INSELGRUPPE

UNIVERSITÄT BERN

Media Relations

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Bernese researchers involved in four Innosuisse Flagship Initiatives

Bernese researchers are involved in all four consortia supported by Innosuisse as part of its call for "Flagship Initiatives". They will receive a multi-million contribution jointly provided by Innosuisse and industry partners. The transdisciplinary projects will contribute to the development of systemic innovations in the fields of dementia research, precision oncology and diabetes prevention.

Artificial intelligence (AI) is already changing clinical research, diagnostics and therapy - for example through large language models and deep learning analysis of big “omics” data for AI-supported diagnostics. Diseases such as cancer, diabetes and dementia are among the biggest health challenges worldwide - with far-reaching social and economic consequences. Prevention, early diagnosis and effective therapies are therefore key objectives of modern health research.

Innosuisse's 2024 flagship call for proposals focuses on the key topic of "Artificial intelligence in life sciences with a focus on human health". The aim is to promote interdisciplinary innovations that bring measurable benefits for patients, healthcare systems and the economy - with the potential for systemic change. Funding is provided for technologically as well as socially, legally and ethically viable solutions that strengthen Switzerland's international competitiveness.

Innovation potential in Bern as a medical location

Of the 24 project outlines submitted, a total of four projects will be funded with 24.6 million Swiss francs. Researchers from the University of Bern, Inselspital, Bern University Hospital and Bern University Psychiatric Services are involved in all four projects. "We are delighted that the medical hub is playing a central role in so many forward-looking projects," says Hugues Abriel, Vice-Rector Research and Innovation at the University of Bern. "These initiatives illustrate the enormous potential of our researchers to achieve significant progress in health research through interdisciplinary collaboration," adds Abriel.

University of Bern as a pioneer for innovation in the field of dementia

The University of Bern is the leading house for the Innosuisse Flagship Initiative "SwissBrAInHealth" under the co-leadership of Prof. Dr. Bogdan Draganski from the Department of Neurology - Brain Health Clinic at Inselspital, University Hospital Bern and Prof. Dr. Tobias Nef, from the ARTORG Center for Biomedical Engineering Research at the University of Bern. The research project with 5 academic partners (ETH Zurich, EPF Lausanne, CHUV, HE-SO, and HSLU) and 12 industrial partners is designed to run for 5 years and is supported by Innosuisse and the participating industrial partners with a total of 9.6 million Swiss francs.

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Forecasts point to a doubling to tripling of dementia cases in Switzerland by 2050, which could result in an estimated 25.4 billion Swiss francs per year in healthcare costs. "Meta-analyses show that almost 50% of the risk of developing dementia depends on lifestyle factors, such as cardiovascular fitness, exercise and social activities. Efficient and cost-saving strategies are urgently needed to improve the prevention of dementia," explains Draganski. "Reducing the risk by 20% in a third of people at risk would lead to annual savings of 750 million Swiss francs," says Draganski.

This is where "SwissBrAInHealth" comes in: The initiative aims to develop and evaluate a so-called "Augmented intelligence system" to individually reduce the risk of dementia in people with subjective cognitive complaints: this includes, for example, digital biomarkers for brain health, an AI system to support diagnostics and a therapy app for individualized risk modification through behavioral changes. These innovations should enable early detection and delay the onset of dementia through targeted prevention. "The project makes an important contribution to the implementation of the Swiss Brain Health Plan (SBHP) launched in 2023. By developing practical tools, it supports the individualized and evidence-based prevention of dementia, one of the five strategic priorities of the SBHP," explains Prof. Dr. Claudio Bassetti, Chair of the Swiss Brain Health Plan and Dean of the Faculty of Medicine at the University of Bern and Director of Teaching and Research at Insel Gruppe.

Promoting digital health literacy

"The augmented intelligence system complements human expertise with AI capabilities by combining clinical assessment with continuous lifestyle assessment via digital biomarkers based on smartwatches, bed sensors or shoe sensors," says Tobias Nef. He adds: "Swiss BrAIn Health offers a model for early, individualized interventions that focuses on inclusivity and ethical innovation. Digital treatments support patients in carrying out therapy in accordance with the instructions and recommendations of medical staff and enable continuous monitoring and care outside the hospital."

The validation of the clinical benefits will be carried out in the Brain Health Clinic at Inselspital and will form the basis for future Brain Health Centers. "By promoting digital health literacy and the affordability of brain health resources, the project supports Switzerland's societal resilience in the face of an ageing population," concludes Nef.

