

detail, and there is a lot to learn for those struggling with less well-characterised systems. For example, the oncogene studies deal essentially with the control of cell division and differentiation, and as such are clearly relevant to work on control of development of plants as well as animals. Similarly, the classic work on gene regulation on *E. coli* and its phage has formed the basis for models of eukaryotic gene regulation. Work in progress with plant and animal systems is now putting them to the test.

I can certainly recommend this book as informative and enjoyable reading for the novice as well as the devoted molecular biologist. Whether he will also wish to purchase a copy will probably depend on his precise range of interests.

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**Haploids of higher plants *in vitro*.** Hu Han and Yang Hongyuan. China Academic Publishers, Beijing; Springer-Verlag, Berlin. 1986. Pp. xi+211. Price DM248.00. ISBN 3 540 16003 5.

Over the last decade Chinese scientists have been at the forefront of developments in plant tissue culture and its application in agriculture. This is particularly true for research on haploids. This book is, therefore, a timely compilation of advances made in haploid production techniques and utilisation in different laboratories in China, particularly those of the Institute of Genetics, Beijing, where many advances in this field have been made.

The book is divided into two parts—the first covering haploid production via anther and pollen culture and the second *in vitro* methods utilising the megaspore. Altogether there are 12 chapters covering methods of production in different species, and the utilisation of the products of these techniques, doubled haploids, in plant breeding, and in genetic and cytogenetic studies.

The first three chapters describe in great detail the influence of genotype, developmental stage, pretreatments, culture conditions and media on the induction of callus and the regeneration of plantlets. These chapters deal with rice (Chen Ying), wheat (Ouyang Junwen) and woody species (Chen Zhenghua) and provide clear, detailed protocols for the different species. These essentially summarise the conclusions of years of patient, hard work in getting the “cookery” right.

Chapters 4 and 5 describe the genetic variability observed in the products of anther culture in wheat (Hu Han) and in maize (Gu Mingguang). These authors review the types of chromosome aberrations observed and discuss possible causes. This is further explored at

the ultrastructural level in the next chapter by Huang Bin which describes in great detail the developmental events which occur during pollen development *in vivo* and *in vitro*. This first part of the book is concluded by three chapters describing how these techniques have been applied, and can be applied, to produce new varieties of rice, wheat and maize.

The second half of the book details with the culture of unfertilised ovaries, technologies which, as yet, are not as far advanced, particularly in terms of application, as anther culture. Although there are only three rather short chapters in this section, nevertheless, they give much interesting and useful information in an area of tissue culture which is proving a difficult nut to crack.

Overall, although essentially aimed at the specialist in this field the book contains much of interest to others. It is a nicely produced, and generally well written book with numerous good photographs and well stocked bibliographies. Since many of the original papers are relatively inaccessible to western workers because they were written in Chinese this book should prove a valuable source of information for researchers and plant breeders alike.

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**Human chromosomes: Structure, behavior, effects (2nd Edition).** Eeva Therman. Springer-Verlag, New York. 1986. Pp. xvi+313. Price DM89.00. ISBN 3 540 96173 9.

This, the second edition of Eeva Therman's “*Human chromosomes*”, is a much expanded and rewritten version of the original book and brings the reader up to date with developments in this fast-moving field. The book is intended as an introduction to human chromosomes and will provide the reader with an excellent grounding in human cytogenetics and cytogenetics in general. It should appeal to a wide audience.

The 28 chapters each cover a clearly defined subject area and are further subdivided into smaller topics which aid clarity. The subject matter covers the history of cytogenetics, general cytogenetics, including chromosome structure and cell division, and more specific subjects areas such as double minutes and homogeneously stained regions, oncogenes, and the mapping of human chromosomes. At the end of each chapter there is an extensive reference list and a comprehensive index provides easy access to the material. The well planned layout of this book will make it particularly valuable both as a textbook for the student and as a reference book in the laboratory.

It is pleasing to find, in a book on human chromosomes, that reference is made throughout the text to research on plant and other animal species. My only disappointment is that the photograph of a normal

karyotype (Giemsa banded) (Figure 11.4) exhibits few bands and does not reflect the standard of banding achieved today. However, the rest of the book is well illustrated.

