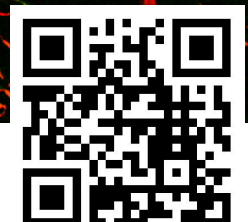




Health Sciences and Technology

The department at a glance



Health Sciences and Technology

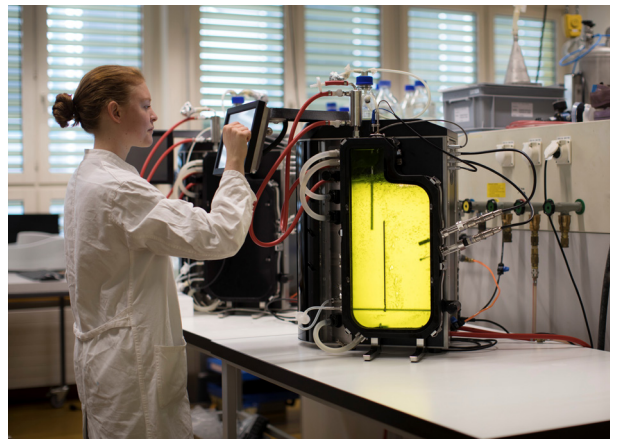
The Department of Health Sciences and Technology (D-HEST) promotes discoveries and new technologies to enable improvements in human health and innovations in human medicine.

Maintaining health into old age and preserving a good quality of life is a major challenge for our society and our healthcare systems. From food and the gut microbiome to physical and mental health, from movement sciences and robotics to rehabilitation, from advances in chemistry, biochemistry, molecular and cell biology to preventive and regenerative medicine, the Department of Health Sciences and Technology brings together a globally unique combination of expertise and knowledge.

Research at the intersection of engineering, neuroscience, human movement, nutrition and food sciences, as well as biology, medicine and social sciences is of increasing societal and economic

importance. Therefore, the goals of the Department of Health Sciences and Technology are:

- > to maintain health into old age and preserve a good quality of life
- > to accelerate the transfer of research findings to practical applications in industry and clinics
- > to educate the next generation of health and nutrition scientists, engineers, and physicians, equipping them with the intellectual abilities needed to tackle the challenges of the future



Study Programmes

Food Science

The Food Science study programme comprises the fundamental relationships between food quality, manufacturing processes and the effects of nutrition on health.

Health Sciences and Technology

The interdisciplinary study programme Health Sciences and Technology educates professionals to apply science and technology in the service of human health, creating new opportunities for prevention, diagnosis, treatment and monitoring.

Human Medicine (Bachelor)

The bachelor's degree programme in Human Medicine teaches topics from the fields of molecular biology and medical technology in addition to the classical medical aspects. The subsequent master's degree in medicine is completed at a partner university in Switzerland.

Doctorate

The doctorate at ETH Zurich is characterised by independent scientific work under the supervision of a professor. Doctorates at D-HEST are offered in the fields of Food Science and Health Sciences and Technology.

Continuing Education

The Department of Health Sciences and Technology offers MAS and CAS programmes in Nutrition and Health and in digital Clinical Research, a teaching diploma in Sport, and teaching certificates in Food Science and in Health Sciences and Technology.

www.hest.ethz.ch/studies

www.hest.ethz.ch/doctorate

www.hest.ethz.ch/continuing-education

Research

The strategic research priorities defined by D-HEST focus on some of the world's most prevalent diseases, including cardiovascular diseases, obesity, malnutrition and undernutrition, neurological and musculoskeletal disorders, and immunological diseases. Mental illnesses also require a neuroscientific understanding and holistic treatment approaches.

Researchers from various research areas work together at D-HEST:

Movement Sciences and Sport

The goal is to understand the fundamentals of all aspects of movement. This area deals with muscle function in health, illness and old age: plasticity and the ability to regenerate, neural control of movement, and investigations into energy supply are the key areas.

Food Sciences and Nutrition

Innovative technologies and sound knowledge about the structure of food, possible microbial or toxic contaminations and the metabolism of nutrients enable solution-based responses for the world food system and for the prevention and treatment of nutrition-dependent diseases.

Medical Engineering

Researchers in this area study the influence of mechanical forces on biological tissue and develop advanced quantitative diagnostic and patient-monitoring systems, as well as new technologies to support patient rehabilitation and regeneration.

