Facultatea de Medicina si Farmacie

Departamentul Discipline Morfologice

Tematica si bibliografia pentru postul poz 23

Cellular and molecular biology

1. General characteristics of cells

The cell, the first living system. The virus concept. Types of cells. Differences between prokaryotes and eukaryotes.

2. Chemical composition and structure of cell surface

The plasma membrane. The glycocalyx. The cell cortex. Functional categories of cell junctions. Cell adhesion. Transport across the biological membranes. Membrane receptors and cell signalling.

3. The cellular matrix

Cytoskeleton: structure and role. Cellular motility based on specific molecular interactions microtubuleskinesin/dynein. Cellular motility based on specific molecular interactions actin filaments-myosin. Intermediate filaments: types and properties.

4. The genetic material

The structure and role of DNA and RNA molecules in prokaryotic and eukaryotic cells. Organization of the genome in viruses and cells. The nucleus: genetic centre of eukaryotic cell. Transmitting of genetic material to the descendant cells. Replication of DNA. Cell division: mitosis and meiosis. Gene expression. The central dogma of molecular biology and exceptions to the rule. The transcription and the translation.

5. Cellular organelles: organization and role

The endoplasmic reticulum and the rybosomes. The Golgi apparatus. The lysosomes. The peroxisomes. The mitochondrion.

6. The extracellular matrix

The molecular organization in animal cells. The functions.

7. Cellular senescence and death

Theories of aging. The necrosis and the apoptosis

Bibliography

1. Alberts & col., Molecular Biology of the Cell, Garland Science, 2008

2. Allison L.A., Fundamental Molecular Biology, Wiley, 2006

3. Ciobanu C., Cellular and Molecular Biology. Lecture Notes, Ed. Univ. Oradea, 2010

4. Cooper M.G., *The Cell - A Molecular Approach*, 2nd Edition, Sinauer Associates Inc. Publishers, 2000

5. Cooper M.G., Hausman RE, The Cell, Palgrave MacMillan, 2006

6. Lackie J.M., The Dictionary of Cell and Molecular Biology, Acad press, 2007

7. Lodish & col., Molecular Cell Biology, 6th Edition, Freeman&Co, 2008

8. Pollard T., Earnshaw W., Cell Biology, 2nd Edition, Saunders Ed., 2007

Histology laboratory

1. Microscopical preparations. Optic Microscope

notions. Simple and stratified covering epithelium.

2. Exocrine glands. Types: tubular, Acinar serous and mucous.

3. Mucous tissue, loose and dense irregular connective tissue.

4. Elastic, reticular and adipose connective tissue. Tendon.

5. Hyaline, Elastic and Fibrous cartilage.

6. Compact and spongy bone. Endochondreal ossification.

7. Striated Muscle.

8. Smooth and Cardiac muscle. Myocardium.

9. Elastic and muscular arteries. Structure of veins and capillaries.

10. Blood smear.

11. Histological structure of bone marrow and that of thymus.

12. Lymph node and spleen.

13. Neuron and its organelles. Neuroglia. Spinal

ganglion. Spinal cord, cerebellum and cerebrum.

14. Practical exam.

Bibliography

1. Muțiu G., Ciursaș A., Osiceanu, A., General Histology, Practical Guide, 2nd Volume, Histology Collection, CCMIP, University of Oradea Publ. House, 2010.

2. Gabriela Muțiu, Adina Ciursaș, Alina Osiceanu, General Histology – Practical Guide for General Medicine; Editura Universitatii din Oradea, 2011

3. Adriana Bold, L. Mogoanta, Cristina Busuioc, Hystology, Editura UNF Craiova