

# UNIVERSITÀ DEGLI STUDI DI MILANO-BICOCCA

## **SYLLABUS DEL CORSO**

# Istologia

2122-1-H4601D002-H4601D009M

#### Aims

The objectives of the course are to provide expertise in histology and embryology.

#### **Contents**

The primary goal of the course is to provide a good knowledge of tissues organization and embryonic development. During the lessons some clinical correlations will also be deepened.

### **Detailed program**

#### **GENERAL HISTOLOGY**

Tissues: general characteristics and classification.

Methods for preparation of histological specimens.

For each of the following tissue structural, ultrastructural, functional characteristics and classification will be discussed:

Lining epithelia;

Exocrine gland epithelia. Merocrine, apocrine, holocrine and eccrine secretion;

Proper connective tissue. Intercellular substance of the connective tissue (fibres and ground substance).

Biosynthesis of collagen. Connective tissue cells;

Adipose tissue (unilocular and multilocular adipose tissue);

Cartilage (hyaline, elastic and fibrous cartilage);

Bone (woven and lamellar bone, compact and trabecular bone). Osteogenesis (intramembranous and endochondral ossification);

Muscle tissue (smooth, skeletal striated and cardiac striated muscle tissue). Sarcomere ultrastructure and mechanisms of contraction, neuromuscular spindle and Golgi tendon organ;

Nervous tissue (neurones and neuroglia). Myelin and myelination. Nervous fibres;

Blood tissue and hematopoiesis;

Stem cells.

Tooth: enamel, dentine, cementum, dental pulp, priodontal membrane.

#### **GENERAL EMBRYOLOGY**

Introduction. Gametogenesis (spermatogenesis and spermatozoa, oogenesis and oocytes).

Capacitation. Fertilization. Cortical reaction. Zygote.

First week of development: segmentation, morula, cavitation, blastocyst (embryoblast and trophoblast)

Implantation.

Early development of human embryo: formation of epiblast and ipoblast, bilaminar embryonic disc.

Late development of human embryo: primitive streak, epithelial-mesenchymal transition (gastrulation), formation of mesoderm, trilaminar embryonic disc, notochord and formation of body axes, neurulation (neural tube and neural crest cells).

Cephalo-caudal and lateral folding.

Germ layers (ectoderm, endoderm and mesoderm) and their derivatives.

Somites and their derivatives.

Pharyngeal arches and their derivatives.

Intra-embryonic Coelom formation.

Monozygotic and dizygotic twins.

Teratogenic factors.

Tooth development.

Prerequisites
-
Teaching form
Frontal lessons. Lessons in attendance, subject to any ministerial changes following the COVID pandemic situation.
Textbook and teaching resource
Histology:
Ross M.H. e Pawlina W. Istologia Testo e atlante. Casa Editrice Ambrosiana;
Ross M.H., Pawlina W. e Barnash T.A. Atlante di Istologia e Anatomia Microscopica. Casa Editrice Ambrosiana ;
Di primio et al., Istologia Umana, Casa Editrice Idelson-Gnocchi
S. Adamo et al. Istologia di Monesi. Piccin.
Tooth histology and development:
Ten Cate A.R, Istologia orale. Piccin
Embriology:
Bertini et al., Embriologia umana. Casa Editrice Idelson-Gnocchi
Moore, Persaud. Lo sviluppo prenatale dell'uomo. EdiSES.
De Felici et al., Embriologia Umana, Piccin
Last editions

#### Semester

First semester

#### **Assessment method**

A mid-course assessment (scheduled for the end of the first semester and before each oral exam) by multiple choice quiz focused on Citology, Histology, Embriology and general Anatomy. Moreover, the knowledge of microscopic anatomy will be assessed by the identification of a histological slide.

At the end of the course, the assessment will be based on an oral examination focused on Head Anatomy.

Exams in attendance, subject to any ministerial changes \_\_\_\_\_

#### Office hours

By appointment