dental research. Three distinct themes, dental hard tissues, oral microbiology, and saliva, are covered. Four chapters relate to the molecular biology of the dental hard tissues. These include genetic control of the dentition, enamel proteins, and immunolocalisation strategies, enamel protein genes and their expression, and, lastly, dental mesenchyme and the expression of molecules therein. One chapter is devoted to the molecular genetics of oral bacteria and the microbial aetiology of dental caries and periodontal diseases. The remaining section deals with salivary composition, with separate chapters on salivary mucins, salivary proteins, and the proline rich salivary proteins. The chapters are contributed by distinguished researchers in each field. Some chapters appear somewhat subjective but this reflects the relative contribution of the author(s) to their subject of interest. The comprehensive list of references at the end of each chapter will provide a valuable source of further reading for those seeking to further their knowledge of the field. Although the editor acknowledges in the foreword that the content of the book will soon become dated because of the rapid advances in molecular biology both in general and in relation to dental research, this book is to be welcomed for bringing together in one volume current thinking regarding molecular biology as applied to the study of oral and dental structures and tissues.

M J ALDRED

Advanced Techniques in Chromosome Research. Ed Kenneth W Adolph. (Pp 462; £166.75.) New York: Marcel Dekker. 1991.

Over the last 20 years the purely descriptive field of cytogenetics, and the reductionist, analytical field of molecular biology have steadily approached each other until it is almost time for them to celebrate their wedding. Although it is not yet possible to construct a detailed model of chromosome organisation, the ways in which genes are organised in chromosomes and chromosomes in nuclei are beginning to be well understood, so that the present volume makes an appropriate appearance. However, the value of this book as a contribution to this important field is more debatable.

The title leads one to expect a series of detailed descriptions and evaluations of techniques at the leading edge of chromosome research, whereas what we find is a mixture of review articles (some quite excellent) and technical chapters, with the majority of the latter lacking sufficient detail to make them an adequate guide to implementing the techniques described. There is also a problem (presumably arising from the delay between submission of the manuscripts and publication) with material becoming outdated. Very few of the references cited by most of the authors are later than 1989, and in such a rapidly changing field, this is usually too long ago!

In a volume of such diverse character, I feel that the best way to give an idea of the value of the book is to run briefly through the chapters, with a brief description and comment on each. The book is divided into three sections, covering Molecular Techniques, Cytogenetic and Linkage Analysis, and Cellular Techniques respectively.

The first section begins with a review of 'Molecular diagnostics' (Summar and Phillips), which is detailed and well written, my

only criticism being that mentioned above, that there is no reference more recent than early 1989. This is followed by a chapter on 'Cloning and analysis of large DNA molecules' (Scherer and Tsui). This is primarily concerned with YAC technology and the analysis of YAC DNA by pulsed field gel electrophoresis (PFGE). There is thorough coverage of this important area, but, although protocols are given, they tend to lack the precise details necessary to translate them into successful laboratory procedures. The next chapter is a detailed report of a single piece of work involving the 'Molecular analysis of a single chromosome sub-band' (Yunis). While this is an excellent paradigm for the sort of work involved in molecular cytogenetics, it is not sufficiently universal for the reader to be able to apply it to similar problems in a different system. Chapter 4 describes a method for purifying DNA fragments by immobilised oligonucleotide probes as a stage in high efficiency cloning (Wada, Tsurui, and Suyama). Although the data are presented in great detail, again I feel that the protocols are not sufficiently detailed to be useful as laboratory guides without further amplification. Chapter 5 covers 'In situ hybridization of oligonucleotide probes' (Nanda, Schmid, and Epplen). This is an excellent chapter, reporting a new approach in good and adequate detail. Chapter 6, on the 'Analysis of flow-sorted chromosomes' (Shimizu and Minoshima) has useful protocols, but limited application owing to the use of a single fluorochrome and laser, with the limited resolution available with this system. Again, the most recent references are 1989. The last chapter in this section covers 'Pulsed-field gel electrophoresis', and I am grateful to John Maule for reading it and providing me with his comments. Although it provides a basic introduction to PFGE, the experimental procedures are not sufficiently detailed or accurate to allow a novice to carry them out. Some of the figures are of poor quality and the legends are, in some cases, inaccurate, while some of the information is out of date, and some of the cited references are inappropriate. Although the list of references is extensive, there is again nothing after 1989.

