

tion fragment length polymorphisms) on the different chromosomes. Linkage analysis of familial data using RFLPs is making it possible to locate the chromosome segments carrying particular genes in cases where the molecular pathology of the defect is quite unknown – and this is the first essential step in analysis. Recent successes with this approach include Huntingdon's Chorea, Duchenne muscular dystrophy and polycystic disease of the kidney. Oligonucleotide probes have also made it possible to recognise specific gene mutations, e.g. causing sickle cell anaemia,  $\beta$  thalassaemia and  $\alpha$ 1 antitrypsin deficiency. Rapid development in this area can be expected, and will certainly lead to a demand for much increased laboratory facilities.

The chapter on the treatment of genetic disease is also of particular interest. Current treatments include surgical correction of certain congenital abnormalities, diet control of a few metabolic disorders and replacement therapy for others. Recent attempts to replace missing enzymes, or to replace defective genes by bone marrow transplants, have proved very disappointing so far; but research into possible methods of gene replacement therapy is going ahead very actively. This is the approach which it is popularly assumed will be the natural outcome of genetic engineering, but, as this chapter makes clear, some very difficult problems have to be solved before it can become a reality. Other approaches include attempts to turn on genes which were active earlier in development, such as the foetal haemoglobin genes, but again with little success so far.

Weatherall ends with a very useful discussion of future prospects and ethical problems likely to arise from these developments. To sum up, I strongly recommend this book as essential reading for everyone interested in the prospects and problems of applying genetic knowledge to man, woman, child and foetus. It is very well written, extremely well illustrated, and cheap enough to buy for your private library. As a footnote, I read that a medical team in Tokyo has devised a method of separating X- and Y-bearing human sperm which really works (numerous claims of success during the last thirty years have always remained unsubstantiated). It is claimed to produce a very high success rate for a female child and a slightly lower success rate for a male child. It is being used to prevent the transmission of sex-linked diseases such as haemophilia, and also for women who simply want a daughter. The ethical aspects of an uncontrolled commercial venture of this kind have come under attack.

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*Molecular Biology of the Photosynthetic Apparatus.*

Edited by K. E. STEINBACK, S. BONITZ, C. J. ARNTZEN AND L. BOGORAD. Cold Spring Harbor, New York: Cold Spring Harbor Laboratory. \$75. ISBN 0 87969 188 3.

The editors of this volume suggest that photosynthesis research has developed in 'eras', as various research approaches have been utilized, and that the last eight years constitutes the era of chloroplast molecular biology. During that time, the application of recombinant DNA technology to help improve our understanding of aspects of chloroplast function and development has certainly had a major impact. The precise and detailed information obtained from analysing genes encoding components of the photosynthetic apparatus has been most valuable to protein biochemists who wish to describe the photosynthetic structures in detail. Cloned DNA sequences have been employed to learn more about the control of synthesis of photosynthetic proteins, and the molecular analysis of photosynthetic mutants has told us much about the structure and function of specific components. These aspects of the photosynthetic apparatus are those which dominate this volume, which is derived from a meeting held at the Cold Spring Harbor Laboratory.

The book begins with an introductory review article by three of the editors, and is then presented in two sections: *Molecular Biology of Energy-Transducing Photosynthetic Membranes*, and *Genes for the Photosynthetic Apparatus*. The first of these sections is comprised of 25 papers dealing with the major macromolecular complexes involved in electron transport, light harvesting and photophosphorylation. The second section is comprised of 21 papers dealing with the chloroplast genome, prokaryotic systems, and nuclear chloroplast interactions. A notable feature of the book is the strong representation given to bacterial photosynthesis, which is most welcome. Increasingly, research dealing with prokaryotic and eukaryotic photosynthesis will overlap, as genes encoding components of the photosynthetic apparatus are transferred between the two groups.

Volumes of this kind often provide authors with the opportunity to present incomplete results or speculative ideas which might not pass the rigours of review in regular journals. This particular volume is no exception, which adds to, rather than detracts from, its value. Also, there is a certain amount of original data, including nucleotide sequences, which will not appear elsewhere. Therefore, the papers in this book will be referred to widely in future publications. Most papers are quite brief, which helps the reader to find the important information in each. It is also helpful to have all references with complete titles. Specific information can also be found by reference to a comprehensive subject index or to the author index. These features, together with the large number of topics covered, will make the book a valuable addition to the bookshelf of teachers and researchers in photo-

synthesis. I suspect that the book will spend more time off the shelf than on!

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*Plant Cell and Cell Interactions*. Edited by I. SUSSEX, A. H. ELLINGBOE, M. CROUCH and R. L. MALBERG. Cold Spring Harbor, New York: Cold Spring Harbor Laboratory. 1986. 151 pages. \$27 paper. ISBN 0 87969 189 1.

This collection of 25 'short papers/extended abstracts' is based on talks given at the Cold Spring Harbor Laboratory in October 1985. 'Cell/cell interactions' is rather misleading as a title, since the book is almost entirely restricted to those situations in which cells, 'born free', subsequently come into juxtaposition. The major examples of this discussed are the interaction of sexual partners (8 papers) and host-phytopathogen interactions (15 papers). Only two papers tackle the major question of cell/cell interactions *within* the vegetative plant.

The papers are brief (3–6 pages), telegraphic descriptions of recent work: some published or in press in refereed journals; some not yet refereed and therefore to be taken with a pinch of salt. This balance between review and preview is achieved by the various authors with varying degrees of success. Too often, the emphasis is on preview, so that the book will soon

be out of date. Indeed, many of the items of research described as 'in progress', etc., have now appeared in mainstream journals. However, for anyone who wants a quick taste of some of the research currently going on in the exciting field of non-sister cell/cell interactions, this book will provide one, although I cannot say that it is particularly good value for \$27 (without an index).

It is difficult to guess who this book is really aimed at – probably mainly the participants of the conference as a memento. At any rate, the book is likely to be preaching to the converted. Students and newcomers to the field are unlikely to make much headway owing to the large amount of background knowledge assumed.

Another point that will severely limit the book's usefulness is the fact that, officially, its contents are unpublications. The book bears the statement that 'the individual summaries ... should not be treated as publications or listed in bibliographies. Information contained herein can be cited as personal communication contingent upon obtaining the consent of the author.' This being the case, it is difficult to see who will take the book very seriously.

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