Mitochondrial Laboratory

Offer

- Isolation of mitochondria from fresh tissues and cells, optimization of isolation protocols, evaluation of the quality of isolated organelles
- Preparation of protocols for optimum tissue permeabilization and homogenization
- Analysis of mitochondrial respiratory activity in biological samples using high-resolution respirometry
- Determination of activity of selected mitochondrial enzymes
- Evaluation of the effect/s of experimentally induced pathological states and pharmacological agents on mitochondrial respirátory parameters in animal studies
- Analysis of mitochondrial activity in fresh human cells (platelets, spermatozoa) or human cell lines
- Statistical analysis of the collected data for publication purposes, testing of hypotheses, correlation analysis

Expertise

- The Mitochondrial Laboratory focuses on evaluation of respiratory activity of isolated mitochondria or mitochondria in situ, i.e. in tissues or cells aft er mechanical and/or chemical permeabilization.
- The method of high-resolution respirometry enables analysis of individual complexes of mitochondrial respiratory system in tissue biopsies and intact or permeabilized cells (cultured cell lines, platelets, spermatozoa).

Members

- Assoc. Prof. Jitka Kuncová, M.D., Ph.D. – Research Group Leader
- Miroslava Čedíková, Ph.D., M.D.
- Michaela Marková, M.Sc.
- Renata Šťastná

Selected Publications

- Cedikova M, Miklikova M, Stachova L, Grundmanova M, Tuma Z, Vetvicka V, Zech N, Kralickova M, Kuncova J. Effects of the Czech propolis on sperm mitochondrial function. Evid Based Complement Alternat Med. 2014; 2014: 248768
- Svíglerová J, Kuncová J, Stengl M. Contractile functions of myocardium and their regulation. Cesk Fysiol. 2014; 63 (1): 25–33
- Cedíková M, Miklíková M, Grundmanová M, Zech NH, Králíčková M, Kuncová J. Sperm mitochondrial function in men with normozoospermia and asthenozoospermia. Ceska Gynekol. 2014; 79 (1): 22–8
- Pfeil U, Kuncova J, Brüggmann D, Paddenberg R, Rafiq A, Henrich M, Weigand MA, Schlüter KD, Mewe M, Middendorff R, Slavikova J, Kummer W. Intrinsic vascular dopamine - a key modulator of hypoxia-induced vasodilatation in splanchnic vessels. J Physiol. 2014; 592 (Pt 8): 1745–56
- Svíglerová J, Kuncová J, Nalos L, Holas J, Tonar Z, Rajdl D, Stengl M. Cardiac remodeling in rats with renal failure shows interventricular differences. Exp Biol Med (Maywood). 2012; 237 (9): 1056–67
- Kochová P, Kuncová J, Svíglerová J, Cimrman R, Miklíková M, Liška V, Tonar Z. The contribution of vascular smooth muscle, elastin and collagen on the passive mechanics of porcine carotid arteries. Physiol Meas. 2012; 33 (8): 1335–51
- Švíglerová J, Mudra J, Tonar Z, Slavíková J, Kuncová J. Alteration of the cardiac sympathetic innervation is modulated by duration of diabetes in female rats. Exp Diabetes Res. 2011; 2011: 835932
- Kuncová J, Chvojka J, Sýkora R, Svíglerová J, Stengl M, Nalos L, Kroužecký A, Matějovič M. Tissue concentrations of vasoactive intestinal peptide are affected by peritonitis-induced sepsis and hemofiltration in pigs. Physiol Res. 2011; 60 (3): 531–40
- Kuncová J, Sýkora R, Chvojka J, Svíglerová J, Stengl M, Kroužecký A, Nalos L, Matějovič M. Plasma and tissue levels of neuropeptide y in experimental septic shock: relation to hemodynamics, inflammation, oxidative stress, and hemofiltration.
Artif Organs. 2011; 35 (6): 625–33
- Svíglerová J, Kuncová J, Nalos L, Tonar Z, Rajdl D, Stengl M. Cardiovascular parameters in rat model of chronic renal failure induced by subtotal nephrectomy. Physiol Res. 2010; 59 Suppl 1: S81–8

Are you interested in this expertise?

Please contact CPPT UK
Web: www.cppt.cuni.cz/
Mail: transfer@cuni.cz
Phone: +420 224 491 255

Experts and their department

Assoc. Prof. Jitka Kuncová, M.D., Ph.D.
Institute of Physiology
Web: www.biomedic-plzen.cz