

UNIT ONE

THE IMPORTANCE OF BIOTECHNOLOGY

Biological processes have had central importance in the foodstuffs industry, in particular, for thousands of years, but it is only in the last hundred years that they have been applied more intensively in chemical technology.

At the present time, modern biotechnology is capable of becoming a part of industry of increasing economic importance.

The field of operation of biotechnology consists of three large areas:

1. Microbiology, including microbial genetics;
2. Biochemistry, physical chemistry, and technical chemistry; and
3. Process engineering and apparatus constructions.

Biotechnology is developing by close interweaving between these areas and can develop further only by means of an interdisciplinary cooperation between them.

Many products can be manufactured only biotechnologically. This applies particularly to most of the secondary metabolic products such as, for example, antibiotics, vitamin B₁₂, and many others, but it also applies to many products that are manufactured by a microbial transformation and which cannot be produced profitably in any other way, such as, for example, steroids and many estrogenic ovulation inhibitors that are used as "antibody pills". At the present time about 90 antibiotics for medical use are manufactured industrially. The production of antibiotics is in the order of more than 30,000 tons per year. Even special antibiotics, such as monensin, a coccidiostat and animal feed supplement, and validamycin, which is used in Japan for the control of phytopathogenic bacteria, are already being manufactured on the ton scale.

More than 20 amino acids are offered by various industries as biotechnologically prepared products. Of these glutamic acid is particularly important with a current production of about nearly 300,000 tons per year.

More than 25 enzymes are produced technically. It is impossible nowadays to imagine the economy without their use, for example, rennet in the USA, for the manufacture of cheese, and as proteases and amylases in many branches of industry. The situation is similar with citric acid, the manufacture of which has assumed an important place in foodstuffs chemistry.

Millions of people in the world owe their lives to the use of antibiotics. The same applies to other therapeutic agents, including vaccines, which are likewise largely produced biotechnologically. Many people do not realize that for us the antibiotics practically represent the "philosophers' stone" of the Middle Ages which was sought and pursued with such great labor.

The Language Of Biotechnology

N Noddings



The Language Of Biotechnology:

The Language of Biotechnology John M. Walker, Michael Cox, Allan Whitaker, 1988 This dictionary attempts to define routinely used specialized language in the various areas of biotechnology and remain suitable for use by scientists involved in unrelated disciplines Viewing biotechnology as the practical application of biological systems to the manufacturing and service industries and to the management of the environment terms defined have been selected from as broad a spectrum as possible to include work accomplished by the following disciplines 1 microbiology 2 pharmacology 3 biochemistry 4 chemistry 5 physiology 6 chemical engineering 7 genetic engineering 8 enzymology and 9 cell biology The typical biotechnologist can utilize this dictionary to integrate specialized work with studies being carried out by collaborators in related fields particularly with respect to differences in terminology i e jargon JJK

The Language of Biotechnology of Terms J. M. Walker, 1995 [The Language of Biotechnology](#), 1984 **Information Resources in Toxicology** P.J. Bert Hakkinen, Gerald Kennedy, Frederick W. Stoss, 2000-01-10 Information Resources in Toxicology Third Edition is a sourcebook for anyone who needs to know where to find toxicology information It provides an up to date selective guide to a large variety of sources books journals organizations audiovisuals internet and electronic sources and more For the Third Edition the editors have selected organized and updated the most relevant information available New information on grants and other funding opportunities physical hazards patent literature and technical reports have also been added This comprehensive time saving tool is ideal for toxicologists pharmacologists drug companies testing labs libraries poison control centers physicians legal and regulatory professionals and chemists Serves as an all in one resource for toxicology information New edition includes information on publishers grants and other funding opportunities physical hazards patent literature and technical reports Updated to include the latest internet and electronic sources e mail addresses etc Provides valuable data about the new fields that have emerged within toxicological research namely the biochemical cellular molecular and genetic aspects

Modern Biotechnology Nathan S. Mosier, Michael R. Ladisch, 2011-09-20 A unique resource for the next generation of biotech innovators Enabling everything from the deciphering of the human genome to environmentally friendly biofuels to lifesaving new pharmaceuticals biotechnology has blossomed as an area of discovery and opportunity Modern Biotechnology provides a much needed introduction connecting the latest innovations in this area to key engineering fundamentals With an unmatched level of coverage this unique resource prepares a wide range of readers for the practical application of biotechnology in biopharmaceuticals biofuels and other bioproducts Organized into fourteen sections reflecting a typical semester course Modern Biotechnology covers such key topics as Metabolic engineering Enzymes and enzyme kinetics Biocatalysts and other new bioproducts Cell fusion Genetic engineering DNA RNA and genes Genomes and genomics Production of biopharmaceuticals Fermentation modeling and process analysis Taking a practical applications based approach the text presents discussions of important fundamentals in biology biochemistry and engineering with relevant case

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continued interconnectedness of biological and sociological understandings of relatedness and the relationship between nature and nurture **Science Today: Problem or Crisis?** Ralph Levinson, Jeff Thomas, 1997-01-02 What is science What is the purpose of science education Should we be training scientists or looking towards a greater public understanding of science In this exciting text some of the key figures in the fields of science and science education address this debate Their contributions form an original dialogue on science education and the gener

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