Book reviews

The Dynamic Genome. Barbara McClintock's Ideas in the Century of Genetics. Nina Fedoroff and David Botstein (eds). Cold Spring Harbor Laboratory Press. New York. 1992. Pp. 422. Price £50.00, hardback. ISBN 0 87969 422 X.

This book not only encompasses insights and scientific discoveries of Barbara McClintock since the start of her career near the beginning of this century, but gives the reader a historical account of the evolution of genetics during this time to what we recognise as today's modern genetics and molecular biology.

After a short introduction *The Dynamic Genome* is divided into four main sections covering Cytogenetics, Transposition, Retirement and The Nobel Prize and a Molecular Retrospective. These titles refer, in chronological order, to the different aspects of McClintock's work which are discussed in the chapters within. Every section opens with a reprint of a relevant paper by McClintock, and appropriate reprints are also used to close those sections on Retrotransposition and Retirement. Each of the four parts of this book comprises contributions written by friends, colleagues and some of those familiar with McClintock's work who, in turn, have discovered transposition in other organisms. The sections vary considerably in length, content and the number of chapters.

For those like me, who were probably only aware of one aspect of McClintock's work, this book was a revelation. It covers the many areas of genetics in which she was involved, including maize genetics, *Neurospora* chromosomes, transposition (of course!!) and a host of other genetic intrigues for which her scientific legacies have served as building blocks. As a young scientist, I found the section on Cytogenetics a delightfully encouraging read. It describes the early years of McClintock's career as a graduate student at Cornell University and details scenarios still familiar to many involved in the scientific world today, such as overcrowding and lack of funding. It also describes how McClintock, and those around her, reaped benefit from these seemingly undesirable situations.

Those essays that describe how their author's were influenced, both by McClintock herself and by her discoveries, make an enjoyable read for those of us not familiar with the entire range of her research. A few authors failed to make this connection throughout their contributions and succeeded in losing my attention whilst relating the story of their own works. This book is not a text book. If one wanted a description of McClintock's research, then one would surely read the relevant papers or a textbook on the relevant subjects. In addition, there is a certain amount of overlap between chapters in some of the historical background describing genetics at the start of the century. This is not

necessarily a negative factor. It is to be expected in such a compilation, with contributions from a variety of authors, each of which has an individual viewpoint. Together, these contributions serve to give an unbiased and balanced insight into how things really were.

This book is inspirational and educational reading not only for geneticists but for any aspiring scientist. The impression given of McClintock's unique powers of perception, and her understanding of nature as a whole, leaves the reader aware of the standards attainable and wondering if they will ever reach them during their own lifetime. This is quite an expensive book for personal purchase but you could always borrow a copy from the library, especially if you are in need of some inspiration or encouragement to introduce new and controversial ideas to the scientific community. Remember, it took a decade for McClintock's idea of transposition and mobile elements to be accepted by her peers. It was for this discovery that she was awarded a Nobel Prize in 1983, almost thirty years after she first proposed the phenomenon!!

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Basic Human Genetics. E. J. Mange and A. P. Mange. W. H. Freeman, London. 1993. Pp. 491. Price £29.95, hardback. ISBN 0 87893 495 2.

The preface to this text book indicates that it is geared towards first year (US) college students with diverse interests in any branch of biology. Thus the book should aim to be inspirational, as well as being purely informative.

On these grounds I think the book succeeds well. Having read it, I was left with a renewed feeling of the excitement and scope of human genetics. The book is visually attractive, with a user friendly layout and index. Most chapters are introduced with a specific case history adding human interest to the subject, and advances are placed in historical context. The text is broken up with figures and inset boxes, and each chapter ends with questions (with answers at the back for embarrassed reviewers!).

The book is organized into sections, which in some places are a bit contrived. For example, imprinting is considered as an essential genetic concept, whereas recombination and linkage are dealt with under more complex issues. No biochemistry is tackled until half-way through the book. I suppose that the rationale for this is to avoid frightening off students with no chemistry background at the outset. As a

consequence, for example, the genotype/phenotype relationships between Becker and Duchenne muscular dystrophies could not be adequately explained on the basis of the exon/intron structure of the DMD gene, since the concept of exons had not been covered at this stage. Likewise, the word "substance" rather than amino acid is initially used to describe phenylalanine (in phenylketonuria), and nucleoli contain "substances" rather than rDNA genes. It is not until Chapter 14 that the book really gets to grips with the biochemistry underlying inborn errors of metabolism and cancer genetics, and I found this one of the most enjoyable parts of the book.

Although the text in general is clearly written, there were parts of the book which I found misleading. For example, in Chapter 2 it is implied that all insects and animals have heteromorphic sex chromosomes with males having an XY karyotype. Similarly, Chapter 7 states that the L1 elements inserted into the factor VIII gene actually produce reverse transcriptase, whereas they merely have the potential to encode a protein with homology to reverse transcriptases.

The last section of the book deals with evolution, genetic screening and counselling, eugenics and ethical questions.

Much of the media attention directed towards human genetics quite rightly focuses on the social, ethical and moral dilemmas associated with genetic screening, assisted conception and gene therapy. These subjects are all covered thoughtfully, albeit from a very US-centred point of view. The teaching of creationism versus evolution is raised, and many of the problems of genetic screening which are discussed focus on access to medical insurance. For now, at least, this is one problem which we do not have to consider on this side of the Atlantic, although many of the same considerations pertain to life insurance.

I would recommend this book as an up-to-date text for first year students of biological sciences and medicine, and much of it might also be within the grasp of motivated A level and Scottish highers school pupils.

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