



Department of Biological and Medical Sciences

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RESEARCH AREA & EXCELLENCE

The members of the research team are especially focused on body composition, energy metabolism, nutrition and DNA damage in various clinical conditions, both physiological and pathological.

KNOW-HOW & TECHNOLOGIES

Content of Research

- measurement of energy need and substrates
- effects of various diseases, therapy or nutrition on body composition, energy metabolism and nutrition substrate utilization
- searching for markers giving more accurate estimation of disease progression and mortality
- parenteral and enteral nutrition individualization of patients according their actual needs

Main Capabilities

- measurement of energy expenditure and nutrition substrate utilization (indirect calorimetry)

- examination of body composition and anthropometric parameters (caliperation, bioelectrical impedance analysis, bioelectrical impedance spectroscopy)
- function tests (dynamometry, spirometry)
- DNA damage and reparation (comet assay)

Fields of Research

Clinical physiology | Pathological physiology | Metabolism
| Nutrition | Body composition

EXPECTATIONS & OFFERS

We are opened to a wide spectrum of collaboration with academic partners, partners from applied research and clinical partners.

KEY RESEARCH EQUIPMENT

- Indirect calorimeter Vmax Encore (SensorMedics)
- Multiscan 5000 (Bodystat)
- BCM – Body Composition Monitor (Fresenius Medical Care AG & Co.)

- Abdominal fat analyser AB 140 M Viscan (Tanita corporation)
- Pinch/grip analyser (MIE Medical Research Ltd.)
- Fluorescence microscope Nikon Eclipse 80i (Nikon Instruments) + analyzation software Lucia Comet Assay (Laboratory Imaging Praha), ELFO + Western blot equipment

PARTNERSHIPS & COLLABORATIONS

- Department of Research and Development, University Hospital, Hradec Kralove, Czech Republic (Prof. MUDr. Zděnek Zadák, CSc.)
- Department of Surgery, University Hospital, Hradec Kralove, Czech Republic (MUDr. Eduard Havel, Ph.D.)
- Department of Obstetrics and Gynecology, University Hospital and Faculty of Medicine, Hradec Kralove, Czech Republic (Doc. MUDr. Marián Kacerovský, Ph.D.)
- Pulmonary Department, University Hospital, Hradec Kralove, Czech Republic (MUDr. Vladimír Koblížek, Ph.D. and MUDr. Michal Hrnčiarik)
- Department of Toxicology, Faculty of Military Health Sciences, Hradec Kralove, Czech Republic (Prof. RNDr. Rudolf Štětina, CSc.)



ACHIEVEMENTS

Publications

- publications in respected international journals with impact factor
- presentations in domestic and international congresses
- application of new knowledge into clinical practice

