Theor Appl Genet (1989) 78: 608

Book reviews

Wettstein, D. von; Nam-Hai, Chua (eds.): Plant Molecular Biology. NATO ASI Series A, Vol. 140. New York, London: Plenum Press 1987. 897 pp.

Someone should say it at least once: books printed from camera-ready manuscripts are no joy to read. And for this reason alone, I suspect that apart from the editors themselves and reviewers, no one will read this book in its entirety; interested readers will only select those articles which fit the needs of their work. The present volume contains the invited lectures and abstracts of posters presented at the NATO Advanced Study Institute held in June 1987 at the Carlsberg Laboratory, Copenhagen. It was really quite an outstanding assembly of plant molecular biologists which came together to discuss the possibilities of applying their knowledge to crop improvement. This volume under review contains 57 complete lectures covering a number of the main topics of molecular biology of plants: ribulose-biphosphate carboxylase, phytochrome, chloroplast genes, transcription of organelle DNA, transposons, somatic hybridization, pathways, herbicide resistance, stress reactions, virus and viroids, nitrogen fixation, and transgenic plants. One of the most interesting sections of the volume is the senior editor's summary, entitled "Missing links from molecular biology to useful plants". While being optimistic, this editor states quite clearly that genetic transformation cannot yet be employed in the breeding of such important crops as wheat, barley, rice, and maize. As demonstrated by von Wettstein, the goals are quite clear for improving the quality of barley. Fifty abstracts of the poster session round off these proceedings.

H. F. Linskens, Nijmegen

Aubert, J.-P.; Beguin, P.; Millet, J. (eds.): Biochemistry and Genetics of Cellulose Degradation. F.E.M.S. Symposium No. 43. Academic Press, Harcourt Brace Jovanovich: London, San Diego, New York, Boston, Sydney, Tokyo, Toronto. xi + 428 pp., several figs. and tabs. Hard bound.

Biochemistry and Genetics of Cellulose Degradation is the compilation of the contributions to the FEMS symposium held in Paris, September 1987. The volume begins with an introductory lecture by G. Gottschalk on the carbon cycle. This is followed by three major sections entitled (1) Biochemistry of cellulose degradation, (2) Genetics of cellulolytic microorganisms, (3) Degradation of hemicellulose and lignocellulose, and (4) (the last) Round table, methodology for studying cellulose structure and cellulase activity.

Symposia proceedings are mostly collections of rather diverse papers. As the present book is limited to fungal and bacterial cellulases and a few related topics on hemicellulose and lignocellulose, its different parts complement each other rather well, without diverging to much. The various contributions provide, in general, profound information while remaining comprehensible to non-specialists. A few minor, but unavoidable, remarks have to be made. The contributions of P. Sims et al.: Molecular genetics of lignocellulose degradation, and R. L. Farrell et al.: Cloning ligninolytic enzymes, belong in part 2, not in part 3. The later contribution is also too superficial. In the contribution by K. E. Erikson: Microbial delignification, figures 2 and 7 serve very little purpose without a more detailed explanation as to how cellulose can be detected electron microscopically. The contributions found in part 4 are too concise and could have been omitted, or they should have been extended. It should also be noted that cellulases are be no means a monopoly of fungi and bacteria; they also occur in higher plants, where they play an important role in cell morphogenesis. As cell walls constitute more than 90% of the entire biomass, their degradation is of crucial interest to the global carbon cycle and to their possible use as a source of energy. Considering the threats by deforestation and industrial acid emissions, the study of cell walls in every aspect and not only degradation is attracting too little interest. It should be one of the major topics of present science. The present publication must be considered a useful contribution.

J. W. M. Derksen, Nijmegen

Low, K. Brooks (ed.): The Recombination of Genetic Material. San Diego: Academic Press 1988. 506 pp., 98 figs., 25 tabs. Hard bound.

Authors of the individual chapters have been selected from amongst the leaders in their field. In particular, the "tours de force" of Clark and Low's "pathways and systems of homologous recombination in *Escherichia coli*" (60 pages), Oishi's chapter on recombination and SOS functions (46 pages), Potter and Dressler's contribution on the molecular biology and evolution of recombination (65 pages) and Grindley's review of transposition induced recombination (77 pages) as well as Miller's short but detailed summary of the regulation of lambda integration and excision provided a core of up-to-date material, intelligently interpreted and critically evaluted, which alone would have induced me to buy this volume.

Smith's chapter on hot spots for homologous recombination had the character of a collection of curiosities largely covered in the other chapters. Meselson's chapter on "methyl-directed repair of DNA mismatches" gives a summary of data up till early 1986 which can be understood in the context of recombination and gene conversion.

Eukaryotic recombination gets very poor treatment, unworthy of the advances made in this field. Perry's review on the immunoglobulin genes is confined to gene structure/cDNA composition as it was known in 1982. Finally, the chapters 2 and 3 (an unfortunate position, which nearly lead me to reject it out of hand on first perusal) from Rossignol et al. on non-Mendelian segregation in *Ascobolus* and Hilliker et al. on *Drosophila* do not belong in this book. They are full of half-digested raw data and speculations (50 pages for *Ascobolus!*) The *Drosophila* paper includes 17 self-citations from a total of twenty (three since 1984) and the *Ascobolus* paper only three citations since 1985.

Illustrations were rather few, basic and far between, being in general, apart from the classical chesnuts, not very informative.

In spite of the varied quality of the contributions, this book contains enough good, well-presented, up-to-date material to enable an evaluation of the current status in bacterial and bacteriophage genetic research. It is particularly aimed at those involved in research and university education. Many chapters contain information and insights with respect to recombination in *E. coli* that I have not found in other text books, although some areas of direct practical importance such as deletion of palindromes and comparisons of DNA stability (vis à vis deletion) of chromosome- and plasmid-located sequences (particularly European research) are not covered.

J. Collins, Braunschweig