

---

 Book Reviews
 

---

**Rosenthal, S.; Bielka, H.; Coutelle, Ch.; Zimmer, Ch. (eds.): Gene Function.** FEBS Meeting Dresden 1978, Vol. 51.

Oxford, New York, Toronto, Sydney, Paris, Frankfurt: Pergamon Press 1979. 490 pp., 178 figs., 33 tabs. Hard bound \$ 40,-

Gene function in its various aspects was covered by two of the symposia and a colloquium at the 12th FEBS Meeting in Dresden (1978). Aspects covered in depth included DNA-protein interactions, gene expression and the technology of genetic engineering. These lectures have been assembled in this volume to produce a publication containing an authoritative description of all the exciting and recent accomplishments in restriction, in vitro recombination and cloning of DNA, and biochemical synthesis of genes.

The volume is organized for convenience into several subsections. Functional organization of chromatin is covered in depth in two of these subsections, where chapters on the Lac repressor, chromatin replication and transcription, accompany several papers on the detailed structure of chromatin. Chapters on interactions, interaction models and restriction enzymes cover the vast field of DNA-protein interaction. A description of the mammalian virus SV40 by Fiers and collaborators is included, wherein conclusions about the genome are drawn from the complete nucleotide sequence of the viral DNA worked out by the Ghent group. Overlapping genes and splicing of m-RNA feature in this discussion.

Gene expression, processing and modification of RNA and molecular biology of bacteriophages T<sub>3</sub> and T<sub>7</sub> follow, together with sections on ribosome structure and organization, and on control of protein synthesis. Several chapters deal with the isolation and synthesis of genes as well as the construction of hybrid vectors and transfer of genes. Included in the latter are chapters by D. Jackson and J. Schell on strategies for introduction of new genetic information into animal and plant cells via mammalian viruses or the crown gall plasmid.

Topically, the book concludes with a report of a round table discussion on the beneficial and potential hazards of genetic engineering. The meeting came to the conclusion that the benefits of the new technology are very real and that hazards can be averted provided the experiments are carried out by competent and socially aware scientists who are willing to obey the necessary safety regulations.

J. F. Jackson, Glen Osmond

**Setlow, J.K., Hollaender, A. (eds.): Genetic Engineering. Vol. 1: Principles and Methods.**

New York-London: Plenum Press 1979. 269 pp., 50 figs., 20 tabs. Hard bound \$ 35,40

The subtitle 'Principles and Methods' suggest that those who want to be initiated into Genetic Engineering will find here a survey of the rules, the theory, the possible approaches, as well as the recipe to proceed. However, since this is not a monography on the subject but a compilation of contributions each 15 to 20 pages long coming from thirteen different laboratories the outcome is different. Nevertheless, the editors and the advisory board have to be congratulated that, for many of the articles, they were able to convince the leading scientists in the field to summarize their experience with recombinant DNA.

After an elegant and very thoughtful introduction by Maxine Singer, one finds two articles giving a wealth of technical information, one on cloning of double stranded DNA and one on gene enrichment.

The former is written by Efstratiadis and Villa-Komaroff, both well known for their contributions to the knowledge of the chorion of the silkworm, in collaboration with Tom Morniat and

F. Kafatos. The authors do much more than just review the recent successes of this form of molecular cloning. They specify clearly the important technical contributions of the quoted papers, underlining and detailing the important reaction conditions, as well as the concepts which guided these experiments. A list of 130 references, many from 1978, conclude this extremely useful contribution.

The gene enrichment paper is written by the Edgell and Hutchinson lab. Although they mostly detail their experience with RP-C-5 columns, which are formed of a compound no longer commercially available, the article is very stimulating since they explain well the goals of each step of the procedures. This will allow readers to judge the potentials of alternative gene enrichment methods worked out now by many authors. Most of the other articles discuss the very relevant question of how to introduce a cloned gene (or c DNA) into a eukaryotic cell and how to modify this DNA in order to obtain a desired gene product.

Wigler, Axel and colleagues describe their experience with direct transformation of cultured mammalian cells with genomic DNA. Their pioneering work, using a thymidine kinase mutant cell line as a sensitive assay system may have general application in the near future. So it is particularly fortunate that a first review of their results became available in this issue.

Another important transformation system is that of yeast. Fink and coworkers summarize recent progress and nicely detail the fascinating potentials of yeast transformation. Yeast is clearly a model system for studying genome structure and gene expression in a lower eukaryote, and secondly it offers possibilities for the large scale production of cloned eukaryotic proteins.

Reeder reminds us of what is known about in the structure of a eukaryotic genome by discussing results of cloning different *Xenopus* gene families. New approaches for selective mutagenesis of cloned eukaryotic genes are discussed by Nathans' group with SV-40 as a model system and by C. Weissmann for the rabbit  $\beta$ -globin gene. They describe how to select the site of region one wants to alter and how to isolate and identify the required mutant. Both articles illustrate in a superb way the contributions of ingenious molecular biologists.

An important part of this volume has been reserved for introducing plant molecular genetics. Bogorad reviews with authority the plastid genome and discusses the contributions of genetic engineering in solving problems of basic chloroplast research and the potentials for crop improvement.

The present day knowledge, or lack of knowledge on plant mitochondrial DNA is reviewed by Lenings and Pring. They especially comment on extrachromosomally inherited traits such as the different forms of male sterility. Research on an important potential vector for genetic engineering of higher plants is presented by the Schilperoort group. The 30 page article contains little information related to genetic engineering. It mostly reviews miscellaneous information of possible interest to *Agrobacterium* researchers as well as some recent and preliminary results of the authors' laboratory on the functional map of the tumor-inducing plasmids of *Agrobacterium*. In an attempt to present host-vector systems for plants C. Kado rapidly summarizes all possible cloning vehicles including bacterial plasmids, phage lambda and transposable elements. Finally, research on a particular system of agronomic importance, the soybean urease, is presented. The authors (Palocco, Sparks and Harris) report their first results of cloning soybean DNA.

In general this first volume in a series dedicated to genetic engineering is both very informative and stimulating.

M. van Montagu, Gent