

1st Dept. of Internal Medicine – Cardioangiology

- acute coronary syndromes (risk factors, comparison of invasive procedures, ischemia/reperfusion injury)
- chronic thromboembolic disease
- hypertrophic cardiomyopathy
- biomarkers in diagnosis, risk stratification and therapy monitoring
- hemodynamic
- arrhythmias (medication, non - pharmacological procedures)

Contact person:

Prof. Jan Vojáček, MD, Dr.Sc. and Prof. Radek Pudil, MD, Ph.D.

email: jan.vojacek@fnhk.cz, radek.pudil@fnhk.cz, pudilr@lfhk.cuni.cz

2nd Department of Internal Medicine – Gastroenterology

- *Helicobacter pylori* infection (clinical, including epidemiology studies, experimental)
- small intestinal imaging (including double balloon enteroscopy)
- inflammatory bowel disease
- colorectal cancer screening
- bio-degradable stents (for diseases of the gastrointestinal tract)
- clinical and experimental electrogastrography
- hydrogen & methane breath tests; ¹³C-carbon based breath test
- portal hypertension
- intestinal microbiota
- experimental porcine models (endoscopic mucosal resection, wireless capsule endoscopy, dextran-sodium-sulphate-induced inflammatory bowel disease, probiotics, colicins, non-steroidal-anti-inflammatory-drugs-induced injury to the small intestine, gastrointestinal myoelectric response to different drugs, bioavailability and pharmacokinetics of model drugs)

Contact persons:

Professor Marcela Kopáčová, MD, PhD

e-mail: marcela.kopacova@fnhk.cz

Professor Jan Bureš, MD, PhD

email: bures@lfhk.cuni.cz

3rd Department of Internal Medicine - Gerontology and Metabolism

Metabolism and nephrology

- development of new methods and schedules for nutritional support
- development of new diagnostic and therapeutic procedures for wound healing
- study of energy substrates metabolism during fasting in diabetic patients
- improvement of diagnostic and treatment options of glomerulonephritides
- improvement of diagnostic and treatment options in renal transplantations
- CKD-MBD in chronic haemodialysis and predialysis patients
- role of dialysis procedure in calcium and phosphate metabolism

Contact persons:

prof. MUDr. Luboš Sobotka, CSc, prof. MUDr. Miroslav Merta, CSc., Prof. MUDr. Sylvie Dusilová Sulková, DrSc., MBA

email: lubos.sobotka@fnhk.cz, miroslav.merta@fnhk.cz, sylvie.dusilova@fnhk.cz

Gerontology

- biomarkers of aging, the effect of antioxidant capacity in the aging process
- neurodegenerative diseases - etiological factors, immunological and biochemical changes, the quality of the patients life
- research in the field of healthy lifestyle - eating habits, diet influence the impact of the decrease of physical performance in the elderly
- studies on the impact of nutrition support for recovery in the acute stage of seniors
the influence of the most common drug interactions for morbidity and mortality in old age

Contact person:

Božena Jurašková, MD

email: bozena.juraskova@fnhk.cz

4th Dept. of Internal Medicine – Haematology (*incl. endocrinology*)

Haematology:

- study of the aberrant expression in hematologic malignancies
- gene mutations and polymorphism and its impact on treatment resistance
- intra- and inter cellular signalling during proliferation of hematopoietic elements
- residual disease monitoring

- platelet functions as a markers of tumor angiogenesis
- hemapheretic methods

Contact person:

Assoc. Prof. Pavel Žák, MD, Ph.D.

email: pavel.zak@fnhk.cz

Endocrinology:

- coagulation and disorders of the thyroid gland
- thyroid gland in acute conditions
- individual variability in response to corticosteroids
- thyroid cancer (prognostic factors, survival analysis)
- endocrinological follow-up of patients with hematologic malignancies

Contact person:

Prof. Jan Čáp, MD, CSc.

email: jan.cap@fnhk.cz

Dept. of the Respiratory Disorders

- bronchial obstruction
- structure and function of the ciliary apparatus
- bronchoscopy intervention in the treatment of diseases associated with airway obstruction
- diagnosis and treatment of severe bronchial asthma
- COPD: incidence, effect of air pollution, diagnosis and treatment

Contact persons:

Assoc. Prof. František Salajka, MD, CSc. and Vladimír Koblížek, MD, Ph.D.

email: frantisek.salajka@fnhk.cz, vladimir.koblizek@fnhk.cz

Dept. of Oncology and Radiotherapy

- molecular predictors of response to cancer treatment
- advanced techniques of radiotherapy (IGRT, IMRT, 3D BRT)
- pharmacodynamics (genotyping patients for UGT1A1 polymorphisms to optimize irinotecan therapy, etc.)
- stem cells (effect of splenectomy in vivo homing of transplanted cells, etc.)
- tumor immunology with a focus on malignant melanoma
- influence of different treatment modalities on the quality of life for cancer patients

