

## TEACHING PLAN OF BIOLOGY

Autumn semester of the academic year 2020/2021

(Dentistry – 1<sup>st</sup> year)

- 1. week:** 5.-9.10.  
Lecture: **Introduction to the medical biology** (doc. MUDr. Iva Slaninová, Ph.D.)  
*Practice:* *Instructions. Non-cellular organisms and infectious agents*
- 2. week:** 12.-16.10.  
Lecture: **Chemical nature of life – chemical components of cells, protein structure and function** (doc. MUDr. Iva Slaninová, Ph.D.)  
*Practice:* *Prokaryotic cells, basics of light microscopy*
- 3. week:** 19.-23.10.  
Lecture: **Architecture and function of eukaryotic cell I – structure and function of biomembranes, organelles** (doc. MUDr. Iva Slaninová, Ph.D.)  
*Practice:* *Microscopic observation of eukaryotic cells*
- 4. week:** 26.-30.10.  
Lecture: **Architecture and function of eukaryotic cell II – nucleus, cytoskeleton** (doc. MUDr. Iva Slaninová, Ph.D.)  
*Practice:* *In vitro culture of human cells*
- 5. week:** 2.-6.11.  
Lecture: **Genome organization – nucleic acids, chromosome structure, DNA replication** (doc. MUDr. Iva Slaninová, Ph.D.)  
*Practice:* *Human karyotype and chromosomal aberrations*
- 6. week:** 9.-13.11.  
Lecture: **Genome stability and instability – DNA damage, mutations, DNA repair and defects in DNA repair** (doc. MUDr. Iva Slaninová, Ph.D.)  
*Practice:* ***Control test 1 (knowledge of weeks 1 to 5) + practical exam in microscopy***
- 7. week:** 16.-20.11.  
Lecture: **Gene expression I – central dogma of molecular biology, gene structure, transcription, genetic code, translation** (doc. MUDr. Iva Slaninová, Ph.D.)  
*Practice:* *DNA structure, gene expression and DNA replication*
- 8. week:** 23.-27.11.  
Lecture: **Gene expression II – regulation of gene expression, cell differentiation** (doc. MUDr. Iva Slaninová, Ph.D.)  
*Practice:* *Genetic toxicology*
- 9. week:** 30.11.-4.12.  
Lecture: **Cellular communication – general principles of cell signalling, receptors, signalling pathways** (doc. MUDr. Iva Slaninová, Ph.D.)  
*Practice:* *Principles of electron microscopy and cellular ultrastructure*

- 10. week:** 7.-11.12.  
Lecture: **Cell cycle and principles of its regulation** (doc. MUDr. Iva Slaninová, Ph.D.)  
*Practice:* *Methods of cell cycle studying*
- 11. week:** 14.-18.12.  
Lecture: **Cell division – mitosis and meiosis** (doc. MUDr. Iva Slaninová, Ph.D.)  
*Practice:* *Mitosis observation under light microscope*
- 12. week:** 4.-8.1.  
Lecture: **Cell death** (doc. MUDr. Iva Slaninová, Ph.D.)  
*Practice:* *Biological significance of meiosis – gametogenesis*
- 13. week:** 18.-22.1.  
Lecture: **Cells and tissue – cell junctions, adhesive molecules and extracellular matrix** (doc. MUDr. Iva Slaninová, Ph.D.)  
*Practice:* **Control test 2 (knowledge of weeks 7 to 12)**
- 14. week:** 11.-15.1. **Substitution week**

#### **COMPULSORY LITERATURE:**

- ALBERTS, Bruce, Karen HOPKIN, Alexander JOHNSON, David Owen MORGAN, Martin C. RAFF, Keith ROBERTS a Peter WALTER. ***Essential cell biology***. Fifth edition. New York: W.W Norton, 2019. xxxii, 734. ISBN 9780393680393.
- SNUSTAD, D. Peter a Michael J. SIMMONS. ***Principles of genetics***. Seventh edition. Wiley, 2015. ISBN 9781118875896.