



I. I. Mechnikov Odessa National University

**Bioethics and Biosafety.
Curriculum and syllabus**

Department of Microbiology, Virology and Biotechnology

«Bacteria - causative agents of highly infectious diseases»

- Topic 1. Cholera.
- Topic 2. Plague.
- Topic 3. Anthrax.
- Topic 4. Legionellosis.
- Topic 5. Causative agents of glanders, melioidosis, tularemia.
- Topic 6. Characteristics of highly infectious diseases caused by bacteria.
- Topic 7. Characteristics of highly infectious diseases caused by viruses and prions.
- Topic 8. Biological weapon. Bioterrorism.
- Topic 9. Laboratory of highly infectious diseases.
- Topic 10. Organization of infection diseases epidemiological surveillance.

«Health and safety. Biosecurity»

- Topic 1. Introduction.
- Topic 2. General requirements to laboratory area and facilities.
- Topic 3. Biosafety levels 1-4.
- Topic 4. Requirements to work with BSL3 and BSL4 agents.
- Topic 5. Laboratory personnel security measures and protective equipment.
- Topic 6. Requirements to personnel proficiency and security measures.
- Topic 7. Security rules and regulations.
- Topic 8. Requirements to PCR detection of BSL2 and BSL1 agents.
- Topic 9. Biosafety and recombinant DNA technology.

2009-2011 - special courses "GMOs and Biosafety" (Specialists-microbiologists), "Bioethics and Biosafety" (Masters-microbiologists)

2011-2012 - course "Principles of Bioethics and Biosafety"
(general course, 18 hours)

Bioethics

Ethics in Science and Research

Biosafety and biosecurity.

Convention on Biological Diversity.

The Cartagena Protocol on Biosafety.

Methods and ethical aspects of transgenic microbes, animals and plants development and use. LMOs.

Biosafety: object, goals, main issues, problems. LMO use risks. Regulation of LMOs transfer, handling and use. Regulations: international, European, national.

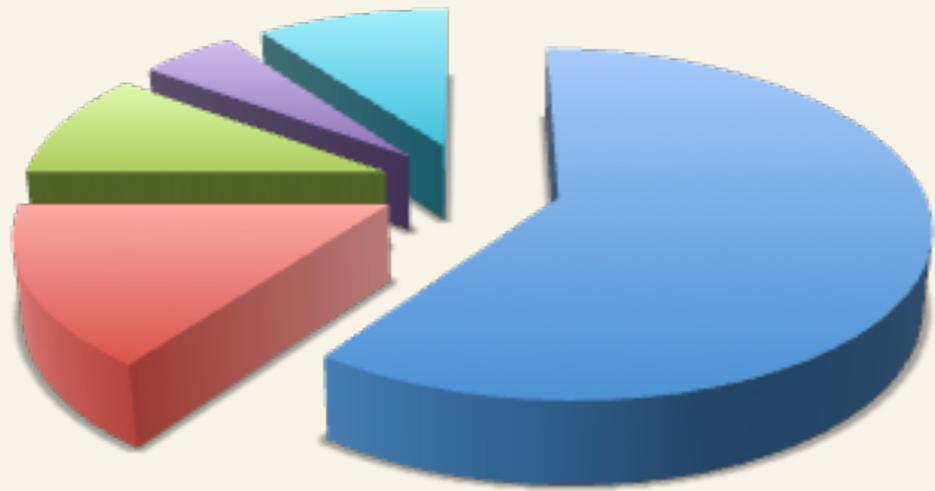
Biosecurity: Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction (BTWC); dual use research

Biorisks. Risk assessment. Risk management.

Bioherrorism.