The second section begins with a chapter on the 'Analysis of chromosomal alterations in human solid tumors' (Meese and Trent). This is a useful review, though it omits to point out that classical analysis of complex translocations by banding is subject to error, and chromosome painting by fluorescent in situ hybridisation (FISH) often shows very different conclusions and detects translocations overlooked by classical analysis. Chapter 9 is a comprehensive review of the whole subject of 'Fragile sites on human chromosomes' by Sutherland, the doyen of the field, while chapter 10 is again a review, in this case of 'Immunocytogenetics', again by two of the leading exponents of the field, Haaf and Schmid. It is primarily a historical survey of the development of the subject, from the early 1970s up to 1989. The remaining three chapters in this section cover aspects of gene linkage studies. As D'Eustachio, the author of the first of these ('Molecular linkage genetics of the mouse') says, construction of linkage maps is not a new activity, and it is difficult to see what these chapters, however sound they may be (and I certainly have no criticism of this one), are doing in a book with the title this one bears. The second of the linkage chapters discusses 'Genome duplication and compar-

ative gene mapping' (Nadeau), an interesting and important subject. However, the data are so poorly presented, either because of careless proof reading or errors in composition, that the value is much reduced. The final chapter in this section, 'Human linkage analysis: strategies for locus ordering' (Weeks) presents an advanced mathematical and statistical approach to the topic, likely to be of value to dedicated constructors of maps.

The final section, on 'Cellular techniques', begins with the editor's own contribution, on the 'Arrangement of chromosomes in human mitotic cells'. This describes the construction of 3D images by computer graphics from electron micrographs of serial sections through mitotic cells. This seems to me an interesting piece of work, though less valuable than the work by Heslop-Harrison *et al* (1988) cited by the author, which applies a similar approach to analysing the organisation of individual chromosomes in cells. This is followed by a chapter entitled 'Production of transgenic animals' (Gordon). The first part of this chapter is a thorough review of this topic, but the remainder covers a series of subjects more akin to subfertility studies than basic science. These include micromanipulation fertilisation, pronucleus removal, and prenatal diagnosis by embryo biopsy. The next chapter is a review of 'Mutagen testing using mammalian cells' (Hsu and Elder) and is again a useful review without being in any way a technical guide. The penultimate chapter may be considered as an appendix to that by Meese and Trent in the second section, as it describes the 'Culture of solid lung tumors for cytogenetic analysis' (Siegfried *et al*). Again, while technical information is given, it is not in sufficient detail to permit a novice to perform the procedures. The last chapter discusses the use of 'Colchicine and colcemid to block microtubule assembly' (Sluder) and, again, while it is a first class research report, the methodology is not described in sufficient detail for it to make an adequate laboratory guide.

In summary, this volume may have a misleading title, as the majority of the contributors do not provide more than a review of the field covered by their titles, and few of those chapters which do provide practical details do so in sufficient detail for the book to be a useful manual. To whom, then, will it appeal, because, make no mistake, this is a good and worthwhile book? I find this a very difficult question to answer. It is not, because of the delay between writing and publication, a useful introduction to the field, yet it is the sort of book that departments of genetics and cell biology ought to have on their shelves.

JOHN GOSDEN

Therapy for Genetic Disease. Ed Theodore Friedmann. (Pp 127; £16.50.) Oxford: Oxford University Press. 1991. ISBN 0-19-261971-3 (pbk).

Though prenatal diagnosis has provided a valuable tool in helping families with genetic disease, most recognise that this can only ever be a partial solution. Selective abortion will never be entirely acceptable to everyone, and unless all fetuses are screened, affected children will still continue to be born with serious genetic disorders. Many have recognised this dilemma and have hoped that one day effective treatments will be found. This little book addresses this problem.

Firstly, Nyhan reviews the classical approach to treating metabolic disorders by dietary restriction, replacement of a deficient product, or the employment of alternative pathways. There have been many successes in this approach, most notably with phenylketonuria. Secondly, Sweetman considers the treatment of certain metabolic disorders by various co-factors, perhaps the simplest and most straightforward approach. Unfortunately, disorders amenable to such treatment are all very rare. Thirdly, the use of chelation and other methods of toxin removal are discussed by Schneider. Here the best example is the use of penicillamine in Wilson's disease. Though highly effective in many cases, some patients prove intolerant and a new drug (triethylene tetramine dihydrochloride) may now be helpful and is currently under trial. Fourthly, the seemingly most obvious approach of enzyme replacement is reviewed by Hershfield. So far, however, there has been little if any success in this field for a variety of technical and biological reasons. Fifthly, organ transplantation for genetic disease is covered by Parkman. This approach has claimed moderate success with a number of disorders, most notably bone marrow transplantation in severe combined immunodeficiency disease (SCID). In many other disorders where this approach has been tried, including the mucopolysaccharidoses, the results are less clear. However, organ transplantation can occasionally provide interesting insights into pathogenesis. In cystinosis, for example, patients have been successfully treated with kidney transplantation though later there is histological recurrence in the grafted organ, showing that renal involvement is only a manifestation of a systemic disease.

Finally, the editor reviews gene therapy, an area in which he himself has been interested for many years, but this approach still remains only a possibility. "There are many technical issues still to sort out and to understand. What remains now is to solve those problems and to undertake the not inconsiderable task of making it work." Similar sentiments regarding other so called 'novel' approaches to treating genetic disease have been frequently expressed. We can only hope that the situation will change. Perhaps drug therapy may in some cases prove to be the best approach after all.

ALAN EMERY

Genetics and Human Nutrition. Eds Philip J Randle, John Bell, James Scott. London: John Libbey. 1990.

