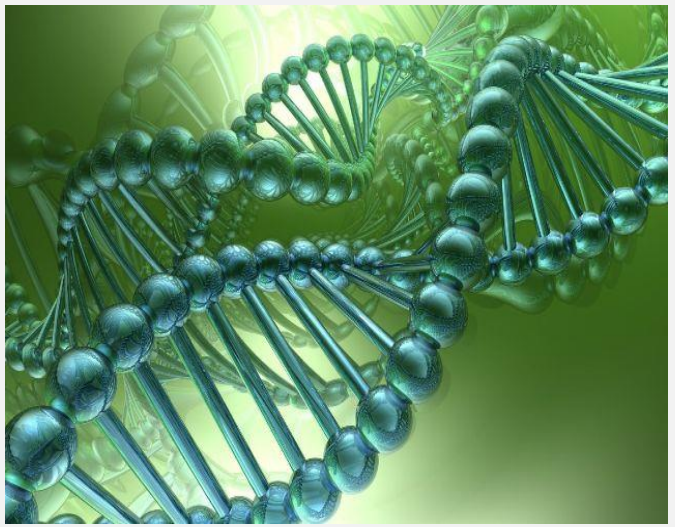
МІНІСТЕРСТВО ОХОРОНИ ЗДОРОВ'Я УКРАЇНИ
НАЦІОНАЛЬНИЙ ФАРМАЦЕВТИЧНИЙ УНІВЕРСИТЕТ
DEPARTMENT OF BIOLOGICAL CHEMISTRY AND VETERINARY MEDICINE

# MODERN ISSUES OF MOLECULAR BIOLOGY


**2023-2024 academic year**

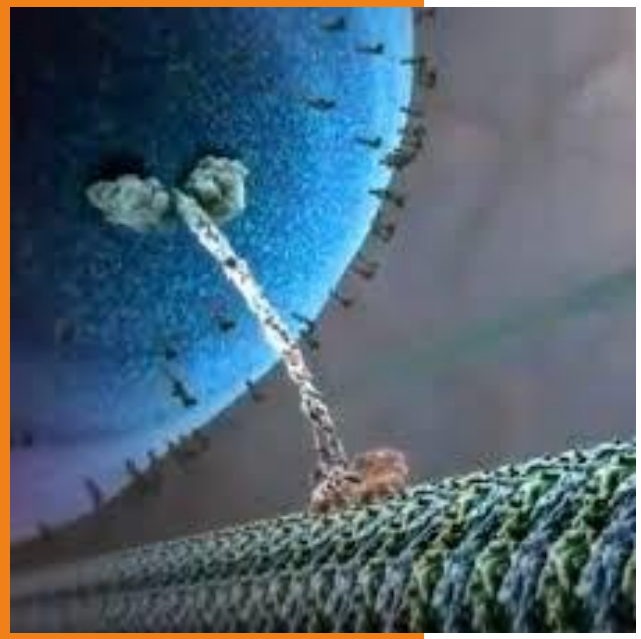
# DESCRIPTION OF THE EDUCATIONAL COMPONENT

**"MODERN ISSUES OF MOLECULAR BIOLOGY "** is an OK, the purpose of teaching of which is the formation of knowledge and practical skills in studying the laws of heredity and variability in living organisms and the molecular organization of hereditary processes



# SCOPE OF EC "MODERN ISSUES OF MOLECULAR BIOLOGY "

**90 hours, 3 credits ECTS**



## TASKS of the educational component are:

obtaining a comprehensive understanding of the material and molecular bases of heredity, the laws of inheritance and the principles of heredity, types of variability and its causes, genetic processes at the level of the organism and populations, the structure and function of the gene, the molecular organization of genetic processes, the mechanisms of preservation and transmission of genetic information, the meaning of genetics as a theoretical basis of selection and biotechnology.

# COMPETENCES AND PROGRAM LEARNING OUTCOMES

1

2

3

- the ability to use knowledge of the molecular basis of heredity, mechanisms of development of hereditary and acquired human diseases in the practical activity of a specialist.
- the ability to apply knowledge of the peculiarities of human ontogenesis in the diagnosis and treatment of various human diseases.
- ability to apply knowledge of modern achievements of molecular biology in practical pharmacy and medicine.
- the ability to use one's own professional activity to preserve the environment.
- skills of researching the genetic material of animals, humans, plants and microorganisms;
- research and trace the effect of pharmaceuticals at the genetic level;
- to be able to use knowledge about the genome and genes in biotechnology, pharmacy and medicine;
- research DNA and RNA of animals, humans, plants and microorganisms;
- to be able to use fundamental knowledge in practical and scientific activities.