- nutritional aspects of cancer treatment

Contact:

Prof. Jiří Petera, MD, Ph.D.

email: jiri.petera@fnhk.cz

Department of Neurology

- recanalization in acute cerebral ischemia
- endovascular treatment of intracranial arterial stenosis
- intracranial thrombosis
- treatment of multiple sclerosis
- diagnosis and treatment of dementia

Contact person:

Assoc. Prof. Martin Vališ, MD, PhD., Assoc. Prof. Dagmar Krajičková, MD, CSc.

email: martin.valis@fnhk.cz, dagmar.krajickova@fnhk.cz

Department of Paediatrics

- inflammatory bowel diseases (assoc. prof. O.Pozler)
- diagnosis of allergies (assoc. prof. J.Chládková)
- diabetes in children (dr. D.Neumann)
- kidney diseases (assoc.prof. S.Skálová)
- problems in premature babies (assoc.prof. Z.Kokštein)
- Center for cystic fibrosis (H.Vaníček, M.D.)
- Center for diabetes mellitus (D.Neumann, M.D.)
- Osteological center (prof. M.Bayer)

Contact person:

Prof. MUDr. Milan Bayer, Ph.D.

email: milan.bayer@fnhk.cz, dagmar.krajickova@fnhk.cz

Dept. of Dermatology and Venereology

- photodynamic therapy, photo-climatology, dermatological phototherapy
- food allergy and atopic dermatitis
- skin side effects of biologics and immunosuppressive therapy
- methotrexat in psoriatic therapy

- therapy of atopic dermatitis
- evaluation of side effects of Goeckerman regimen in psoriasis

Contact person:

Doc. MUDr. Karel Ettler, CSc.

email: karel.ettler@fnhk.cz

Dept. of Psychiatry

- the detection and evaluation of risks for developing thromboembolic disease among patients treated for psychiatric disorders. The detection and evaluation of metabolic and cardiovascular risks among patients with psychotic conditions and mood disorders.
- the evaluation of effectiveness and efficacy of new modes of electroconvulsive treatment (ECT) in bipolar disorder. The assessment of the cognitive adverse effects of different modes of ECT administration.
- the investigation of the practical and theoretical significance of cognitive components of visual evoked responses and other electrophysiological markers among patients with psychotic disorders and drug dependence.
- the participation at the large scale international study of optimal sequence in treatment of first episode psychosis (Optimise: www.optimisetrial.eu) supported by 7th. EU Framework Programme in research and innovation

Contact person:

Prof. Jan Libiger, MD, CSc.

email: jan.libiger@fnhk.cz

Department of radiology

- structural and functional changes of the brain in patients with schizophrenia

Contact person:

Prof. MUDr. Antonín Krajina, CSc.

email: krajina@fnhk.cz

The Fingerland Department of Pathology

Oncopathology

- Predictive markers in cancers of the breast and the colon

- Role of extracellular matrix in tumor progression
- The role of immune cells in interaction with tumor

Cardiovascular Pathology

- Pathology of the heart in the aged
- Valvular heart disease, particularly calcific aortic stenosis
- Pathology of atrial fibrillation

Contact persons:

Prof. MUDr. Ivo Šteiner, CSC., prof. MUDr. Aleš Ryška, Ph.D.

email: ivo.steiner@fnhk.cz, ales.ryska@fnhk.cz

Department of Anaesthesia and Intensive Care

- Experimental and clinical research of cardiopulmonary resuscitation (CPR).
 - Current research in therapeutic hypothermia as an important part of sudden cardiac arrest management.
 - Effectivity of CPR, energy intensity of CPR.

Truhlar Anatolij, MD (anatolij.truhlar@fnhk.cz), Roman Skulec, MD (skulec@email.cz)

- Research of tissue and organ perfusion under pathophysiological conditions
 - Distal rectal anastomosis perfusion research both under experimental and clinical conditions, really relevant clinical problem of a great importance. Laser Doppler Flowmetry (LDF) and Sidestream Dark-field imaging (SDF).
 - Various target parameters during cardiopulmonary bypass management and their effect on organ functions focused mainly on kidney injury.
 - Effect of anaesthesia techniques on organ microcirculation.

Zdenek Turek, MD, Ph.D. (zdenek.turek@fnhk.cz), Vladimir Cerny, prof., MD, Ph.D., FCCM

(vladimir.cerny@fnhk.cz), Monika Gerlichova, MD (monika.gerlichova@centrum.cz),

Jindrich Samek, MD (samek@fnhk.cz)

- Effect of anaesthesia techniques on dynamics and quality of organ functions recovery after major surgery.
 - The differences between general and combined general / epidural anaesthesia.

