



HISTOLOGY AND EMBRYOLOGY - channel 3

BIO/17 - 7 CFU - 2° Semester

Teaching Staff

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Office Hours: Martedì e giovedì dalle 10:00 alle 12:30

LEARNING OBJECTIVES

The purpose of **Histology** teaching is to provide the student with a basic cytological and histological culture for the comprehension of the general organization of cells, their specializations and interactions to fulfill specific functions of tissues, essential in order to recognize the physiological characteristics of human cells and tissues.

The purpose of **Embryology** teaching is to provide the student with a general culture on human embryology through a detailed description of the various phases of human development, from the zygote (fertilization) to the embryo (embryogenesis) and to the fetus (organogenesis) until at birth, with reference to the related mechanisms of control and regulation.

COURSE STRUCTURE

Frontal lessons in the classroom.

Should teaching be carried out in mixed mode or remotely, it may be necessary to introduce changes with respect to previous statements, in line with the program planned and outlined in the syllabus.

Learning assessment may also be carried out on line, should the conditions require it.

DETAILED COURSE CONTENT

HISTOLOGY

General principles on methods of tissues study through histochemical techniques (fixation, inclusion, staining).

EPITHELIAL TISSUES:

Lining epithelia: General features – Classification - Description of the various types of epithelium: simple pavement epithelium, simple cubic epithelium, simple columnar epithelium, multilayered pavement epithelium, multilayered columnar epithelium, pseudostratified epithelium, transitional epithelium (urothelium) - Specializations of the lateral surface - Specializations of the basal surface - Specializations of the apical surface

Glandular epithelia: General features - Exocrine glands: Classification of exocrine glands by: Number of cells and location, Branching ducts and structure of adenomeri, Mode of secretion and chemical nature of the secretion - Endocrine glands: Cell target - Bonding hormone-receptor – Classification: Cord glands, Interstitial glands, Follicular gland

CONNECTIVE TISSUES:

Proper connective tissue: General features - Collagen fibers - Reticular fibers - Elastic fibers - Ground substance – Cells: Fibroblasts, Macrophages, Mast cells, Adipocytes - Types of connective: Loose connective tissue, Dense connective tissue, Adipose Tissue

Tissue Cartilage: General features, Hyaline cartilage, Elastic cartilage, Fibrous cartilage

Bone Tissue: General features, Bone structure: macroscopic aspect, Microscopic structure: lamellar organization and vascular systems, The bone matrix, The bone cells, Osteogenesis, Bone remodeling, Repair of fractures, Histophysiology bone

Blood: General features – Plasma – Erythrocytes – Leukocytes: Neutrophil granulocytes, Eosinophil granulocytes, Basophil granulocytes, Lymphocytes, Monocytes – Platelets – Lymph – Hematopoiesis
General concepts of immunity

NERVOUS TISSUE

General features – Neuron: Shape and size, Body cell, Cytoskeleton, Extensions cell: dendrites and axon, Transport axon - Nerve fiber: Myelin sheath, Conduct impulse – Synapse - Neuroglia

MUSCLE TISSUE

Striated skeletal muscle tissue: Structural organization of the tissue, Structural organization of myofibrils, Molecular organization of myofibrils, Mechanism of contraction, Neuromuscular junction

Striated cardiac muscle tissue: Structure of cardiomyocyte, Structural organization of the tissue, Interlayers discs, Tissue of conduction

Smooth muscle tissue: Structure of the smooth muscle cells, Structural organization of the tissue, Contraction of the smooth muscle tissue

EMBRIOLOGY

General concepts of the embryonic development – Oogenesis – Spermatogenesis – Fertilization - I and II week of development - III week of development - IV week of development – Placenta - Development of the face and the branchial apparatus - Development of the digestive and respiratory systems -

Development of the locomotor apparatus - Development of the urogenital apparatus - Development of the cardiovascular apparatus - Development of the nervous system

TEXTBOOK INFORMATION

Histology (by choice):

1. V. Monesi - ISTOLOGIA 7a Ed. - Piccin
2. ISTOLOGIA 5° ediz.- edi-ermes

Embryology (by choice):

3. Moore - Persaud - Torchia - LO SVILUPPO PRENATALE DELL'UOMO 11° ed. - EDRA
 4. De Felici-Boitani - EMBRIOLOGIA UMANA 3a Ed. - PICCIN
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