BRC CH Botnar Research Centre for Child Health

Annual Report 2019
Botnar Research Centre for Child Health

University of Basel ETH zürich

Supported by Fondation Botnar

Annual Report 2019
Botnar Research Centre for Child Health

Facts and Numbers

Jan 1, 2019
Start of operations

4
Partner institutions

5
International research collaborations

14
Principal investigators

15.2
Mio CHF in research project support

4
Multi-institutional research consortia

530
Recipients of newsletter

6882
LinkedIn impressions

In 2000, the United Nations Millenium Development Goals[1] were adopted, among which were goals to reduce child mortality and combat disease. In the ensuing years, global efforts have reduced mortality in children under 5 years of age. Nevertheless, children and adolescents in low- and middle-income countries still carry a disproportionate burden of disease[2].

Therefore, our goal at the Botnar Research Centre for Child Health (BRCCH) is to promote innovative research and novel solutions for the health of neonates, children and adolescents worldwide. Our vision is to create a Basel-Zurich hub of research excellence dedicated to child health by building a multidisciplinary community of collaborative researchers.

2019 in brief

- The Botnar Research Centre for Child Health started operations on January 1, 2019, as a joint research initiative by the University of Basel and ETH Zurich
- BRCCH's four partner institutions are the University of Basel (UniBas), ETH Zurich (ETHZ), the University Children's Hospital of Basel (UKBB) and the Swiss Tropical and Public Health Institute (Swiss TPH)
- Multi-Investigator Projects (MIP) represent BRCCH's multi-institutional and multidisciplinary research activities
- Four MIP projects were selected out of 28 proposals in the domains of AI-assisted surgical innovation, digital support systems and bioengineering for diagnostics and therapy
- Plans are underway for three new tenure-track Assistant Professorships
- New strategic tools are developed for project partnerships and postdoctoral fellowships

Prof Georg Holländer
Director

Prof Sai Reddy
Vice Director

Dear colleagues and friends of the BRCCH,

January 1, 2019, marked the start of operations and the successful transition from concept to action for the Botnar Research Centre for Child Health.

The initial concept of the Centre was codeveloped from 2017 to 2018 by the University of Basel, ETH Zurich and Fondation Botnar. As an independent research centre, we would like to first and foremost thank these two academic institutions for their founding partnership, as well as the Fondation Botnar for their generous financial support. We would also like to thank all those that were personally and heavily involved in the conceptualisation of our Centre and most of all the researchers that will actively contribute. The intense engagement is testament to the commitment of the community to advance research in paediatrics with the clear goal to translate and apply findings for clinical use worldwide. Without all of these key supporters, our Centre would not have become a reality.

We have the ambitious vision to make the Basel-Zurich area and the Botnar Research Centre for Child Health the home for multidisciplinary, translational research benefiting children and adolescents. We will strive towards this goal by shaping a bespoke research portfolio that leverages on the existing expertise of our partner institutions (UniBas, ETHZ, UKBB and Swiss TPH) and complementary expertise through international collaborations. We are also aware of forthcoming challenges, especially related to translation of research from the Centre to other locations in a way that is context-specific and impactful.

Undoubtedly, the active support by all stakeholders and the passionate interest of researchers and clinicians to advance paediatrics are the key ingredients towards fulfilling the Centre's mission. It is therefore with great pleasure that we present this inaugural Annual Report for 2019. Within this document, you will find an introduction to our emerging research portfolio, featuring our first multidisciplinary, multi-institutional research projects and an outlook on our future activities dedicated to child and adolescent health and well-being.

With our sincere regards,

Georg Holländer

Sai Reddy

The BRCCH – a hub for paediatric health

Our Motivation

The Centre's purpose stems from the fact that according to the World Health Organization, more than 5 million children under the age of 5 die every year. Since the global adoption of the United Nations Sustainable Development Goals, mortality in children and adolescents has been steadily declining.

However, the largest burden of child and adolescent mortality is carried by low- and middle-income countries (LMICs). There, the total deaths in children and adolescents under 20 years of age is 9.38 times higher than in high-income countries[3]. A complex range of diseases, conditions and adverse events impact child and adolescent health across the globe. However, many of these deaths could be averted with appropriate preventative measures and adequate therapies. In addition, given the growing double burden of both communicable and non-communicable diseases in LMICs, there is a critical need to develop and implement new, cost-effective, robust and innovative healthcare solutions for children and adolescents living in low-income settings.

