volume, which was reviewed in *Genetical Research*, vol. 61, p. 76 (1993).

The accompanying rearrangement of chapters in Volume 1 makes good sense, with a general introduction more logically placed, as does the inclusion of a separate chapter on 'Prenatal diagnosis and tissue culture'. The introduction of a chapter on the applications of cytogenetic investigations to clinical practice expands the scope of the volume as a whole, and the guidelines provided by John Wolstenholme and John Burn as to where to look (choice of tissues), how to look (choice of techniques) and what to look for in the major categories of referral should prove invaluable to newcomers and 'old hands' alike. It is unfortunate that the publication date precluded the inclusion of detailed information on the most recent developments in the molecular detection of fragile X – no doubt this will be covered in the third edition! The section on interpretation of findings in various types of prenatal diagnosis should be extremely useful.

The chapter on 'Microscopy, photography and computerized image analysis' by Alan Monk, John Swansbury and Denise Rooney makes the very valid point that training in the use of the cytogeneticist's most vital equipment is often sketchy, and Alan Monk provides an informative and practical guide to all aspects of microscopy in the first section, while John Swansbury and Denise Rooney share my belief that no matter how good computerized karyotyping may be 'traditional cytogeneticists are not yet redundant!' – especially when the quality of the initial chromosome preparations is poor!

The allocation of an entire chapter to chromosome analysis by non-isotopic *in situ* hybridization, in contrast to its five-page summary as a part chapter in the first edition, is a clear reflection of the changing world of human cytogenetics; the authors of this chapter provide a series of useful protocols for the various types of 'ish' and associated techniques, as well as outlining the underlying theory and some of the pitfalls which may be encountered. The good-quality photomicrographs included in this chapter are impressive.

In the same combined chapter in the first edition, flow cytometric analysis of human chromosome was given a brief airing. In the second edition this approach too warrants much more extensive coverage, ably provided by Brian Young.

The potential breadth of application of many of the new methodologies is brought into focus in the chapter by Hulten and colleagues on meiotic studies, in which protocols are provided for a range of molecular techniques applicable to human testicular preparations. Few routine diagnostic laboratories are in a position to undertake work of this type, but for anyone with time, appropriate facilities and access to suitable material this could be an interesting and challenging field in which to develop expertise.

The particular clarity of the print, with the use of highlighting rather than italics for most section headings, and an apparent improvement in the subsection numbering system make this much easier than the first edition to use as a reference text, while the spiral-bound format of the hard-covered volume makes for an ideal bench-top manual which should be included in any cytogenetics library.

PATRICIA M. ELLIS
Cytogenetics Laboratory
Department of Pathology
Royal Hospital for Sick Children
Edinburgh EH9 1LF

Mechanisms of Eukaryotic DNA Recombination. Edited by MAX E. GOTTESMAN and HENRY J. VOGEL. Academic Press. 1992. 215 pages. Price $55. ISBN 0 12 293445 8.

This book is a collection of articles derived from a symposium held at Columbia University in (I assume) 1989. It includes many interesting contributions on a wide range of topics but suffers from a lack of consistency of purpose. Some chapters are mini-reviews (e.g. the excellent chapter 10 by Stephen Mount on *Drosophila* transposable elements). Others (e.g. Chapter 1 by Roni Bollag and Michael Liskay on the ratio of sister-chromatic and intra-chromatic reciprocal recombination in mouse L cells) are research articles from the authors' laboratories. This random approach can sometimes be successful if the subject area is sufficiently tightly defined that a clear readership is identified. Unfortunately this is not the case here. What we have is a semi-random collection of topics defined by participation in the symposium. In addition we are not helped by the title, which suggests a focus on recombination *mechanisms* not present in the book.

To give an overview of the book's contents I shall briefly describe each chapter in turn. Chapter 1 is a description of experiments by Bolag and Liskay that argue for a preponderance of reciprocal sister–chromatid exchanges over intra-chromatid exchanges in mouse L cells. Chapter 2 describes experiments by Lin, Sperle and Sternberg, which reveal that double-strand breaks in both copies of extrachromosomal DNAs undergoing homologous recombination are necessary for high-frequency exchange. They argue therefore for a single-strand annealing model of recombination. Chapters 3 (by Zimmer, Wang, Wagner and Gruss) and 4 (by Rossant, Gossler, Moens, Skarnes and Joyner) deal with targeted homologous recombination in embryonic stem cells, but do not provide any insight into recombination mechanisms. The second of these articles seems particularly concerned with the position of the authors' research in June 1989, reflecting the competitive nature of this type of work. This is the sort of thing one might expect to hear in an oral seminar, but is it really of interest to the target readership of this

