

**Univerzita Karlova  
Lékařská fakulta v Hradci Králové**

Šimkova 870  
500 38 Hradec Králové  
<http://www.lfhk.cuni.cz>



**Výzkumné zaměření a prezentace služeb LFUK HK  
- teoretická pracoviště (11 ústavů)**

**Seminář Inovační vouchery - 15. června 2016**

Doc. Ing. Josef Hanuš, CSc.

proděkan pro technický rozvoj a informatiku

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## Charakteristika fakulty

- Jedna z 8 lékařských fakult ČR (jedna z 5 v rámci Univerzity Karlovy: 3x v Praze, HK, Plzeň)
- Odborná pracoviště fakulty: teoretická (budova v Šimkově ul.) a klinická (společná s Fakultní nemocnicí Hradec Králové)
- Výuka - studijní programy magisterské: všeobecné lékařství (MUDr), zubní lékařství (MDDr); bakalářský: ošetrovatelství (bc); doktorské (20 oborů, Ph.D.); U3V (celoživotní vzdělávání); celkem přibližně 1000 studentů
- Věda - biomedicínský výzkum zaměřený na civilizační choroby a stárnutí populace

# Department of Anatomy

**Chairperson:** Assoc. Prof. Dasa Slizova, M.D., Ph.D.

[slizova@lfhk.cuni.cz](mailto:slizova@lfhk.cuni.cz)

- \* **Scanning electron microscopy of biological preparations;**
- \* The experimental intoxication of central nervous system by inhibitors of cholinesterase and monitoring of the effect of prophylactically administered antidotes by histochemical methods;
- \* The study of the development of permanent cartilage and importance by calcification rib cartilage;
- \* Evaluation of changes of the intestinal mucosa in the sprue and morbus Hirschsprungi in intestinal biopsies in humans;
- \* The study of blood supply and venous drainage of the liver.

# Department of Medical Biology and Genetics

**Chairperson:** Prof. PharmDr. Emil Rudolf, Ph.D.

[rudolf@lfhk.cuni.cz](mailto:rudolf@lfhk.cuni.cz)

- \* A study of the regulation of cell proliferation, programmed cell death and differentiation of cells including related molecular mechanisms;
- \* Research of influence of nutrients on the basic cell functions in cells of the intestinal cancer;
- \* **The examination of the impact of toxic substances, in particular metals (chromium, zinc, selenium) to basic cell functions;**
- \* The study of chemosensitivity and chemoresistance in ovarian tumors (the effects of cytostatics on cells isolated from tumors of the ovaries).

# Department of Physiology

**Chairperson:** Prof. Zuzana Cervinkova, M.D., Ph.D

[wolff@lfhk.cuni.cz](mailto:wolff@lfhk.cuni.cz)

- \* Experimental Hepatology (mechanisms of toxic liver injury, liver regeneration, the sensitivity of the liver to hepatotoxic substances in the field of the liver affected non-alcoholic fatty; extrabiliary cholestasis and options to influence the development of subsequent hepatic injury);
- \* The metabolism of protein and amino acids (pathogenesis and treatment of protein catabolism in ballast conditions; the use of amino acids and their derivatives such as nutritional supplement);
- \* Experimental Cardiology (cardiotoxicity of antineoplastic substances; chromatin infarction in different pathological states).

# Department of Pathological Physiology

**Chairperson:** Prof. Miroslav Kuba, M.D., D.Sc.

[kuba@lfhk.cuni.cz](mailto:kuba@lfhk.cuni.cz)

- \* Electrophysiology of vision and central nervous system (objectification of diagnosis of sclerosis multiplex, neuritis retrobulbaris, glaucoma, amblyopia, dyslexia, neuroborreliosis, encephalopathy, peri-brain damage, schizophrenia, Alzheimer's disease);
- \* **The development of mobile personal visual stimulator** (monitoring of the vision and brain function in normal human activities);
- \* Risk evaluation of genotoxicity, mutagenicity and of immunosuppression (cellular and humoral indicators) in adults and children exposed to toxic substances.

