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**Book reviews**

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**Saenger, W.: Principles of Nucleic Acid Structure.** Berlin, Heidelberg, New York, Tokyo: Springer 1984. xx + 556 pp., several figs. and tabs. Soft bound \$ 29.50.

As another volume in the series *Advanced Texts in Chemistry*, this book covers the area of nucleic acid structure extremely well, and fills a gap needed at the advanced graduate level. The authors are to be congratulated on the way in which they have attempted to keep up with the latest discoveries and include them in this monograph in a way which renders these advances readily comprehensible and shows the graduate reader how they relate to earlier established principles and ideas.

The first short chapter puts structure into the background of nucleic acid biochemistry and is followed by a chapter on terms, definitions, symbols and parameters to be used in the remainder of the book. Before getting into the structures proper a further section deals with the methods involved – crystal structure analysis, potential energy calculations, crystallography, fibre structure, and spectroscopic methods. Having set the scene, the structures of the component parts, the bases, sugar and phosphate, are put forward in terms of puckering, conformation, geometry, orientation, torsion angles and helical sense. Charge densities and pH values precede consideration of hydrogen bonding and stacking in polynucleotides, and then follows nucleoside modification and the binding of metal ions to nucleic acids.

Chapters on RNA and DNA structure involve discussion of A-, B- and Z-type double helices amongst other topics, and the more recent notion of left-handed DNA. After presentation of homopolymer nucleic acid structures, this volume then deals with a series of topics more closely related to the biological activity and organization of the nucleic acids. The structure of t-RNA and suggestions about anticodon-codon recognition are presented in one chapter, and others deal with protein-nucleic acid interaction, higher organization of DNA (chromatin, nucleosomes, transcription, etc.), intercalation and a chapter on the hydration shell around nucleic acid molecules rounds off an immensely useful, up-to-date and informative volume. Over one thousand references are to be found at the end of the book, as well as a comprehensive index. This monograph is to be recommended for postgraduates in chemistry and biochemistry who have a need to keep up with this rapidly advancing field.

J.F. Jackson, Glen Osmond

**Apirion, D. (ed.): Processing of RNA.** Boca Raton, Fla: C.R.C. Press 1984. 352 pp., several figs. and tabs. Hard bound \$ 140,-.

The "Processing" of the mature RNA molecule from a precursor is a crucial stage in the production of many forms of RNA. All stable RNAs in bacteria and eukaryotes are synthesized as primary transcripts from which the mature ribosomal RNA and transfer RNA must be released. By contrast most – but not all – bacterial messenger RNAs are primary transcripts. In eukaryotes, however, the production of an mRNA from an interrupted gene is the most labour intensive of all processing, sometimes involving a large number of splicing reactions. In this book the present state of art of all these various aspects of RNA processing as well as our current knowledge of post-transcriptional modifications – such as Cap- and poly(A) addition and nucleoside modifications – is extensively reviewed. Attention is not only paid to the enzymes executing the processing reactions but even interestingly also to the enzymology which underlies the processing events.

The organisation of the different (eleven) chapters is by organism (or cell-organelle) rather than by the kind of RNA processed (tRNA, mRNA, etc.). This means that certain phenomena such as RNA splicing in yeast and *Tetrahymena* or RNA ligation in wheat germ and in yeast are discussed in different chapters. This type of organization does not form, however, a serious drawback for obtaining a clear and up-to-date view about what currently is known about this broad area of research. The eleven chapters of the book are concisely written by leading scientists of the field and nicely documented with figures and tables. A large list of references, which include the full title of cited articles, are to be found at the end of each chapter while an extensive index is given at the end of the book.

The book is one of the most complete and up to date books currently available on RNA Processing and is therefore highly recommended for anyone who is studying, or interested in, mechanisms involved in gene-expression and regulation.

R. N. H. Konings, Nijmegen