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BOOK REVIEW

PASSARGE E.: **Color Atlas of Genetics.** Second edition, enlarged and revised. Stuttgart-New York: Georg Thieme Verlag, 2001. XI+457 pp. Format 125×190 mm. Soft cover. Price EUR 28.63. ISBN 3-13-100362-6

The author is Professor of Human Genetics at Institute of Human Genetics, University of Essen, Germany. First German edition occured in print in 1994, first English edition occured in 1995. French, Japanese, Chinese, Italian and Turkish editions followed in 1995–2000. As stated in the preface, knowledge about genes (genetics) and genomes (genomics) of different organisms continues to advance at a brisk pace. All manifestations of life are determined by genes and their interactions with the environment. Deciphering of genomes of many different organisms by determining the sequence of the nucleotide bases of DNA will augment our understanding of normal and abnormal functions. In the introduction the author emphasizes classical genetics between 1900 and 1953, genetics and DNA, important methodological advances in the development of genetics after about 1950, medical and molecular genetics, the genome, ethical and societal aspects. "Chronology" contains a list of selected events in genetical science starting with 1839 – the year of recognition of cell as the basis of living organisms, and concluding with 2000 – the year of genome sequencing. Crucial point of this publication consists in explanation of textual parts by pictorial presentations of genetic phenomena. The volume is composed of three parts.

Part I. Fundamentals contains 7 chapters. Chapter on molecular basis of genetics describes the cell and its components, DNA as carrier of genetic information, the genes, recombinant DNA and changes in DNA. Subsequent chapter analyses prokaryotic cells and viruses, as well eukaryotic cells, including chromosomes, cell cycle control, cell division, formation of gametes, and others. The chapter on mitochondrial genetics concentrates on genetically controlled energy-delivering processes in mitochondria, on the genome in chloroplasts and mitochondria, on mitochondrial genome of man and on mitochondrial diseases. Chapter on formal genetics discusses various aspects of Mendelian traits, genotype and fenotype, segregation of parental genotypes, analysis with genetic markers, linkage analysis, biochemical polymorphism, geographic distribution of genes and miscellaneous other aspects of formal genetics. Next chapter explores the chromosomes: the nucleosomes, DNA in chromosomes, polytene chromosomes, the telomere, karyotype, chromosomal aberrations, in situ hybridization, translocation, and more. Concluding chapter provides coverage of the essential aspects of regulation and expression of genes.

Part II. Genomics is intended to give an introduction to the study of organization of genomes. Further on, outlined are the genomes in some prokaryotic and eukaryotic organisms, genome maps, approach to genome analysis, gene identification, identification of a coding DNA segment, mobile genetic elements, evolution of genes and genomes, genome analysis by DNA microarrays, and others.

Part III. Genetics and Medicine incorporating 12 chapters is concerned with cell-to-cell interactions, genes in embryonic development, with the immune system, origin of tumours, with oxygen and electron transport, lysosomes and endocytosis, homeostasis, cytoskeletal proteins in erythrocytes, mammalian sex determination and differentiation, atypical inheritance pattern, karyotype/phenotype correlation, genetic diagnosis, and selected genetic disorders.

In addition to the text, there is a treatise on chromosomal location of monogenic diseases, chromosomal location of human genetic diseases, a list of general references, selected websites for access to genetic information, a glossary relevant to definitions of genetic terms, and a comprehensive index. This publication is based on 194 carefully designed colour plates by using a visual approach to convey important concepts and facts in genetics. Depicted are the cell and its components, DNA and its components and structures, flow of genetic information, DNA sequencing and cloning and miscellaneous molecular, biochemical, cellular, biological and clinical phenomena relevant to genes and genetics. These illustrations are presented in line drawings featuring two- and three-dimensional and space-filling models, arrangements of molecules and structures, genetic and geographical maps. Furthermore, there are some illustrations presenting black-and-white and colour photographs of pathological and histopathological abnormalities and clinical conditions. All illustrations can be seen on right pages, explanatory textual parts are situated on opposite left pages together with several references. All the colour plates were produced by J. Wirth, Professor of Visual Communication at the University of Darmstadt.

This attractive user-friendly atlas offers a very accessible in-depth overview of genetics while accentuating latest advances in the field together with optimal visualization of complex biological relationships.

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