



UNIVERSITATEA  
DE MEDICINĂ ȘI FARMACIE  
VICTOR BABEȘ | TIMIȘOARA

Universitatea de Medicină și Farmacie “Victor Babeș” Timișoara  
Departamentul II  
Disciplina de Biologie Celulară și Moleculară

### TEMATICA ȘI BIBLIOGRAFIA

pentru ocuparea postului vacant de **Profesor universitar, poziția 50 din statul de funcții** la Disciplina de Biologie Celulară și Moleculară, Departamentul II al UMFVBT:

#### EXAM TOPICS

- I. Cell as a biological open system
  1. Systemic theory
  2. The cell and its place in the hierarchically arrangement of the living world
  3. The features of the system
- II. Classification of the world from the point of view of cellular organization
  1. Noncellular life forms
  2. Cellular life forms
  3. General characteristics of eukaryotic cell
- III. The molecular constituents of cells and their biological roles
  1. Elemental composition of living matter
  2. Inorganic compounds
  3. Organic compounds
- IV. The extracellular matrix
  1. Glycosaminoglycans and proteoglycans
  2. The fibrils proteins
  3. The matrix proteins
  4. The basal membrane
- V. The molecular biology of cellular membrane
  1. The concept of cell membrane
  2. The plasma membrane
  3. The glycocalix
  4. The membrane cytoskeleton
- VI. The functions of cell membrane
  1. Adhesion function

2. Intracellular and intercellular signaling function
3. Membrane transport
- VII. Cytoplasm – site of cellular mechanisms
  1. Cytosol
  2. Cytoplasm inclusions
  3. Intracellular organelles and their functions
- VIII. The cell nucleus
  1. Cell cycle
  2. Nucleus in interphase
  3. Cell division
- IX. Proliferation and cellular differentiation
  1. Cellular proliferation
  2. Cellular differentiation
- X. Cell aging and cell death
  1. General aspects
  2. General characteristics of cells in different stages of life
  3. Hypothesis and theories regarding cellular aging and death
  4. Apoptosis

## **BIBLIOGRAPHY:**

1. Alberts B., Bray D., Lewis J., Raff M., Roberts K., Watson J.D. Molecular Biology of the Cell, six edition, Garland Publishing, Inc. NY & London, 2016
2. Alberts B., Johnson A., Lewis J., Morgan D, Raff M., Roberts K., Walter P. Biologie moléculaire de la cellule. Sixième édition, Lavoisier Médecine Sciences, 2017
3. Alberts Bruce, Bray Dennis, Hopkin Karen, Johnson Alexander, Lewis Julian, Raff Martin, Roberts Keith, Walter Peter. L'essentiel de la biologie cellulaire. Lavoisier Medecine Sciences, 2018
4. Verdeş D., Muntean I., Puşcaşiu D., Belengeanu A., Popescu R. Biologie Celulară şi Moleculară Ed. Eurobit Timișoara, 2016
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