BOOK REVIEW

**From a Microspore to a Cultivar. T. B. Batygina, N. N. Kruglova,
V. Yu. Gorbunova, G. E. Titova, and O. A. Sel'dimirova
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The monograph describes the theoretical bases for plant reproduction paying special attention to the new category of vegetative reproduction—floral and vegetative embryoidogeny, i.e., reproduction via development of somatic embryos. The evidences for natural existence of various types and methods of embryoidogeny, which can be combined with traditional forms of seed and vegetative reproductions, are summarized. The development of somatic embryos in seeds together with sexual embryos gives rise to the phenomenon of additional genetic heterogeneity of seeds; consequently, the new generation will be represented not only by the individuals combining the traits of parental plants but also by clones of the maternal plant.

Considerable attention is paid to the theory and practice of androclinal haploidy. The phenomenon of androcliny, based on the switching of the developmental program of haploid microspores of the anther from a gametophytic to a sporophytic pathway, is widely applied in agricultural plant biotechnology when producing homozygous lines. The monograph describes the results obtained by studying the stages in anther development that are optimal for inducing in vitro morphogenesis according to a sporophytic pathway. It

has been demonstrated that the morphogenetic competence for switching the developmental program from a gametophytic to a sporophytic variant is characteristic of the microspores with a pronounced polarity (with a high degree of vacuolation and the nucleus located in the opposite part of the cell), which are structurally similar to the mature egg cell. A stress impact of cold and an optimal concentration of exogenous auxin in culture liquid trigger the sporophytic developmental pathway for such microspores, initiating the programs of embryoidogenesis and gem-morphizogenesis.

The appendix contains detailed methodical recommendations for production of androclinal haploids of the spring soft wheat and describes the methods for making transient and permanent cytoembryological preparations for control of morphogenesis and the methods for preparing specimens to scanning electron microscopy examination as well as the operating principles of microscopic devices.

This monograph will undoubtedly be interesting to researchers, teachers, postgraduates, and students as well as breeders and biotechnologists.

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