

Overall, a solid book with some interesting chapters. The emphasis on chemical mechanisms is welcome to this reader, but will deter many life science students, as will the dull presentation of the book. There are better textbooks of enzymology available.

PII: S0031-9422(01)00372-7

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Comprehensive Natural Products Chemistry, Volume 6: Prebiotic Chemistry, Molecular Fossils, Nucleosides and RNA

D. Soll, S. Nishimura and P.B. Moore (Volume Editors), Pergamon, an Elsevier Science Imprint, Oxford, 1999, 295 pp., ISBN 0-08-043158-5. Price EUR 387.50, US\$ 387.50.

This is volume 6 in the series *Comprehensive Natural Products Chemistry*. Previous volumes have dealt with polypeptides, isoprenoids, carbohydrates and amino acids. This volume covers RNA chemistry, RNA enzymes, rRNA, mRNA and ribozymes. Colour figures are interspersed throughout the volume enabling good 3D reconstructions of RNA structures.

The book includes chapters on RNA structure, chemical and enzymatic probing, chemical RNA synthesis (6 chapters). RNA editing, RNA enzymes, Ribozyme selection and enzymology constitute the next 4 chapters.

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Viroids (single-stranded circular RNA molecules, found only in plants) are described in a stand-alone chapter which is then followed by four chapters dealing with ribosomal RNA structure, turnover of mRNA, ribonucleotide analogues and ribozyme structure and function.

The title is an odd one given that in effect, the book is about anything you ever wanted to know about RNA. However, given the existence of an enormous RNA literature the volume cannot be regarded as definitive. Overall, it is a solid book with emphasis on chemical mechanisms very suitable for biological chemistry but not for life science researchers and students.

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Comprehensive Natural Products Chemistry, Volume 7: DNA and Aspects of Molecular Biology

E.T. Kool (Volume Editor), Pergamon, an Elsevier Science Imprint, Oxford, 1999, 733 pp., ISBN 0-08-043159-3. Price EUR 387.50, US\$ 387.50.

I am very fond of telling 'lay' audiences that although DNA is the genetic material we can handle it like a 'piece of chemistry' in the test tube. Of course, analysis of my remark would show that I do not strictly mean what I say. What I actually mean is that molecular biologists can carry out biochemical reactions on DNA in the test-tube, leading us to cut, re-join, clone and sequence DNA.

However, here is a book that does in fact deal with DNA from an almost entirely chemical standpoint. DNA is of course a natural product even when it is in the form of recombinant DNA molecules and thus is an entirely legitimate subject for a book in a series entitled *Comprehensive Natural Products Chemistry*.

The series has been produced as a result of the vision and persistence of one of the most brilliant and prolific organic/natural product chemists of the 20th century, Sir Derek Barton. Sadly, he died before the project was complete. Indeed, two of the 38 'prepages' are a reprint of a previously published obituary while another 18 form both a very interesting and informative preamble

to the book and a tribute to Sir Derek under the title *An historical perspective of natural products chemistry*, authored by Koji Nakashini, one of the series editors.

So, what of the book? Whoever thought that the word *comprehensive* should be in the overall series title was not joking. I can best describe this text as one volume in a nine-volume encyclopaedia (the ninth volume is simply entitled *Cumulative Indexes* which will give the reader some idea of the information-richness of the books in the series). I presume that all nine volumes have been published in the same format as this one with a page size of 270×190 mm. The print size used by the publishers means that 60 lines of text can be fitted onto each page. Indeed, some pages are thus packed although much of the text is broken up by subheadings and extensive use of diagrams and other forms of illustration. It is a dense book which conveys a lot of information, much of it in quite a terse and compressed style. The following statistics will give our readers some idea of what I am trying to convey: there are 17 chapters that vary in length between 14 pages (chapter 13, *DNA-binding peptides*) and 98 pages (chapter 6, *Attachment of reporter and conjugate groups to DNA*). Each chapter is very extensively referenced. Even the shortest chapter cites 96 references while most cite 200–400. It is thus not surprising that the author index runs to over 30 pages and contains about 5000 names! I also need to mention the subject index. Such a complex task it was to assemble the index that its first page is headed by the names of the two professional indexers who explain that ‘Every effort has been made to index as comprehensively as possible and to standardize the terms used... in line with the IUPAC recommendations.’ By my reckoning they have done well. The subject index is indeed comprehensive, running to about 26 pages and containing over 3500 entries.

But size is not everything! It's what you do with it that counts! The first thing to say about the contents is that, perhaps rather obviously, this is not a book to read straight through but rather to be referred to and dipped into for specific information. Nevertheless, as a reviewer, I actually read a lot of this text. To a molecular biologist/biochemist like myself, who has been working with DNA since post-doctoral days, it is a revelation. It is like seeing something familiar but from a completely different angle, a little like being shown the other side of a mountain range that one has gazed on for years but never crossed. As a molecular biologist/biochemist I take it for granted that, for example, certain dyes bind to DNA or that certain inhibitors prevent DNA replication or that particular enzymes modify DNA in specific ways. However the text shows the chemical mechanisms that underlie these reactions and provide a rational chemical basis for their operation. It is thus a very useful and informative book

for the DNA biochemistry community. Equally, it will be of use for organic and natural product chemists who are not yet familiar with the wonders of DNA. Indeed, in his preamble, Koji Nakanishi actually states that familiarity with molecular biology is necessary for modern natural product chemists.

In a book of this size it is perhaps inevitable that there are some negative points. The last chapter, which is essentially on how DNA cloning is done, seems out of place. Yes, an organic chemist may, for his or her work, need a protein or polypeptide expressed in a transgenic micro-organism. But surely they would turn for their information to one of several available comprehensive manuals on the topic rather than to a 30-page overview. There are also some specific errors. For example on p. 246, it is stated that (DNA) replication is an autocatalytic process. By my definition of autocatalytic (ie a reaction that catalyses itself or a compound that catalyses its own metabolism) this is simply not true. DNA replication certainly uses the pre-existing DNA as a template but that is not autocatalysis. In Fig. 12 (p. 350) in the same chapter, the figure legend refers to ‘RNA polymerase III’; it should read ‘DNA polymerase III’. I do not think that errors such as these detract significantly from the value of the book; nevertheless it would have been preferable had they been eliminated. Whilst dealing with the ‘downside’ I must also mention dates. The date of publication, according to book's own ‘data page’, was 1999. I did not receive this review copy until mid-December 2000 (and I am writing this review at the end of February 2001). However, assuming that the publication date was 1999, it is clear that some, perhaps most, of the chapters were finished before that date. Analysis of the reference lists of three chapters selected at random revealed no references later than 1997, i.e. at least two years earlier than the publication date and three years earlier than receipt of the review copy. This will limit the usefulness of the text as a source of very recent material for those getting into a particular research area. It is nevertheless an amazingly full and informative text for those who want the wider picture without necessarily needing it to be bang up-to-date. Whether they can afford to buy it or not is another matter. I do not know the price but the book looks very expensive; those who wish to have access to this text will need to talk nicely to their librarian.

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