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IMPORTANCE OF GENETIC ENGINEERING AND BIOTECHNOLOGY IN MEDICINE.

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Abstract: This article discusses the importance of genetic engineering and biotechnology in medicine, the essence of each of them, and their interdisciplinary application.

Keywords: Microorganisms , biotechnology , genetics

Microorganisms, plant and animal cells, enzymes isolated from them, cell organelles, membranes surrounding them in pure or immobilized form are used in the production of proteins, organic acids, amino acids, alcohols, medicinal substances, enzymes, hormones and other substances from biotechnology processes. It is widely used in the production of organic substances (for example, biogas), separation of metals in pure form, processing of wastewater and agricultural or industrial waste. To date, modern biotechnological methods using genetic engineering have produced interferons for pharmaceuticals, insulin, somatotropin, hepatitis vaccine, enzymes, diagnostic materials for clinical research (test systems for drug addiction, hepatitis and a number of other infectious diseases, reagents for biochemical tests, flexible biological plastics, antibiotics, many other bio-mixed products) are produced. Usually, an attempt is made to study microorganisms as useful and harmful. This opinion is absolutely not correct. In our opinion, all microorganisms are useful, because they actively participate in the metabolism in nature and synthesize many different vital substances. Therefore, microorganisms are the most powerful productive forces of the world we live in. They are resistant to various physic-chemical environments, adapt quickly, and have the ability to live in different food environments. Microorganisms such as yeasts, micromycetes, bacteria and actinomycetes (oat fungi) are used in biological processes. The whole organism cannot live without microorganisms, and microorganisms themselves live. For example, if the number of active microorganisms in the digestive system decreases, dysbacteriosis and other related diseases occur. Another example is that if you transfer plants to pots with sterilized soil, i.e. sterilized soil and add all the necessary mineral fertilizers, the seedling will wither in 4-5 days. Modern biotechnology entered the 21st century with great achievements. It is known to everyone that the complete reading of the human genome, the ability to create strains with

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pre-planned characteristics, the pursuit of unlocking the secrets of agelessness, in a word, the pursuit of eternity is not a myth compared to the achievements of today's science.

Genetic engineering is the field of molecular genetics; is engaged in purposefully creating new combinations of genes that do not occur in nature using genetic and biochemical methods. It is based on combining a gene or a group of genes isolated from a specific organism cell with specific molecules of nucleic acid and introducing the resulting hybrid into another organism cell. Viruses, etc. appropriate modeling of the genetic program of cells of any living organism, creation of new strains of viruses and microorganisms, new types of plant and animal cells, plant varieties and animal breeds necessary for agriculture, etc. G. i. is a task. The American scientist P. Berg together with his staff connected parts of genetic molecules of viruses and microorganisms in a test tube and obtained recombinant DNA G. i. laid the foundation for the creation of (1972). G. i. was formed due to the complementarity of theories and research methods of biological sciences such as general genetics, molecular genetics, molecular biology, bioorganic chemistry, microbiology, plant science. The achievements of genetic enzymology and nucleic acid chemistry are of great importance in the development of G. i. The results of work carried out at the molecular level depend on two types of enzymes - restriction endonuclease and ligase. Restrictases (there are more than 300 types) are used to break DNA molecules into different parts, and ligases are used to rejoin them. The most widely used restrictase (Yeso Rb) in G. i. was obtained in 1971. The history of the development of G. i. in vitro (outside the organism) involves recombinant DNA molecules, that is, various plasmids (non-chromosomal, independent living DNA loop molecules), even hybrids between plasmids and phages, or vector molecules (independently regenerated in the host cell a DNA molecule with the ability to obtain) started with the proof-of-principle that it can be obtained. Later, recombinant molecules were obtained between various plasmids with chromosomal genes belonging to prokaryotes (organisms without a formed nucleus). Incorporating the DNA of the genes of eukaryotic (with a formed nucleus) organism (mainly animal and plant) into vector molecules is a major achievement of G. i. As a result, it became possible to multiply and express animal genes in bacterial cells (gene cloning). Finally, G. i. The science of biotechnology was formed due to the synthesis of the achievements of cell engineering with genetic engineering - mainly keeping hidden genes in itself and creating a new gene as a result of their crossing. G. Darwin was one of the first to give his information. In 1865, G. Mendel was the first to conduct his first experiment. He conducted this experiment with yellow and green 'leads on the lines. And with this experience, he teaches g.i in a more open way. Biotechnology (bio... and Greek. techne - skill, art, logos - word, teaching) is a set of industrial methods that use living organisms and biological processes in various fields of agriculture, industry and medicine. Biol. a scientific direction that combines the possibilities of technology. "B." The reason for the emergence of the term was the fact that a group of scientists from Stanford University (USA; 1973) combined genetic molecules with different properties to obtain recombinant DNA (a product resulting from the fusion of two or more parts of DNA isolated from any organism in vitro). After that, biol. "B". the term began to be used. B. is based on microbiology, biochemistry, bioorganic chemistry, molecular biology, physiology, genetics, molecular genetics, genetic engineering and other achievements. B. has areas such as microbiological B., membranes B., immobilized enzymes B., cell B., gene and cell engineering B.

Microbiological B. is based on the processes of the life activity of microorganisms, and in this field enzyme preparations, antibiotics, amino acids, hormones, protein substances and necessary metabolites for various branches of the national economy are synthesized. For example, at the Institute of Microbiology of the Academy of Sciences of Uzbekistan, on the basis of microbiological B., it was

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achieved to prepare feed for livestock from plant waste (stalks, straw, straw and waste); in some countries (Brazil), extracting sugar or alcohol from cellulose with the help of special microbes, extracting methane gas from cow dung (especially in China, Brazil and European countries) has a very high economic effect.

Modern biotechnology industries are gaining great economic and social importance even today. In this regard, the potential of the Biotechnology Foundations industry is immense. Another branch of Ulam is the production of sugar and sugar substitutes from plant residues (stalks, corn stalks, straw, etc.). In addition, protein and other food and nutrients obtained by microbiological synthesis can be used for the production of artificial food products in practically unlimited quantities. Therefore, mastering this subject by master's students will allow them to acquire biotechnological qualifications and skills perfectly in the future.

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