

## Book Reviews

**Hofschneider, P.H., Starlinger, P. (eds.): Integration and Excision of DNA Molecules 28. Colloquium-Mosbach 1977**

Berlin-Heidelberg-New York: Springer 1978. 134 pp., 55 figs., 10 tabs. Hard bound DM 48,-

The natural processes by which DNA molecules from different sources are joined together is the subject of this book and of the 1977 Mosbach Colloquium from which it is derived. In this book experts from various fields deal with examples from a very diverse assemblage of organisms.

Bacteriophages have been known for a long time to form such linkages with the chromosome of the bacterial host. The kind of integration can vary from one bacteriophage to another: this is illustrated in chapters on bacteriophages, lambda and Mu by M. Ptashne, H. Nash and P. van de Putte. Another type of transposable DNA element, the transposon, which can only occur in combination with the bacterial chromosome and can jump from one site of integration to another, is discussed in a chapter by H. Saidler. Insertion sequences, natural components of the *E. coli* chromosome which stimulate recombinational events, are described also therein. Prokaryote recombination is dealt with by G. Mosig, and the mechanisms involved in viral integration of SV40, Adeno, Herpes and RNA tumour viruses are presented in chapters by D. Nathans, J. McDougal, N. Frenkel and H. Varmus. The question of cellular mechanisms for chemical oncogenesis is dealt with by H. Heidelberger, and chapters on nitrogen fixation and crown gall follow. From these wide-ranging examples one can conclude that gene order in a given genome is not fixed but can be changed by pathological and physiological processes. The generalized hypothesis of 'wandering' genes is indeed an attractive one in the light of the discussions presented in this very readable book.

Naturally occurring DNA integration discussed in this book may be important in the continuing debate on the cloning of new DNA combinations *in vitro*. Some examples of *in vitro* recombination with nitrogen-fixing genes are given by R. Dixon and C. Kennedy, who also expand on the molecular biology of the *nif* gene. Finally, it must be gratifying to the authors of the chapter on crown gall (J. Schell and M. van Montagu) that the circumstantial evidence presented in this book for the role of T<sub>1</sub> plasmid of *Agrobacterium tumefaciens* in crown gall has been confirmed by direct evidence since this book went to press.

J.F. Jackson, Glen Osmond, SA.

**Springer, K.F. (Ed.): Semper attentus.**

Beiträge für Heinz Götze zum 8. August 1977.

Berlin-Heidelberg-New York: Springer 366 pp., 41 figs. Hardbound \$ 31.30

This is a typical German 'Festschrift' with 55 contributions. It is dedicated to Heinz Götze, a famous and devoted publisher, a man of distinction and one who has friends world-wide among scientists, physicians, Nobel laureates, archaeologists, designers, printers and business men, on the occasion of the sixty-fifth anniversary of his birth. The articles range from topics in science and the humanities to essays and admiring congratulations. This book, which can be read with pleasure, is very well edited by Dr. Götze's fellow-publisher Dr. Konrad Ferdinand Springer and Mr. Heinz Sarkowski Production Manager of Springer-Verlag. It is a token of the international fellowship of the scientific community and the relations of one of the most important scientific publishers under the sign 'Always prepared'.

H.F. Linskens, Nijmegen

**Pai, A.C.: Foundations of Genetics. A science for society.**

New York: McGraw-Hill 1974. 386 pp., 171 figs., 26 tabs.

This book is written for nonscientists. The author has been conducting a course called 'Genetics for the Layman' for a number of years and the book is a result of her experiences with that course. She succeeded in writing in a manner understandable to nonscientists, and because such readers are mainly interested in human genetics and biology she has illustrated the general genetic principles, if possible, by examples from that fields.

In order to provide for solid understanding of the basic principles of genetics, in the first section of the book classical and molecular genetics are explained. In the other section problems of immunology, cancer, evolution, mutability of man and formation of human races are dealt with. The last chapter 'Now and to Come' is critically informative about highly relevant questions of eugenics, eugenics (sperm banks, test tube babies?, cloning human cells for a 'brave new world?') and genetic engineering (until 1974). The author wants to give the public a better insight into the development of genetics in order to enable people to influence and conduct scientific work with the aim of using the progress in genetics for the benefit of human society.

As a hint for the preparation of the next edition, some critical remarks: The formation of bivalents is not shown clearly enough; a good scheme pointing out the relation between amino acid sequence and nucleotide sequence is missing; conjugation is not understandably described (fig. 7.12 is wrong); the Barr body is too big; although fig. 12.1 is cited from S. Benzer, it should be compensated by other genetically more instructive, politically less questionable examples.

The reading of this book will be profitable, not only for laymen, but also for teachers, undergraduate students of biology and scientists not trained in genetics. For geneticists, it will be interesting to learn how Anna C. Pai discusses the problems of modern genetics.

E. Günther, Greifswald

**Kuspira, J., Walker, G.W.: Genetics: Questions and Problems.**

New York: McGraw-Hill 1973. 776 pp. Soft bound DM 43.20

For the understanding of genetics the learning of facts alone is not enough. Therefore the solving of the 1768 questions and problems included in this book, or at least most of them, will help students and other readers to improve their knowledge and to learn the real interpretation of their own experimental results. Only questions and problems are laid out in the book; answers are not implied. For that reason the reader must be provided with some information about genetics by lectures or textbooks. Because the problems are graded in difficulty it will be possible even for beginners to solve some of the problems correctly with the help of genetic textbooks or other related literature. At the end of each chapter many references are provided, and some of the questions include quotations enabling the reader to answer the questions.

