Book Reviews

Kovacevic, V.: Proucavanje specificnosti samooplodnih linija kukuruza u odnosu na mineralny ishranu. Thesis Univerzitet u Novom Dadu, Poljoprivredni Facultet, Novi Sad, Zbornik Radova, Godina X, Svezak 2 1980. 151 pp., 2 figs., 51 tabs.

This thesis reports on a study made on the characteristics of corn inbred lines with regards to mineral nutrition. The work was carried out at the Agricultural Institute Osijek of the Yugoslavian university at Novi Sad. The text is published in Serbo-Croatian with a short summary in English, but the legends of the tables are in both languages, thus enabling most readers some access to this interesting work. In field trials and in greenhouse experiments involving different nutrient solutions, 10 Yugoslavian corn inbred lines of different origins, but similar vegetation lengths, were investigated. It was shown that mineral content (N, P, K, and Mg were analyzed) differed with the lines. Under field conditions the variation between the lines was about 22% for nitrogen, 30% for phosphorus, 32% for potassium and 36% for magnesium. The highest variation was found in the middle part of the stalk. The most stable genetically conditioned characteristic of mineral nutrition was the middle part of the leaves. The results obtained from plants grown under greenhouse conditions for three seasons did not match those results obtained under field conditions. This thesis represents the first attempt to analyze and understand the mechanism of genetic specific mineral nutrition. The optimal use of mineral fertilizers depends on the specific demand of the genotype. In addition, the finding that light intensity and day length are important factors in mineral nutrition means that the genetic approach can contribute towards obtaining a more efficient consumption of nutrients. H.F. Linskens, Nijmegen

Schimmel, P.R.; Söll, D.; Abelson, J.N. (eds.): Transfer RNA Part 2: Biological Aspects. Cold Spring Harbor: Cold Spring Harbor Laboratory 1980. 578 pp., 77 figs., 31 tabs. Hard bound $ 72.00.

'Transfer RNA: Biological Aspects' is a companion volume to 'Transfer RNA: Structure, Properties and Recognition'. Both texts were solicited by the editors from scientists who delivered invited lectures at the 1978 Cold Spring Harbor Laboratory Meeting on tRNA; many of the chapters have been updated to mid-1979 at least.

'Biological Aspects' sets out to summarize current knowledge in the areas of t-RNA biosynthesis, t-RNA gene organisation and structure, genetic suppression and coding and the role of tRNA in regulatory processes. The book covers the field admirably, giving an overall perspective of current research in these rapidly expanding areas. The new technologies of recombinant DNA, DNA sequencing and efficient cell-free protein synthesizing systems, all figure prominently in the various chapters of this volume. For example descriptions of the elucidation of t-RNA biosynthesis via large precursor molecules draws heavily on these technologies, as well as the frequent use of RNAse P and RNAse III mutants. The organisation of t-RNA genes dwells predominantly on either determination of primary transcription units and a study of their transcription, as well as on such questions as the arrangement of these genes (clustering etc.). A chapter on the cloning of synthetic suppressor t-RNA genes by Khorana and others shows how chemical synthesis gives complete flexibility in design of predetermined mutation – any nucleotide can be changed at will.

The genetics of t-RNA suppressors, including temperature sensitive suppressions is dealt with at length, while later chapters are involved with the regulation of amino acid biosynthesis by t-RNA and the role of t-RNA in the attenuation of the tryptophan operon. An appendix deals with the location of t-RNA genes on the *Drosophila* and *E. coli* genetic map. An author index and subject index round off the book. J.F. Jackson, Glen Osmond

Sauer, H.W.: Entwicklungsbiologie. Ansätze zu einer Synthese. Berlin, Heidelberg, New York: Springer 1980. 328 pp., 228 figs., Soft bound DM 39.–.

Modern research in developmental biology is characterized by closer relationships with the fields of genetics, molecular biology, ultrastructure analysis and cell biology. Such interdisciplinary research has provided deeper insights into such regulative phenomena described hitherto by classical terms as competence, embryonic induction and determination. This new approach is clearly documented in the book of H.W. Sauer. It is the result of long experience in research and teaching in this field and is written in a spontaneous and refreshing style.

Following an introductory chapter on the evolution of cell structure, the main part of the book commences with a discussion of 'The organization of developmental information' and proceeds via 'Growth' to 'The origin of biological forms: morphogenesis'. Always guided by general problems, this most extensive chapter contains an abundance of selected observations and experimental data on subcellular and cellular morphogenesis and on the increase of complexity in development of multicellular organisms represented in oogenesis, blastulation, gastrulation, neurulation, organogenesis, regeneration and postembryonic development. The following chapters on 'Cell differentiation', 'Developmental defects' and 'Ageing' contribute important results (e.g. on immune response and tumor induction) relative to the analysis of general principles in development. Hypotheses, methods and results are summarized in an original way by simple sketches, inviting the reader to test his understanding.

At the end of the book there is a brief survey on recent trends in various fields of biology which contribute towards a general developmental biology. In his search for such a synthesis the author puts forward in the final chapter three 'iconoclastic theses'. These focus on the foundation of irreversible processes in development, on the regulation of gene expression and on epigenetic interactions between extranuclear structures in the formation of spatial patterns. Without doubt this book will stimulate discussion and future research. L. Stange, Kassel