

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. Similarly, 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 the many and varied ways in which this technology can be applied to answer many fundamental questions in biology.

Appropriately the first article, 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 practitioners 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 susceptibility 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

series of European School of Oncology Monographs that are intended to disseminate rapidly the results of study group meetings involving experts in the field.

As the title suggests, the book is mainly devoted to the clinical aspects of the interferons as anti-cancer agents. Two useful summary chapters, by Woll and Crowther and by Wagstaff, begin and end the book, providing an overview of the clinical successes and failures of interferon therapy, and looking to the future, respectively. Sandwiched between these are detailed accounts of the uses of interferons in the treatment of myeloma, low-grade lymphoma and neuroendocrine tumours.

Apart from a chapter by Stark on the molecular aspects of interferon production and action there is little biochemistry in this monograph, and I detected some generalizations here and there that could mislead readers unfamiliar with the field. Although the anti-proliferative effects of interferons unfortunately are easily demonstrated in tissue culture than they are with patients, it is still an exaggeration to say that 'a majority of tumour cell lines are growth inhibited by interferons in vitro'. More seriously, a distorted view of the poorly understood signal transduction pathways used by the interferons could be obtained from casual (and unreferenced) remarks, such as the suggestion that the

interferon-gamma receptor is G-protein linked. Even Stark's chapter ignores a large body of evidence indicating the involvement of protein kinase C (or a similar type of protein kinase) in the regulation of gene expression by the α and β interferons.

Of course, we do not need to know how an agent works in order to use it successfully in the clinic. Nevertheless, the future of interferon therapy probably lies in the development of combination treatments, with other cytokines or with chemotherapeutic drugs, a theme that crops up in several places. The reports of synergistic effects between different combinations of these agents raise important questions about the mechanisms responsible, and these will need to be answered if a rational approach is to be adopted in the future. As Woll and Crowther state, the initial euphoria by testing the interferons as anti-cancer agents in vitro and in vivo has given way to cautious optimism born of mature reflection. As a biochemist, perhaps one must add that the future of this branch of medicine should lie in the acquisition of knowledge born of experiment.

Mike Clemens

Biochemical and Molecular Aspects of Selected Cancers, Volume I; Edited by T.G. Pretlow II and T.P. Pretlow; Academic Press; San Diego, 1991; x + 444 pages. \$ 99.00.

The two volume treatise on biochemical aspects of cancer research was designed to provide readers with an insight into the underlying biochemistry of selected cancers. Unfortunately this reviewer received only the first volume, and as such my comments are restricted to the contents of vol. I. It may well be that volume II has yet to be published! In this regard it would have been informative if volume I gave some kind of indication as to the topics covered in volume II.

During the last twenty years there has been an exponential growth in the publications of cancer-orientated research, making it almost impossible for the average research scientist or clinician to keep in anyway abreast of the field. He or she has come to rely more and more on publications of the sort being reviewed herein to obtain a broad picture on the current status of research in areas as diverse as drug resistance, oncogenes and tumour progression. This book brings together recent developments in the biochemical area of selected human cancers. The volume reviewed consists of 13 chapters running to 444 pages with each chapter well endowed with appropriate bibliographies. The topics covered range from oncogenes and tumour suppressor genes to the role of kinases and the extracellular matrix in tumour development. Each chapter is contributed by an expert researcher in the field and is by and large well sprinkled with informative diagrams. The initial chapter in the book examines the role played by tumour suppressor genes in human cancers, an area of research which is both exciting and

rapidly expanding at present. An excellent subsequent chapter by M. Oren looks in detail at what we know about p53, the archetypal tumour suppressor gene. Other well-written chapters cover topics on chromosomal markers of cancer and protein kinase C in neoplastic cells.

There are a number of weaknesses and omissions in this volume, none of which are serious or worthy of comment except perhaps the level of detail which individual contributors go into on their subject. For example the chapter on glutathione transferases by Sata and Tsuchida goes into considerable detail on the biochemical structure and function of this enzyme with 19 pages of references. In contrast Gottesman et al. give a much more general review on multi-drug resistance with as few as 8 pages of references. This imbalance makes for difficult reading, and I ask myself at what kind of reader is the book targeted; the individual who wants a general overview or the cancer expert who wants detailed precise information? It is debatable whether these comments are really worthwhile criticisms, but in my opinion they do reflect a certain lack of editorial guidance. The job of an editor is to ensure that each contributor is aware of the type of reader the book is aimed at and is given editorial guidelines that enable a readable well balanced volume to be produced at the end of the day. However, having said all that, I feel that this volume is a good buy and well worth the \$99.00 price tag.

T.G. Cotter