

# The Botnar Research Centre for Child Health: Digital-based healthcare solutions and novel therapies for children and adolescents worldwide.

According to the World Health Organization (WHO), more than 5 million children under the age of 5 die every year. Many of these deaths could be averted with appropriate preventive measures and adequate therapies. In order to develop innovative approaches to efficient and safe digital-based healthcare solutions and novel therapies for children and adolescents worldwide, the University of Basel and the ETH Zurich in 2018 jointly founded the [Botnar Research Centre for Child Health \(BRCCH\)](#) with generous support by Basel-based Fondation Botnar.

The goal of the BRCCH is to establish an ecosystem of outstanding expertise in the fields of health research and health technology, starting with researchers based within our four partner institutions: University of Basel, ETH Zurich, Swiss Tropical and Public Health Institute (Swiss TPH) and University Children's Hospital, Basel (UKBB). The Centre will bring together experts in medicine, life sciences, engineering and information technology. We aim to create a hub of research excellence in which our community of transdisciplinary and collaborative researchers share a common vision towards developing efficient and safe digital-based healthcare solutions and novel therapies for children and adolescents worldwide.



# Research Areas of the BRCCH

The BRCCH is designed to be the unifying transdisciplinary research centre and crystallization point for child health research within the University of Basel and ETH Zürich, bringing together basic research, engineering, translational science, clinical sciences and implementation expertise. We will use artificial intelligence, innovative hardware and software technologies, as well as health systems and implementation research to address issues in our four research areas:

**Research Area 1**, Applied Health Care for Children, relates to projects that develop novel, child- and adolescent-specific health-related software and hardware solutions for use by children, adolescents and/or health care providers, including devices, apps, instruments, etc. Projects in research in Area 1 may also relate to technologies that enable the evaluation of methods for their practicality and safety in clinical settings/trials.

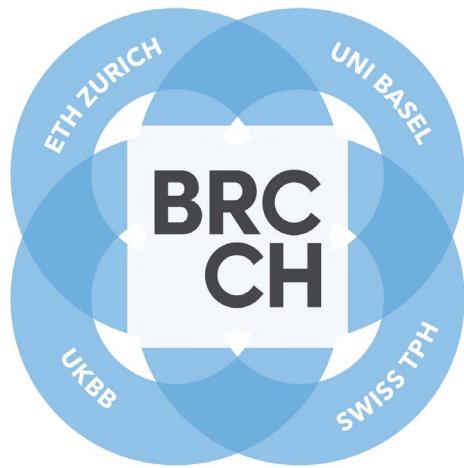
**Research Area 2**, Intelligent Systems for Medical Decision Support, focuses on clinical decision support systems based on medical and health data. These will often involve the application of bioinformatics and machine learning for the following: (i) to gauge health risks, (ii) deliver correct preventative measures, (iii) support appropriate clinical diagnoses, (iv) guide therapeutic intervention, (v) follow and anticipate public health challenges and/or (vi) predict specific outcomes in individuals and at population level.

**Research Area 3**, Translational Research from Cellular to Health Control, focuses on translational research and the application of technologies enabling novel therapeutic interventions. This will combine innovation across several domains such as molecular and cellular engineering, biomedical engineering and drug delivery.

**Research Area 4**, Legal, Ethical, Economic Health Systems and Capacity Building, addresses the specific aspects of a child's environment. It considers the context of local health care systems and resources, and the feasibility, sustainability and economic aspects of novel health technologies. It also examines the societal and ethical-legal aspects of such technologies. This is particularly important for applying novel mobile digital applications, where ethical-legal implications for use in children are largely unexplored.

# The BRCCH-Network

BRCHH connects four major swiss institutions: The University Basel, ETH Zürich, Swiss TPH and the University Children's Hospital Basel (UKBB). Any of these partners contribute their specific expertise and network to provide the researchers at the BRCCH with anything that is required for the development of new approaches for child and adolescent health worldwide.



## Development of the BRCCH

The idea of the BRCCH was developed in 2018 by Fondation Botnar, the University of Basel and ETH Zürich. Various partners and institutions participated in designing the concept. Supported by the generous contribution of the Fondation Botnar for initially ten years, the University of Basel and ETH Zurich co-founded the BRCCH in September 2018 and operations began in early 2019.

BRCCH activities are overseen by a governing Board and are advised by a Strategic Scientific Advisory Board. The BRCCH is located in the center of Basel.

Executive Team: Director Prof Georg Holländer (University of Basel), Vice Director Prof Sai Reddy (ETH Zurich)  
Management Office: Patrick Mayrock (CEO), Dr Maressa Takahashi (Science Officer), Dr Tara Sugrue (Science Officer), Dr Philippe Lucarelli (Science Officer), Dr Reinhard Wendler (Science Communication), Sabine Schulze (Administration)

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