
Department of Histology and Embryology

The Department of Histology and Embryology is dedicated to the investigation of the microscopic structure of tissues, organs and cells at the level of light microscopy and ultrastructure. It combines observations with the identification of key tissue and cellular molecules in the analysis of intact, developing, regenerating, or aging cells and tissues, which are often affected by external factors or drugs. He transfers his knowledge and expertise to undergraduate and postgraduate students, applies it to his own research activities and translates it into numerous collaborations at various levels of biomedical research. The Institute includes Histology Laboratories for tissue sample processing, Immunohistochemistry Laboratory, Fluorescence Microscopy Laboratory, Transmission Electron Microscopy, Molecular Morphology Laboratory and Stem Cell Culture Laboratories.

Main research topics

- Research on stem cells - their cultivation, differentiation, new methods of cryopreservation and analysis of their behaviour in different environments and on different carriers, including nanofibrous carriers.
- Study of the ultrastructure of cells and tissues in vitro and in situ
- Testing the effect of antibiotics and chemotherapeutics on stem cells, development of new carriers for drugs.

Achievements

- D1 publikace: Aagenaesův syndrom/lymfedémová cholestáza 1 je způsoben zakladatelskou variantou v 5'-nepřekládané oblasti UNC45A. J Hepatol. 2023;79(4):945-954; IF 25,7
- Harrison SP et al. Scalable production of tissue-like vascularized liver organoids from human PSCs (Škálovatelná produkce tkání podobných vaskularizovaných jaterních organoidů z lidských PSC). Exp Mol Med. 2023 Sep;55(9):2005-2024; IF 12,8
- Wesseler MF et al. 3D mikroperfuze lidských mikrofyzilogických modelů jater v mezoměřítu zlepšuje funkčnost a rekapituluje jaterní zonálnost. Acta Biomaterialia, 171, 336-349; IF 10,633

Equipment

- JEOL JEM1400Plus transmission electron microscope equipped with EDS (for elemental composition analysis) and cryo accessories
- Smart Zoom / Patho Zoom + AI Image Analysis
- Ultramicrotome PowerTome from RMC Boeckeler