
Department of Preventive Medicine

The Institute of Preventive Medicine was established on 1st January 2021 following the restructuring of the Institute of Hygiene and Preventive Medicine and the Institute of Social Medicine. The head of the Institute is still Prof. MUDr. Lenka Borská, Ph.D. The teaching and research focus of the Institute extends to the fields of hygiene, epidemiology, toxicology, public health, practical medicine, psychology, and medical ethics. The Institute provides teaching in six undergraduate study programmes (38 subjects) and guarantees two internships and one state rigorous examination from Preventive Medicine. The Institute is a training centre for two doctoral study programmes (Preventive Medicine and Public Health) and participates in specialisation training of doctors (attestations) in the field of Hygiene and Epidemiology. Research in the field of prevention and toxicology is oriented (1) on the study of the organism's response to exposure to selected chemical factors (nanoparticles and nanomaterials), (2) on the study of preventable immuno-pathophysiological mechanisms of the origin and development of selected civilization diseases (obesity, metabolic syndrome, diabetes mellitus, cancer, psoriasis vulgaris) and (3) on the evaluation of biomarkers of aging. Research in the field of epidemiology is oriented in the areas of clinical epidemiology, epidemiology of non-communicable diseases, pharmacoepidemiology, medical statistics, and in the area of strategy for planning clinical trials of new vaccines. Research in the fields of public health and general practice is oriented towards optimisation of the network of GP providers in the Czech Republic and legislative modifications of their competences. Research in the areas of psychosocial and ethical issues is focused on the assessment of the quality of life of patients ("Well-being"), medical ethics, psychosomatic diseases, and the issue of doctor-patient communication.

Domestic cooperation: University Hospital Hradec Králové, Military Medical Faculty of the University of Defence, Faculty of Chemical Technology of the University of Pardubice and Centre of Materials and Nanotechnologies (CEMNAT), The Society of General Practice.

International cooperation: Epigenetic Clock Development Foundation (Torrance, California, USA); HealthyLongevity.clinic Inc. (Boca Raton, Florida, USA); Glycanage Ltd. (Newcastle Upon Tyne, England); Trudiagnostic (Lexington, Kentucky, USA); Department of Humanities, University of Naples Federico II (Naples, Italy); SUNY Upstate Medical University (New York, USA); Johns Hopkins Bloomberg School of Public Health (Maryland, USA); Trinity Translational Medicine Institute, School of Medicine (Trinity College, Dublin, Ireland).

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Main research topics

- Study of preventable immuno-pathophysiological mechanisms of civilisation diseases and biomarkers of aging
- Study of the toxicity of nanomaterials
- Assessment of quality of life

Equipment

- Automated Metafer system (Comet assay, chromosomal aberrations)
- Fluorescence microscope (Comet assay)
- Cell culture laboratory

Achievements

- Publications of monographs: (1) MAREŠ, Jiří. Health psychology. (2) FIALA, Zdeněk and Drahomíra HOLMANNOVÁ. Carbon nanomaterials. Biomedical applications and toxicity. Karolinum, 2024
- 2020: Prof. MUDr. Roman Prymula, CSc., Ph.D. was awarded the Order of the White Lion 1st Class Civil division
- 2023: Prof. MUDr. Lenka Borská, Ph.D. and Prof. Ing. Zdeněk Fiala, CSc. were included with their biographies in the Encyclopedia of Personalities of the Czech and Slovak Republic, XI. edition (ISBN: 978-1-912100-06-4)
- "Become a practitioner in the Hradec Králové Region!" (2022-2023, project coordinator: Kateřina Javorská, MD)
- "Know the Power of Prevention" (2024, guarantor: prof. MUDr. Lenka Borská, Ph.D.): the first year of a prevention and awareness-raising event for the general public organized by students under the auspices of the Institute of Preventive Medicine of the Faculty of Medicine

Publication

- Borsky, P., Fiala, Z., Andrys, C., Beranek, M., Hamakova, K., Malkova, A., ... & Rehacek, V. (2020). Alarmins HMGB1, IL-33, S100A7, and S100A12 in psoriasis vulgaris. *Mediators of inflammation*, 2020.
- Holmannova, D., Borska, L., Andrys, C., Borsky, P., Kremlacek, J., Hamakova, K., ... & Fiala, Z. (2020). The impact of psoriasis and metabolic syndrome on the systemic inflammation and oxidative damage to nucleic acids. *Journal of immunology research*, 2020.
- Karas, A., Holmannova, D., Borsky, P., Fiala, Z., Andrys, C., Hamakova, K., ... & Borska, L. (2022). Significantly altered serum levels of NAD, AGE, RAGE, CRP, and elastin as potential biomarkers of psoriasis and aging—a case-control study. *Biomedicines*, 10(5), 1133.
- Borsky, P., Holmannova, D., Andrys, C., Kremlacek, J., Fiala, Z., Parova, H., ... & Borska, L. (2023). Evaluation of potential aging biomarkers in healthy individuals: telomerase, AGEs, GDF11/15, sirtuin 1, NAD⁺, NLRP3, DNA/RNA damage, and klotho. *Biogerontology*, 24(6), 937-955.
- Holmannova, D., Borsky, P., Parova, H., Stverakova, T., Vosmik, M., Hruska, L., ... & Borska, L. (2023). Non-genomic hallmarks of aging—The Review. *International Journal of Molecular Sciences*, 24(20), 15468.
- Schettino, G., Hodačová, L., Caso, D., & Capone, V. (2024). Physicians' adoption of massive open online courses content in the workplace: An investigation on the training transfer process through the theory of planned behavior. *Computers in Human Behavior*, 154, 108151.