Prostaglandins in Animal Reproduction

L. E. EDQVIST and H. KINDAHL (Editors)
Elsevier, Amsterdam, 1984, pp. 304, Dfl 175.00


It is divided into chapters mainly by species, five presenting data on ewes, five on cattle, two on mares, one on pigs and one on guinea pigs. One chapter by Kindahl et al. (Sweden) valuably presents data on levels of prostaglandin F₂₀ metabolites in blood and urine in early pregnancy in all the species covered elsewhere in the book.

The chapters review data on pregnant and early pregnant animals, with only one by Schultz et al. (Kansas) reviewing publications on the practical veterinary uses of prostaglandin F₂₀ and prostaglandin analogues for procuring abortion in early- and late-pregnant cattle.

The data presented are almost entirely on prostaglandin F₂₀ and prostaglandin F₂₀ metabolites, although Sheldrick and Flint (Cambridge, U.K.) describe their interesting work on ovarian oxytocin and luteal function in the early-pregnant sheep and the stimulatory effect of E₂ and F₂₀ analogues on luteal secretion of oxytocin.

Other chapters explain the control of prostaglandin F₂₀ production from the uterus and the role of prostaglandin in maternal recognition of pregnancy. The last chapter in the book, by Allen (Cambridge, U.K.), discusses the hormonal control of early pregnancy in the mare and manages to avoid mentioning prostaglandins.

This is a 'proceedings' book with a specialist view of prostaglandins and non-pregnant and early-pregnant reproduction rather than the broad treatment that one might expect from the title. It lacks by having only limited data on cellular and molecular mechanisms and finally by having no index.

K. HILLIER

Histone Genes: Structure, Organization and Regulation

G. S. STEIN, J. L. STEIN and W. F. MARZLUFF (Editors)
John Wiley and Sons, New York, 1984, pp. 494, £78.70

Most molecular biologists will have some idea about how histone genes are organized and expressed. This is because they were the first protein-encoding genes to be cloned, because they are the most accessible proteins to be expressed in a cell-cycle-related manner and because they are major constituents of the basic unit of the chromosome. Most people will also be aware that their initial conceptions of this subject are now inaccurate, based as it turns out to be on the special case of the sea urchin 'early' genes and on the HeLa cell cycle. The wide range of information now available presents a confusing picture for a number of reasons (see the brief review by Old and Woodland, Cell, in the press).

Thus eukaryotes contain a variety of histone genes, a battery of histone variants and diverse strategies for coupling histone synthesis to the assembly of chromatin, but the reasons for this variety are largely obscure. A particular area of ignorance is the functional significance of the many histone variants, especially characteristic of deuterostomes. In addition we are handicapped by our poor understanding of the control of the cell cycle.

A comprehensive account of histone genes and their functions is therefore particularly timely. This volume fulfills the overall need, providing detailed accounts of the histone genes of most groups of organisms that have been studied, with the notable exception of plants. As a work of reference this book can therefore be strongly recommended, though at £78.70 it is unlikely to be found outside libraries and reviewers' bookshelves.

This is on the positive side, but it must be said that the book also represents a lost opportunity. The basic problems are typical of a multi-author volume. The book is a collection of review articles, with no attempt at integration by the editors. Many of the chapters overlap considerably (including those of the editors!), and usually much the same introductory material is re-worked in each chapter. Mostly the chapters concentrate heavily on the work done in the authors' laboratories, though there are exceptions, notably a model account of Drosophila histone genes by Anderson and Lengyel, as well as the sections on yeast, Tetrahymena, and chickens. In the case of mammals there are enough different chapters to cover most of the necessary ground, but elsewhere there are gaps. Particularly surprising is absence of an account of sea urchin histone gene structure, although experiments in this area have had a continual seminal influence. Another important gap is the failure to discuss the functional analysis of transcription conducted on sea urchin histone genes in Max Birnstiel's laboratory.

All of these deficiencies are difficult for editors of such multi-author volumes to eliminate, since it is often difficult enough to extract any sort of manuscript from some authors, let alone persuade them to write to direction or revise manuscripts extensively. A compromise would have been to provide a general chapter giving an overview of the field. Unfortunately this is not provided, so the only way that a reader can get an overall picture is himself to read the whole book, and to read a few older review articles and recent papers to fill in the gaps. For this reason the book is mainly to be recommended to the reader with a desire to immerse himself in the specialist detail of the subject or to someone looking for information in a particular area.

Lastly, as a worker on Amphibia I cannot refrain from mentioning the curious classification system adopted. The range of organisms from yeast and Tetrahymena to insects and echinoderms are grouped together as 'lower eukaryotes', amphibians are 'intermediate eukaryotes' while mammals and birds are 'higher eukaryotes'. This seems a strangely myopic view of living organisms!

H. R. WOODLAND
Eukaryotic genomes encode histones, which are assembled on the genome into octamers, yielding nucleosomes. Post-translational modifications of the histones, which occur mostly on their N-terminal tails, define the functional state of chromatin. Like eukaryotes, most archaeal genomes encode histones, which are believed to be involved in the compaction and organization of their genomes. Both Archaea and eukaryotes express histones, but whereas the tertiary structure of histones is conserved, the quaternary structure of histone–DNA complexes is very different. In a recent study, the crystal structure of the archaeal hypernucleosome was revealed to be an “endless” core of interacting histones that wraps the DNA around it in a left-handed manner.