The Institute for Health Research at UMONS brings together researchers and practitioners from diverse scientific backgrounds. Biologists, clinicians, pharmacists, chemists, physicists, engineers, psychologists, and sociologists combine their expertise to advance research in the field. The goal? To improve human health, both on an individual and community level. This ambitious mission relies on strong collaborations with various stakeholders in the sector, creating a dynamic network dedicated to collective well-being.

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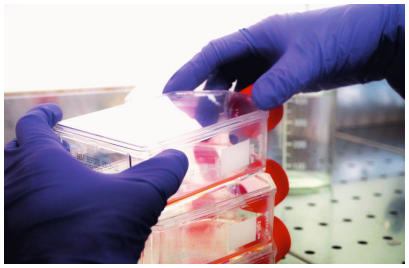

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Physical and Mental Health: Today’s Challenges

Physical and mental health is crucial in today’s society. The increase in life expectancy, overweight issues, neurodegenerative diseases, human development, cancer, and well-being are all challenges we need to address.

In this context, scientific and technological development in the field of health requires enhanced collaboration between the various researchers at the UMONS Health Institute and operators in the hospital and industrial sectors.

Expertise and Research Topics

The research focus areas of the institute are as follows:

Brain Diseases

Brain diseases are approached at the Health Institute in a multidisciplinary and intersectoral

manner. Emphasis is placed on collaborations with academic, industrial, and hospital partners, combining cutting-edge technologies with preclinical, in vitro, in vivo, and clinical expertise.

Organ Crosstalk

The goal is to improve understanding of the dialogue between tissues and organs in a holistic approach to the functioning of an organism in both normal and pathological conditions. The research approach is translational and combines clinical, in vivo, and in vitro studies.

Stress & Emotions

The objective is to link the human brain-mind and health, investigating the consequences related to physical and/or psychological health or well-being issues on cognition.

Research and Development of Biomarkers and Drugs

The goals include identifying biomarkers for diseases and toxicities, developing tracers for diagnosis and monitoring, as well as creating medications for treatment.

Cancer

This focus aims to foster collaboration among different research teams working closely or remotely on cancer-related themes, to share knowledge as well as technical expertise in both experimental research (cell biology, molecular biology, biochemistry, etc.) and human sciences (psychology and support for patients and their families facing illness, etc.).

Focus on Specific Projects of the Institute

The institute primarily develops its activities through collaborative research projects. These projects are based on interdisciplinarity and are structured around a partnership logic with all societal stakeholders (industries, services, research centers, local authorities, government institutions, etc.). These projects facilitate the establishment of partnerships at the provincial, regional, federal, European, and international levels.

Examples of the Health Institute’s Projects

- **PANOPP (Wallonia / Win2Wal)**: Characterization of the epigenetic regulator Prdm12 in mature nociceptors to validate it as a target for developing new therapeutic approaches for pain.
- **PROTHER-WAL (Wallonia)**: Establishment of a proton therapy platform in Wallonia, which will serve as an internationally renowned inter-university research center, an

effective care center, a training center, and a hub for technological and industrial developments.

- **TRADIQUAL (FWB)**: Improvement of the quality and safety of traditional medicine products sold in the markets of the three main cities of the Democratic Republic of Congo.
- **CardiOnco (Wallonia / Win2Wal)**: Development of a tool for early detection of cardiovascular complications induced by chemotherapy. The technology will combine recordings of kinesiocardiography (KINO, HeartKinetics) with continuous blood pressure measurement.
- **FC-RELAX (EU, MSCA)**: FC-RELAX aims to enhance understanding of field-dependent relaxation processes and to exploit the full potential of NMR relaxometry for various biomedical applications and material characterization.
- **MS-DEV&MA (FWB/ARC)**: During Alzheimer's disease, knowledge related to the meanings of words and objects is also affected. MS-DEV&MA studies the underlying processes of semantic memory formation in childhood and its deterioration during Alzheimer's disease. This project has strong theoretical and clinical applications.
- **TRIAD (FWB-Excellence of Science)**: Study of the transmission of resilience to stress within triads (mother, father, and child) to identify the biobehavioral dynamics and factors contributing to its transmission within families.
- **URGENT (EU + FWB; EJP-RD rare diseases)**: This project addresses the issue of gender in professions related to early childhood. It aims, on one hand, to understand the implications of fathers' experiences on early child development, and on the other hand, to study fathers' involvement in care settings and examine the relationship between professionals and fathers.
- **PodoMITO (EU + UMONS/UNamur; MSCA Cofund C2W)**: Study of the dysfunction mechanisms of podocytes in the context of glomerular diseases, specifically focusing on mitochondrial bioenergetic adaptation. This project will deepen the understanding of focal segmental glomerulosclerosis and improve its diagnosis.

More information

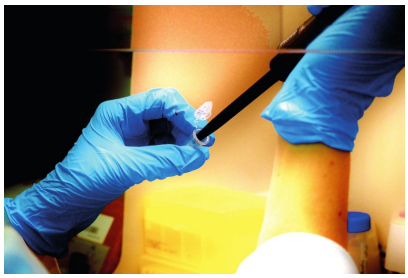
UMONS & Health's Partnerships

UMONS is also active in the field of health, notably through teaching and research chairs. For examples:

- UMONS and "Centre Hospitalier de Wallonie-Picarde (CHWapi)", Research Chair named "Hospital Transition".
- UMONS and "Hôpital EpiCURA", Research Chair named "Innovation Health".
- UMONS and iCare, the chair will be dedicated to predictive medicine.
- UMONS Chair on Artificial Intelligence, Digital Medicine, Innovation and Personalised Healthcare.

- UMONS and “Amis des aveugles”, Chair in the field of low vision.

UMONS also maintains close partnerships with a number of hospitals in Wallonia, including: Helora Mons Kennedy site, CHwapi, EpiCura, CHU de Charleroi… Finally, we can also mention the launch of the Master in Medicine, in collaboration with ULB, for the 2024-2025 academic year.



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