

Merchant, S., Briggs, W.R., Chander, V.L. (ed.): **Annual Review of Plant Biology. Volume 56 (2005).** - Annual Reviews, Palo Alto 2005. 575 pp. ISBN 0-8243-0656-2.

Comparison with the previous volume of this series shows two major changes. First, only the first editor continues in editorial work, this time as Editor, second, both the size of the book and its graphical design had changed. The pages are broader (ca. 185 mm instead of 150 mm), the used good quality glazed paper enables colour print of figures, subtitles, under-print, and other aesthetic tricks. Main texts are arranged in two column, main references are printed in bold and are commented, *etc.* Volume 55 contained 23 reviews, while the reviewed one contains only 20 reviews. Clear instructions for research online are printed on end-papers. This enables current individual subscribers' online access to full-text articles, PDFs, reviews in advance (six months ahead of print publication), bibliographies, *etc.* This improvement will certainly increase the already high impact factor of this book series. The presented references can be downloaded to a citation manager which presents a great help to researchers and students. They will certainly welcome also the possibility of advanced search to all volume of all series (at present 31) of Annual Reviews back to the year 1932. Teachers can also download figures in three sizes. References in bibliographies link out to sources of cited articles online. The broad page margin contains legends to figures, explanatory notes of terms, *etc.*

The introductory review describes life and research history of Peter Starlinger, a well known German geneticist. The following review describes phytoremediation, *i.e.* the use of plants and associated microbes for environmental cleaning, and shows the important plant species, new and well known technologies, application for various pollutant classes, *etc.* Formation and function of calcium oxalate is reviewed next presenting also fine microphotographs and models.

The following five reviews are more or less connected with photosynthesis. The first of them deals with starch degradation, its metabolic pathways in leaves and storage organs, enzymes, products, and control of flux. CO₂ concentrating mechanisms in algae are reviewed next. The article describes the function of carbonic anhydrase and further enzymes, specificity in cyanobacteria and

individual algae classes, modulation by environmental factors such as CO₂ supply, irradiance, or nutrients, and evolutionary conclusions. Solute transporters of plastid envelope are the next interesting topic which is connected with genomics and bioinformatics. A large table classifies putative envelope transport proteins and their functions. In the review on abscisic acid biosynthesis and catabolism carotenoids function as biosynthetic precursors. Its metabolism is specified for seeds, fungi, lower plants, and also for abiotic stress adaptation. The review on redox regulation deals with thioredoxin, glutaredoxin, redox signalling, regulation linked to photosystem 2, NADP, or oxygen, *etc.*

Endocytotic cycling of plasma membrane proteins and molecular physiology of development of legume seeds are the next two topics. The following review is on cytokinesis that partitions cytoplasm between nuclei. Evolution of flavours and scents is a question interesting not only in food industry, cosmetics, or pharmacy, but its biochemical and genetic basis is of general importance. The main demonstration types are *Rosaceae*, *Clarkia breweri*, and sweet basil. Next review deals with chromatin structure, remodelling, and dynamics. Shoot branching in monocots and dicots brings another important topics. The next reviewed inteins are protein splicing elements important in protein purification and biofiber production. The following chapter deals with microsporogenesis and microgametogenesis, stamen development, anther cell differentiation, plant meiosis, and pollen development. Plant-specific calmodulin-binding proteins represent another modern topic of plant physiology and biochemistry. Next question is that of self-compatibility in *Brassicaceae*, *Solanaceae*, and *Papaveraceae*. The following review deals with physiology, genetics, and molecular basis of vernalization. The last review is on the function of phytopathogenic bacterial type III effectors in plants.

Hence the selection of topics is certainly broad and the book accompanied as usually with perfect subject index will certainly serve in all plant physiological, biochemical, and genetic laboratories.

Z. ŠESTÁK (Praha)

Campbell, A., Anderson, W.W., Jones, E.W. (ed.): **Annual Review of Genetics. Volume 39.** - Annual Reviews, Palo Alto 2005. 689 pp. ISBN 0-8243-1239-2.