book three years later? Chapter 5 covers the isolation of retroviral insertion mutants of mice that affect development by Gray, Weither, Gridley, Noda, Sharpe and Jaenisch. This is of some interest for developmental biology but is not very illuminating on recombination mechanisms. Another chapter that deals with technological developments is 6, where Pachnis, Pevny, Rothstein and Constantini describe the insertion of yeast artificial chromosomes into the chromosomes of mouse L cells. Chapter 7 by Wu, Hadchouel, Farza, Amar and Pourcel describes methylation of HBV transgenes that seems to be dependent on the site of integration. Again, I see no link with recombination mechanisms. Grifin and Raeban discuss a rather tenuous model for the role of transcription in antibody switch recombination and then note in proof that they have modified their interpretations. The reader is left wondering how much to believe. Should not the editors have either deleted this chapter or insisted on a more detailed explanation of the changed interpretation? I enjoyed reading chapter 9, where Hawley and Zim propose an explanation of chromosome segregation that relies on euchromatic and heterochromatic pairing and describe the effects of genes affecting chromosome disjunction. Chapter 10 is the mini-review of *Drosophila* transposable elements mentioned above. Chapter 11 provides an interesting introduction to pairing, recombination and disjunction in *Caenorhabditis elegans* by Rose and McKim. Kolodner, Alani, Heyer, Johnson, Norris and Tishkoff describe the properties of the *Saccharomyces cerevisiae* strand-exchange protein 1 (SEP1) and related proteins that they have been studying in chapter 12. That their *sep1* mutants are hypo-rec in mitosis but hyper-rec in meiosis goes to show that the recombination pathways in yeast are very complicated. Homologous recombination in yeast cell-free extracts is discussed in chapter 13 by Symington. In chapter 14 Smith and Ponticelli describe the isolation and characterization of 53 new recombination-deficient mutants of *Schizosaccharomyces pombe*. This very systematic work will significantly enhance the value of this useful model system. Holliday's chapter (chapter 15) deals with the structure of the 'Holliday' junction and the genetic and biochemical analysis of recombination in *Ustilago maydis*. Chapter 16 by van der Ploeg, Gottesdiener, Tse, Chung and Weiden describes the chromosomal organization in *Trypanosoma brucei*, and chapter 17 by Eisen describes how recombination of the expression-linked copy of the VSG gene with both complete and defective silent copies leads to the programmed change in surface glycoproteins in the related organism *T. equiperdum*. Finally, Cowman and Kemp describe the chromosome structure and organization of *Plasmodium falciparum*.

My overall assessment of the book is that I enjoyed reading it but that it lacks a sense of purpose. The editors have, mainly, done a good job of presentation, but three chapters managed to slip in with a different form of referencing to the others!

DAVID R. F. LEACH
Institute of Cell and Molecular Biology
University of Edinburgh
Kings Buildings
Edinburgh
EH9 3JR

Autoimmunity. By W. OLLIER AND D. P. M. SYMMONS. Medical Perspectives Series (Editors: A. P. READ and T. BROWN). βios Scientific Publishers, Oxford, England. 1992. 142+x pages. Paperback £12.95/US$26.00. ISBN 1 872 748 50 3.

Like its companion volumes, this book is aimed at postgraduate and clinical medical students and at non-specialists working in the field of medicine. It is also relevant to immunology undergraduates and others with an interest in this field. Its core section is the two chapters which describe the manifestations and immunological associations of the major autoimmune diseases, firstly those with a wide impact within the body (chapter 5), and then those largely confined to a single organ or system (chapter 6). Within the constraints of a relatively compact volume, these chapters are comprehensive and informative, and in stressing both the polygenic origins of most autoimmune conditions and the many overlap syndromes which exist, they highlight the difficulties presented in analysing and treating the disease states which result. These two chapters are followed by two topical and readable shorter ones, the first dealing with prognosis and treatment strategies, the second presenting an overview and bringing together a number of the threads introduced earlier in the book.

In contrast, the earlier chapters read less well, and compromise to some extent the recommendation which could otherwise be given to this book. The style is neither precise nor convincing, perhaps the victim of an attempt at over-simplification for the non-specialist reader, and there are several areas where the story does not come together particularly well. In chapter 1 the T-cell receptor (TCR) is carefully defined as a complex of the α/β or γ/δ dimer (here referred to as Ti) with the CD3 polypeptides. However, on all subsequent occasions the TCR is identified as the receptor dimer alone, with CD3 referred to in text and figures as a separate entity. This will be confusing for some readers, and other examples abound. For instance, there is the implication in chapter 3 that the major auto-antigens in Graves's Disease are thyroglobulin and thyroperoxidase, while chapter 6 clearly, and correctly, places the emphasis on antibodies to the TSH receptor. Again, in chapter 2 the figure illustrating haplotype sharing by siblings fails to illuminate the text, while elsewhere the conventions of genetic shorthand are abandoned. Chapter 4 is really incorrectly titled. It contains several sections which