Molecular Recognition Mechanisms; Edited by Michel Delaage; VCH Publishers: Weinheim, 1991: viii + 285 pages. £65.00, DM 182.00.

This book, originally published as Méchanisms de reconnaisance moléculaire, is a collection of material from authors working in French laboratories, and covers a wide range of topics which fall under the umbrella of Molecular Recognition. Such topics include, molecular modelling of protein and peptide structure, molecular pharmacology, immunology, protein engineering, artificial regulation of gene expression, lectins and membrane transport. Obviously the range of material covered is enormous, and that is where the book runs into difficulties. The book could have been written to appeal to a wide audience, giving an over-view of the various specialities within this field. Certainly some of the chapters have been written in this way with an introduction to the topic, which might have come from a standard text book, followed by anecdotal over-view of some research project in that area. These chapters would certainly broaden the outlook of an enthusiastic under-graduate or post-graduate reader. Alternatively the book could have been compiled to appeal to a smaller, more specialist audience; in which case the chapters would deal mainly with the author's work. Indeed the book contains numerous chapters of this type. The individual authors, in the main, have done an excellent job. The material is well presented and illustrated, but the inconsistency of approach results in a rather confusing book. It is not clear to me what type of readership this book has been put together for. Given the editors decision to include a wide range of topics in the book it is puzzling to find 3 chapters on the reni n-angiotensin system, each with a similar introduction although approaching the topic from a slightly different angle. Also, in such a fast moving field, it is disappointing to find that the most recent references are ca. 1986, and certain sections of the book are seriously dated. For example the chapter on membrane transport contains no mention of the sequences of the cation transporters which were becoming available at the time and set the stage for the expansion in the study of these transporters.

Despite these reservations it has to be said that the book does bring together some fascinating material which would encourage the reader at, say, the post-graduate level, to broaden his or her appreciation of molecular interactions. However, given the different levels at which the various chapters are pitched, its appeal will largely be dictated by the particular strengths and weaknesses of the individual reader.

J.M. Eust

Nucleic Acids and Molecular Biology, Volume 5; Edited by F. Eckstein and D.M.J. Lilley; Springer Verlag: Berlin, Heidelberg, 1991; xi + 251 pages; DM 198.00. ISBN 3-540-53121-1.

This is the fifth volume in this series, and continues the tradition of presenting stimulating and topical reviews that was set by the earlier volumes. The Introduction indicates that the editors put considerable thought into chosing the topics to be covered; and, for the most part, the chapters tell a cohesive story of structures of DNA and DNA binding proteins. There is some light relief from the more physical studies in chapters 4–6 that deal with DNA repair and replication; and the volume ends with chapters describing the topological problems encountered by RNA polymerase during transcription, on the 'Regulation of HIV-1 Gene Expression' and on 'Transgenic Technology' that whet the appetite for future volumes.

This is not a book for undergraduates, except perhaps those in their final year. To follow the story requires a considerable understanding of the diverse, physical techniques that are being used to study problems of modern molecular biology. The first three chapters deal with the structure of particular DNA molecules in isolation, though there is a 'token attempt to relate these structures to the biological situation. Chapter One is an eye opener a to the variety of unusual 'Structures that Telomeric DNA' may assume; and Chapter Two considers the structure of 'Parallel Stranded DNA'. This form of DNA is remarkably stable and I was left wondering why it is not commonly found in cells. Chapter Three on 'Scanning Tunneling Microscopy of Nucleic Acids' is surprisingly easy to understand and provides an honest appraisal of the state of the art at the time it was written (early 1991).

The unfortunate lag between the writing of a review and its availability to the reader is impossible to avoid but detracts slightly from the usefulness of the chapter on 'Repair of UV-Damaged DNA' that is otherwise helpful and straightforward; as is the interesting chapter on 'Mismatch Repair in Eukaryotic Systems'.

Even though they present a facinating comparison of various origin structures, Baker and Kornberg have struggled to condense several lives' work into the 14 pages of the sixth chapter entitled 'Initiation of Chromosomal Replication' with the result that much is glossed over. This contrasts strongly with the excellent and detailed summary of work on the Klenow fragment of 'DNA Polymerase I' that has led to some understanding of structure function relationships.

Lehming and co-workers report on in vitro mutagenesis studies on the *lac* repressor/operator system. Although one might expect this to be similar to λ, it is not, even though both involve a similar base recognition sequence; and an attempt is made to formulate 'Rules for Protein DNA Recognition'. The 'DNA-Binding Motif, SPKK' is characteristic of DNA binding proteins and, in a stimulating article, Suzuki describes how, depending on its state of phosphorylation, this grouping promotes or inhibits sliding of proteins along the minor groove.