The introductory chapter (written by R.E. Michod) is dedicated to John Maynard Smith, one of the most original thinkers in evolutionary biology of the post neo-Darwinian synthesis age. The readers of *Biologia*

Plantarum may find interesting the reviews: Molecular signatures of natural selection (R. Nielsen), Orthologs, paralogs and evolutionary genomics (E.V. Koonin), and The moss *Physcomitrella patens* (D. Cove). Other

reviews covered in this volume: Hearing and balance in zebrafish (T. Nicolson), Immunoglobulin gene diversification (N. Maizels), *Trp* regulation in *B. subtilis* (P. Gollnick *et al.*), Cell-cycle transcriptions in yeasts (J. Bähler), Arthropod body plan evolution (D.R. Angelini *et al.*), Concerted and birth-and death evolution (M. Nei *et al.*), *Drosophila* models of neurodegeneration (J. Bilen and N.M. Bonini), Germline stem cell regulation (M.D. Wong *et al.*), T-box genes in development (L.A. Naiche *et al.*), ENU-induced variants of the mouse genome (P. Papathanasion and C.C. Goodnow), *Drosophila* evolutionary genetics (T.A. Markow and P.M. O'Grady), Sex determination in medaka (M. Matsuda), Mitochondrial and age related diseases (D.C. Wallace), Switches in bacteriophage lambda development (A.B. Oppenheim *et al.*), Nonhomo-

logous end joining in yeast (J.M. Daley *et al.*), Plasmid segregation mechanisms (G. Ebersbach and K. Gerdes), Blood development in zebrafish (J.L.O. de Jong and L.J. Zon), Dynamic mitochondria (K. Okamoto and J.M. Shaw), DNA deletion in *Tetrahymena* (M.-C. Yao and J.-L. Chao), Axis formation in zebrafish (A.F. Schier and W.S. Talbot), and Chromatin remodeling in dosage compensation (J.C. Lucchesi *et al.*).

All articles were written by the foremost experts in the field. Current individual subscriptions include seamless online access to full-text articles, PDFs, reviews in advance (as much as 6 months ahead of print publication), bibliographies, and other supplementary material in the current volume and the prior 4 year's volumes. Available online at: <http://genet.annualreviews.org>

T. GICHNER (*Praha*)

Royo, C., Nachit, M.M., Di Fonzo, N., Araus, J.L., Pfeiffer, W.H., Slafer, G.A. (ed.): **Durum Wheat Breeding. Current Approaches and Future Strategies.** - Food Products Press, An Imprint of The Haworth Press, Inc. New York - London - Oxford 2005. 1084 pp. Hardcover USD 149.95. ISBN-V1 1-56022-966-7, ISBN-V2 1-56022-967-5

Food Products Press issued a unique two-volume book *Durum Wheat Breeding – Current Approaches and Future Strategies*, providing a complex view of durum wheat from many aspects including its genetics, factors influencing the yield and quality of products and breeding strategies. The book has six editors from Spain, Syria, Italy and Mexico and ninety nine international contributors and is subdivided into five parts and thirty five chapters.

The first volume consists of three parts: Part I. World distribution and role of durum wheat breeding consists of three chapters: 1. Wheat: Its concept, evolution, and taxonomy, 2. End products: Present and future uses, 3. Importance of breeding for further improving durum wheat yield. Part II. Genetics and molecular aspects is composed of following chapters: 4. A retrospective analysis of genetic diversity in durum wheat elite germplasm based on microsatellite analysis: A case study, 5. Managing and collecting genetic resources, 6. The cytogenetic contribution to the analysis and manipulation of the durum wheat genome, 7. Comparative genetics of durum wheat and other *Triticeae*, 8. Genetic manipulation of durum wheat: application to grain composition and quality, 9. Genetic bases of resistance to abiotic stresses in durum wheat (*Triticum turgidum* ssp. *durum*), 10. Resistance to diseases, 11. Genetic basis for insect pest resistance in durum wheat and 12. Genetic bases of grain quality. Part III. Physiological bases of durum wheat improvement consists of chapter 13. Genetic improvement

effects durum wheat yield physiology, 14. Durum wheat ideotypes for sustainable farming in diversified environments, 15. Physiological basis of yield potential in durum wheat, 16. Adaptation to water stress: Methodologies for the study of the photosynthetic response and 17. Functional determinants of grain quality.

Volume II, part IV is subdivided into following chapters 18. Increasing yield potential and stability in durum wheat, 19. Selection tools for improving yield-associated physiological traits, 20. Selection strategies for traits relevant for winter and facultative durum wheat, 21. Selection strategies and methodologies for biotic stresses in durum wheat, 22. Breeding methodologies and strategies for durum wheat quality improvement, 23. Wide crosses for durum wheat improvement, 24. Doubled-haploid technique in durum wheat breeding, 25. Management of genotype-environment interaction and their implications for durum wheat breeding, 26. Design and analysis of field experiments. Last part V. contains nine chapters describing durum wheat improvement in individual states or organizations: Italy, Spain, Romania, Canada, Morocco, Turkey, India, North Dakota State University and CIMMYT.

This book will be appreciated by wheat breeders, cereal scientists, agronomists and students of plant sciences. This is hitherto the most comprehensive book about durum wheat.

M. KUBALÁKOVÁ (*Olomouc*)