UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

SYLLABUS DEL CORSO

Pathology and Medicine

2122-2-H4102D011-H4102D035M

Aims

The course aims to introduce the student to the knowledge of the causes of human diseases, the students will be able to understand the fundamental pathogenetic and pathophysiological mechanisms. During the course, topics for in-depth knowledge on the molecular mechanisms underlying the disease pathogenesis to identify potential therapeutic targets will be developed.

Contents

- Introduction to General pathology
- Physical, chemical and biological agents as a cause of illness
- Tissue changes in response to chronic and acute pathological stimuli
- The inflammatory process
- The healing and repair process
- Cardiovascular Disorders
- The body’s response to infection
- Neoplastic growth
- Environmental Diseases

Detailed program

Concepts of health, pathological process and disease. Etiology, pathogenesis, evolution, course, outcomes. Intrinsic and extrinsic pathogenic factors: causes of physical, chemical, biological nature. Alterations of

DNA, proteins.

Cellular pathology. Alterations of cell growth and differentiation. Cell Aging. cell replication;

Molecular mechanisms of cell damage. Oxidative stress: origin of free radicals, Antioxidant defenses of the cell.

Cell death. Causes of cell death. Types of dath. Necrosis, Apoptosis. Causes of apoptosisOther types of cell death: ferroptosis, pyroptosis, autophagy.

Reaction to damage: inflammatory processes. Acute inflammation and chronic inflammation: phenomena (, inflammatory exudate, leukocyte migration, infiltrate, tissue damage), mechanisms, cells, mediators, types, evolution. Inflammatory lesions: Defects and excesses of the inflammatory response. Reaction to damage: the reparative process and its alterations. Fibrosis.

The response to infections. The main transmission pathways of infections. Structural defenses against infection. Escape mechanisms. The susceptibility to infections.

Cardiovascular disorders. Vascular occlusion and thrombosis. Atherosclerosis and hypertension. Circulatory failure.

Oncology: Introduction, nomenclature, epidemiology. Molecular oncology: cell cycle and related control mechanisms; protooncogenes, oncogenes and oncoproteins; tumor suppressor genes and their products; alterations of DNA repair mechanisms; altered genetic control of apoptosis. Etiological factors: chemical carcinogenesis, carcinogenesis by physical agents, DNA and RNA oncogenic viruses, presence of carcinogens in the environment, tumor heredity. Immuno-surveillance mechanisms. Tumor-host interaction.

Onco-Immunology: Immunological approaches to cancer therapy

Environmental disorders. Environmental effects, climate change and environmental pollution on health. Occupational health risks. Effects of alcohol and drugs.

Prerequisites

Knowledge of the introductory courses indicated in the regulation of the degree course

Teaching form

Lectures including 9 hours of seminars

Textbook and teaching resource

Robbins e Cotran: The pathological bases of diseases. Elsevier

Semester

I semester

Assessment method

The exam includes a written test with multiple choice questions and an open question on General Pathology topics. The questions will assess the degree of depth achieved by the student. In the specific case of GENERAL PATHOLOGY, questions are asked on all the fundamental aspects of the individual parts of the Program above. The test will also include an open-ended question that will assess the ability to link the different topics covered.

The exam is considered passed only if at least 60% of the questions including exactly the open question are answered

Office hours

contact upon e-mail