This volume is the fruit of an International Symposium organised by the Rank Prize Funds in March 1990. It covers a wide spectrum of topics ranging from diabetes to favism and many of the authors are distinguished experts in their fields. In their foreword, Professor D J Weatherall and Dr J Bell articulate the hope that some of the advanced genetic techniques which have helped unravel the mysteries of major monogenic diseases may soon be applied successfully to the more common metabolic disorders discussed in this book.

Several chapters are devoted to various aspects of diabetes and insulin resistance. One MHC encoded genetic element is known to determine approximately 20 to

30% of the genetic component of type 1 diabetes, but other genetic determinants have yet to be identified. Various approaches to identifying these loci are described. Once this is achieved the challenge will then be to understand the interaction between genes and environment which produces the susceptibility phenotype. Other topics covered include the protein kinase C pathway, protein serine/threonine phosphatases, fructose intolerance, islet prohormones, gut hormone and neuropeptide physiology, adipin, apolipoprotein B and lipoprotein (a).

This pot-pourri volume is well presented and clearly illustrated and provides a valuable overview of the genetics of some of the major metabolic disorders. Inevitably, some recent advances are not included but that is also a hopeful sign since it indicates that progress is being made in our understanding of these complex disorders. As a reference book for scientists and clinicians this volume would be a useful addition to a departmental library.

RUTH MORGAN

Jablonski's Dictionary of Syndromes and Eponymic Diseases. By Stanley Jablonski. (Pp 665.) Florida: Krieger. 1991.

The best part of this large volume is the brief introduction, which discusses the development, use, and misuse of the term 'syndrome' in lucid terms. Sadly, but predictably, the book itself does not live up to this. This compilation of diverse material will astonish even the clinical geneticist used to coping with heterogeneity, but much is irrelevant (for example, almost one page on 'headache syndrome' and 'malabsorption syndrome') while the entries on the true malformation syndromes are too brief and uncritical to be of use. Photographs are poor. The listings of those people describing syndromes are likewise too brief to be useful (for example, 'Young ID, British Physician'), while many entries ('hospital hobo', 'yuppie disease') are either obscure or bizarre.

I can recommend this book as light holiday bedside reading for the obsessional dysmorphologist (though I did not dare to send it to any one of them to review). On reflection, though, perhaps this collection is not so far removed from our own present attempts to classify dysmorphic syndromes, and should teach us not to regard them as too weighty or definitive.

PETER S HARPER

The Diffusion Of Four Prenatal Screening Tests Across Europe. Margaret Reid. (Pp 133.) London: The King's Fund Centre. 1991.

This is one of three books looking at factors involved in what is termed the 'diffusion' of three types of medical technology across Europe. The first two books concern themselves with renal lithotripsy and organ transplantation, the latter primarily considering liver and heart transplantation. This book, the third in the series, considers four prenatal

screening tests: amniocentesis, chorionic villus sampling, maternal serum α -fetoprotein sampling (for both neural tube defects and Down's syndrome), and ultrasonography.

The first chapter outlines the four different tests and their spread temporally and geographically within the European community countries. This is followed by four chapters with detailed summaries of reports from representatives of four of the individual member countries, the Federal Republic of Germany, Sweden, Greece, and Portugal. The four countries were felt to differ in geographical, social, economic, legal, and religious factors which might have affected any differences seen in the spread of these tests within those countries. The final chapter analyses the generic factors which were felt to affect the diffusion of the three types of medical technology.

It is suggested that an understanding of the factors such as the compatibility of the technology with ethical beliefs (for example, acceptability and legality of termination of pregnancy), the presence or absence of local or national policy decision making organisations (which might look at 'costs versus benefits'), the existence of a clinical infrastructure (for example, the establishment of clinical genetics services), and the 'observability' of a technique or procedure (for example, heart transplant versus prenatal diagnosis) might allow prospective determination of the appropriate allocation of medical resources and support. As acknowledged, however, the diffusion of new techniques or procedures often follows the technological imperative, "if it can be done, it should be done".

While this book is of interest in detailing the recent history of the innovation of these four types of prenatal screening tests in Europe, the analysis of the factors which might affect the subsequent diffusion seems relatively pedestrian, does not often determine which are primary or secondary, and, although a short book, it is, on occasion, repetitive in the material covered.

R F MUELLER

The New Genetics and Clinical Practice. 3rd edition. By DJ Weatherall. (£15.00.) Oxford: Oxford University Press. 1991.

When this book first appeared in 1982, it formed a modestly produced volume based on a lecture series, issued by a little known publisher. Despite this, its impact was immediate and profound, so that it is fair to say that the book and its author have been one of the principal influences in determining how molecular genetics has affected and been incorporated into clinical medicine. Nearly 10 years later, this third edition has grown and changed, but it still retains much of the original message and enthusiasm which were responsible for its success.

The book is now attractively produced and illustrated, remarkably inexpensive (reflecting its intended wide readership), and more comprehensive in its coverage of the field. Indeed, it now makes an excellent introductory textbook for students or clinicians, though its increased complexity may well deter some of those non-genetically orientated and educated clinicians that would have been influenced by the first edition.