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Taschenatlas der Genetik

Second revised and enlarged edition. Thieme Verlag: Stuttgart – New York, 2004. XIV + 435 pages. Format 125 x 190 mm. Softcover. Price EUR 34.95/ CHF 57.80. ISBN 3-13-759502-9

The author is Professor emeritus and Director at Institute of Human Genetics, Univerity of Essen, Germany. First German edition occurred in print in 1994. English, French, Japanese, Chinese, Italian and Turkish editions followed in 1995-2003. Portuguese, Polish and Spanish translations are to be printed. In the introduction the author accentuates the genetic individuality, classical genetics between 1910 and 1940, modern genetics between 1940 and 1953, genetics and DNA, the gene, the eugenics as an erroneous way, the genetic code, important methodological requirements for the development from 1953, molecular genetics, genes and evolution, human genetics, genetics and medicine, the human genome project, and ethical and societal aspects. There is a list of selected events in genetical science starting with 1543 – the year of a publication of Andreas Vesalius *De humani corporis fabrica libri septi*, and concluding with 2003 – the year of complete sequence of the human genome. The volume is composed of 4 parts arranged in non-numbered chapters. This publication takes into account the arrangement for genetics and human genetics in the subject-catalogue "Biologie für Mediziner".

Part 1 Fundamentals (6 chapters) explains the molecular basis of genetics while describing the cell and its components, DNA as carrier of genetic information, the genes, DNA sequencing, cloning, amplification, DNA libraries, mutations and modifications, and other genetic processes. Subsequent chapter analyses eukaryotic cells including chromosomes, cell cycles, 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 on mitochondrial diseases. The chapter on formal genetics discusses miscellaneous aspects of Mendelian traits, segregation of Mendelian traits, alleles, genotype and phenotype, segregation of parental genotypes, monogenetic inheritance, segregation analysis with genetic markers, distribution of genes in a population, and various other aspects of formal genetics. Next chapter analyses the chromosomes: the nucleosomes, DNA in chromosomes, polytene chromosomes, the telomere, karyotype, chromosomal aberration, fluorescence *in situ* hybridization, translocation, molecular cytogenetic analysis, and others. Concluding chapter provides coverage of regulation of genes: the cell nucleus and ribosomal RNA, transcription, control of gene expression in bacteria by induction and by repression, control of transcription regulation of gene expression in eukaryotes, DNA methylation, genomic imprinting, X-chromosome inactivation, and more.

Part 2 Genomics is intended to give an introduction to the study of genomes. Outlined are the genomes of some prokaryotic and eukaryotic organisms, genome maps, approach to genome analysis, gene identification of a coding DNA segment, mobile genetic elements, evolution of genes and genomes, genome analysis by DNA microarrays, and others.

Part 3 Genetics and medicine (13 chapters) deals with cell--to-cell interactions, with the sensorial perception, embryonic development, with the immune system, origin of tumours, with haemoglobin, peroxisomes and lysosomes, with the homeostasis, cell and tissue structures, sex determination and differentiation, atypical inheritance pattern, karyotype/genotype correlation, and genetic diagnostics.

Part 4 Pathological anatomy of the human genome examines gene loci for human diseases and presents in alphabetical order a list of gene loci for monogenic diseases.

In addition to the text there is 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 189 carefully designed colour plates by using a visual approach to convay 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. Moreover, there are some illustrations presenting black-and-white or colour photographs of pathological and histopathological abnormalities and clinical syndromes. All illustrations can be seen on right pages, explanatory textual parts are situated on opposite left pages together with selected references. All the colour plates were produced as computer graphics by J. Wirth, Professor of Visual Communication at the Faculty of Design, University of Applied Sciences, Darmstadt, Germany.

This volume presents an attractive and user-friendly text-atlas. It offers a very accessible, internationally highly acknowledged, in-depth overview of genetics while accentuating latest advances in the field together with optimal visualization of complex biological relationships. A recent similar monograph of the same author: Color Atlas of Genetics (Thieme) occurred in print in 2001 (for review see Cent. Europ. J. publ. Hlth, 10, 4, 2002, p. 131).

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