

Book reviews

Bajaj, Y. P. S. (eds.): Crop II. Berlin, Heidelberg, New York: Springer 1988. XX/578 pp., 154 figs. Hard cover DM 398.—.

In the volume under review, biotechnology has been reduced to in vitro approaches and tissue culture work. As in the earlier volume, (*Crops I*, 1986), micropropagation is included and blown up out of proportion with respect to the crop species treated (grapes, strawberry, brambles, red raspberry, currant, gooseberry, kiwi fruit, blueberry, cranberry, cauliflower, cabbage, Brussel sprouts, broccoli, cucumber, chicory, targo, rhubarb, lettuce, spinach, quinoa, kale, fescue, brome grass, bermuda grass, napier grass, foxtail, sainfoin, trifol, millet bluestems, indian grass, turtle grass, Barnyard grasses, *Paspalum*) by including information on their importance, distribution and area under cultivation, diseases, and conventional practices. All of these topics can be found in more detail in other standard works. While there is no doubt that test-tube propagation is increasing in importance and is already being practised on a large scale world-wide, a compact volume would have been of more value to the researcher and most likely also cheaper than this treatise.

H. F. Linskens, Nijmegen

Skulachev, V. P.: Membrane Bioenergetics. Berlin, Heidelberg, New York: Springer 1988. XIV/442 pp., 130 figs., 18 tabs. Hard bound. DM 398.—.

This book, which is written by a well-known authority on bioenergization, provides a survey of what is currently known about the energization of both animal and plant cells. It opens with an introductory chapter; this is followed by a chapter (2) on the determination of the two components of the proton motive force (pmf) – the membrane potential and the pH difference – across the cell membrane, and two chapters (3 and 4) on the formation of the pmf. Chapter five discusses the use of the pmf: in scalar processes as the formation of ATP, pyrophosphate and NADPH; in vectorial processes as protein and DNA transport, lactose-proton cotransport, phosphate-proton cotransport; in mechanical work as bacterial motility; and also as a source of heat production. Chapter six contains a description of the ways the pmf is regulated, transmitted, and buffered. In addition to the pmf, the electrochemical gradient of Na^+ may also be used as a source of energy; this is discussed in chapter seven. Chapter eight provides an outlook on future developments in research and the possible applications of the pmf or Na^+ gradient in medicine, for example, in fighting cancer or microbial infections, and also a few technological applications. The last chapter describes the history of research on the pmf.

This book may be considered to be a textbook for both those carrying out research on the bioenergization of membrane transport processes and those who would like to acquire a more detailed knowledge of this field, such as students and lecturers. Though it does cover the whole field of membrane bioenergization, some more information on pmf- or Na^+ -linked processes in fungi could have been provided.

G. W. F. H. Borst Pauwels, Nijmegen

Coll. INRA: Variabilité Génétique Cytoplasmique et Stérilité Mâle Cytoplasmique. INRA 1988. 313 pp.

The English translation of the title of this book is *Cytoplasmic Genetical Variability and Cytoplasmic Male Sterility*. The

volume is the proceedings of a joint meeting held on this topic at Saint-Sabine (France) on April 22–23, 1987. About 30 papers were presented by both basic researchers and plant breeders.

Ever since the creation of the first male-sterile hybrid, a great deal of research has been directed towards the study of both genomic and cytoplasmic male sterility. Breeders have shown an ever increasing interest in these genotypes which represent an effective means for controlling crosses in various crop species. However, despite the fact that molecular biology provides fantastic tools, there is as yet no clear evidence elucidating the relationships between mitochondrial DNA and the mechanisms inducing male sterility.

These proceedings will appear heterogeneous in their contents because of the many species discussed and analyzed (cotton, wheat, corn sorghum, rape seed, sunflower, thymus petunia, and *Vicia faba*...). Nevertheless, this is the state of the field, and if the term "restorer" is used by plant breeders, molecular geneticists are still unable to provide a clear definition for this concept.

This book will be a good complement to the classical treatise of Kaul which was recently published in the Monographs of Theoretical and Applied Genetics (1988). As the organizer, A. Berville, pointed out in his concluding remarks, it is of an absolute necessity to concentrate research efforts to a few models and to enlarge this research domain to plant physiologists in order to analyze the male program and its genetical deviation, such as male sterility.

C. Dumas, Villeurbanne

Rott, R.; Goebel, W. (eds.): Molecular Basis of Viral and Microbial Pathogenesis. Mosbacher Colloquium, No. 38: Berlin, Heidelberg, New York: Springer 1988. 185 pp., several figs. and tabs. Hard bound DM 89.—.

The focus of the 38th Mosbacher Colloquium was the mechanisms of pathogenesis of diseases caused by viruses and bacteria. Two aspects were given special attention: first, the nature of such basic biological processes as replication, gene regulation, genetic variability, and host-pathogen interactions; second, the use of this knowledge for controlling these diseases. Such new genetic and immunological techniques as recombinant DNA and monoclonal antibody methods have provided unique tools for studying infectious diseases induced by viruses and bacteria. The application of these methods in the characterization of correlations between specific attributes of viruses, bacteria, or parasites and the mechanisms of pathogenesis provided the main topics.

Special emphasis was given to the correlation between viroid and virus structures and the pathogenicity of plant viroids, influenza viruses, herpes viruses, adenoviruses, measles virus, and a leukemia virus. Shiga and Shiga-like toxins were analyzed as well as the molecular mechanisms of pathogenicity in *Shigella flexneri*, *Neisseriae*, and *Streptococcus* group A. The functions of bacterial cytotoxins, clostridial neurotoxins, iron as a signal in bacterial infections, as well as the stage-specific expression of antigens in *Trypanosoma cruzi* were discussed. The papers were presented by scientists well-known in their field and they provide new insights into the problems discussed.

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