

Book reviews

Wagner, E.; Greppin, H.; Millet, B. (eds.): The Cell Surface in Signal Transduction. NATO Advanced Series H: Cell Biology, Vol. 12. 243 pp. Berlin, Heidelberg, New York: Springer 1987.

Signal transduction on the cell surface is one of the unifying concepts of biology – at least at the cellular level. The dynamics of the cell surface is related to both growth and development, and to the transduction of environmental and internal signals. The feed-back of genetic information to the cell surface is becoming evident at all levels of complexity. This was the topic of discussion during the NATO Advanced Research Workshop at Besançon in March 1986. From the geneticist's point of view, the role of membrane glycoproteins in signal transduction is most interesting. Their place as male recognition factors of the pollen-stigma and pollen tube-style interaction is once again confirmed, but this time using more sophisticated techniques than were available in the 1950s. The role of phospho-inositides as mediators of signal transduction is emphasized, and the role of ions in signal transduction in higher plants via mechano-transductive ion channels is clearly indicated. However, care must be taken not to transfer this model of animal systems to plant cells with their rigid and resistant cell wall, even though the symplast-apoplast hypothesis offers a way of inter- and intracellular communication.

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Böhme, H.; Mettin, D.; Müller-Stoll, W. R.; Müntz, K.; Rieger, R.; Rieth, A.; Scholz, F.; Stubbe, H. (eds.): Die Kulturpflanze. (Mitteilungen aus dem Zentralinstitut für Genetik und Kulturpflanzenforschung Gatersleben der Akademie der Wissenschaften der DDR, vol 35). Berlin: Akademie-Verlag 1987. 516 pp. 151 figs. 66 tabs. 11 plates.

The recent voluminous report of the East German central institute of genetics and research on cultivated plants is dedicated to H. Stubbe, its former director and managing editor of this journal between 1945 and 1970. This is a typical institute publication: all the authors are either presently at work in the institute or have worked there on a collaboration. This institute has an excellent name in the field of plant breeding at both the national and international level, and the review and technical papers included in this report present an impressive picture of the institute's activities. However, the whole spectrum of research conducted at this institute is not adequately reflected in this collection of annual reports and publications: research is more directed towards molecular and cell genetics than the present volume suggests.

The reviews concentrate on the physiological characteristics of breeding for higher yield, the contribution of the institute to basic research on the biochemistry and genetics of crop seed proteins (cereals and legumes), and on the theory of classifying cultivated plants. All three overviews underline the advantages of large central institutes with their long-term financing and research programs, and their maintenance of collections and gene banks for the long-term improvement of crops.

The original papers cover a wide-ranging field. Most important are the reports on field work: collecting expeditions for plant genetic resources in southern Italy, Korea, Georgia, Cuba, and Iraq. The traditional annotated literature list on the archaeological remains, taxonomy, and evolution of cultivated plants covers the years 1985–1986.

Most important is a preliminary report of work on rye, based on the large collection of wild rye held in the Gatersleben gene bank. The problems of maintaining this culture are evident. Other existing collections have also been evaluated, e.g., a total of 700 wheat accessions of the local gene bank have been screened for gibberellic acid insensitivity genes. As a result, the probable origin of the *Gai*-genes can now be discussed. The barley collection has been tested for resistance to yellow mosaic virus, and the soybean mutant collection for variability of protein and oil content. Another paper is concerned with the taxonomy of the genus *Raphanus*: the result is that the species *R. raphanistrum* is classified with the ssp. *landra*, *raphanistrum*, and *rostratus*, and *R. sativus* with the convar. *oleifer*, *caudatus*, and *sativus* as groups with special directions of use. Emphasis is given to the danger of increasing gene erosion. Therefore, the collection and evaluation of the whole gene pool in gene banks of this economically most important and highly variable genus with its vegetables, fodder- and oil-crops becomes extremely important.

A few articles stand isolated from the others. One of these is on *Spirogyra* species, and the other one is in itself a valuable investigation of the intracellular bars in the wood of *Larix* and *Juniperus*. Obituaries for J. Helm and Igor Grebenshchikov demonstrate the personal touch in an institute conducting fundamental research for world food production.

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Zohary, D.; Hopf, M.: Domestication of Plants in the Old World. The Origin and Spread of Cultivated Plants in West Asia, Europe, and the Nile Valley. 249 pp. 25 maps, 38 figs. Clarendon Press, Oxford 1988.

A great deal of progress has been made during the last decennary in elucidating the wild progenitors of old world crops. The wild ancestors of most of the world's cultivated plants have now been identified, both by genetic analysis and by comparative morphology. The area of south-west Asia, Europe, and Egypt is the first major geographical region for which an overview, compiled through modern methods of archaeology, ethnobotany, and comparative genetics, can be given. Evidence has not only been collected from the analysis of plant remains, but also from living plants (although not yet including DNA analysis). The authors, professor of genetics at the Hebrew University and former head of the botany department of a German archaeological museum, respectively, provide the reader with an excellent synthesis of what is now known on the origin and dispersal of cultivated crops of the classical Old World. The book is arranged, after an introduction on the sources of evidence, according to crop groups: cereals, pulses, oil and fiber crops, fruit trees and nuts, vegetables and tubers, condiments and dyes, and fruits collected from the wild. The last chapters designate plant remains to 29 representative archeological sites, from Iran to Portugal. A chronological chart, 25 site orientation maps, and an extensive list of far more than 400 references renders all the information presented extremely accessible. This book is not only easy to read, but is a fundamental and instructive review of available information. The conclusions drawn by the authors are very convincing.

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