

## Molecular biology of tumors

Thursday 15:00-16:30 ONLINE

1. Introduction to cancers: classification and characterization of cancers, causes of cancer, properties of cancer cells, principles of therapies, targets of therapies [Pandur Edina - 09.09.](#)
2. Tumor genetics: mutations, carcinogenic agents, inheritance, tumor genes, defects in DNA repair and predispositions to cancer, cell protection mechanisms [Pandur Edina - 09.16.](#)
3. Tumor epigenetics: mechanisms of epigenetic inheritance, imprinting, DNA methylation, epigenetics of cell differentiation and tissue homeostasis [Jánosa Gergely - 09.23.](#)
4. The cell cycle, apoptosis and senescence: checkpoints, therapeutic targets and inhibitors, molecular mechanisms of apoptosis, replicative senescence and its disturbances in human cancers [Pap Ramóna - 09.30.](#)
5. Oncogenes and tumor-suppressor genes [Pandur Edina - 10.07.](#)
6. Signaling pathways in tumors: MAPK, PI3K, TP53 network, NF $\kappa$ B, TGF $\beta$ , STAT signaling [Pandur Edina - 10.14.](#)
7. Diagnosis of tumors: molecular diagnosis, molecular detection and classification [Jánosa Gergely - 10.21.](#)
8. Cancer prevention: nutrients, energy metabolism of tumors, hormones and gene interactions [Pap Ramóna - 10.28.](#)
9. Stem cells and cancer: Wnt signaling, Hh signaling, differentiation therapy [Pandur Edina - 11.04.](#)
10. Drugs in cancer therapy: molecular mechanisms of cancer chemotherapy, targeted drug therapy, immunotherapy, gene therapy. [Fliszár-Nyúl Eszter - 11.11.](#)
11. The role of immune system in tumors: inflammation, infections, cancer vaccines, inhibition of the immune system [Pap Ramóna - 11.18.](#)
12. Invasion and metastasis: genes and proteins involved in cell-to-cell, cell-matrix adhesion, in extracellular matrix remodeling during tumor invasion; angiogenesis. [Pandur Edina - 11.25.](#)
13. Human cancers I: common properties, genetic aberrations, molecular alterations, histology and etiology of cancers [Tóth Dénes - 12.02.](#)
14. Human cancers II: common properties, genetic aberrations, molecular alterations, histology and etiology of cancers [Tóth Dénes - 12.09.](#)