UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Hystology

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

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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 following the COVID pandemic situation.

Office hours

By appointment