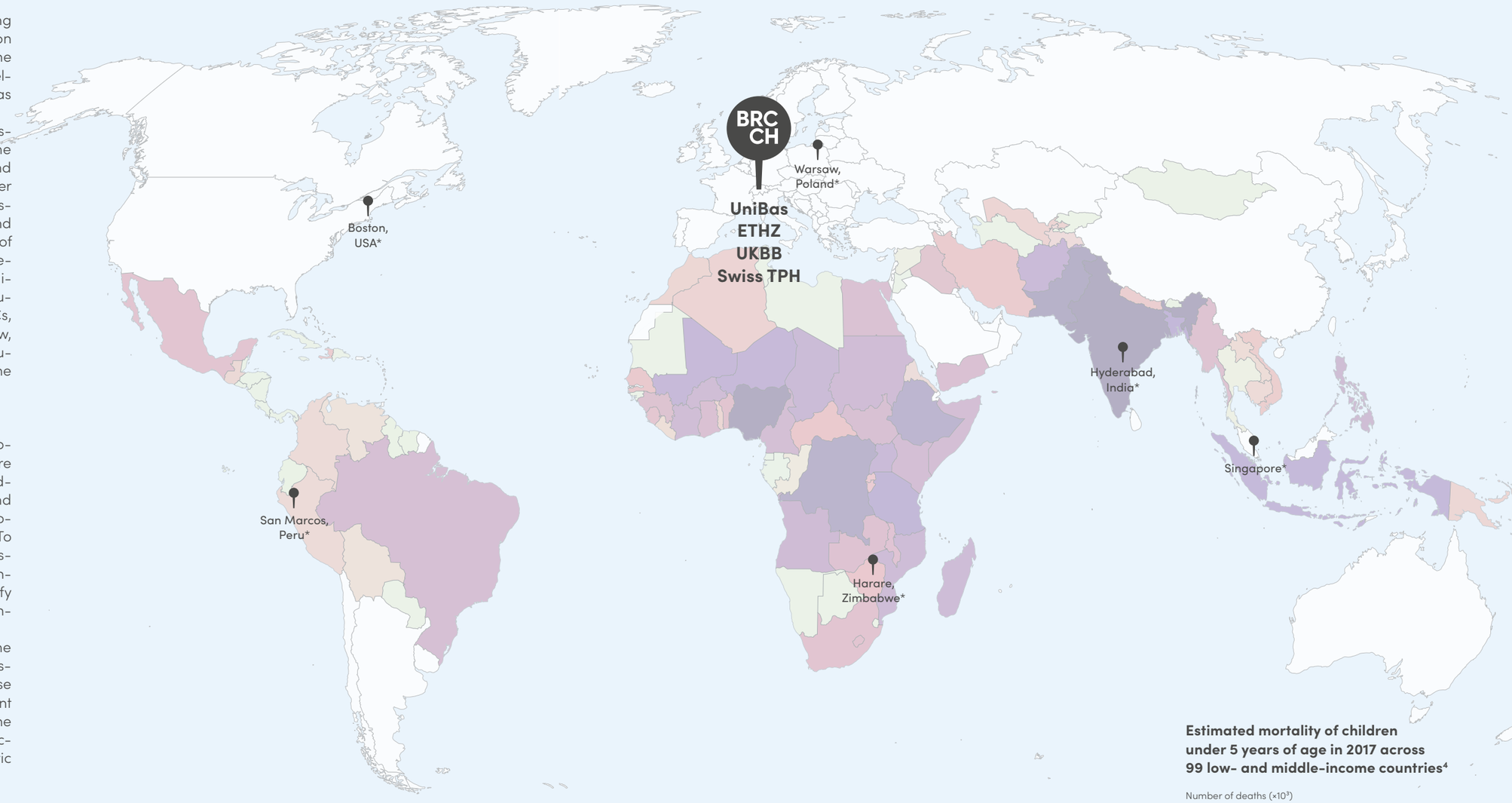
Our Mandate and Vision

Our mandate at the BRCCH is to support the development of safe and effective next-generation healthcare solutions for children and adolescents. We aim to address unmet medical needs, improve diagnoses and offer novel therapies for newborns, children and adolescents, particularly for those located in LMICs. To achieve these goals, the Centre will foster a multidisciplinary research culture, where researchers and clinicians work collaboratively and iteratively to identify needs, to conduct basic research and to scale and implement solutions.