In 33 chapters all areas of genetics (until 1973) are treated, and examples from the genetics of different organisms and viruses are described. The majority of questions and problems are presented in such an interesting manner complemented by many figures and tables that the reader is incited to think about genetics and to deepen his understanding of it. Didactically not so well suited for learning genetics is the fact that mitosis and meiosis are discussed

in chapter 1, whereas replication, which is very important for the understanding of division and segregation, is treated only in chapter 25.

The book is greatly recommended to all those teaching genetics in schools and particularly to those people in universities, undergraduates and graduate students, and anyone else who may want to test their understanding of all or some special areas of genetics. For teaching genetics the broad collection of various problems is very valuable. Because the book was published in 1973, there are no examples of the advanced results of the last five years. It is to be hoped that, considering those recent explorations, the author will soon write an appendix to 'Questions and Problems'.

E. Günther, Greifswald

**Lubs, H.A., de la Cruz, F. (Eds.): Genetic Counseling.** A Monograph of the National Institute of Child Health and Human Development.

New York: Raven Press 1977. 616 pp., 24 figs., 122 tabs. Hard bound \$ 36.00

In forty contributions the state of the art on genetic counselling is presented, illustrating the complexity of the subject even though not all the ramifications are dealt with. Specific diseases as well as general evaluations, sociological methods, prospective programmes, organization of services, special technics and future directions and supportive methods were discussed during this conference organized by the National Institute of Child Health and Human Development. Reading is strongly advised to those who believe that they have not yet mastered every detail of the art.

S.J. Geerts, Nijmegen

**Hsu, T.C., Benirschke, K.: An Atlas of Mammalian Chromosomes Vol. 10.**

Berlin-Heidelberg-New York: Springer 1977. 324 pp., 68 figs. Loose-leaf boxed DM 64,80

This is the last volume in this series, bringing the total number of folios to 518. 'This does not mean that in the future additional compilations of karyotypes will not be appended'. Though 'it is premature to compile banded karyotypes', this Atlas 'will remain useful as a general reference'. It has substantially contributed to mammalian cytogenetics, cytotaxonomy and cytoevolution. The cumulative index makes the series a classic in these fields.

S.J. Geerts, Nijmegen

**Kelly, P.T.: Dealing with Dilemma. A manual for Genetic Counsellors.**

Berlin-Heidelberg-New York: Springer 1977. 143 pp., 1 fig. Soft bound DM 17,10

Those who regularly or occasionally give genetic counselling

should read this book and contemplate its content. It is not about the modes of inheritance, diagnostic problems or the calculations of chances, but deals with the psychological and humanistic aspects instead. The reader is given clear, step by step guidance for his communications with persons under emotional stress for a genetic reason. Geneticists have not been trained as social or behavioral scientists and this manual really fills a gap. It is regrettable that the title does not clearly describe the contents of the book.

S.J. Geerts, Nijmegen

**Segal, J., Kalaidjiew, A.: Vol. 2. Biophysikalische Aspekte der Struktur, Dynamik und Biosynthese der Eiweißmoleküle. Vol. 3. Biophysikalische Aspekte der multimolekularen Eiweißstrukturen (Koazervate, Membranen, Fasern).**

Leipzig: VEB G. Thieme 1977. 160/132 pp., 78/57 figs., 9/10 tabs. Soft bound DM 34,-/30,-

These two books (in German) treat some of the biophysical aspects of the structure, dynamics and biosynthesis of protein molecules (vol. 2) and of the multi-molecular protein structure-like coacervates, membranes and fibers (vol. 3). The books, intended for scientists working in these fields, have been written by the authors in order to express a number of hypotheses which deviate strongly from generally accepted views.

The basis of most of these hypotheses is their 'Faltentrommel' model (Falten = fold, trommel = drum) of globular protein molecules. This model, published earlier by the authors (Segal, Dornberger-Schiff, Kalaidjiew: 'Globular Protein Molecules', Pergamon Press, 1960) has never gained acceptance. This is not surprising. Their model requires the amino acid sequence to have pairs of bifunctional amino acids at regular distances and to have pairs of dibasic-amino acids alternate with pairs of diacidic-amino acids. Such regularities are not found in the known sequences of numerous globular proteins. Moreover, the model is completely incompatible with the structure of globular protein molecules as found from X-ray analyses.

Inspired partly by this model, the authors propose their 'Faltenband' model for DNA which consists of left- and right handed double helical parts of equal length. The model would make, the authors state, the unwinding of DNA preceding replication and transcription much more understandable than other models do. It would, moreover, be able to code peptide chains which satisfy the requirements for their protein model.

In the treatment of the structure and properties of biological membranes, the protein component of the membrane is again seen as a 'Faltentrommel' and plays, therefore, an important role in the permeability and transport properties of the membranes.

Although we have read both books with interest and some curiosity, the arguments used by the authors to support their theories are scarcely convincing. We do not consider the contents a valuable contribution to our knowledge. G.A.J. v. Os, Nijmegen

## Announcement

### Assinsel Award for A.C. Gallais

The International Association of Plant Breeders for the Protection of Plant Varieties (ASSINSEL), founded in 1938 at Amsterdam, has decided to create an Award for scientists whose basic research contributes noticeably to the improvement of plant breeding methods for the benefit of agriculture and horticulture.

During the 1978 Assinsel congress at Hamburg, the first Award was presented to Mr. André C. Gallais (France) for an outstanding thesis. Based on his observations of alfalfa, he conducted biometrical study on heterosis in an allogamic autotetraploid species.