Vladimir Cerny, prof., MD, Ph.D., FCCM (vladimir.cerny@fnhk.cz), Abraham Bucek, MD

(bucekabr@fnhk.cz)

Contact person:

Prof. MUDr. Vladimír Černý, Ph.D., FCCM

email: vladimir.cerny@fnhk.cz

Department of clinical genetics

- Psychosocial aspects of prenatal screening
- Methylation analysis for assessment of promoter methylation status
- Biological monitoring of genotoxic effects of environmental factors cytogenetic analysis of peripheral lymphocytes
- Monitoring of genome stability in stem cells under different conditions in vitro

Contact person:

Dr. Mária Šenkeříková

email: maria.senkerikova@fnhk.cz

Tissue Bank

- Development and testing of efficiency and safety of cell and tissue preservation methods with particular attention to cryopreservation and long-term storage of viable cells and tissues in liquid nitrogen
- Efficiency and safety of advanced medicinal products and the influence of the processing technology on the content of protective substances in the human milk.

Contact person:

MUDr. Pavel Měříčka, Ph.D.

email: mericka@fnhk.cz

Department of Surgery

- parametric control of TME quality as an instrument for reduction of local recidivation after rectum cancer surgery
- evaluation of quality multi-modal management at patients with liver metastases of colorectal cancer in a frame of complex carcinologic centres in the Czech Republic
- development of a diagnostic panel for perioperative damage monitoring of a small intestine
- optimization of a surgical management in high age patients group
- advancement of pre-operative preparation for more effective surgical therapy
- optimization of the treatment in elderly patients with trophic crural defects
- the effect of short-term parenteral nutrition in elderly patients after resection of bowel

- temporary biventricular pacing in patients after heart valve surgery
- the hemodynamic parameters of the extracorporeal circulation in patients with biventricular stimulation
- the effectivity of the surgical treatment of malignant pleural effusion
- metabolic changes in the brain in patients with subarachnoideal haemorrhage in elderly

Contact persons:

prof. Alexander Ferko, MD, CSc. and Assoc. Prof. Milan Kaška, MD et RNDr., CSc.

email: alexander.ferko@fnhk.cz, milan.kaska@fnhk.cz

Department of Cardiosurgery

- aortic valve sparing operations
- minimally invasive mitral valve operations
- minimally invasive operations because of ischaemic heart disease
- monitoring of organs and tissue perfusion during heart operations

Contact persons:

Assoc. Prof. Jan Harrer, MD, CSc. and Assoc. Prof. Jiří Mandák, MD, Ph.D.

email: jan.harrer@fnhk.cz, jiri.mandak@fnhk.cz

Department of Otorhinolaryngology and Head and Neck Surgery

- The use of the rheohaemapheresis in the treatment of hearing loss (J. Dršata, MD, PhD)
- Management of diagnostics and therapy of swallowing disorders (M. Černý, MD)
- The investigation of occult cervical lymph node micrometastases in squamous cell carcinoma of ENT region (P. Čelakovský, MD, Ph.D., professor V. Chrobok, MD, PhD)
- Analysis of selected prognostic and predictive markers of oropharyngeal and laryngeal tumors (D. Kalfeřt, MD)

Contact person:

prof. Viktor Chrobok, MD, PhD

email: chrobok@fnhk.cz

Department of Urology

- enzymatic detection of renal parenchyma damage
- renal transplantation in ABO incompatible blood group
- the surgery for urologic malignant tumors in elderly patients
- the new methods of haemostasis in laparoscopic surgeries

Contact person:

Doc. MUDr. Miloš Broďák, Ph.D.

email: milos.brodak@fnhk.cz

Department of Ophthalmology

- cataract and corneal surgery (prof. Rozsival, prof. Jirásková),
- refractive procedures (prof. Rozsival, prim. Feuermannová),
- acquired retinal diseases (dr. Dusová, dr. Studnička, dr. Hejsek),
- neuroophthalmology (prof. Jirásková),
- glaucoma (prof. Rozsival, dr. Kadlecová),
- electrophysiology of vision (prof. Langrová)

Contact person:

Prof. Pavel Rozsival, MD, CSc., FEBO

email: pavel.rozsival@fnhk.cz

Dept. of Stomatology

- dental implants (doc. MUDr. Antonín Šimůnek, CSc.)
- stem cells (MUDr. Jakub Suchánek, Ph. D.)
- Sjögren´s syndrome (MUDr. Iva Lindrová)
- antimicrobial photodynamic therapy (doc. MUDr. Radovan Slezák, CSc.)
- dental caries epidemiology (doc. MUDr. Romana Ivančaková, CSc.)
- oral mucosa diseases (MUDr. V. Paulusová)

Contact persons:

Assoc. Prof. Antonín Šimůnek, MD, CSc. and Assoc. Prof. Radovan Slezák, MD, CSc.

email: antonin.simunek@fnhk.cz, radovan.slezak@fnhk.cz

Department of Obstetrics and Gynaecology

- Biomarkers of intraamniotic infection. Proteomic identification of inflammation in amniotic fluid in patients with preterm labour. Management of preterm labour. (M. Kacerovsky, MD, PhD)
- Chemoresistance and chemosensitivity of ovarian tumour cells. Immunology of gynaecological tumours. Tumour markers. (I. Sedláková, MD)
- K-ras gene mutation in cancerogenesis of endometrial cancer (E. Křepinská, MD)

Contact person:

Assoc. Prof. Jindřich Tošner, MD, PhD.

email: jindrich.tosner@fnhk.cz

Department of Neurosurgery

- metabolic changes in the brain after subarachnoid haemorrhage
- metabolic changes in the brain after acute evacuation of subdural hematoma

Contact person:

Assoc. Prof. Svatopluk Řehák, MD, CSc.

email: svatopluk.rehak@fnhk.cz

Department of Orthopaedic Surgery

- Possible substitutes of the bone and cartilage tissue (osteocytes metabolism, possibilities of its influence, osteoporosis, chondrocyte metabolism, treatment of articular cartilage defects, the use of stem cells, synthetic biomaterials as carriers of mesenchyme stem cells)

Contact: Tomáš Kučera, MD, Ph.D.

email: tomas.kucera@fnhk.cz

- Congenital malformations of the musculoskeletal system (epidemiology, genetics, diagnostics of the musculoskeletal birth defects, the possibilities of the conservative and surgical treatment)

Contact:

Assoc. Prof. Pavel Šponer, MD, PhD.

email: pavel.sponer@fnhk.cz

- Endoprosthetics (prevention and management of complications, replacement of the joints, joint replacement in extreme conditions - after transplantation or after the

chemotherapy and corticosteroid treatment, TEP in oncology, TEP at trauma indications)

Contact:

Assoc. Prof. Pavel Šponer, MD, PhD.

email: pavel.sponer@fnhk.cz

- Septic Orthopaedics (modern diagnosis of bone and joint infections, development of modern therapeutic approaches)

Contact: Tomáš Kučera, MD, Ph.D.

email: tomas.kucera@fnhk.cz

Department of Clinical Biochemistry and Diagnostics

- The possibility to influence bone metabolism in experiment (Živný, Živná)
- The study of renal function in critically ill patients (Živný, Palička)
- The use of molecular biological methods in oncology (diagnosis, prognosis, risk), (Nekvindová, Beránek, Palička)
- The use of microdialysis for the study of interstitial metabolism in critically ill patients (Palička, Živný)

Contact person:

Assoc. Prof. Pavel Živný, MD, PhD.

email: pavel.zivny@fnhk.cz

Department of Clinical Microbiology

- Microbiological diagnostics – processing of biological materials - isolation, cultivation, identification of infectious agents – bacteria – viruses – fungi – parasites – antibiotic susceptibility testing (Pavla Paterová, MD)
- Evaluation of anti-infective effect of compounds – *in vitro* screening and testing – determination of MIC and MLC – bacteria – fungi - *in vivo* experimental model of an infection in animal (Assoc. Prof. Vladimír Buchta, RNDr, Ph.D)
- Study of human microbiota – microscopy – cultivation – immunology – molecular methods – PCR – real-time PCR - pyrosequencing next generation – sequencing (Assoc. Prof. Vladimír Buchta, RNDr, Ph.D)
- Study of vulvovaginal discomfort* – pathogenesis – aetiology – diagnostics – therapy (Assoc. Prof. Vladimír Buchta, RNDr, Ph.D)

- Study of epidemiology and diagnostics of zoonotic infections - *Leptospira* – *Toxoplasma* – *Borrelia* – direct and indirect diagnostic methods – PCR (Z. Čermáková, MD, Ph.D.)

Contact person:

Assoc. Prof. RNDr. Vladimír Buchta, PhD.

email: vladimir.buchta@fnhk.cz

Department of Clinical Immunology and Allergy

provides the complex laboratory support in clinical immunology. Especially, multicolor flow cytometry, cultivation of cells in vitro, assessment of their biological activities and immunochemical determination of the spectrum of immune parameters in body fluids and supernatants are available (the list of methods available is on <http://www.fnhk.cz/ukia/laboratorni-prirucka>). The principal scientific interest is inflammatory response. Inflammation induced by premature rupture of maternal membranes, inflammation induced by cardiac surgery and impact of separation methods on inflammatory response are our principal scientific aims.

Contact person:

Prof. RNDr. Jan Krejsek, CSc.

email: jan.krejsek@fnhk.cz