Neurosciences

Key topics include understanding the relationships between genotypical and phenotypical behavioural characteristics, the interface between the brain and computing, the analysis and modelling of complex neural circuits, and the understanding of the molecular and genetic mechanisms of aging for the prevention and treatment of pathological processes.

Translation

Researchers from all institutes of D-HEST strive to develop fundamental scientific knowledge and novel technologies, and to translate the associated innovations into more effective prevention methods and more efficient medical diagnosis, therapy and rehabilitation solutions. The goal is to holistically maintain and improve people's quality of life into old age.

www.hest.ethz.ch/research

Collaborations

With the wide range of research fields, collaboration is of crucial importance for the department. Thanks to many third party funded projects, our professorships collaborate internationally with leading research institutions and with globally recognised industry partners. With health at the heart of our strategy, we work closely together with many different clinics, mainly in and around Zurich, but also nationally and internationally. At the same time, the department collaborates with competence centers at ETH Zurich and is significantly involved in the strategic initiatives of ETH Zurich..



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Institute of Food, Nutrition and Health

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Prof. Nicholas Bokulich
Food Systems Biotechnology



Prof. Peter A. Fischer
Food Process Engineering



Prof. Christophe Lacroix
Food Biotechnology

Institute of Robotics and Intelligent Systems

www.iris.ethz.ch



Prof. Roger Gassert
Rehabilitation Engineering



Prof. Martin Loessner
Food Microbiology



Prof. Alexander Mathys
Sustainable Food Processing



Prof. Raffaele Mezzenga
Food and Soft Materials



Prof. Carlo Menon
Biomedical and Mobile
Health Technology



Prof. Laura Nyström
Food Biochemistry



Prof. Shana J. Sturla
Toxicology



Prof. Ferdinand von Meyenn
Nutrition and Metabolic
Epigenetics



Prof. Stanisa Raspopovic
Neuroengineering



Prof. Emma Wetter Slack
Mucosal Immunology



Prof. Christian Wolfrum
Translational Nutrition
Biology

Institute for Environmental Decisions

www.ied.ethz.ch



Prof. Michael Siegrist
Consumer Behavior



Prof. Robert Riener
Sensory-Motor Systems

Institute of Translational Medicine

www.itm.ethz.ch



Prof. Andrea Alimonti
Experimental Oncology and
Translational Cancer Medicine
(USI)



Prof. Collin Ewald
Extracellular Matrix
Regeneration



Prof. Volkmar Falk
Translational Cardiovascular
Technologies



Prof. Jörg Goldhahn
Translational Science



Prof. Catherine Jutzeler
Biomedical Data Science



Prof. Katharina Maniura
Biointerfaces (Empa)



Prof. Simone Schürle-Finke
Responsive
Biomedical Systems



Prof. G.V. Shivashankar
Mechano-Genomics



Prof. Effy Vayena
Bioethics



Prof. Viola Vogel
Applied Mechanobiology



Prof. Bernd Wollscheid
Molecular Health;
Biomedical Proteomics Platform

Institute for Neuroscience

www.ins.ethz.ch



Prof. Johannes Bohacek
Molecular and Behavioural
Neuroscience



Prof. Denis Burdakov
Neurobehavioural
Dynamics



Prof. Katharina Gapp
Epigenetics and
Neuroendocrinology



Prof. Isabelle Mansuy
Neuroepigenetics



Prof. Gerhard Schratt
Systems Neuroscience

Institute of Human Movement Sciences and Sport

www.ibws.ethz.ch



Prof. Ori Bar-Nur
Regenerative and
Movement Biology



Prof. Katrien De Bock
Exercise and Health



Prof. Rafael Polania
Decision Neuroscience



Prof. René Rossi
Biomimetic Membranes
and Textiles (Empa)



Prof. Christina Spengler
Exercise Physiology



Prof. Nicole Wenderoth
Neural Control of
Movement



Prof. David Wolfer
Anatomy

Institute for Biomechanics

www.biomech.ethz.ch



Prof. Stephen Ferguson
Orthopaedic Technology



Prof. Michael Leunig
Biomechanics
Schulthess Klinik



Prof. Ralph Müller
Bone Biomechanics



Prof. Jess Snedeker
Orthopaedic Biomechanics



Prof. William R. Taylor
Movement Biomechanics



Prof. Marcy Zenobi-Wong
Tissue Engineering and
Biofabrication