
Laboratory of Experimental Cardiology

"The laboratory is focused on physiology and pathophysiology of the heart."

Offer

- Development of experimental models and analysis of cardiac function; development of an appropriate animal model (broad experience with various experimental animal species and models, e.g. rat with chronic renal failure, rat with diabetes mellitus, rat with autonomic denervation, hypercholesterolemic rabbit, Carlsson's model of rabbit, pig with sepsis) with a detailed description of cardiac function (ECG including variability analysis, measured both *in vivo* and in isolated heart, measurement of contraction and of membrane potential in multicellular preparation, measurement of membrane ionic currents in isolated cardiac myocytes).
- Description and analysis of cardiac effects of substances/ drugs; pharmacological effects tested *in vivo*, in isolated heart, in multicellular cardiac preparation, in isolated cardiac myocytes; various experimental animal species (rat, rabbit, pig); analysis of electrophysiological and contractile effects.
- Testing cardiac safety of substances / drugs; analysis of contractile, electrophysiological and possible proarrhythmic effects; *in vivo* and *in vitro* testing.

Expertise

The cardiac function is analyzed in various animal models using a number of experimental approaches on several levels of biological complexity:

- from *in vivo* measurements (ECG analysis) to
- molecular level (measurement of membrane ionic currents).

Members

- Assoc. Prof. Milan Štengl, M.D., Ph.D. – Research Group Leader
- František Barták, M.Sc.
- Jaroslava Hesová
- Lucie Jacenková, M.Sc.
- Dagmar Jarkovská, Ph.D., M.Sc.
- Eliška Mistrová, M.D.
- Lukáš Nalos, M.D., Ph.D.
- Assoc. prof. Jitka Švíglerová, M.D., Ph.D.

Selected Publications

- Stengl M, Ledvinova L, Chvojka J, Benes J, Jarkovska D, Holas J, Soukup P, Sviglerová J, Matejovic M.: *Effects of clinically relevant acute hypercapnic and metabolic acidosis on the cardiovascular system: an experimental porcine study*. Crit Care 2013; 17: R303
- Švíglerová 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 2012; 237: 1056–67
- Stengl M, Bartak F, Sykora R, Chvojka J, Benes J, Krouzecky A, Novak I, Sviglerova J, Kuncova J, Matejovic M.: *Reduced L-type calcium current in ventricular myocytes from pigs with hyperdynamic septic shock*. Crit Care Med 2010, 38: 579–87
- Kuncová J, Švíglerová J, Kummer W, Rajdl D, Chottová-Dvoráková M, Tonar Z, Nalos L, Stengl M.: *Parasympathetic regulation of heart rate in rats after 5/6 nephrectomy is impaired despite functionally intact cardiac vagal innervation*. Nephrol Dial Transplant 2009; 24: 2362–70
- Stengl M, Sykora R, Krouzecky A, Chvojka J, Novak I, Varnerova V, Kuncova J, Nalos L, Sviglerova J, Matejovic M.: *Continuous hemofiltration in pigs with hyperdynamic septic shock affects cardiac repolarization*. Crit Care Med 2008; 36: 3198–204

Are you interested in this expertise?

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Experts and their department

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