

A Multi-Volume Comprehensive Treatise

Biotechnology

Second, Completely Revised Edition

Edited by H.-J. Rehm and G. Reed
in cooperation with A. Pühler and P. Stadler

This fully revised and expanded Second Edition takes into account all recent developments in biotechnology. It is extraordinarily broad in scope, up-to-date, carefully structured and well-balanced. "Biotechnology" considers both basic concepts and widely-differing industrial applications: it is a successful synthesis of theory and practice. Any scientist aiming for success in industrial microbiology, biochemistry, molecular biology and chemical engineering must turn to "Biotechnology". Genomics is the new paradigm in biology, medicine and biotechnology. The complete "blueprint" of organisms from all phylogenetic domains, including the human genome, has been characterized, opening unprecedented opportunities for research and development. The first chapters introduce the major model organisms. The chapters about the human genome also deal with genetic diseases and drug development. The major genomics technologies, including DNA and protein characterization and expression studies are introduced in the next section. Several chapters are devoted to dealing with bioinformatics, including chapters on databases and applications. Ethical aspects of genomics research and development are discussed in a separate chapter. The book concludes with an outlook to genomics five years from now.

Topics included are:

• Model Organisms • The Human Genome • Human Genetic Diseases and Genomics • DNA Sequencing Technologies • Protein Characterization Technologies • Expression Studies Using High Density DNA Arrays • Databases for Bioinformatics • Bioinformatics Tools for DNA Analysis • Bioinformatics Tools for Protein Analysis • Automated Genome Analysis • Ethical Aspects of Genomics Research • The Future of Genomics Research

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