

МІНІСТЕРСТВО ОХОРОНИ ЗДОРОВ'Я УКРАЇНИ НАЦІОНАЛЬНИЙ ФАРМАЦЕВТИЧНИЙ УНІВЕРСИТЕТ



Кафедра біотехнології

Selective component EP «Pharmacy»

TECHNOLOGIES OF MICROBIAL SYNTHESIS OF DRUGS



Dear students!

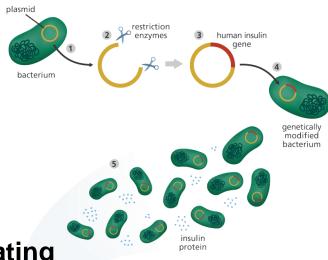
Microbiological synthesis- methods of obtaining compounds and products due to the activity of microbial cells. The obtained compounds and products are biotechnological. Biotech drugs account for more than 15% of the total global pharmaceutical market.

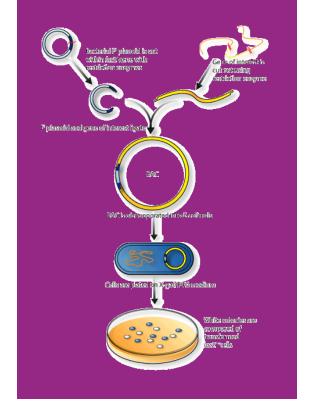
U.S. Biotechnology Market Size, by Application, 2012- 2024 (USD Million)

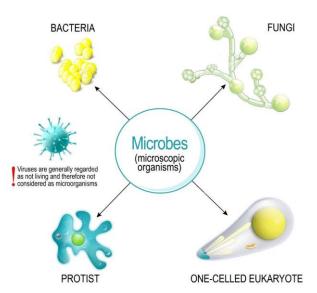


WHICH MEDICINES ARE OBTAINED BY MICROBIAL SYNTHESIS?

- Antibiotics
- Enzymes
- Vitamins
- Hormonal drugs
- Immunobiological drugs vaccines, sera
- Interferons, interleukins
- Biologically active factors colony-stimulating factors, blood coagulation factors, tumor necrosis factors
- Recombinant proteins
- Bacteriophages
- Probiotics







Purpose of the discipline:

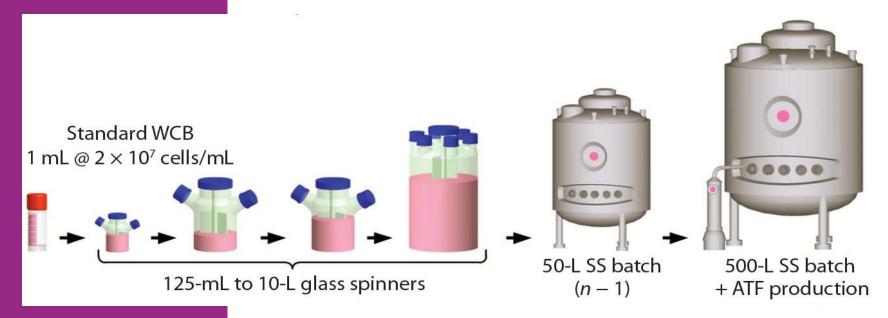
- acquisition of the theoretical foundations and practical abilities and skills of carrying out biotechnological processes,
- cultivation of individual strains of industrial microorganisms, management of cultivation processes of microorganisms and quality control of the obtained target products, environmental safety of biotechnology products created on the basis of microorganisms,
- assimilation features and familiarization with the achievements of biotechnologies in the production of pharmaceuticals of the latest generation.

Topics

- **Topic 1.** Characteristics of microorganisms as objects of microbial synthesis: bacteria, archaea, mushrooms. Methods of working with microorganisms in laboratory and industrial conditions for the implementation of microbial synthesis technologies
- **Topic 2.** Technologies recombinant DNA to obtain recombinant microorganisms
- **Topic 3**. Classification of products of microbial synthesis. Technologies of microbial synthesis antibiotics formed by bacteria, actinomycetes, mycelial mushrooms
- **Topic 4.** Technologies of microbial synthesis of enzyme preparations: amylase, protease, lipase, lactase, glucooxidases
- **Topic 5.** Technologies of microbial synthesis of vitamins: riboflavin, cyanocobolamine, ascorbic acid, ergosterol, β-carotene
- **Topic 6.** Technologies of microbial synthesis of amino acids: lysine, tryptophan, glutamic acid, L-alanine
- **Topic 7.** Production technologies recombinant proteins-cytokines: interferons, interleukins
- **Topic 8.** The latest technologies in obtaining immunobiological drugs vaccines: live, recombinant, protein, DNA vaccines, etc.

We wish you success in your studies!
We hope that this course will help you
to master the material of the discipline,
we are sure that the knowledge and
skills you will gain during the course
will help in your future professional
activity!

PLEASANT TEACHING!



Teachers



Head of Biotechnology department Natalia Khokhlenkova



Assistant of Biotechnology department Alina Soloviova