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Further information on the Innosuisse Flagship Initiative:
https://www.innosuisse.admin.ch/en/flagship-initiative-en

Further Bernese participation in Innosuisse Flagship Initiatives

NAIPO - National AI Initiative for Precision Oncology
Host: EPFL
Academic Partner: ETHZ, UNIBAS, UNIGE, UZH, BFH, FHNW, UNIBE
Researchers UniBE: Prof. Dr. Deborah Stroka, Department of Biomedical Research and University Clinic for Visceral Surgery and Medicine - Visceral and Transplant Surgery, Inselspital, Bern University Hospital
Involved implementation partners: 21

The National AI Initiative for Precision Oncology (NAIPO) aims to transform cancer care in Switzerland with help of artificial intelligence. Bringing together a large transdisciplinary team of leading Swiss institutions from academia, healthcare and industry, the project will develop a secure, federated infrastructure that ensures the protection of sensitive patient data while enabling AI-driven research and discoveries. By integrating advanced AI models into every stage of the patient journey – from diagnosis to treatment – NAIPO enables more personalized, equitable and effective care. The initiative explores cutting-edge technologies, including AI foundation models, AI agents and privacy-preserving algorithms, and applies them in real-world clinical settings. With strong engagement from hospitals and industry, NAIPO will accelerate innovation, improve patient outcomes and help establish Switzerland as a global leader in medical AI.

ORION
Host: HE-Arc Ingénierie
Academic Partner: ETHZ, UNIBE, FHNW, CSEM, SIPB
Researchers UniBE: Prof. Dr. Marianna Kruithof-de Julio, Department of Biomedical Research and University clinic of urology, Inselspital, Bern University Hospital
Involved implementation partners: 18

The flagship ORION is developing a smart, AI-powered “microfactory” designed to create personalized cancer treatments. Using tumor-specific inputs, such as patient data and tissue, the ORION microfactory will autonomously produce tumor models by continuously adjusting their cellular composition and microenvironment to closely mirror well-characterized tumor samples from patients.
Model optimization will be driven by a combination of closed-loop feedback from integrated sensors and discrete measurements, such as sequencing. The most accurate models will be validated using past treatment data, then expanded and tested against selected therapeutic agents. To ensure safety, ORION will assess potential toxic effects on organ models including liver, lung, and kidney.
ORION will support drug discovery and help identify effective therapies for clinical trials. In the long term, it could guide personalized treatments in clinical settings and enable the creation of digital tumor twins to simulate treatment responses. This project has the potential to revolutionize cancer research and treatment by making precision medicine more adaptive, scalable and data driven.

Swiss Precision Digital Therapeutics for the Prevention of Type-2 Diabetes
Host: EMPA
Academic Partner: ETHZ, UNISG, UZH, BFH, OST, UNIBE
Researchers UniBE: Prof. Dr. Lia Bally, University Polyclinic for Endocrinology, Diabetology, and Clinical Nutrition, Inselspital, Bern University Hospital
Involved implementation partners: 12

In Switzerland, type-2 diabetes (T2D) is one of the most prominent non-communicable diseases. It causes serious health issues and substantial healthcare costs. Preventing T2D will reduce the health and economic burdens on the Swiss healthcare system and population. The flagship Swiss Precision Digital Therapeutics for the Prevention of Type-2 Diabetes aims to tackle three systemic challenges: (1) limited long-term engagement with lifestyle interventions, reducing the impact of preventive care; (2) the absence of sustainable business models for T2D prevention among healthcare, health insurance and technology providers; (3) insufficient leveraging of each individual’s health and lifestyle data to enable AI-driven diabetes detection and personalized, preventive interventions.
To solve these challenges and induce a systemic change in T2D prevention, EMPA set up a multidisciplinary consortium with partners in digital health interventions, wearable body monitoring, health insurance, dietary support, food retail and food processing. The consortium also includes hospitals, a Swiss Innovation Park and a cantonal government. These innovations can significantly reduce the health and economic burden of T2D in Switzerland and lower the socioeconomic inequalities in health.

Gerontechnology and Rehabilitation research group at the ARTORG Center
The specialized group of the ARTORG Center for Biomedical Engineering Research at the University of Bern develops digital technologies for the early detection, monitoring and therapy of neurodegenerative diseases - often associated with aging - in collaboration with the Department of Neurology at Inselspital and sitem-insel, the Swiss Institute for Translational Medicine and

Entrepreneurship. Research fields include sensor systems (wearables, environmental sensors, etc.), serious games and virtual and augmented reality. Areas of application include memory and language training for dementia and after stroke, tele-rehabilitation, rehabilitation robotics and non-invasive brain stimulation. The group works closely with NeuroTec at the Department of Neurology at Inselspital University Hospital to develop meaningful movement parameters for patients with dementia, Parkinson's disease and other neurodegenerative diseases.
Further information: www.aging.unibe.ch

Brain Health Clinic
The Brain Health Clinic at the Department of Neurology, Inselspital, Bern University Hospital, offers personalized advice to strengthen cognitive health and effectively prevent dementia, especially in the case of existing subjective memory complaints. During the initial consultation, neurological status and cognitive functions are assessed. If necessary, further diagnostics are carried out. Based on these findings, we work with our patients to develop an individualized plan of medical interventions and lifestyle adjustments to optimally protect and improve brain functions in the long term.
Further information: https://neurologie.insel.ch/de/unser-angebot/brain-health