

Annotation

Biotechnology Basics

Biotechnology is a polydisciplinary field of science about the use of living organisms, cell cultures and biological processes in production in order to obtain useful products for the national economy, medicine and veterinary, which purposefully improve the impact on the environment and the formation of an ecologically benign environment for humans and animals. Biotechnology is the newest area that combines the modern achievements of the complex of fundamental biological sciences and biomedical technologies; the concept of species specificity of medicinal substances, especially high molecular weight; new paradigms of chemotherapy and principles of combinatorial chemistry; innovative ways of creating medicinal substances based on the use of data from genomics, proteomics and bioinformatics: and which is of great importance for various spheres of human economic activity - the reproduction of food and medicinal substances, mineral raw materials and energy resources, the rational use of biosphere resources and environmental protection.

The course includes consideration of biological objects as a means of production of medicinal, prophylactic and diagnostic drugs; genetic engineering; enzymes used in genetic engineering; technique, target, vectors, target and marker genes, methods of introducing a template gene into a recipient organism, selection of modified systems; biological objects of plant origin; macrobiological objects of animal origin; bioobjects - microorganisms; bioobjects - macromolecules with enzymatic activity; genetic basis for improving biological objects; private biotechnology; biotechnology of primary and secondary metabolites; genetic engineering and the creation of producers of new medicinal substances using its methods; genomics; proteomics; the role of miRNA in solving cardinal problems of medicine based on the achievements of biotechnology; obtaining "biomedical technologies" of medicinal, prophylactic and diagnostic preparations; biotechnology and understanding of the foundations of the pathology of infectious, oncological and hereditary diseases; immunology as one of the branches of biotechnology; immunomodulatory agents: immunostimulants and immunosuppressants (immunosuppressants); immunotoxins; recombinant DNA technology and the production of mediators of immunological processes; the contribution of biotechnology to solving common environmental problems.