabolic pathways that transform steroid hormones into carcinogens and the effects