

Al-Farabi Kazakh National University
Faculty of biology and biotechnology
Department of Molecular biology and genetics

APPROVED by
Dean of Faculty

_____ B.K Zayadan
(signature)

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EDUCATIONAL-METHODICAL COMPLEX OF DISCIPLINE

«OB1202 Objects of Biotechnology»

Specialty "6B05103 — Biotechnology" (NIS)

Course – 2
Semester – 4
Number of credits – 5

Almaty 2021

Educational-methodical complex of the discipline is made by Turasheva S.K., PhD, Associated Professor, Izmukan A. Zh., Master of BT (Department of Biotechnology), Amirova A. K., candidate of biological science, (Department of Molecular Biology and Genetics)

Considered and recommended at the meeting of the department of Molecular Biology and Genetics

from «___»_____2021, protocol № ___

Head of department _____ Zh.K. Zhunusbayeva
(Signature)

Recommended by methodical bureau of the faculty of Biology and Biotechnology
«___»_____2021, protocol № ___

Chairman of the Methodical Council of the faculty _____S.T. Nazarbekova
(Signature)

PREFACE

The objects of biotechnology describe the objects industrial, plant and animal biotechnology and their application in industry, agriculture and medicine. Biotechnology is the use of an organism, or a component of an organism or other biological system, to make a product or process for a specific use.

Objects of Microbial Biotechnology or Industrial Biotechnology describe the general characteristics of viruses, structural differences and similarities of prokaryotic and eukaryotic cells, and their specification, biotechnologically important viruses, bacteria, archaea, morphology of the bacteria, reproduction of bacteria, sporulation, conjugation, pure culture isolation, importance of E.coli in development of biotechnology.

Objects of Plant Biotechnology define higher plants and algae as objects of biotechnology, structural and functional features of the organization of cells and metabolism of plants as objects of biotechnology, subcellular structures as biological objects, plant cell, tissues and organ cultures, methodical principles of culture media preparation, plant tissue cultures as model systems in theoretical and experimental research, the main directions of application of the methods of plant biotechnology.

Objects of Animal biotechnology acquaint with objects of animal biotechnology, achievements of animal biotechnology and main directions of animal breeding, animal reproduction, reproductive technologies, artificial insemination, in vitro production of embryos, embryo transfer, the features of the organization of biotechnological laboratory in animal husbandry, aseptic techniques, animal cell technologies, mammalian cell and tissues culture and medium, biotechnology and genetic engineering of mammals, fundamentals of bioethics, biosecurity, applications of animal biotechnology.

Aim of course: to consider microorganisms, plants and animals as objects of biotechnology, as well as the basic principles and approaches used to create new biological objects.

As a result of studying the discipline the undergraduate will be able to:

- demonstrate knowledge of the main objects, methods and application of biotechnology;
- use modern information technologies to know the classification and characteristics of different objects of biotechnology;
- demonstrate ability to own methods and techniques for studying biotechnological objects;
- have skills of application of different methods of biotechnology;
- implement a systematic approach to the search, critical analysis and synthesis of information on biotechnology;

Prerequisites: Microbiology and Virology, Physiology of Microorganisms, Low molecular biological substances.