# Department of Histology and Embryology

**Chairperson:** Prof. Jaroslav Mokry, M.D., Ph.D.

[mokry@lfhk.cuni.cz](mailto:mokry@lfhk.cuni.cz);

- \* The study of stem and progenitor cells (cell isolation, characterisation of the differentiating potential, cell kinetics, morphology including the immunophenotyping);
- \* Expansion, cryopreservation and transplantation of stem cells in animals;
- \* Research into the use of stem cells for therapeutic purposes (regeneration of muscle, nervous tissue, dental pulp, bone marrow);
- \* Application for regenerative medicine (construction of the extracellular matrix and its modification, the study of angiogenesis, re-inervation of tissue and cancer tissues).
- \* **Transmission electron microscopy**

# Department of Medical Biophysics

**Chairman:** Assoc. Prof. Josef Hanus, M.Sc., Ph.D

[hanus@lfhk.cuni.cz](mailto:hanus@lfhk.cuni.cz)

- \* **Testing of thermal and mechanical characteristics, long-term stability or controlled degradation of body reinforcement and support**, orthodontic products and accessories from special materials (materials with shape memory and biodegradable materials);
- \* Measurement and modelling of thermoelectric properties of the selected materials, focusing on the design of special temperature sensors (miniature multi thermocouple probes for the purposes of hyperthermia);
- \* **Statistical evaluation and processing of data in a robust statistical programmes.**



# Department of Medical Biochemistry

**Chairperson:** Prof. Martina Rezacova, M.D., Ph.D.

[rezacovaM@lfhk.cuni.cz](mailto:rezacovaM@lfhk.cuni.cz)

- \* The study of anticancer effect of substances with synthetic and natural origin, including a combination of cytostatic treatments with selected nutrients (in vivo, in vitro);
- \* Studies of damage, DNA repair and programmed cell death mechanisms in tumor cells and characterization of the mechanisms of action against anticancer substances;
- \* Metabolism and fibrogenesis with a focus on liver fibrosis and cirrhosis, and the healing of skin wounds (the study of the changes of gene expression)

## Department of Social Medicine

**Chairperson:** Assoc. Prof. Svatopluk Byma, M.D., Ph.D

[Bymas@lfhk.cuni.cz](mailto:Bymas@lfhk.cuni.cz)

- \* A study of social support for children and adolescents, the study of quality of life in children and adolescents, and the patient's treatment of the disease
- \* The study of the socio-medical perspective on health care and health status of the selected sub-populations;
- \* Evaluation of the quality of the practice of general practitioners, the quality of care for people with diabetes, cardiovascular and gastro-intestinal diseases and their prevention in primary care);
- \* Student assessment of teaching throughout Charles University.

# Department of Pharmacology

**Chairperson:** Prof. Stanislav Micuda, M.D., Ph.D

[micuda@lfhk.cuni.cz](mailto:micuda@lfhk.cuni.cz)

- \* Cardiotoxicity of medicinal products and the possibilities of pharmacological cardioprotection (mechanisms of toxic effects against cancer drugs);
- \* Modulation of liver disease medicines (pathophysiological mechanisms of cholestatic or hepatocellular damage to the liver and their possibilities for modulation);
- \* Personalized pharmacotherapy  
(models using the pharmacokinetics, pharmacogenetics and indicators for therapeutic and toxic effects of medicines);
- \* Development and validation of HPLC methods for the analysis of drugs and their metabolites in biological matrices and the determination of indicators of oxidative stress

# Department of Hygiene and Preventive Medicine

**Chairperson:** Prof. Zdeněk Fiala, M.Sc., Ph.D.

[fiala@lfhk.cuni.cz](mailto:fiala@lfhk.cuni.cz)

- \* Risk evaluation of genotoxicity, mutagenicity, and stress (exposure to factors of physical, chemical and social); biological monitoring of exposure;
- \* Epidemiological monitoring of the characteristics of the health status and lifestyle (the perception of health risks, social inequality in access to health, quality of life, healthy individuals and patients, the effect of the level of physical activity to the organism);
- \* Experimental and regulatory toxicology (dermal absorption of pollutants, biological interactions of mixtures of substances, the models predict the levels of pollutants in the air)

**Conclusion:**  
**we offer wide spectrum of services in the area of  
biomedical research**

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