BOOK REVIEWS

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The Chromosome. Ed J S Heslop-Harrison, R B Flavell. (Pp 281; £49.50.) London: BIOS Scientific Publishers. 1993.

Given the current frenzy in the hunt for disease genes, it is easy to lose sight of more global questions concerning gene organisation. Is there any logic to the way genes are distributed along chromosomes? What determines the alterations in chromosome structure through the cell cycle, and chromosome replication? What effects does this have on gene regulation? These are some of the questions that a book of this title should address.

The inside cover reveals its provenance as "selected reviews from the Tenth John Innes Symposium held from September 7 to 10, 1992, in an edited and modified form". Although the contributors are to be commended on the speed of publication, its origins highlight two drawbacks. First, out of 18 chapters, three concern plants and four concern bacteria, subjects which might fall outside the province of all but the most eclectic medical geneticist. Second, the amount of detail in each review varies considerably, from the in depth (eukaryotic origins of DNA replication, DePamphilis, 28 pages) to the cursory (DNA methylation and CpG islands, Antequera and Bird, seven pages). These problems are partly compensated for by the high scientific calibre of the contributors. There are brief but illuminating essays on telomeres (Richards *et al*, Greider *et al*), β globin expression (Grosveld's group), imprinting (Ferguson-Smith and Surani), and the genome sequencing projects in *E coli* and *S cerevisiae* (Blattner *et al*, Oliver *et al*). The exposition of position effect variegation in *Drosophila*, a phenomenon that is ripe for the discovery of a human corollary, is particularly clear (Henikoff *et al*).

On the other hand, most of these subjects represent fairly safe "reductionist" territory, and the going gets tougher once one ventures into the more dynamic aspects of chromosome function. The review by DePamphilis, already mentioned, is the most comprehensive and scholarly of the collection, but at the end the author summarises the current state of knowledge on how chromosomes of higher eukaryotes replicate their DNA as "akin to a blind man describing an elephant". It seems that DNA replication is initiated preferentially at defined sites 0.4 to 3 kb long, which lie embedded in larger (8 to 55 kb) replication "bubbles". However, the identity of the important *cis* acting sequence motifs, and the influence of chromatin organisation on the whole process, remain to be elucidated. Elegant biochemical work from Laskey's group on chromatin decondensation following fertilisation in *Xenopus* implicates a protein, nucleoplasmin, that acts as a "molecular chaperone" in the assembly of histones and DNA into nucleosomes. Analogous processes may be responsible for chromosome decondensation following mitosis. The chapter by Moens and Pearlman "probing pachytene chromosomes" is illustrated by some attractive colour photographs showing the synaptonemal complex and associated chromatin loops using *in situ* methods.

In summary, this is a well produced book that provides some interesting, but rather disjointed snapshots of the approaches being used to understand chromosome function at various levels of organisation. There are many obvious omissions, such as recent work on microtubule self-organisation, centromere structure and function, and comparative mapping and evolution of chromosomes, to name a few. A useful book to dip into, but one that lacks the depth of coverage to assure an extended shelf life. But then, perhaps it is simply too early to write a satisfying book with this ambitious title.

ANDREW WILKIE

Genome Maps and Neurological Disorders. Ed K E Davies, S M Tilghman. (Pp 125; £49.00.) New York: Cold Spring Harbor Laboratory Press. 1993.

Volume 6 in the Genome Analysis series contains five papers describing specific areas where molecular genetic advances have had particular impact in neurobiology. Each is well written and informative: two describe general applications (cloning and analysis of nervous system cDNAs and the use of mutant mice to study mammalian CNS development) while three are disease specific (fragile X syndrome, bipolar affective disorder, and Alzheimer's disease). The paper by Oostra

and colleagues describing the genetics of fragile X syndrome stands out as the most complete and includes interesting discussion on possible mechanisms for trinucleotide repeat instability as well as summarising current understanding of the role of methylation in the silencing of the FMR-1 gene and the timing of the repeat expansion.

The other disease specific papers serve to remind us of two of the major pitfalls in identifying disease associated genes. Straub and Gilliam describe how initial evidence for linkage of bipolar affective disorder to chromosomes 11 (lod score 4.9 for HRAS1) and X (lod score 9.17 for Xq28 markers) was refuted by re-evaluation of the pedigrees and linkage data, the multipoint lod score for the X locus dropping to -2.04! This paper should be required reading for anyone embarking on linkage analysis for psychiatric disorders.

The paper by Talbot and colleagues addresses the more familiar problem of genetic heterogeneity as it pertains to Alzheimer's disease (AD). It also touches on the interesting association of polymorphisms of the ApoE gene on chromosome 19 with familial and sporadic AD.

This slim volume contains much of interest to researchers in the field of molecular neuroscience. It would be a welcome addition to any departmental library.

JOHN C MACMILLAN

NOTICE

IV International Fetal Genetic Pathology Workshop

The IV International Fetal Genetic Pathology Workshop will be held on 31 March-2 April 1995 at Malelane Lodge, Kruger National Park, South Africa. Main focus: 'Craniofacial development and malformation'. Other topics will be presented. Enquiries and further information from Lesley Stephenson, Conference Office, PO Box 327, WITS 2050, South Africa. Tel: 27 11 716 5091, Fax: 27 11 339 7835.

Please note: The South African Society of Human Genetics 6th Congress will be held on 27-29 March 1995 in Cape Town, South Africa.