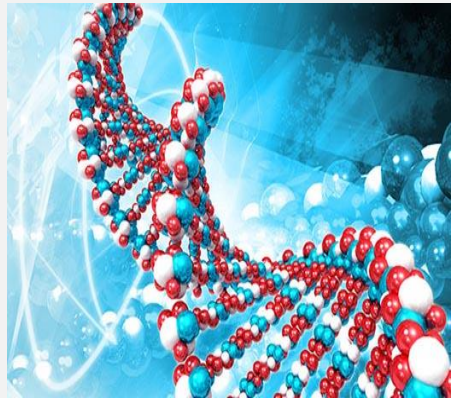
# BRIEF CONTENTS OF THE PROGRAM of the educational component

***Content module 1.*** **Molecular basis of heredity.**

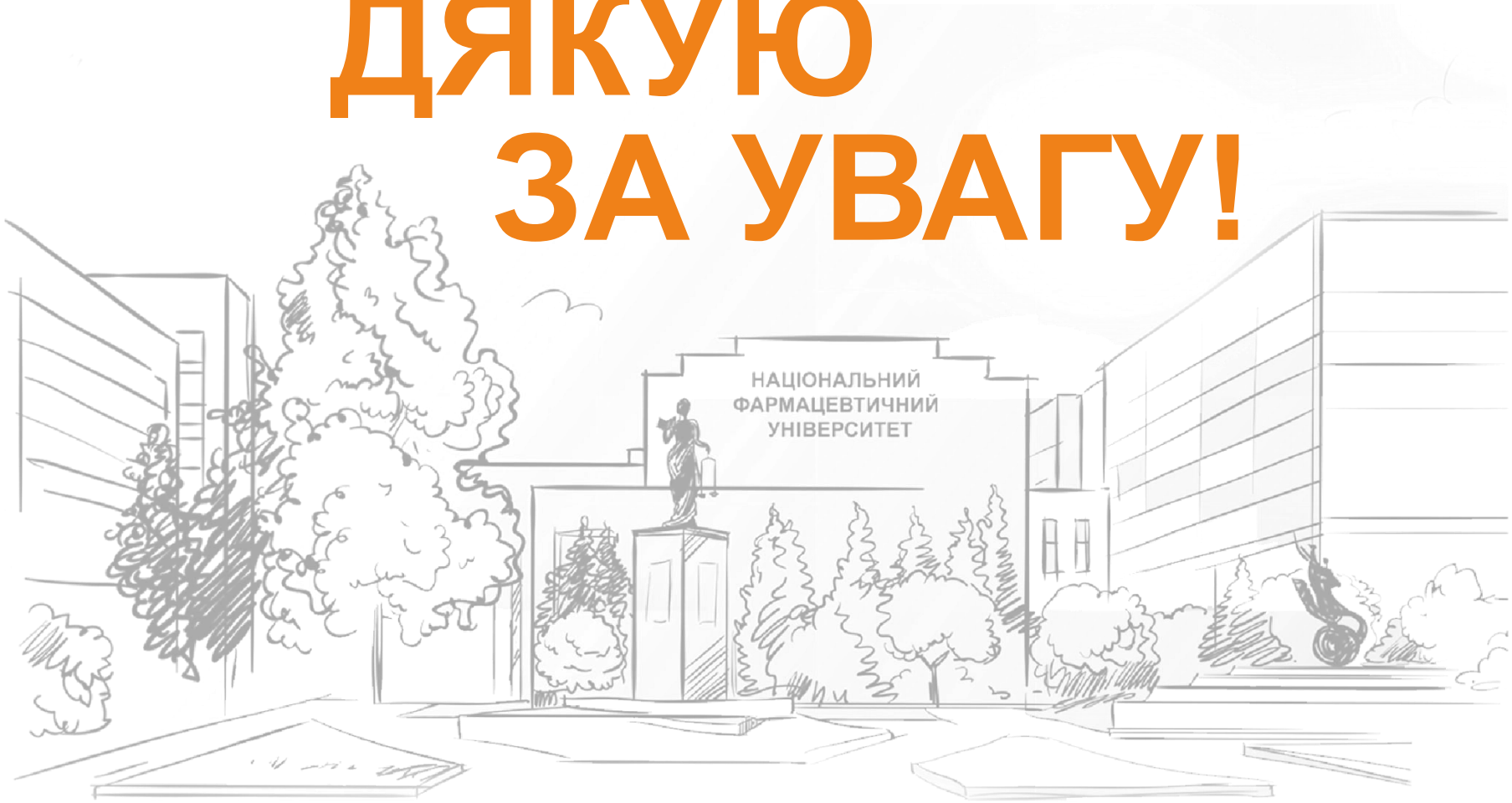
**Topic 1. The subject and tasks of molecular biology. Molecular mechanisms of intercellular signaling and transmembrane transport.**
**Topic 2. Macromolecules as objects of molecular biology study. DNA replication and repair.**
**Topic 3. Gene expression and its regulation.**
**Topic 4. Structural organization of genomes of viruses and cellular organisms.**
**Topic 5. Molecular mechanisms of ontogenesis.**

***Content module 2.*** **Molecular basis of hereditary diseases. Current state of gene technologies.**

**Topic 6. Problems of mutagenesis and molecular mechanisms of hereditary diseases.**
**Topic 7. Regulation of the cell cycle. Apoptosis. Basics of oncogenetics.**
**Topic 8. Methods of genetic engineering. Study of nucleic acids.**
**Topic 9. Transgenic organisms. Gene therapy.**
**Topic 10. Cloning of organisms.**



# ДЯКУЮ ЗА УВАГУ!

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