
 Book Reviews

Cold Spring Harbor Symposia on Quantitative Biology, Volume 43; DNA: Replication and Recombination. Cold Spring Harbor: Cold Spring Harbor Laboratory 1979. 1387 pp., numerous. Hard bound.

What are the detailed biochemical mechanisms by which genetic material is reproduced and reassorted? This question has occupied geneticists and biochemists for decades. The tremendous strides made in the areas of DNA replication, and general as well as specialized recombination are summed up in the two-book volume containing the edited proceedings of a Cold Spring Harbor meeting.

These two volumes are a unique demonstration of the power of coupling genetical and biochemical approaches for solving basic biological problems. The resulting deep insight into the molecular biology of replication and recombination is mainly due to the explosive development in three areas: gene cloning techniques, genetics of transposable elements and the rapid DNA sequencing techniques.

A. Kornberg, the outstanding authority on DNA replication, gives, in the introduction, an overall perspective of ongoing research and sets the stage for future investigations. The more than 150 papers are organized into the 12 following sections: DNA Unwinding, Replication Origins, Priming and Okazaki Fragments, Replication of Small Phages and Plasmids, Replication of Large Phages and Bacteria, Replication of Eukaryotic DNA, Replication of Eukaryotic DNA Viruses, Replication of RNA Tumor Viruses, Recombination Functions and Repair, General Recombination, Specialized Recombination of Phages lambda and Mu, Insertion Sequences and Transposons and Recombination Genetics.

Without any exception the 152 presentations are of a high intellectual quality giving a real representation of top science in the field of DNA replication and recombination. Therefore both volumes reveal in a unique manner a frustrating aspect of scientific development: the discrepancy between the levels of scientific research in different countries increases continuously. This conclusion is not only supported by the considerably number of non-represented European countries, but also by a comparison of the number of participants per country. In general the two volumes provide an excellent guide for further biochemical and genetic studies of DNA replication and recombination. Not only specialists but also graduate students and teachers in the field of molecular biology and genetics will enormously profit from its study.

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Cetl. I. Jiřina Relichová: Genetic and Cytogenetic Problems of *Tagetes* Breeding. Biologia 60, Tomus XXI, Opus 1. Folia Facultatis Scientiarum naturalium universitatis Purkynianae Brunensis 1980. 60 pp., 17 figs., 20 tabs., Kčs 8,00.

Since the golden age of marigold breeding in the sixties (Bolz, Eresen, Kaspar, Towner) *Tagetes* has not attracted much attention from ornamental breeders. Recently, however, the department of Genetics of Purkyne University, Brunn, the place where Gregor Mendel developed the fundamentals of quantitative genetics, has begun to direct attention once more to *Tagetes*. In a historical sense, the department is continuing the work of Mendel, who also did a lot of breeding studies with species of the Asteraceae. The present report actually consists of 7 different articles which centre around the *Tagetes* species *erecta* L., *tenuifolia* Cay. and *patula* L. and are detailed studies of the mode of mating of more than 50 lines. It was found that the *fem* allele leads to the absence of the male apparatus in flowers. Thus, time-consuming hand-crossing with laborious emasculation can be avoided by breeding the purely female flowers and it is possible to obtain hybrid seeds by simply placing the pollen of the paternal partner on the stigmata of the isolated purely female inflorescences of the *fem/fem* homozygotes. The production of hybrid seeds by means of pollinating purely female flowers in the heads of commercial F₁ hybrids is recommended for the purpose of combination breeding in *Tagetes*. Using the *fem/fem* *erecta* genotype with an uniform genetic background was shown to be also advantageous in obtaining hybrid seeds for breeding for heterosis. Useful forms can also be obtained from various offspring of such hybrids. Thus, the most progressive trends are closely linked with the efforts to produce excellent F₁ hybrids. Other articles cover artificial selection, combination breeding, breeding for heterosis and mutation, breeding based on polyploidy and interspecific hybridization, as well as the genetic structure of populations. Micromutations, produced by use of MNU, receives special attention. Erectoids, hybridoids and patuloids appear among the B₁ plants. A large diversity of forms appeared after intercrossing of *T. erecta* and *T. patula*. However, the problem of stable and fertile hybridoid lines remains unsolved.

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