UNIVERSITY OF NOVI SAD
FACULTY OF MEDICINE

Study program: Doctoral Academic Studies in Biomedical Sciences

Name of the subject: MOLECULAR MICROBIOLOGY

Teacher(s): Ivana B. Hrnjaković Cvjetković, Gordana M. Smieško, Deana D. Medić, Vera P. Gusman

Status of the subject: elective

Number of ESПБ points: 20

Condition:

Goal of the subject: To achieve a comprehensive view of current facts in the field being studied in order to connect the and apply them in theory and practice.

Outcome of the subject

Theoretical preparation for diagnosis and differential diagnosis. Preparation for work in practice, selection of appropriate methods and their interpretation.

Content of the subject

Theoretical lectures

1. Knowledge regarding the molecular aspects of the structure and function of bacteria
2. New knowledge regarding bacterial genetics
3. Application of molecular methods in the diagnosis of bacterial infections
4. Application of molecular methods in the examination of nosocomial infections
5. Molecular aspects of bacterial resistance to antibiotics
6. Resistance genes and their spread among bacteria. The possibility of combating this phenomenon
7. Infection. The role of immunocytokines in infections and sepsis. Diagnostic and prognostic significance of cytokine detection
8. Genes and molecules for immunocytokines and their receptors. Immunomodulations for treatment
9. Normal flora of the human body and opportunistic infections
10. Sanitary bacteriologist
11. New causes of parasitic and fungal diseases
12. Viral infections of the respiratory tract
13. Acute gastroenteritis of viral etiology
14. Hepatotropic and cardiotropic viruses
15. AIDS. Sexually transmitted viruses
16. Viral infections of the CNS
17. ARBO viruses
18. New viruses and their significance. Defective viruses and prions

Practical lectures

1. Laboratory diagnosis of respiratory bacterial infection
2. Laboratory diagnosis of bacterial infections of the urinary tract and their therapy
3. Laboratory diagnosis of bacterial infections of the gastrointestinal tract
4. Current events in the diagnosis and therapy of sexually transmitted diseases
5. Laboratory diagnosis of pyogenic bacterial infections and sepsis. Interpretation of results.
6. Testing of bacterial susceptibility to antimicrobial drugs (new standards)
7. Laboratory diagnosis of parasitic and fungal infections
8. Application of serological diagnostics (possibilities of obtaining false-positive and false-negative results, overcoming existing problems and interpretations)
9. Molecular diagnostic methods and their application in rapid and early diagnosis
10. Application of electron and immunoelectron microscopy in the diagnosis of viral infections. Immunological tests and their application
11. Virus isolation and identification. Application of isolation method in rapid diagnostics. Interpretation of results
12. Influence of the type of patient material and sampling time on the choice of a certain diagnostic method and interpretation of results
13. Effect of physical and chemical agents on viruses. Principles of rational antiviral therapy (new understandings)
14. Virus genetics. Possibility of recombination, incorporation of the virus into the cell genome, rearrangement of cell genes.

Consequences of viral variability (variability)

15. Viruses in the environment

Literature

1. Ter Meulen V, Mahy BWJ. Topley&Wilson's Microbiology and microbial infections: Virology, Hodder Arnold UK, 2009.

Number of active classis	**Theory:** 60	**Practice:** 45

Methods of delivering lectures: Lectures, exercises, seminars

Evaluation of knowledge (maximum number of points 100)

activities during the lecture: 20
seminars: 10
SRW: 40
oral exam: 30