

BRCCH Botnar Research Centre for Child Health

The BRCCH at a Glance

The Botnar Research Centre for Child Health (BRCCH) was co-founded in 2018 by the University of Basel and ETH Zurich. Together with the generous support of Fondation Botnar, our mandate is to develop effective next-generation healthcare solutions for children and adolescents. Our focus is on countries with limited resources, and on solutions that can be implemented worldwide.

The BRCCH seeks to generate tangible results in paediatrics to prevent diseases, improve diagnoses, develop new treatments and enhance forecast effectiveness. To do so, the Centre combines the expertise of both the University of Basel and ETH Zürich as well as of partner institutions such as the University Children's Hospital of Basel (UKBB), the University Hospital (USB) and the Swiss Tropical and Public Health Institute (Swiss TPH). Experts in systems biology, medicine and various areas of life sciences, engineering, social sciences and information technology will collaborate in a transdisciplinary approach to improve health and wellbeing in children.

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, cutting-edge cell-based and antibody therapies, as well as health systems and implementation research to address issues in our four research areas.



Figure 1. BRCCH research areas: Four research areas are supported by core technologies and platforms of the Basel life science environment of the University of Basel and ETH Zurich.

Here is a more detailed yet still preliminary description of BRCCH's 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.

Development of the BRCCH

The idea of the BRCCH was developed in 2018 by Fondation Botnar, the University of Basel and ETH Zürich. Prof. Urs Frey, Medical Director of the University Children's Hospital Basel, and Prof. Daniel Müller, ETH Department of Biosystems Science and Engineering, led and coordinated the project development. Various other 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.

Contact +41 (0)61 207 6200 | contact@brcch.org

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)

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.