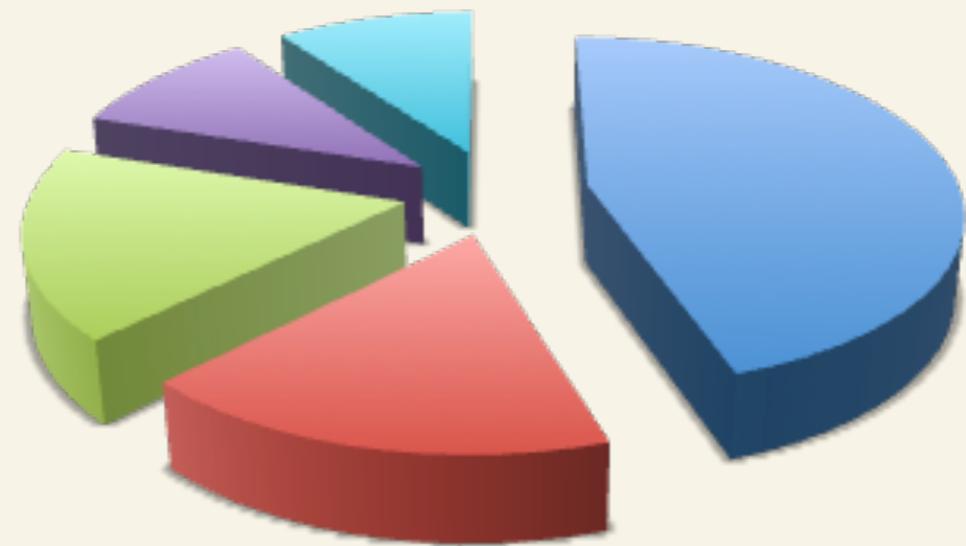
Bioethics&Biosafety syllabus

before 2013



■ Bioethics ■ Biosafety ■ Biosecurity ■ Dual Use ■ Standards, Regulations

after 2013



■ Bioethics ■ Biosafety ■ Biosecurity ■ Dual Use ■ Standards, Regulations

Text

Bioethics and Biosafety, Biosecurity

biotechnology students



Bioethics
4th year students

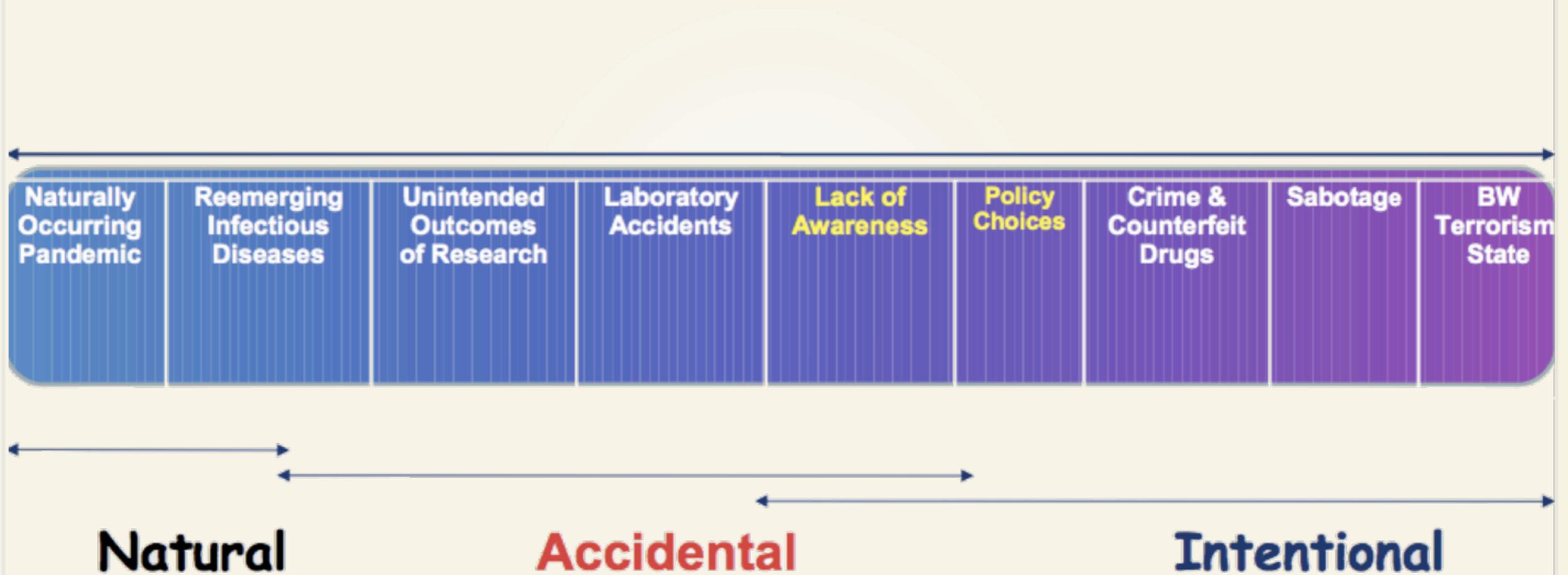


**Biosafety and
Biosecurity**
5th year students

Topics of special interest

- Biological labs and *GLP* Rules
- Safety of molecular technologies
- Biotechnology risk assessment
- Potential impact of genetical modification
- Dual-use issues

