

Book reviews

Exploring Genetic Mechanisms. Maxine Singer and Paul Berg (eds). University Science Books, Sausalito, CA. Pp. 674. Price £60.00, hardback. ISBN 0935702 70 9.

I am writing this review (already late) during the bouncing excitement and expectation of the *Soujourner* landing on Mars. This foray to the Red Planet is destined to animate our assumptions on the totality of the molecular basis of life here on Earth and elsewhere. So exciting, it doesn't get any better than this!

A measure of a good text book is that it conveys a sense of excitement and achievement (after the fact) of those discoveries that changed our view of biology and led to our present mixture of prejudice and understanding. In their preface Singer and Berg stress the unity of genetic processes among different organisms in relation to the structure, organisation and expression of genes and genomes. This book has the highly laudable aim of introducing how genetic complexity is analysed by focusing on an eclectic collection of experimental systems. If there is a message, it is that genetic strategies are limitless and anything goes (so there must be hope for discovering life on Mars). However, the level of excitement in this book is low. This trend begins by anticipating that in future biology will be represented by a bland continuum which ranges from the properties of a gene to the hierarchical interactions of systems. This, the editors avow, will make arguments over the reductionist vs. the holistic view of biology irrelevant. It sounds really boring and really wrong? Genes are not the sole explanation for complex etiologies and syndromes.

Initially the book concentrates on the analysis of viral life cycles (papo-, RNA- and retro-viruses) in relation to their gene expression programs and effect on host cells. This is followed by an excellent chapter on viruses and cancer which comes closest to the ideal set out in the preface because it at least gives the reader a slight frisson with the analysis of oncogenes, taking as its starting point the discovery of the *Src* gene by Varmus and Bishop. Then there are chapters on human gene mapping (resulting in a very low LOD score), haemoglobin gene expression, antigen receptor diversity, intracellular signalling peptides, *Drosophila* development, manipulating protein structure and two excellent chapters on the genetic modification of animals and plants. In choosing this format there are going to be omissions such as chromatin analysis, epigenetics and the uses of frogs, worms and yeasts. It just makes you wonder why some topics were included and others omitted. By way of compensation the layout is superb and all the diagrams are built up from a set of key figure symbols which are consistently used in different

chapters. In addition the book contains examples of real data; many textbooks try to get by with unreal graphic representations instead of the raw blobs and blots of experiments.

Ultimately the book does not live up its lofty aims, in part because although the different topics demonstrate genetic and cellular complexity, there is no overall view as to what theories and ideas are being tested. Thus there is no sense of thrill, pace or achievement. Why not delve into how scientists came to comprehend what makes normal cells cancerous and the persistent role of the tumour viruses in that story, from the first filtrate that caused sarcomas in chickens to the pioneering work of Little and Gross with mice in the 30s and 40s? The powerful insights of Dulbecco (influenced by his work on bacterial viruses), Baltimore, Temin, Bishop and Varmus should be used as a vehicle of explanation and excitement especially in relation to the ingenious oncogene hypothesis of Huebner and Todaro. This story also serves as a good example of a scientific advance that was challenged by the scepticism of peers whose beliefs are bounded by, and finally convinced by, experimental evidence. It also illustrates the pluralism of science which tolerates a wide set of beliefs built on the assumption of the unity of the molecular basis of life wherever we find it. This reminds me of a story from Ray Bradbury's *Martian Chronicles*. Two Martians are looking up at Earth hanging in their night sky. One says to the other 'Do you think there is life on that planet?' The other replies 'Nahhhh, too much poisonous oxygen there!'

RICHARD MEEHAN
Department of Biochemistry
University of Edinburgh
Hugh Robson Building
George Square
Edinburgh EH8 9XD
U.K.

Understanding DNA and Gene Cloning: A Guide for the Curious (3rd edn). Karl Drlica. John Wiley and Sons, Inc., New York. 1997. Pp. 329. Price £19.99, paperback. ISBN 0 471 13774 X.

The book has 14 chapters, that start with DNA structure, replication and gene expression, followed by a discussion of bacteria, plasmids, phages and enzymes, as used for