

Research topics for undergraduate students in the Biological Research Centre
Szeged for the academic year of 2021-2022

Biological application of differential-polarization laser scanning microscopy. Hierarchically ordered structures.

Gábor Steinbach (Laboratory of Microscopical Cell Analysis)

Integrated optical devices in biology: biosensors, protein based optoelectronic devices

Sándor Valkai and András Dér (Institute of Biophysics)

Construction of microfluidic devices and their utilization in biophysical applications

Sándor Valkai and András Dér (Institute of Biophysics)

Investigation of the permeability and transport mechanisms at the blood-brain barrier under physiological and pathological conditions

Mária Deli and Fruzsina Walter (Institute of Biophysics)

Molecular bases of neurovascular functions

István Krizbai and Imola Wilhelm (Institute of Biophysics)

Role of the blood-brain barrier in the formation of brain metastases

Imola Wilhelm and Kinga Molnár (Institute of Biophysics)

Role of pattern recognition receptors in pathologies related to cerebral endothelial cells and pericytes

István Krizbai and Imola Wilhelm (Institute of Biophysics)

Studying the neurovascular unit with two-photon microscopy

Attila Elek Farkas (Institute of Biophysics)

Restoration of cerebrovascular functions during aging

István Krizbai and Attila Elek Farkas (Institute of Biophysics)

Examination of mutant plants defective in symbiosis

Gabriella Endre (Institute of Plant Biology)

Functional study of symbiotic genes and proteins

Gabriella Endre (Institute of Plant Biology)

Investigation of the effect of new plant antimicrobial peptides on different bacteria

Gabriella Endre (Institute of Plant Biology)

Antibiotic resistance in microbes

Csaba Pál (Institute of Biochemistry)

Evolution of human immune system in response to pathogens

Csaba Pál (Institute of Biochemistry)

Lipid-protein interactions during autophagy
Hajnalka Laczkó-Dobos (Institute of Genetics)

Autophagy in the nervous system
Áron Szabó (Institute of Genetics)

The mechanism of LC3-associated phagocytosis in glia
Áron Szabó (Institute of Genetics)

Production of organoid cultures from human pluripotent stem cells
Melinda Purity (Institute of Genetics)

Generation of fluorescently labelled mouse stem cell lines for cell fate tracking
Melinda Purity (Institute of Genetics)

Analysis of cell death signalling pathways in mouse and human stem cells
Melinda Purity (Institute of Genetics)

Analysis of blood cell transdifferentiation in *Drosophila melanogaster*
Viktor Honti (Institute of Genetics)

Analysis of the regulation of blood cell niche maintenance in *Drosophila melanogaster*
Viktor Honti (Institute of Genetics)

Analysis of blood cell originated tumor formation in *Drosophila melanogaster*
Erika Gábor (Institute of Genetics)

Investigation of piRNA/PIWI mediated transposon silencing
Melinda Bence (Institute of Genetics)