One takes for granted the fact that the '*Eco*RI Endonuclease' does not cleave methylated DNA, but it must show even greater discrimination against the very large number of unmethylated sequences that differ from its normal target by a single base change. Although the crystal structure of the DNA-enzyme

complex is known it is clear from the contribution by Jen-Jacobson et al. that it is still not possible to define precisely the importance of various interactions. Similary, a great deal is known about the interactions of DNAse I with DNA and how binding causes the DNA to bend away from the protein, thereby widening the minor groove. Yet we are still not in a position to predict the rates of reaction at most individual sites.

The publishers obviously had some trouble with Chapter 2 as there is a sheet of errata to go with it. This is a pity for such an expensive little volume but did not detract from the enjoyment I got from reading this book, and I would recommend it strongly to those interested in the fundamental problems of nucleic acid-protein interactions.

Roger L.P. Adams

DNA Fingerprinting: Approaches and Application; T. Burke, G. Dolf, A.J. Jeffreys and R. Wolff; Birkhäuser Verlag; Basel, 1991; x + 400 pages; SFr. 168.00, DM 198.00. ISBN 3-7643-2562-3.

This is a collection of papers delivered at an International Symposium on DNA Fingerprinting in Bern in 1990.

For those who think of DNA fingerprinting mainly in terms of its forensic applications, this compilation will provide a stimulating insight into tha many and varied ways in which this technology can be applied to answer many fundamental questions in biology.

Appropriately the first atricle, by Alec Jeffreys, deals with recent developments, largely in the area of forensic work, and concludes that most of the original problems associated with this application have been solved. However, difficulties associated with 'band shift' are dismissed as readily identifiable and correctable but unfortunately no details are provided.

There is an interesting contribution on synthetic oligonucleotides, comprising simple repeat motifs, in which a wide range of applications are described, including forensic uses, where such probes appear to offer some advantages over more conventional probes. Naturally occurring DNA sequences with simple repeat motifs are the subject of another section where their successful application to the identification of protozoan parasites is reported, a hitherto technically difficult area.

Several sections deal with various aspects of population genetics, about which some practioners might be surprised to learn that, although specific bands can not be associated with particular loci and alleles can not be identified by the use of multilocus probes, it is still possible to obtain useful population data, such as the level of homozygosity, effective population size, degree of relatedness and mutation rates, through the use of such probes.

By contrast, the use of single locus probes allows the identification of individual alleles, but with VNTR loci this in itself raises problems since the sheer number of alleles at these loci precludes the detection of all possible genotypes. However, by the use of the appropriate statistic, conformity with Hardy Weinberg expectations and independence of allele segregation may be examined without recourse to the collection and analysis of an infinitely large population sample. In another type of population study, fingerprinting techniques have allowed monitoring of the migration of the Peregrine Falcon through the detection of sex-linked, species-specific DNA fragments!

An important theme in many of the contributions is the use of probes for the detection of VNTR loci for use as linkage markers. Human DNA probes have been used to detect such loci in mice to provide linkage markers for genes important in disease suseptibility in models of human genetic disease. Several papers describe the exploitation of VNTR locus markers for genes that control quantitative characteristics in studies on genotype/environmental interactions and in breeding experiments in species as diverse as chicken, salmon and trout.

The collection includes several chapters which describe investigations into the possible molecular mechanisms that generate VNTR loci, and further contributions consider other evolutionary aspects such as the effects of selection and genetic drift on such loci.

Medical aspects are perhaps underrepresented but chapters describing the application of fingerprinting techniques in the area of quality control cultured cell banks and in the detection of somatic mutations in cancer and other human diseases are noteworthy.

N. Spencer

Interferons: Mechanisms of Action and Role in Cancer Therapy; Edited by D. Crowther; Springer-Verlag; Berlin, Heidelberg, New York, 1991; 63 pages. DM 72.00. ISBN 3-540-54302-3.

It is now thirty five years since the discovery of interferon, and over a decade since the interferons began to be used clinically in cancer therapy. During this period we have learned a great deal about what the interferons do and how they work, and we understand even more about the molecular basis of cancer. In neither case, however, is our knowledge sufficient to give more than an inkling of the basis for the occasional anti-tumour actions of the interferons; more disappointingly, we do not understand much about why many human cancers (including the commonest solid tumours) are largely refractory to interferon treatment.

This short monograph is a useful attempt to summarize current knowledge of the basic biology of the interferon system and the application of the interferons as agents in the therapy of a number of different types of tumour. It has been produced as one of the