

The nature of biotechnology assignment

[Technology](#)



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Microbiology in the Institute of Pharmacy and Biomedical Sciences, University of Stirling, Glasgow and Scientific Advisor to GlaxoSmithKline, Norway. Biotechnology Biotechnology is the major technology of the twenty-first century – yet few people realize how much it impacts on many aspects of human society. The defining aim of this new fifth edition is to re-establish the correct understanding of the term biotechnology. Using the straightforward style that made the previous editions of his textbook so popular, John Smith once again helps students and general readers alike with the deciphering and use of biological knowledge. He explains the historical developments in biotechnology and the range of activities from brewing beer, the treatment of sewage and other wastes, and the creation of biofuels.

He also discusses the innovations in molecular biology, genomics and proteomics, systems biology and their impact on new biotechnology. In this edition John Smith also re-examines the ethics and morality of aspects of biotechnology and puts new emphasis on stem cells and regenerative medicine and micro RNA. Copyright Dedication I dedicate this fifth edition to my grownup children, Sheer, Jill and Fraser, who have been a constant source of inspiration. Contents I. The nature of biotechnology 1. Introduction Improved awareness of agriculture and metal working brought mankind out of the Stone Age, while in the nineteenth century the Industrial Revolution created a multitude of machinery together with increasingly larger cities. The twentieth century was undoubtedly the age of chemistry and physics, spawning huge industrial activities such as petrochemicals, pharmaceuticals, fertilizers, the atom bomb, transmitters, the laser and microchips. The

twenty-first century will be dominated by biology and its associated technologies.

The following chapters will examine how the new biotechnologist are developing new therapies and cures for many human and animal diseases; designing diagnostic tests for increasing disease prevention and pollution control; improving many aspects of plant and animal agriculture and food production; cleaning-up and improving the environment; designing clean industrial manufacturing processes; exploring the potential for biological fuel generation; and unraveling the power of stem cell technology.

Undoubtedly, biotechnology can be seen to be the most innovative technology that mankind has witnessed. The development of biotechnological products is knowledge and resource intensive. 1. 2 What is biotechnology? Modern biology is the most diversified of all the natural sciences, exhibiting a bewildering array of spinelessness: microbiology, plant and animal anatomy, biochemistry, immunology, cell biology, molecular biology, plant and animal physiology, morphogenesis, systematic, ecology, genetics and many others. In the last two decades well over 20 Nobel prizes have been awarded for discoveries in these fields of study. 0 The life sciences affect over 30% of global economic turnover by way of healthcare, food ND energy, agriculture and forestry. Biotechnology will be shown to cover a multitude of different applications ranging from the very simple and traditional, such as the production of beers, wellness Ana essences, to mainly complex molecular processes, such as the use of recombinant DNA technologies to yield new drugs or to introduce new traits into commercial crops and animals.

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The European Federation of Biotechnology (FEB.) considers biotechnology as the integration of natural sciences and organisms, cells, parts thereof, and molecular analogues for products and services. The aims of this federation are: (1) to advance biotechnology for the public benefit (2) to promote awareness, communication and collaboration in all fields of (3) to provide governmental and supranational bodies with information and informed opinions on biotechnology (4) to promote public understanding of biotechnology.

Genetic modification has been used by mankind for over 10 000 years to improve plants and animals by selective breeding. Only within the last 50 years has this process used new methods, such as plasticization, mutagens and X-rays, to achieve changes in genetic composition. Genetic manipulation/modification/engineering is the modern method of selectively moving genes within the same species or between species, using modern molecular biology techniques.

The interdisciplinary nature of Biotechnology can draw upon a wide array of relevant fields, such as microbiology, biochemistry, molecular biology, cell biology, immunology, protein engineering, enzymology, classical breeding techniques, and the full range of processes technologies. Biotechnology is not itself a product or range of products like microelectronics: rather it should be regarded as a range of enabling technologies. A significant application in many industrial sectors.