



UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

SYLLABUS DEL CORSO

Histology

2324-1-H4102D087-H4102D021M

Aims

To acquire the knowledge on the cytology, histology and early embryogenesis

Contents

Students will be able to describe the structure and ultrastructure of the eukaryotic cell and the morphology correlates with the function of each organelle; then they will be able to describe the structure and morpho-functional characteristics of human tissues (epithelial, connective, muscle and nervous tissues) as well as to describe the main events of gametogenesis and early embryogenesis.

Detailed program

Cytology and histology: introduction and methods of study

Cytology:

General properties of eukariotic cells

Plasma membrane: structure, molecular composition, functions.

Cell connections: tight junctions, gap junctions and desmosomes.

Cytosol: molecular composition and functions

Cytoplasmic organelles: Mitochondria, Ribosomes, Endoplasmic reticulum (rough and smooth), Golgi complex, Lysosomes, Peroxisomes

Cytoskeleton: Microtubules, Actin filaments and intermediate filaments

Trafficking, sorting and secretion of proteins

Nucleus and nucleolus

Histology:

Epithelial tissue: covering epithelia and glandular epithelia. Microvilli, cilia, flagellum, stereocilia. Basement membrane.

Connective tissue: cells, ground substance, fibers. Types of connective tissue: loose, dense irregular, dense regular, elastic connective tissue.

Adipose tissue: unilocular and multilocular adipose tissue.

Cartilage: hyaline, elastic and fibrocartilage.

Bone: bone cells, bone matrix. Type of bone: lamellar and non lamellar bone, compact and spongy bone.

Histogenesis: intramembranous and endochondral ossification. Remodelling and repair.

Muscle tissue: smooth, skeletal and cardiac muscle. Stimulation. Contraction. Regeneration.

Nervous tissue: neurons and glial cells. Myelin: myelinated and unmyelinated fibers. Synaptic communication.

Blood: plasma and cells (erythrocytes, leukocytes, platelets)

Embryology:

Gametogenesis

Fertilization

First Week of human development

Second Week: Becoming Bilaminar and Fully Implanting

Third Week: Becoming Trilaminar and Establishing Body Axes

Fourth Week: Forming the Embryo

Principles and Mechanisms of Morphogenesis

Neurulation

Somites and derivatives

Placenta, allantois, amnion, chorion and yolk sac

Prerequisites

College-level scientific knowledge

Teaching form

Activities in attendance (lessons, seminars, practical)

Textbook and teaching resource

Histology: A Text and Atlas, with Correlated Cell and Molecular Biology, by Michael H. Ross PhD, Wojciech Pawlina MD.

Junqueira's Basic Histology: Text and Atlas, by Anthony Mescher.

The developing human: Clinically oriented Embryology by Keith L. Moore and TVN Persaud

Semester

First term

Assessment method

The attendance to the classroom for at least 70% of the lessons is mandatory to take the examination. The knowledge of the topics of this module will be assessed during the examination, see "Fundamentals of Human Morphology" syllabus for the examination description

Office hours

Every day, from monday to friday, by appointment

Sustainable Development Goals

QUALITY EDUCATION | GENDER EQUALITY | REDUCED INEQUALITIES
