

Book Reviews

Genome Analysis, Volume 1: Genetic and Physical Mapping. Edited by KAY E. DAVIES and SHIRLEY M. TILGHMAN. Cold Spring Harbor Laboratory 1990. 189 pages. Cloth \$40 ISBN 0 87969 358 4.

Molecular biology in general, and genome analysis in particular, are extremely fast moving fields – so much so that it can be very difficult even for the mainstream participants to keep up with developments in their own field. There is a constant urgency to produce new data so that standing back and thinking about the aims and optimal methods of achieving them often have low priority in day-to-day life. Well, here is a book that provides much food for thought in less than 200 easy-to-read pages. There are five chapters on: fluorescence *in situ* hybridization (FISH); producing ordered clone sets for mapping and sequencing; yeast artificial chromosomes (YACs) for cloning, and gene manipulation; deletion mapping in the mouse for identifying new, functionally important loci; and lastly a discussion of simple sequence repeats, now so prominent in genetic mapping strategies.

Each chapter covers a growth area. The technology in each case is sufficiently advanced to be considered 'established', but the full spectrum of uses has not yet been exploited. Accordingly, the experimental methodology is only discussed in broad outlines, but is reasonably well referenced. Most of the text deals with the wider potential or possible pitfalls of the technique. For example it is clear that FISH is currently the method of choice for defining the position of chromosomal breakpoints, both translocations and deletions, although it must be said that the idea has not spread yet to the mouse, if chapter 4 is anything to go by. I am sure it will: having had good success in man we are just about ready to try deletion analysis in the mouse. The problem is that there is often a better genetic than molecular map in the mouse, but probes can be generated for example by utilising the known syntenic regions between species, a concept barely touched upon in the relevant chapters here.

The chapter on hybridization fingerprinting is a thought-provoking departure from the most entrenched approaches to producing ordered clone sets which eventually make up the maps. The authors discuss in simple numerical terms, but without any off-putting maths, the fastest route to establishing

order and deducing some sequence. I have heard the arguments on previous occasions, but it is more convincing in printed form absorbed at my own pace. The YAC cloning chapter too gives insights into the versatility of this tool, the many different ways in which it can be utilized, for example for exon mapping in large genes and eventually for assessing function by transferring YACs into embryonic stem cells and eventually analysing them in transgenic mice.

The description of how to identify polymorphic microsatellite sequences (often referred to as $(CA)_n$ repeats) efficiently in specific regions is clearly essential reading for anyone engaged in generating new markers for genetic mapping. Sufficient numbers of perfect, imperfect and compound repeats have been analysed by the author to allow the drawing up of general guidelines for which sequences to pursue and which to abandon as unlikely to yield informative results – obviously worth investing time and effort to read this in order to save both on following up uninformative repeats.

A book like this would be sound investment for the library in any genetics laboratory. It could well inspire its readers to design more efficient and powerful approaches to solving their genome analysis problems. I wish I had got round to reviewing it faster, but each chapter has remained fresh and topical over the weeks the book lay on my desk. And that is a real achievement in this field. My appetite is whetted for volume 2 in the series which promises further fashionable topics.

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Genes and Genomes. By MAXINE SINGER and PAUL BERG. Blackwell Scientific Publications Ltd. 1991. 929 pages. £27.50. ISBN 0 632 02879 3.

Genes and Genomes is one of those large and lavishly produced American books appearing on the market at a price equivalent to about 50 units of *Taq* polymerase. It has nearly 1000 pages and two-coloured illustration by a talented team of scientific artists led by Charlene Kornberg. Perhaps it should be Singer, Berg and Kornberg, so integral to the material of the text are the 700-plus figures. It is in fact a mouth-