UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

General Pathology

2021-2-I0303D007

Aims

The student must be able to perform the:

- Classification and characterization of cell damage and death mechanisms- Description of vascular and general mechanisms of acute inflammation- Description of pathogenetic mechanisms of chronic inflammation
- Description of pathogenetic mechanisms of hemostasis
- Description of tissue repair and regeneration
- Description of physiopathological mechanisms of fever and hyperthermia
- Definition of cellular and molecular mechanisms of atherosclerosis
- Description of cell-mediated and humoral immunological mechanisms - Classification and descrisption of hypersensibility responses
- Description and characterization of preneoplastic lesions
- Description of neoplastic growth with characterization of benign and malign features
- Description of metastatic process
- Definition and characterization of oncogenes and oncosuppressor genes

- Description of cancerogenic role of physical and chemical agents
- Definition of cancerogenic role of viruses
- Explanation of the fundamentals of microbial genetic code, gene expression adjustments and nature of mutations and gene recombination.
- Description of the host-microbe relationships and the mechanisms of microbial pathogenicity.
- Description of the atypical mechanisms of inheritance
- Description of the diseases due to imprinting defects or to dynamic mutations, and mitochondrial and multifactorial diseases
- Description of clinical cancer genetics examples
- Characterization of blood cellular composition and description of main hematological and immunological diseases

Contents

By the end of the course, the students will have acquired the general concepts and specific knowledge of: ethiopathogenesis of genetic, inflammatory, oncological and immunological diseases; microbic genetics and metabolism; pathogenesis of microbic diseases; the effects of functional alterations of haematological and immunological cells.

Lo studente deve sapere:

Definire i concetti di base in fisiopatologia

Classificare ed illustrare il danno cellulare e i meccanismi di morte cellulare (necrosi ed apoptosi

Illustrare le diverse forme ed i fenomeni generali e vascolari che si associano alla flogosi acuta.

Descrivere i meccanismi patogenetici dell'infiammazione cronica.

Illustrare i meccanismi patogenetici tipici delle infiammazioni granulomatose

Illustrare i meccanismi fisiopatologici dell’emostasi

Descrivere i processi di riparazione e di rigenerazione dei tessuti

Illustrare gli aspetti fisiopatologici della febbre e degli stati di ipertermia

Elencare ed illustrare i fattori molecolari e cellulari coinvolti nell'aterogenesi

Descrivere i meccanismi che stanno alla base della risposta immunitaria cellulo-mediata

Descrivere i meccanismi che stanno alla base della risposta immunitaria umorale.

Classificare e spiegare i fenomeni che provocano le reazioni da ipersensibilità

Illustrare i meccanismi fisiopatologici caratteristici delle lesioni precancerose

Illustrare il processo della crescita neoplastica distinguendo i fenomeni coinvolti nella crescita benigna e nella crescita maligna.

Illustrare i meccanismi fisiopatologici della diffusione a distanza delle neoplasie: le metastasi

Illustrare il meccanismo d'azione dei geni oncosoppressori e degli oncogeni

Illustrare i fattori chimici e fisici coinvolti nell'eziologia dei tumori e i loro meccanismi patogenetici.

Indicare il ruolo dei virus nell'oncogenesi.

Descrivere le caratteristiche morfo-funzionali e metaboliche dei microrganismi.

Illustrare i fondamenti del codice genetico microbico, della regolazione dell’espressione genica e la natura delle mutazioni e ricombinazione genica.

Descrivere i rapporti ospite-microrganismi e i meccanismi di patogenicità microbica.

Descrivere i meccanismi alla base dei disordini cromosomici

Descrivere i meccanismi atipici di ereditarietà

Descrivere le malattie da difetti di imprinting, da mutazioni dinamiche, mitocondriali, multifattoriali

Riportare esempi di genetica clinica oncologica

Caratterizzare la composizione cellulare del sangue e descrivere le principali malattie ematologiche e del sistema immunitario

Detailed program

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- **Description of tissue repair and regeneration**
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Prerequisites

Teaching form

During COVID-19 emergency the lessons will be performed on-line

Textbook and teaching resource

- G.M. Pontieri ELEMENTI DI PATOLOGIA GENERALE E FISIOPATOLOGIA GENERALE IV ed. PICCIN

- MICROBIOLOGIA E MICROBIOLOGIA CLINICA (per i Corsi di Laurea in Professioni sanitarie) ed. PICCIN

- FONDAMENTI DI GENETICA MEDICA Tobias; M Connor; M Ferguson-Smith Ed. Pearson

Teachers will provide other didactic materials

Semester

Second year- First semester

Assessment method

"In itinere" written tests with multiple choice test and open questions to evaluate global knowledges about course program for "Genetic Pathology", "Microbiology" and "Blood and Immunological Diseases" modules, and final written test with multiple choice test,for the other modules.

During COVID-19 emergency written tests will be only on-line (https://esamionline.elearning.unimib.it) with automatic proctoring system.

Final judgment is based on the grade point average normalized for credits obtained in each module with integrated oral evaluation

Office hours

making an appointment