UNIVERSITÀ DEGLI STUDI DELL'AQUILA

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[DB0220] - HISTOLOGY AND EMBRYOLOGY

General information

Course	BIOTECHNOLOGIES
Course type	Bachelor or equivalent first cycle
Academic year	2026/2027
Year	1
Training activity type	Basic compulsory subjects
Scope	Biology
Language	Italian
CFU	7 CFU
Didactic Activity Type	Lecture
Evaluation	FINAL GRADE
Teaching period	Second Semester (from 01/03/2027 to 11/05/2027)
Holders	RUCCI NADIA
Teachers	CAPULLI MATTIA
Length	72 hours (72 hours Lecture)
Didactic method	Convenzionale
Subject area	BIOS-13/A
Location	L'Aquila - Università degli Studi
Location	L'Aquila - Università degli Studi

Language

Italian

Goals

The main objectives of this course are: To provide knowledge about the morphological and functional characteristics of the human tissues; To provide knowledge about the cell organisation at structural and ultrastructural level as well as the interactions between the different cells inside a human tissue; To provide knowledge on the functional interactions among the human tissues; To provide knowledge about folliculogenesis, spermatogenesis and the first stages of the human embryonic development; To convey the knowledge about cell biology and human histology, which are preparatory for the subsequent studies and for the biotechnologist education. The course is also in line with the educational objectives of the bachelor in Biotechnology, which provides for the training of professional roles with a scientific profile and methodological skills, suitable for covering roles in technical-operational professional activities in research, service and production processes, typical of the biotechnology sectors.

Learning outcomes

On successful completion of this teaching activity the student should have acquired: A proper scientific terminology; The main techniques employed for the preparation of histological samples; A proper knowledge about the cell structure and human tissues organisation; The ability to identify and describe in a proper manner the different human tissues relating them to their function; A proper knowledge about the early stages of the human embryonic development.

Required skills

This course requires basic knowledge of cell biology.

Subjects

The main topics of the Human Histology teaching activity include: **0.5 CFU:** Topics of cytology useful for the study of human histology: vesicular trafficking, cytoskeleton, cell junctions; methods for the study of cells and human tissues: preparation and staining of histological samples, histochemical staining, immunohistochemistry, fluorescence, immunofluorescence; **1.0 CFU**: Epithelial tissues: covering epithelia, classification and deep description of the endothelium, gastric and intestinal epithelium, epidermis; exocrine (goblet cells, gastric glands, Lieberkühn crypts, sweat glands, mammary gland, exocrine pancreas, liver) and endocrine (hypothalamus, pituitary gland, pineal gland, thyroid, parathyroids, endocrine pancreas, adrenal glands, diffuse endocrine system) glands. **2.5 CFU**: connective tissues and specialized connective tissues (the adipose tissue, cartilage, the bone tissue, blood, bone marrow and hematopoiesis, lymphatic circulation; primary and secondary lymphoid organs). **1 CFU**: Skeletal, cardiac, and smooth muscle; nervous tissue: neuron, glia, nerve fiber, synapses and nerve structure. **1 CFU:** Human embryology: folliculogenesis, spermatogenesis, fertilization and implantation, embryonic development up to the third week, embryonic appendages. **1 CFU**: Histology training. Virtual visualization and/or by optical microscopy of histological sections related to the following human tissues: covering epithelium (simple and stratified, transitional, pseudostratified); glandular epithelia (liver, thyroid, adrenal gland, pituitary gland, mammary gland, pancreas) connective tissue (tendon, dermis); special connective tissues (hyaline, elastic and fibrous cartilage, bone tissue, adipose tissue, blood smear, bone marrow, spleen, thymus, lymph node); muscle tissue; nervous tissue.

Teaching methods

Face to face lectures with slides; Virtual imaging of histological sections. Learning methods can be adapted based on any indication from the University Disability Commission.

Verification of learning

Oral examination: 2 questions will be asked, aimed at understanding: 1) the level of knowledge of the candidate concerning the topics covered; 2) the student's ability to describe the topics with appropriate scientific terminology. The candidate should also identify and discuss an histological slide. The assignment of the grade will reflect the following levels of preparation: Not sufficient (<18/30): fragmentary and superficial knowledge of the contents, inadequate exposition skills; Sufficient (18/30 – 20/30): sufficient but general knowledge of the contents, simple exposition, limited autonomy of critical analysis; Adequate (21/30 – 24/30): appropriate but not in-depth knowledge of the contents, acceptable terminology, partial autonomy of critical analysis; Good (25/30-27/30): appropriate and broad knowledge of contents, good ability to apply knowledge, appropriate language skills and good autonomy of critical analysis; Great (28/30-30/30): wide, complete and in-depth knowledge of the contents, well established ability of analysis and synthesis, confident and correct presentation; Excellent (30/30 cum laude): very broad, complete and in-depth knowledge of the contents, excellent ability to apply the contents, excellent capacity of synthesis and interdisciplinary connections, mastery of exposition. For the ERASMUS students there is the possibility to perform the exam in english. The learning assessment can be adjusted on the basis of any indication from the disability Commission of the University.

Books

Recommended textbook for human histology: Istologia, Monesi 8th edition (Piccin editore). Textbooks to consult: - Molecular Biology of the Cell, Alberts B (Zanichelli editor); -Histology M.H. Ross (Casa Editrice Ambrosiana); -Histology and Microsocpic anatomy, Wheater (Elsevier Masson). Recommended textbook for human Embriology: Embriologia umana- De Felici M. et al. (Piccin Editore). Textbooks to consult: Lo sviluppo prenatale dell'uomo- Moore KL. et al (edra); Embriologia medica di Langman; Embriologia di M.Barbieri e P.Carinci (Casa Editrice Ambrosiana). Websites supporting the study: http://www.istologia.unige.it/ http://www.atlanteistologia.unito.it/page.asp http://www.getbodysmart.com/ap/histology/menu/menu.html http://www.pathguy.com/histo/000.htm http://www.anatomyatlases.org/MicroscopicAnatomy/MicroscopicAnatomy.shtml https://histo.life.illinois.edu/histo/atlas/slides.php.

2030 Agenda Goals for Sustainable Development

This teaching activity contributes to the achievement of the Sustainable Development Goals of the UN 2030 Agenda



Extra info

Reception: by appointment via mail at the following address: nadia.rucci@univaq.it, building Angelo Camillo De Meis (Coppito 2), 1st floor, room B-2-36; virtual meetings are also possible, via teams platform.