MICROBIOLOGY

II Year	Scientific Field	DISCIPLINE	TUTOR
Microbiology	MED/07	*Microbiology*	**Carlo Federico Perno**
	MED/07	*Microbiology*	**Francesca Pica**
ECM 10	MED/07	*Microbiology*	**Valentina Svicher**
Coordinator			
Carlo Federico Perno			

Specific aims

Important targets of the course are the knowledge of the cellular and molecular basis of microbial pathogenicity, interactions between microorganism and host, the causes and the mechanisms of the onset of major diseases with bacterial, fungal and viral etiology, and the applications of biotechnology in laboratory diagnosis, prophylaxis and antimicrobial chemotherapy. These objectives will be achieved through lectures and seminars.
The Teaching Units of General Bacteriology, Mycology, Parasitology and Virology are aimed at the comprehension of the fundamentals and the theoretical principles of microbial structures, their interaction with host defenses, the mechanisms of pathogenicity, the mechanisms of action of antimicrobial drugs, the development of resistance to antimicrobials, the general principles of microbiological diagnosis.
The Teaching Units of Special Bacteriology, Mycology, Parasitology and Virology are aimed to deepen knowledge and relate the student with the various aspects of microbial pathogenesis, host- parasite interaction, identification, prevention and control of the main infections of medical interest . For each pathogen, the student will learn aspects related to the morphology, antigenic structure , virulence factors, pathogenesis of infection, microbiological and serological diagnosis, the sensitivity to antimicrobial chemotherapy and general principles of prophylaxis.

PROGRAM

GENERAL BACTERIOLOGY : criteria for bacterial taxonomy and classification. The architecture of the bacterial cell : the bacterial chromosome, the cytoplasm, the cytoplasmic membrane. Gram staining. Gram positive and gram negative bacteria. Capsule. Flagella. Pili and fimbriae. Metabolism and bacterial growth: the production of bacterial spores. Bacterial genetics: chromosome and plasmids. The transfer of genetic material : transformation, transduction and bacterial conjugation. The pathogenic activity of bacteria and the stages of the infectious process. The bacterial adhesiveness, the ability to invade hosts, the production of toxins. Structure and mechanisms of action of exotoxins and endotoxins. The role of innate and cell-mediated immunity in bacterial infections. Immune sera and vaccines. General principles for the diagnosis of bacterial diseases. Antibacterial drugs and their mechanism of action. Mechanisms of bacterial resistance to antibacterial drugs.

GENERAL MYCOLOGY. Fungi : structure, replication and dimorphism. Mechanisms of fungal pathogenicity.

GENERAL VIROLOGY : nature, origin and morphology of viruses, viral nucleic acids, proteins and lipids viral multiplication of animal viruses, virus-cell interaction. State of persistence and latency of the genome in the cell, host cell cultures, multiplication cycle, virus isolation animals, adaptation and virulence, inactivation of viruses, physical and chemical agents, cell surface antigens encoded by the virus, the immune response to viral infection. Interferons. Vaccines and antiviral chemotherapy.

SPECIAL BACTERIOLOGY : Staphylococci . Streptococci. Pneumococci and enterococci . Bacilli and Clostridia. Corynebacteria and Listeria. Enterobacteriaceae . Pseudomonas. Vibrio, Campylobacter and Helicobacter. Emophili, Bordetella and Brucella. Yersinie and Pasteurelle. Neisseria. Anaerobic microorganisms. Legionella. Mycobacteria. Spirochetes. Mycoplasma. Rickettsiae. Chlamydiae. Gardnerella.

SPECIAL MYCOLOGY: Fungal infections by opportunistic fungi. Superficial, cutaneous, subcutaneous and systemic mycoses.

SPECIAL VIROLOGY : Adenovirus , Herpesvirus , Poxivirus , Papovavirus , parvovirus , picornavirus , Orthomyxovirus , Paramyxovirus , Rhabdovirus , Togavirus and other viruses transmitted by insects. Filovirus . Rubella virus . reovirus and Rotavirus . Hepatitis A virus . Retroviruses . Human Retroviruses . RNA and DNA tumor viruses . Prions.

GENERAL AND SPECIAL PARASITOLOGY: Systematics and Zoological Nomenclature, biological associations; general information on the life cycles of parasites, parasitic specificity , host - parasite interactions and pathogenic action of parasites, parasitic diseases of medical importance ; fight against parasitic diseases. Human parasites.

Textbooks

PATRICK MURRAY R. et al. " Medical Microbiology " , ELSEVIER / MASSON EDITORS Sixth Edition.

EXAM METHOD

Oral exams. (Possible intermediate evaluation through a written test).
Dates of exams: JUNE 2015 – JULY 2015 – SEPTEMBER 2015

EXAM COMMISSION

Carlo Federico Perno (President)			
Francesca Pica			
Francesca Ceccherini Silberstein			
Valentina Svicher			

Tutor			
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