We are opened to a wide spectrum of collaboration with academic partners, partners from applied research and clinical partners. We can offer our help particularly in these fields:

- Histological and immunohistochemical analysis.
- Genes and proteins analysis in tissues and cells.
- Functional analysis of blood vessel contractility.
- Testing of microbial and metabolic activity.

EXPERTISE

- In vivo and in vitro research of TGF-β signaling in models of atherosclerosis and in endothelial cells.
- In vitro antimicrobial activity testing methods based on internationally accepted standard methods, implementation and optimization of methodical approaches for screening of antimicrobial effect on biofilm-forming microorganisms.
- Isolation, purification and analysis of secreted/secerned proteins from microbial agents.
RESEARCH AREAS

Research in the field of experimental atherogenesis.
- Study of the role of endoglin (CD105, TGF-βRIII) and its related signaling in atherogenesis.
- Testing of antimicrobial activity, simulation of host-pathogen interaction via tissue explants.
- Optimization of methodical procedures for drug-microbe interaction analysis.
- Analysis and identification of proteins expressed/transported from microbes after interaction with host cells.
- Research of the role of endoglin and its soluble form in pathogenesis of endothelial dysfunction and atherosclerosis.
- Considering the role of soluble endoglin as a disease biomarker or possibly as an inducer of endothelial dysfunction in various cardiovascular diseases.
- Finding of new candidate molecules with antimicrobial activity.
- Study of molecular mechanisms of microbial pathogenesis.

MAIN CAPABILITIES

- Cultivation of endothelial cells (especially HUVECs).
- Breeding of various knockout hypercholesterolemic mice – models of experimental atherosclerosis.
- Quantification of relevant proteins in cell cultures and sample tissues. Evaluation of tissue morphology. Assessment of mouse aorta function.
- Cultivation of microbes under different conditions, determination of minimal inhibitory concentration of antimicrobial compounds, testing of microbial metabolic activity, detection and quantification of biofilm formation.
- Microbial proteins isolation and purification.

SEE MORE INFORMATION ON OUR WEBPAGES:
https://portal.faf.cuni.cz/Profile/Nachtigal-Petr

KEY RESEARCH EQUIPMENT

- Histology and microscopy.
- Light and fluorescent microscopy.
- Western blot analysis.
- Wire myograph technique.
- Flow cytometry.
- ELISA, qRT-PCR.
- BSL2 microbiological labs.
- Analytical devices: fluorescent microscope, confocal laser scanning microscope, spectrophotometers, microbiological incubators, autoclaves, biohazard safety boxes.

PARTNERSHIPS & COLLABORATIONS

- prof. Carmelo Bernabeu, Center for Biological Research, Spanish National Research Council (CSIC), and Biomedical Research Networking Center on Rare Diseases, Madrid, Spain
- prof. Jose Lopez-Novoa, University of Salamanca, Spain
- prof. Stefan Chlopicki, Jagiellonian Centre for Experimental Therapeutics (JCET), Krakow, Poland

MAIN PROJECTS


ACHIEVEMENTS

- Publications in respected international journals with impact factor.
- Presentations in domestic and international congresses.