watering book and having deposited the review copy in our library, I went out and bought my own. I have never discovered how American publishers manage to produce these wonderful texts at such competitive prices; perhaps the size of the college market in the USA is an important factor.

As the title suggests, *Genes and Genomes* is about molecular biology. Part I is an historical overview of the status of molecular genetics in the early 1970s, that dimly remembered era before the advent of the recombinant DNA concept. Part II describes the tools for and the products of DNA manipulation; it is not quite Maniatis level but there is much more detail and better explanations than you will find in Old and Primrose. Part III moves on to the anatomy, expression and regulation of eukaryotic genes. Part IV is concerned with understanding and manipulating biological systems. This last is the weakest part of the book, as though, after 850 pages of densely argued material, the authors became exhausted.

I presume that the book is primarily directed at graduate students in the USA, and will be used in the course work that features in the first year of an American Ph.D. In this country, with its greater degree of student specialization, the book is more likely to appeal to the specialist researcher. But at £27.50 for the paperback version, it could be on any scientist's shelf. Genes might still be largely the property of geneticists but genomes are not, and I would encourage anyone in the biological sciences to buy this book and to dip into it periodically to get a sense of the discovery and excitement that runs through the molecular biological world.

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Fundamentals of Molecular Evolution. By WEN-HSIUNG LI and DAN GRAUR. Sinauer Associates Inc. 1991. 284 pages. £16.95. ISBN 0 87893 452 9

This is a nicely sized tome of eight chapters covering most of the major areas of molecular evolution. The first two chapters are introductions to the two disciplines that molecular evolution brings together, the molecular biology of genes and population genetics. Both chapters are thorough but err on the dry side with no examples. It might have been interesting for instance to illustrate the different types of mutation with examples from human diseases.

The third chapter covers some of the methods by which the amount of evolutionary change in a sequence is estimated. However, neither the title of the chapter nor the first section mentions 'estimation'. Instead we are treated to some simple models of the evolutionary process which although useful later, I found unhelpful with no mention of the ultimate intent. There is also no discussion of the assumptions made in estimating the number of nucleotide changes. However, there is an excellent section on estimating the number of insertions and deletions which rightly emphasizes the subjective nature of such estimations; and more than competent introductions to estimating divergence from restriction enzyme work and DNA–DNA hybridization.

It is in the fourth chapter on the 'Rates and patterns of nucleotide substitution' that the book starts to come alive with the first data. All aspects of rate variation are covered except, sadly, the intriguing differences in the rates of X and autosomally linked genes, and rather criminally, the variation in rate during time.

The fifth and sixth chapters, covering molecular phylogeny and evolution by gene duplication and exon shuffling, are both excellent introductions illustrated with good examples. The seventh chapter deals with transposable elements and is good except for a very weak section on the control of transposable element copy number. Finally genome organization and evolution are covered in the eighth chapter.

Overall the book is factually very strong and will serve well as an introduction to the molecular side of Molecular Evolution. However, the population genetics aspects of the subject are short changed. There is no real discussion for instance of the neutralist/selectionist debate, of episodic clocks and mechanisms which control transposable element copy number. These are weaknesses which I hope will be remedied in the next edition, which I hear is already in preparation.

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Chromosome Anomalies and Prenatal Development: An Atlas. Oxford Monographs on Medical Genetics No. 21. By DOROTHY WARBURTON, JULIANNE BYRNE and NINA CANKI. Oxford University Press. 1991. 104 pages. £65.00 ISBN 0 19 505145 9.

Intended by its authors for those who are interested in abnormal prenatal development either as a research pursuit or as applied to clinical practice, the atlas is based on material collected over a period of twelve years as part of a study of spontaneous abortion. The gross morphology of all specimens was recorded systematically. Dissection procedures were standardized but a full necropsy was performed routinely only in the last third of the study.

The book comprises five chapters, a reference list and index. The first section details the background and study methods, source of cases, the results of cytogenetic analysis and the definitions used for morphological classification of the abortion material. The proportions of different types of specimen are depicted as histograms according to karyotype and some clinical information is presented in the same format. The authors present much of their data as

percentages with different denominators and it was sometimes difficult to work out how many of each type of specimen had been examined. There is a useful composite table setting out developmental landmarks with reference to post-fertilization age so that contemporary events or appearances are easily picked out. A classification of placental villus morphology is defined and illustrated. The frequency of different morphologic types is depicted within each abnormal karyotype.