This is a very readable, accurate and up-to-date book which I highly recommend.

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**Genetics of microbes (2nd Edition).** Brian N. Bainbridge. Blackie and Son, Glasgow. 1986. Pp. x + 214. Price £25.00 HB, £11.95 PB. ISBN 0 216 92002 7 PB, 0 216 92001 9 HB.

Brian W. Bainbridge has undertaken a task which most of us would consider impossible, *i.e.*, to produce a compact and comprehensive introduction to Microbial Genetics in  $\approx 200$  pages. In his first edition he achieved a remarkable coverage of the subject in only 193 pages and in the 2nd edition this has grown to only 214 pages. Frankly, I think that the strain of limited space is starting to show. Achieving a balance between an adequate coverage of the basis of microbial genetics and new developments in the molecular aspects of the subject has inevitably led to some sections receiving only a rather superficial coverage.

Brian Bainbridge writes in a clear easily comprehended style and he provides useful and economically drawn diagrams which add to the clarity of his text. His figures demonstrate that clarity can still be achieved in black and white drawings, without the confusion sometimes seen in the more picturesque use of colour in many current texts. The work he describes in the individual chapters is supported by adequate references for an introductory text and he provides useful indications of areas of both future development and deficiency in our knowledge.

In the 2nd edition, Brian Bainbridge has extensively revised some of the chapters, particularly those involving recombinant DNA technology and others are identical to the 1st edition. I think it is a pity that the opportunity wasn't taken to revise the whole text, as it still describes trisomy in humans as the "mongol" condition and there are a few figures that frankly waste space.

This text provides a useful introduction to the genetics of a variety of microbes for undergraduates in Biology and for the non-specialist interested in a quick and convenient coverage of a rapidly developing field.

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**The consequences of chromosome imbalance, principles, mechanisms and models.** Charles J. Epstein. Cambridge University Press, Cambridge. 1986. Pp. xxxi + 486. Price £45.00, \$59.50 US. ISBN 0 521 25464 7.

Since the introduction of chromosome banding systems in the early 1970s, we have seen dramatic advances in clinical cytogenetics and the establishment of the "new chromosome syndromes". The range and combination of possible duplications and deletions of chromosomal segments is almost endless, and to attempt to organise what we already know about them, and draw rational conclusions as to the consequence of chromosome imbalance, would be a task far too daunting for most to attempt. To have explored the subject in as great a depth as Professor Epstein has done, and to have presented such a lucid account of the analysis of this data, is indeed a remarkable achievement.

There is no doubt in my mind that Professor Epstein's success is due very largely to the meticulous way in which he keeps the reader informed of what he is about to analyse or discuss, and how he is going to set about tackling the subject. At the same time, I found the style informal and relaxed. This is not to say that this is an "easy read"—there is much to digest, but unlike many "meaty" books, I found myself wanting to read more.

The book is divided into six parts. Following an introduction, the second part discusses the clinical observations in relation to a range of aneuploid types. In the third part, Professor Epstein considers mechanisms by which imbalance of genes can lead to changes of phenotype. The fourth part of the book looks at the experimental systems for the study of mammalian and human aneuploidy; while the penultimate section is devoted to a consideration of trisomy 21, monosomy X and aneuploidy associated with cancer. In the final part, Professor Epstein reflects on the conclusions that may be drawn from the preceding discussions.

The bibliography is full, and in addition to a useful glossary of clinical terms, there is also an appendix showing standard human and mouse ideograms. The publishers have contributed to the excellence of the book, in that the general layout is pleasing. The only slight reservations that I have, concern the illustrations. The line drawings are very clear, but the few half tone plates that are included, are rather grey, and tend to detract from the overall appearance of the book. I also felt that in redrawing the ideograms for chromosomes 11 and 13 on page 48, the current standard band nomenclature should have been used.

Leaving aside these very minor criticisms, this is a very good book that should appeal not only to cytogeneticists and clinicians with an interest in genetics, but also to a much wider spectrum of readers in the field of biology and medicine.

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