The Full Spectrum of Biological Risk

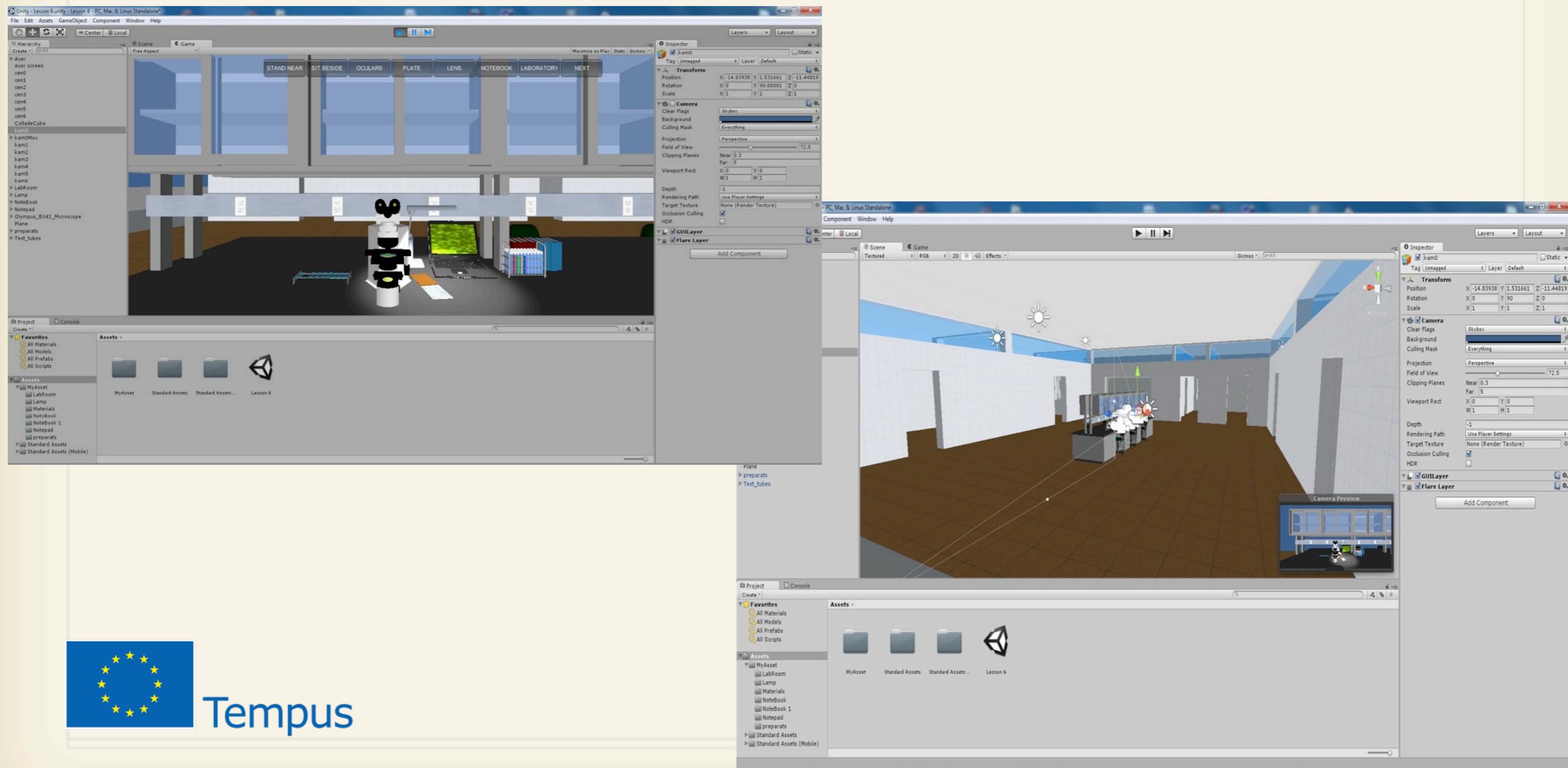


Source: EMBO Science and Security Series (2006) Terence Taylor

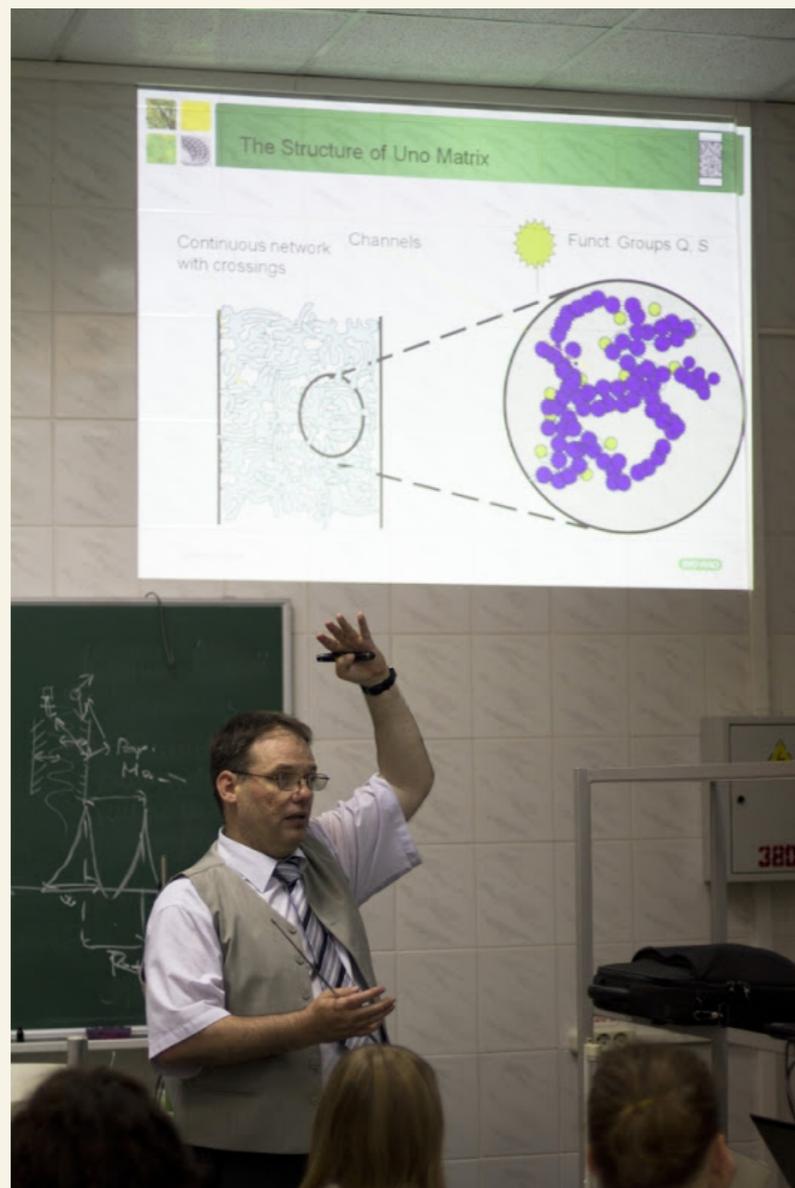
New teaching methods

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Establishment of Multidisciplinary Innovative Centres for the Development of Virtual Laboratories in Biology and Medicine



Summer School for Young Researchers Molecular Microbiology and Biotechnology



Problems

Deficit of academic hours according to current teaching plans (due to the overload of a program with "redundant" courses and limited to 1 year term of Master training).

Lack of available up-to-date study and methodical materials on biosafety, bioethics and biosecurity