

Course Specification

University: Al-Azhar

Faculty: Medicine

Department: **Cell biology and Histology**

1- Data of the course:

Code of the course: 104-his	Title of the course: Cell biology and Histology for the 1 st year of the MBBCh program	Year: First year of MBBCh program Duration:30 weeks
Specialty: Cell biology and histology	Number of teaching units: 9 units	Lectures: 60 hrs Practical: 60 hrs Total:120 hrs

2- Objectives o the course:	<p>1-To learn the principles of modern concepts of microscopy, types of microscopes and up to date microscopic techniques with emphasis on their role in understanding structure, ultra-structure and molecular components of body tissues in relation to their interaction in organ and body function.</p> <p>2-To learn the microscopic structure and ultra-structure in relation to the molecular composition and function of eukaryotic cells.</p> <p>3- To learn the morphological diversity, ultra-structure and molecular composition of cell nucleus and their role in the cell cycle, cell death, cell differentiation and cytogenetics.</p> <p>4- To learn histological terms and concepts for the purposes of identification and precise communication.</p>
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3- ILOs

A- Knowledge and understanding:	<ol style="list-style-type: none"> 1- The normal microscopic and ultra structure and the molecular relationships in relation to function, growth, and differentiation of somatic and stem cells, death and inheritance of eukaryotic cells of the human body. 2- Describe the structure, ultrastructure and molecular components involved in the functional interaction of the four basic body tissues, the formed elements of blood and cells involved in hematopoiesis. 3- The microscopic and ultra- structure in relation to function and interaction of the tissues forming the cardiovascular organs. 4- The microscopic and ultra- structure in relation to function of lymphatic organs with emphasis on the morphology, generation destination and function of different cells of the immune system.
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B- Intellectual Skills:	<ol style="list-style-type: none"> 1- To develop a systematic approach to the correct identification of histological preparations. 2- To understand the relationship between microscopic structure and function of tissues and organs. 3- Interpretation of the report of karyotyping
C- Professional Skills:	<ol style="list-style-type: none"> 1. Demonstrate the cytoplasmic content (organelles & inclusion) 2. LM, EM, molecular biology & functions of all cell components 3. EM characteristics, molecular biology & functions of cytoskeletal elements and the role of each in cell structure and function : <ol style="list-style-type: none"> a. Microtubules, Microfilaments and Intermediate filaments and specific origin of cells (terminal web, desmosome...etc.) 4- Be able to correlate different types of epithelia to their functions 5- Recognize microscope and EM levels and the molecular level the structural elements that harness muscle contraction (i.e., the shortening of myofibrils) to the movement of a body part. 6. Understand where stem cells are located in skeletal muscle and be able to identify their location at both the light and EM levels. 7. Be familiar with the regenerative potential of each muscle type. 8. Be able to identify cells and tissues in the nervous system (nerves, neurons and glia). 9. Describe the organization of a typical neuron and the direction of information flow, and the function and organization of sensory and motor neurons. 10. Describe the process of myelination, and the function of myelin, including Nodes of Ranvier and explain the role of the Schwann cell, with respect to both myelinated and unmyelinated 11. Be able to identify the different types of blood cells at the light and electron microscope, and know the approximate abundance and lineage (lymphoid or myeloid) of each type of blood cell, and what conditions might lead to relative increases in cell types observed in a peripheral blood smear. 12. Know the organization of bone marrow (e.g. cords and sinuses), and be able to identify megakaryocytes. 13. Be able to describe the organization and function of thymus, lymph nodes, spleen and tonsils. 14. Be able to identify the regions rich in B and T lymphocytes in each organ and explain the cellular processes, relevant to immune functions, and know the homing patterns of B & T lymphocytes. 15- Be able to identify principal layers of the skin (epidermis, dermis and hypodermis) at the light microscope level and know the principal functions of each layer. 16- Be able to identify the layers of the epidermis in thick and thin skin and describe the major cellular events that take place in each layer in the process of keratinization.

	<p>17. Identify melanocytes and explain the process of pigment formation in the skin</p> <p>18. Be able to identify eccrine and apocrine sweat glands at the light microscope level.</p> <p>19. Identify the components of the pilosebaceous apparatus and know the structural and developmental relationship between each component and the epidermis of the skin.</p>
D- General Skills:	1- Communicate properly with your colleagues and professors
4- Course Content:	<p>1-Introduction to Histology, Instruments and methods of study.</p> <p>2-Cell Biology Learning Objectives</p> <p>3-Epithelial Tissue</p> <p>4-Connective tissues</p> <p>5-Muscular tissues</p> <p>6-Nervous tissues</p> <p>7-Blood and Hematopoiesis</p> <p>8-Lymphatic system</p> <p>9-Integumentary system</p>

5- Methods of teaching:	<p>Lectures</p> <p>Practical sessions</p>
6- Methods of teaching of handicaps	Not present

7- Students evaluation and assessment:

A- Method of assessment:	<p>1-Quizzes through continuous assessment and mid-year exam</p> <p>2-Final examination:</p> <ul style="list-style-type: none"> -Written exam -Practical exam -Oral exam
B- Time of assessment	<ul style="list-style-type: none"> - Continuous assessment during the academic year - Mid-year in January - End year exam in June

