

## Book reviews

**Vogel, F.; Sperling, K.: Human Genetics, Proceedings of the 7th International Congress, Berlin, 1986.** Berlin Heidelberg New York: Springer-Verlag 1987. 716 pp., 154 figs., 238 tabs. Hard bound DM 460.—

The 7th International Congress of Human Genetics was held in West Berlin from September 22–26, 1986. This volume, which comprises the proceedings of this congress, contains the complete plenary lectures and contributions to symposia as well as the relatively brief reports from the chair persons of the workshops. The proceedings cover a wide range of topics; for example, analysis of the human genome, basic mechanisms, diagnosis and therapy of hereditary diseases, distribution of normal and pathological genes, and DNA variation in human populations. Ethical issues raised by modern developments are also discussed thoroughly. All lectures were given by leading scientists in their field from all over the world. This volume, together with two volumes of abstracts of single contributions (posters), which are still available from the publisher, give an excellent overview of the present state of human genetics. Therefore, the volumes are a must for all scientists and medical doctors concerned with human genetics, whether in research, teaching, or dealing with practical aspects.

F. H. Herrmann, Greifswald

**Gustafson, J. P.; Stebbins, G. L.; Ayala, F. J. (eds.): Genetics, Development and Evolution. 17th Stadler Genetics Symposium.** New York London: Plenum Press 1986. XII + 361 pp., several figs. and tabs. Hard bound.

This volume comprises the lectures presented at the 17th Stadler Genetics Symposium and is dedicated to G. L. Stebbins on the occasion of his 80th birthday.

Two areas of genetics are discussed. In one of them, arguments and results were assembled in an attempt to explain evolution; in the other, possibilities for development and morphogenesis were considered. To explain evolution, all observations on variation are important, and there has indeed been a revolution in this field during the last few years. The dogma of classic genetics on the stability of the genome has had to make room for the idea that there are also instabilities in the genome. More than half of the book is related to these instabilities, for instance, Britten's lecture "Intraspecies genomic variations" and Cullis's lecture on DNA variation in response to stress in flax. An important discovery was the role of accessory DNA in variation. Different forms of it such as mobile and mutator elements in maize, transposable elements in *Dictyostelium* and animals, human retroviruses, and T-DNA, are discussed. While these examples are indeed impressive, direct links to evolution are rare. Ohno et al. showed that in addition to gene duplication (which requires 25–50 million years for transformation to a new gene), oligomeric base sequences for specific polypeptide structures, which are silent in the genome, are potential sources of new genes.

Lectures on the second aspect were intended to give new insights into events causing morphogenesis and development. Because of the difficulty of explaining ontogenesis at the genetic level, the lectures are very heterogeneous. The hypothesis that "Proteins associated with intercellular membranes and the

cytoskeleton" (Stebbins) or "Cell adhesion molecules" (Edelman) play the main primary role in morphogenesis will be interesting not only to geneticists but also to plant and animal physiologists.

Although the essays were reproduced from the original manuscripts, the printing is of good quality. In addition to a lot of experimental results and remarkable ideas, scientists interested in evolution and development will find hints for new ways of analyzing these processes.

E. Günther, Greifswald

**Rigby, P. W. J. (ed.): Genetic Engineering, Vol. 6.** London: Academic Press 1987. VIII + 183 pp., several figs. and tabs. Soft bound £ 13.50.

This volume contains three review chapters, each of them dealing with a special topic in the field of plant genetic engineering. The first chapter treats the genes encoding seed storage proteins in higher plants (J. Messing). The zeins, which are probably the best known group of the storage proteins, are used in general as an example of storage proteins. This chapter also discusses the structure of plant messenger RNA. Here, attention is focused on the nucleotide sequences that surround the AUG initiator codon, on the codon usage according to plant species, and on the signal required for the addition of the poly-A tail of the transcribed mRNA.

The second chapter describes the genetic structure, organization, and action of the plastome and chondriome, and indicates the ways for their genetic manipulation (D. M. Lonsdale). Functional harmony between the organelles and the nucleus developed during evolution when genetic information from the organelles, which originated from endosymbiotic organisms, was transferred to the nuclear genome. This, undoubtedly, will have its consequences for the success of a genetic manipulation: this harmony will be disturbed when incompatible organelles and nucleus are combined within one cell. However, in some cases, a disharmony, caused by incompatibility between mitochondria and nucleus, may lead to a desired phenotypic characteristic, like cytoplasmic male sterility. Other current ideas on genetic manipulation using cytoplasmic organelles, like the transfer of herbicide resistance and an increase in the efficiency of CO<sub>2</sub> fixation, are also explained in this chapter.

The third chapter focuses on the main vector systems that are now applied or are under development for the genetic engineering of plants (C. P. Lichtenstein and S. L. Fuller). A clear and up-to-date description is given on the infection process of *Agrobacterium tumefaciens*, the transfer of the T-DNA, and its expression in the host cell. Attention has also been given to other vector systems, involving caulimo- or geminiviruses, or based on direct gene transfer.

As a whole, this well set-up book is a nice introduction to the several fields of genetic engineering. The reviews have been approached from a plant molecular biological point of view and are based on clear examples. Each chapter begins with a page of contents and ends up in an extended, relevant and up-to-date list of references. The texts are written clearly; tables and figures are informative. The book will undoubtedly be useful as a valuable compendium of information for all scientists working or interested in the field of plant genetic engineering.

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