

Faculty of Medicine



FARM1282 General microbiology

[18h+15h exercises] 3 credits

This course is taught in the 1st and 2nd semester

Teacher(s): Thomas Michiels
Language: French
Level: First cycle

Aims

The lecture presents basic knowledge about structure and function of the bacterial cell and of animal viruses: from the genome to the principles of antimicrobial chemotherapy and resistance.

It aims at giving the student the ability to use basic knowledge of bacterial functions and viral life cycles as a tool for further understanding of host-microbes interactions, antimicrobial chemotherapy and resistance, as well as technologies based on the use of bacterial and viral functions.

Main themes

Description and classification of bacteria and animal viruses; Molecular mechanisms of bacterial and viral life cycles. Gene regulation and use of microbial genomes as tools for research and development in the field of pharmaceutical and medical sciences.

Content and teaching methods

Introduction to the microbial world (chronological account of microbes characterization, eucaryotes & procaryotes, viruses, bacteria...)

Bacteriology: (i) growth of bacteria, (ii) Structure of the bacterial cell and transport of molecules (Gram+ versus Gram-, cytoplasm, peptidoglycan, membranes, appendices, transport across membranes). (iii) the bacterial genome (genome structure, replication, gene expression and regulation) and genome plasticity (mutations and their impact, plasmids, bacteriophages, gene transfer by transformation, conjugation, transduction or transposition) (iv) antibacterial chemotherapy and resistance mechanisms.

Virology: Nature and structure of animal viruses: Replication cycle of viruses chosen to illustrate the link between the nature of the genome, replication strategies, evolution and virus-host interactions (SV40, Herpes, polio, influenza, aids)

Other information (prerequisite, evaluation (assessment methods), course materials recommended readings, ...)

Prerequisite:

- basic elements of cell biology: cell, cytoplasm, nucleus, organelles, membranes, subcellular trafficking
- basic elements in biochemistry and molecular biology: protein, lipid, sugars, nucleic acids, transcription, translation

Evaluation:

- Classical exam. Most questions (exercices) are devoted to test the understanding of the concepts rather than to test memory capacity. Lab course performances are taken into account.

Support:

- text (syllabus) and illustrations
- reference to textbooks that are available at the library in english and/or in french.

Other credits in programs

FARM12BA	Deuxième année de bachelier en sciences pharmaceutiques	(3 credits)	Mandatory
SBIM12BA	Deuxième année de bachelier en sciences médicales	(3 credits)	Mandatory