

# UNIVERSITÀ DEGLI STUDI DI MILANO-BICOCCA

# **COURSE SYLLABUS**

# **Histology**

2526-1-I0303D003-I0303D009M

#### **Aims**

The student must:

- ? know and be able to describe the structure and ultrastructure of the eukaryotic cell and correlate the morphology with the function of each organelle.
- ? know and be able to describe the structure and morpho-functional characteristics of the tissues that make up the human organism

#### **Contents**

The Histology module provides the student with essential theoretical knowledge of the ultrastructure of the eukaryotic cell and the structure of the different tissues of the human organism.

# **Detailed program**

#### Cytology

- ? Eukaryotic cell: general architecture;
- ? Plasma membrane: ultrastructure, functions, specializations (occluding, adherens and communicating junctions; specializations of the apical pole: microvilli, cilia, stereocilia);
- ? Nucleus and nucleolus: ultrastructure, functions;
- ? Cytosol;
- ? Cytoskeleton: ultrastructure and functions of the different components: microtubules, microfilaments, intermediate filaments;
- ? Ribosomes: ultrastructure and functions. Notes on protein synthesis;
- ? Endoplasmic reticulum: ultrastructure and functions of the rough and smooth endoplasmic reticulum. Notes on

#### vesicular transport;

- ? Golgi apparatus: ultrastructure and functions. Notes on post-translational modifications and sorting;
- ? Lysosomes: ultrastructure and functions. Notes on biogenesis;
- ? Peroxisomes: ultrastructure and functions;
- ? Mitochondria: ultrastructure and functions.

#### Histology

- ? General characteristics, classification and study methods of fabrics;
- ? Epithelial tissue: characteristics and classification of the epithelial lining and glandular tissue.
- ? Mode of secretion:
- ? Connective tissue proper: cells and extracellular matrix. Classification: embryonic connective tissue, loose, dense, reticular, elastic;
- ? Adipose tissue: characteristics and functions of unilocular and multilocular adipose tissue;
- ? Cartilage tissue: cells and extracellular matrix. Classification: hyaline cartilage, elastic, fibrous;
- ? Bone tissue: cells and extracellular matrix. Classification: compact and spongy bone tissue. Remodeling and hormonal control:
- ? Muscle tissue: characteristics of skeletal striated, cardiac striated, smooth muscle tissue. Functional aspects and regulation of muscle contraction;
- ? Nervous tissue: morpho-functional characteristics of neurons. Axonal transport. Nervous fibres. Notes on the generation and propagation of the nervous impulse. Synapses. Characteristics and classification of neuroglia;
- ? Blood: characteristics and functions of plasma and figured elements.

#### **Prerequisites**

Scientific knowledge at secondary school level

#### **Teaching form**

6 frontal lessons (2 hours long) carried out in attendance

#### Textbook and teaching resource

Bani D. et al.: ISTOLOGIA per le lauree triennali e magistrali. Idelson Gnocchi Adamo S. et al.: ISTOLOGIA per i corsi di laurea in professioni sanitarie. Piccin

Last editions

#### Semester

First semester

#### **Assessment method**

The histology written test will consist of 15 multiple choice questions to check preparation on the exam programme.

### Office hours

From Monday to Friday upon request for an appointment via email (gabriella.nicolini@unimib.it, Monza ; aallegri@asst-pg23.it, Bergamo).

## **Sustainable Development Goals**

GOOD HEALTH AND WELL-BEING | QUALITY EDUCATION | GENDER EQUALITY | REDUCED INEQUALITIES