

Control of the Thyroid Gland: Regulation of its Normal Function and Growth. Advances in Experimental Medicine and Biology, Vol. 261, Edited by R. EKHOLOM, L. D. KOHN and S. H. WOLLMAN. Published 1989 by Plenum Press, New York. No. of pages: 416. ISBN: 0-306-43380-X.

This volume presents the proceedings of the *Symposium on the "Control of the Thyroid Gland; Regulation of its Normal Function and Growth"* held at the National Institutes of Health, Bethesda, MD on 20–21 March 1989.

The motivation for the organization of this symposium was the fast development in recent years of the understanding of the regulation of the thyroid—and the progress in the field of cell regulation in general—which have led to profound modifications of the view of the control of the thyroid. Not so many years ago the thyroid was thought to be controlled by one regulator, the pituitary TSH, which with cyclic AMP in the role of second messenger was considered to express or regulate most or all processes in the gland. In the last several years it has been well documented that hormones other than TSH and various growth factors are involved in thyroid growth control and it has been increasingly clear that several hormones and neurogenic agents are obligate participants in the regulation of thyroid function. In addition, not only new agonists acting on the thyroid have been revealed, but new transducer and second messenger systems have been discovered. In particular the interest has been—and is—focused on the signals emanating from the hydrolysis of the inositol phospholipids, comprising the inositol trisphosphate/ Ca^{2+} pathway and the diacylglycerol/protein kinase C pathway. Since these new signal systems must be coordinated with the "old" systems, the regulatory network has become very complex. Parallel with the development of these new areas in the field of thyroid regulation the understanding of the TSH system has been modified and essentially improved with respect to the pituitary–thyroid interrelation, the structure and function of TSH and of its receptor.

The proceedings deal with almost all aspects of thyroid regulation and summarize the current state of understanding of this biologically and clinically important issue. The main sections are as follows:

- The pituitary–thyroid axis;
- Thyroid regulators: neurogenic agents, hormones, iodide;
- Signals and transduction;
- Regulation of growth and function.

This book would be useful not only to thyroidologists and endocrinologists in general, but also to clinicians, biologists, and people working in other fields who are interested in cell regulation.

DNA–Protein Interactions in Transcription. UCLA Symposia on Molecular and Cellular Biology, Vol. 95. Edited by J. D. GRALLA. Published 1989 by Liss, New York. No. of pages: 350. ISBN: 0-8451-2694-6.

This volume is the result of a symposium entitled "*DNA–Protein Complexes in Transcription*", held at Keystone, Colorado, on 4–10 April 1988. When planning first began in 1986, it was anticipated that a meeting of modest size would be held, presenting a broad view of a specialized topic. At that time, very few eukaryotic transcription factors had been isolated, and little was known about them. The phenomenon of transcriptional control at a distance seemed to be restricted to eukaryotic genes, and there was little experimental support for proposed mechanisms of action at a distance. Hints were just beginning to emerge that DNA was more flexible than had been thought and that this might have implications for its recognition by control proteins. Gene activation mechanisms in general were obscure, and

critical details were missing even from the well-characterized *Escherichia coli* systems. It seemed like an excellent time to bring together experts in eukaryotic and bacterial systems, ranging from biologists to physicists, to exchange ideas and results.

By the time of the meeting in 1988, the field of study had changed almost beyond recognition. This is reflected in the articles in this volume which discuss aspects of the mechanism of action of dozens of transcription factors. Such enormously important details as which factors direct tissue-specific transcription, how some factors cooperate during transcriptional activation, how they can act over long distances via DNA looping, and how some bind DNA at the atomic level are now known. That all of this could have happened over a two-year period is remarkable and a testament to the health and vigor of the international research community.

The book is divided into the following main sections:

- Prokaryotic transcriptional control:
 - Repression,
 - Activation;
- Factors in eukaryotic transcription:
 - mRNA,
 - Stable RNA;
- Mechanisms in eukaryotic transcription;
- Chromatin.

This book would be very useful for geneticists, chemists, biochemists, molecular and cellular biologists, microbiologists, and immunologists.

Establishing a Successful Human Pregnancy, Serono Symposia Publications from Raven Press, Vol. 66. Edited by R. G. EDWARDS. Published 1990 by Raven Press, New York. No. of pages: 300. ISBN: 0-88167-512-1. Price: \$79.50.

This book presents the proceedings of a conference held in Cambridge to honour the work of Patrick Steptoe who died in 1988 after a long and distinguished career in obstetrics and gynaecology. Its constituent papers reveal the astonishingly rapid advances in our understanding of many fundamental events in reproductive physiology and embryology, and their current application in clinical medicine. Paradoxically, they also show how much remains to be discovered to help patients with infertility or the threat of conceiving children with inherited disease, and how much remains to be discovered about conception and the initial stages of embryonic growth.