The next few chapters each concentrate on a particular karyotypic abnormality, monosomy X, triploidy, autosomal trisomy and tetraploidy. Although the number of specimens in each group is large (197 monosomy X, 176 triploidy) the number of specimens with an embryo or foetus is much smaller, 49 embryos and 9 foetuses with monosomy X and 115 embryos and 8 foetuses amongst triploid specimens.

There is discussion of different types of specimen, associated placental abnormalities and the relationship between types of specimen, gestational age and maternal age at the beginning of each chapter. The number and type of external abnormality at each stage is presented together with a brief account of visceral abnormalities. Each chapter is illustrated by a large number of high-quality photographs, mainly in colour. Many photographs illustrate the external appearance of embryo or embryo foetus or placental villi but some visceral abnormalities are illustrated in all chapters.

This book is a unique archive of a carefully conducted study. As an atlas it is clearly useful to its intended audience in its present form. I would have found it even more useful had the abnormal features in each section been presented in tabular form. I would have also liked to see some more of the study data such as reproductive history, drug ingestion, maternal illness, similarly presented perhaps as an appendix.

Does this book have any rivals? The most recently published book with which one might compare this is *Pathology of the Human Embryo and Pre-viable Fetus: an Atlas* from Kalousek, Fitch and Paradice, Springer-Verlag, New York, 1990. This book does not confine itself to the foetus with chromosome anomalies. There is a long section on normal development and malformations associated with a normal karyotype and effects of intrauterine infection are covered as well. Can one recommend one or the other? And to whom? The narrow range of Dr Warburton's Atlas with its in-depth coverage of its chosen field will clearly appeal to those interested in the effects of chromosome anomalies on development. For those with an applied interest in this subject, particularly those working in obstetrics, prenatal diagnosis, clinical genetics or foetal pathology, unless their departments have unlimited funds for book purchase, I think that the wider coverage presented by Kalousek is of more use in day-to-day practice, although I expect they would want to consult Warburton's Atlas from time to time.

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Introduction to Risk Calculation in Genetic Counselling. By IAN D. YOUNG. Oxford University Press. 1991. 160 pages. Hardback £22.50; paperback £12.50. ISBN 0 19 963263 4 and 0 19 963205 7.

Genetic counselling is a communication process which deals with the human problems associated with the occurrence, or the risk of occurrence, of a genetic disorder in a family. Patients are told about the severity and burden of the disorder and also about possible approaches to avoidance or prevention. Genetic counsellors thus need a number of skills; knowledge of genetics and of clinical diagnosis, ability to relate to their patients, and non-judgmental attitudes. Added to this must be the ability to calculate probabilities.

This little book is concerned with this particular aspect of genetic counselling and will be very useful for clinicians involved in working out risks. The author gives a number of examples of methods of calculation for diseases of different modes of inheritance with or without information from linked DNA markers. A particularly helpful chapter is that dealing with risks for individuals with balanced chromosomal rearrangements. This is an important aspect of genetic counselling and one which is often mishandled. Probably almost every situation where risk calculation would be required is dealt with in the book. Some of the calculations may be too detailed for the non-mathematically minded, but most clinicians will appreciate seeing how they are done.

The only possible deficiency in the book is the lack of information about computer programs such as MLINK which are now widely used for risk estimations from DNA data. Indeed it might be argued that any calculation of risk based on more than one linked marker is better handled by the computer than by the fallible human mind. Despite this reservation I would recommend this book to any clinicians involved in aspects of genetic counselling.

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Glossary of Genetics, Classical and Molecular, 5th edition. Edited by R. RIEGER, A. MICHAELIS and M. M. GREEN. Springer-Verlag, 1991. £24.50 soft cover. ISBN 3 540 52054 6.

This new *Glossary of Genetics* (*GG*, as I shall refer to it below), should obviously be compared with the very slightly older *DG* as I shall call the *Dictionary of Genetics* (edited by King and Stansfield, Oxford

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