

MEDICAL MICROBIOLOGY I.

Institute of Medical Microbiology

Program Director: **Prof. Dr. Dóra Szabó**

Tutor: **Dr. Ágoston Ghidán**

Second Semester

| Week | Lectures (2 hours per week) |
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| 1. | Introduction. General information about the tuition. The place of Medical Microbiology among natural sciences, its significance, sub-fields and short history. Fundamentals of the morphology, physiology and genetics of bacteria. |
| 2. | Pathogenic nature and virulence of bacteria. Pathomechanism, molecular pathogenesis, virulence factors. Infection and disease. |
| 3. | Defence mechanisms of the host against infections. Active and passive immunisation. Vaccines. |
| 4. | Antibacterial drugs: Modes of action and interactions of antibacterial drugs. Principles and practice of the antibacterial chemotherapy. Origin, mechanisms, induction, transfer, spreading, elimination and control of resistance of bacteria against antibacterial drugs |
| 5. | Introduction to the classification of medically important bacteria: fundamentals of taxonomic, epidemiological, nosological, as well as pathogenetical classification. Gram-positive non-spore forming rods: <i>Corynebacterium</i> , <i>Listeria</i> , <i>Erysipelothrix</i> , <i>Lactobacillus</i> Normal flora of the vagina. |
| 6. | Gram-positive aerobic cocci: <i>Streptococcus</i> and <i>Staphylococcus</i> genus. Normal flora of the skin. |
| 7. | Gram-negative aerobic and microaerophilic cocci and coccobacilli: <i>Neisseriaceae</i> , <i>Pasteurellaceae</i> , <i>Haemophilus</i> genus Normal flora of the upper respiratory tract. |
| 8. | Gram-negative aerobic rods and coccobacilli: <i>Pseudomonas</i> , <i>Legionella</i> , <i>Brucella</i> , <i>Bordetella</i> , <i>Francisella</i> genus. |
| 9. | Gram-negative facultative anaerobic rods Normal flora of the gastrointestinal tract. Extraintestinal diseases caused by Gram-negative enteral bacteria. Pathogens of the gastrointestinal tract I: <i>Vibrio</i> , pathogenic <i>Escherichia coli</i> , <i>Campylobacter</i> , <i>Helicobacter</i> . |
| 10. | Pathogens of the gastrointestinal tract II: <i>Yersinia</i> (yersiniosis), <i>Shigella</i> (shigellosis), <i>Salmonella</i> (salmonellosis). The enteral fever (<i>Salmonella typhi</i> and <i>paratyphi</i>), as well as <i>Yersinia pestis</i> . |
| 11. | Gram positive aerobic and anaerobic spore-forming bacteria: <i>Bacillus</i> and <i>Clostridium</i> genus Obligate anaerobic bacteria and associated infections: Gram-positive: <i>Peptostreptococcus</i> , <i>Propionibacterium</i> , <i>Eubacterium</i> , <i>Bifidobacterium</i> , <i>Arachnia</i> , Gram-negative: <i>Veillonella</i> , <i>Bacteroides</i> , <i>Fusobacterium</i> |
| 12. | Acid-fast bacteria: <i>Mycobacterium</i> , <i>Nocardia</i> . <i>Actinomyces</i> |
| 13. | Spirochaetales: <i>Treponema</i> , <i>Borrelia</i> . <i>Leptospira</i> . |
| 14. | Rickettsiales, Chlamydiales, Mycoplasmatales |

Second Semester

| Week | Bacteriology Practicals (2 hours per week) |
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| 1. | Introduction. Rules and instrumentation of the safe handling of microbes. Safety in the laboratory. Basic microbiological methods I: Microscopic examinations. |
| 2. | Basic microbiological methods II: Cultivation of bacteria and biochemical activity of bacteria |
| 3. | Basic microbiological methods III: Sterilisation. Disinfection |
| 4. | Basic microbiological methods IV: Susceptibility of bacteria to antimicrobial drugs |
| 5. | Basic microbiological methods V: In vitro immunological reactions |

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| 6. | Midterm examination I. and Systematic bacteriology I: Identification of Gram-positive aerobic rods |
| 7. | Systematic bacteriology II: Identification of Gram-positive cocci: Staphylococcus |
| 8. | Systematic bacteriology III: Identification of Gram-positive cocci: Streptococcus |
| 9. | Systematic bacteriology IV: Identification of Gram-negative cocci and coccobacilli, and Gram negative aerobic rods |
| 10. | Systematic bacteriology V: Identification of Gram-negative facultative anaerobic rods |
| 11. | Systematic bacteriology VI: Identification of the aerobic and anaerobic spore-forming bacteria, as well as the obligate anaerobic and microaerophilic bacteria |
| 12. | Midterm examination II. and Systematic bacteriology VII: Identification of irregular Gram-positive rods |
| 13. | Systematic bacteriology VIII: Spirochaetes |
| 14. | Systematic bacteriology IX: Rickettsiae, Chlamydiales and Mycoplasmatales |