The following chapters are included:

- Introduction: A tribute to Patrick Steptoe;
- Ovulation, fertility and infertility: lessons from basic research;
- Clinical use of LHRH agonists;
- Gonadotrophins of the menstrual cycle and implantation;
- Follicular growth to ovulation;
- The endocrinology and paracrinology of the ovary;
- The induction of oocyte maturation in mammals;
- Biochemical changes in the fertilizing spermatozoon;
- Biochemistry and functions of mouse zona pellucida glycoproteins;
- Fertilization mechanisms in animals and man: current concepts;
- The cytoskeleton of the oocyte: its role in the generation of normal and aberrant pre-embryos;
- The environment of the preimplantation embryo;
- Induction, gene activation and embryonic differentiation;
- Mechanism and consequences of genomic imprinting for development and genetic disorders;
- Preimplantation diagnosis by biochemical or DNA microassay in a single cell;

- Secretory proteins of the human endometrium;
- Clinical aspects of implantation;
- Location and orientation of implantation;
- Growth factors and early mammalian development;
- Trophoblast interferons as antiluteolysins;
- Fate of human pregnancies.

This book would be useful for obstetricians, gynaecologists, paediatricians, and general clinicians.

Steroids in Diseases of the Central Nervous System. Edited by R. CAPILDEO. Published 1989 by Wiley, Chichester. No. of pages: 320. ISBN: 0-471-91959-4. Price: \$66.00.

The widespread use of steroids in medicine and in diseases of the central nervous system in particular, highlights the obvious difference between "medicine the art" and "medicine the science". The volume of scientific literature on steroid chemistry, physiology and pharmacology in the last 30 years is impressive and, as can be seen in this book, this knowledge continues to grow with new molecules planned for the future. In contrast, the use of steroids in clinical practice remains intuitive. When should steroids be used, which steroid should be used, what dose and for how long remain "guesses", rather on a day-to-day basis. Perhaps the clinical uncertainty is a reflection of the uncertainty as to the mode of action of steroids in different medical conditions and situations, and might explain why so few clinical trials with steroid therapy have been performed in diseases of the central nervous system.

The aim of this book is to bring this body of knowledge together with all the imperfections that such a task is bound to include. The current interest in high-dose steroid therapy points to new therapeutic avenues for the future.

The book covers the following main topics:

- Basic sciences;
- Brain tumours;
- Head and spinal cord injuries;
- Pain;
- Multiple sclerosis; and
- Other neurological diseases.

It would be useful for clinicians, neuroendocrinologists, neurologists, as well as for advanced students.

Recombinant DNA Methodology. Edited by R. WU, L. GROSSMAN and K. MOLDAVE. Published 1989 by Academic Press, San Diego. No. of pages: 760. ISBN: 0-12-765560-3.

Recombinant DNA methods are revolutionary techniques that allow the cloning of a single gene—isolation of a gene in large amounts—from a pool of millions of genes. These techniques also allow specific modification of the isolated genes or their regulator regions for analysis or for reintro-duction into cells for the production of large amounts of specific RNA or protein molecules. These powerful new methods lead to unprecedented possibilities for solving complex biological problems or for producing new and better products in the fields of medicine, agriculture, and industry.

This volume of "Selected Methods in Enzymology" includes important contributions from Volumes 68, 100, 101, 153, 154, and 155 of "Methods in Enzymology". The selection of articles was based mainly on the following criteria: inclusion in the article of extensive description or theoretical discussion of important methods and specific information still up-to-date and useful.

The volume contains the following main sections:

- Recombinant DNA techniques;
- Enzymes used in recombinant DNA research;
- Synthesis, isolation, and purification of DNA;
- Vehicles and hosts for the cloning of recombinant DNA;
- Screening and selection of cloned DNA;
- Detection and analysis of expression of cloned genes;
- Use of enzymes in recombinant DNA research;
- Enzymes affecting the gross morphology of DNA;
- Proteins with specialized functions acting at specific loci;
- New methods for DNA isolation, hybridization, and cloning;
- Analytical methods for gene products;
- Mutagenesis: *in vitro* and *in vivo*;
- New vectors for cloning genes;
- Cloning of genes into yeast cells;
- Systems for monitoring cloned gene expression;
- Vectors for cloning DNA;
- Vectors for expression of cloned genes;
- Methods for cloning DNA;
- Identification of cloned genes and mapping of genes;
- Chemical synthesis and analysis of oligodeoxynucleotides;
- Site-specific mutagenesis and protein engineering;
- Restriction enzymes;
- Rapid methods for DNA sequence analysis;
- Miscellaneous methods.

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