

of the different temporary structures in the embryo. Attempts are mentioned to study cell-lineage with genetic markers in order to construct a prospective fate-map of the early embryo but many more experiments are required before conclusions can be reached.

In addition to morphology, special attention is given to the molecular events during the period under consideration. Since visualization of proteins in electrophoretic patterns depends very much on interpretation, data concerning the machinery of embryonic protein synthesis are rather a subject of speculation. Moreover, they generally derive from studies *in vitro* so that differences with the intact counterparts *in vivo* must be taken into account. Finally, the absence of macromolecules from the maternal reproductive tract may influence development even if the time-course of events in cultured eggs seems morphologically identical to those grown entirely *in vivo*.

Proceeding from the view that successful development requires a functional genome, sites are studied in the genome which may regulate the expression of structural resp. regulatory genes in the embryo. The former may cause an alteration in the synthesis of critical proteins while the latter may be responsible for a disruption of the developmental program (timing of gene function). The use of mutants with lethal genes could provide some information in the matter. The picture becomes especially confused, however, where the T-locus on chromosome 17 of the mouse is concerned. Attempts are described to evaluate the possible role of this genetic system which mostly leads to lethality at specific stages of development: survivors suffer from morphological distortions of varying severity. Whether developmental arrest is due to missing genetic information, to inadequate metabolic requirements, to a meiotic disturbance in the sperm or to specific antigens on the relevant sperm-surface, the possible reason why embryos fail to proceed in development is not yet clear. Despite of about 150 references related to this chapter, one can not escape the impression that the more one appears to know about the subject, the more complicated it becomes.

Particular importance is assigned to the cell-surface as an instrument of interaction between cell and environment, as a place of

mutual cell recognition or as space for feto-maternal relations during embryonic nidation. The zona pellucida around the egg-cell is seen as a peculiar structure to be acting as a charged molecular sieve to select entering macro-molecules or as a tool involved in the species-specificity of fertilization. Since negatively charged groups are situated on the surface of the trophectoderm before implantation, phase specific antigens can be attached to them. A transient expression of antigens can be related to a rapid switching on as well as switching off of genetic information as development proceeds. The relationship between the appearance of antigens and the synthetic activity within the embryo has not yet been elucidated.

A special chapter is dedicated to the role – if any – viruses may play on the course of embryogenesis since some viruses may eventually integrate into the genome and transform specific 'target organs' into tumors. Embryonic cells are generally not permissive for virus replication but they become so subsequent to their differentiation. Virus-caused transformation of differentiated cells may activate specific genes which normally are repressed in the healthy adult. But does the mere detection of virus-related gene products justify the suggestion of an important involvement of viruses in the cellular differentiation during embryogenesis?

A last chapter deals with malignant terato-carcinomata in mice which appear if isolated parts of an egg-cylinder or pieces of a genital ridge containing primordial germ-cells are transferred into an extra-uterine site of a syngeneic host. The tumors consist of a population of rapidly dividing, undifferentiated cells which sooner or later will kill their host. Under certain circumstances, these cells, can differentiate into a wide range of cell-types, once their neoplastic growth has been lost. Terato-carcinomata represent an excellent system for studying not only cell-differentiation and the control of gene expression on it but also a way for analyzing the fundamental relations between ontogeny and oncogeny.

Even if the title of the book does not cover its content, it is controversial and provocative enough to demand that attention be paid to it. It frames many more questions than it answers.

H.A.L. Trampusch, Amsterdam

Announcement

International Plant Breeding Symposium II

The second international Plant Breeding Symposium will be held at Iowa State University on March 12-16, 1979. This symposium will be the sequel to one held on the Iowa State campus in 1965, the proceedings of which were published in the book entitled 'Plant Breeding: A Symposium.' During the past decade and a half, advances in research related to and accomplishments from Plant Breeding have been sufficiently great and significant to justify a summarization and discussion of these advances for the benefit of Plant Breeders in particular, and mankind in the broad sense. It is to accomplish these goals that Plant Breeding Symposium II will be held.

Ten pertinent topics will be discussed during the course of the Symposium, with one half-day allotted per topic. The following subjects will be considered:

1. Progress in meeting human needs through plant breeding.
2. Exotic germplasm: Resources and utilization.
3. Application of tissue culture to plant improvement.
4. Morphological and physiological traits.
5. Selection and breeding methods.
6. Chromosomal and cytoplasmic manipulations.
7. Breeding for stress environments.
8. Pest resistance: Pathology and entomology.
9. Development of plants for multiple-cropping systems.
10. Improvement of nutritional quality.

We would like to make this Symposium useful to plant breeders, scientists in related fields, commercial seedsmen and students on an international scale.

For registration information contact: Dr. K.J. Frey, Agronomy Department, Iowa State University, Ames, IA 50011, (515) 294-7607 or TWX 910-520-1152.