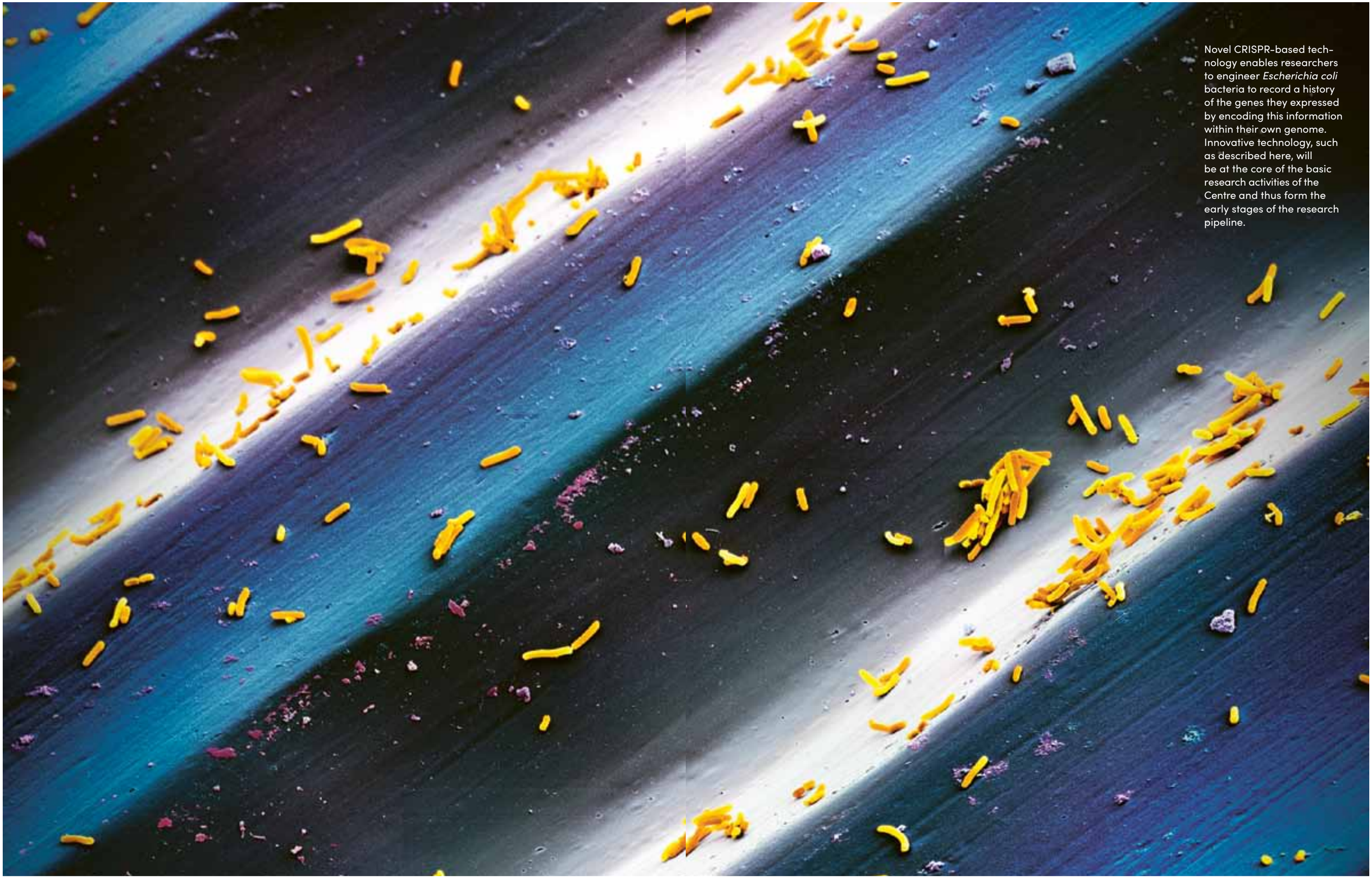
Our long-term strategic vision is to establish the BRCCH as a leading hub for multidisciplinary and translational research in child and adolescent health whose novel solutions in prevention, diagnosis and treatment are applicable worldwide. In the global landscape, the BRCCH will become a crystallisation point with its activities in Basel and Zurich for outstanding paediatric expertise.

Who we are

The University of Basel and ETH Zurich jointly founded the BRCCH as an independent research centre. The BRCCH is steadfast in its appreciation for the support and partnership from its four partner institutions including UKBB and Swiss TPH. Generous financial support from the Fondation Botnar ensures that the BRCCH will be equipped to support the best science over a period of initially ten years.



* BRCCH collaborators and partners (as of December 2019)

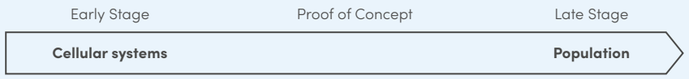


Novel CRISPR-based technology enables researchers to engineer *Escherichia coli* bacteria to record a history of the genes they expressed by encoding this information within their own genome. Innovative technology, such as described here, will be at the core of the basic research activities of the Centre and thus form the early stages of the research pipeline.

Clinicians and scientists work together on BRCCH research projects to address unmet medical needs, improve diagnoses and offer novel therapies in paediatrics. For example, cleft lip and palate treatment can be improved and simplified with the application of technological advances. By linking translational basic research with scalable and applied research, the Centre aims for sustainable, real impact in paediatrics worldwide.

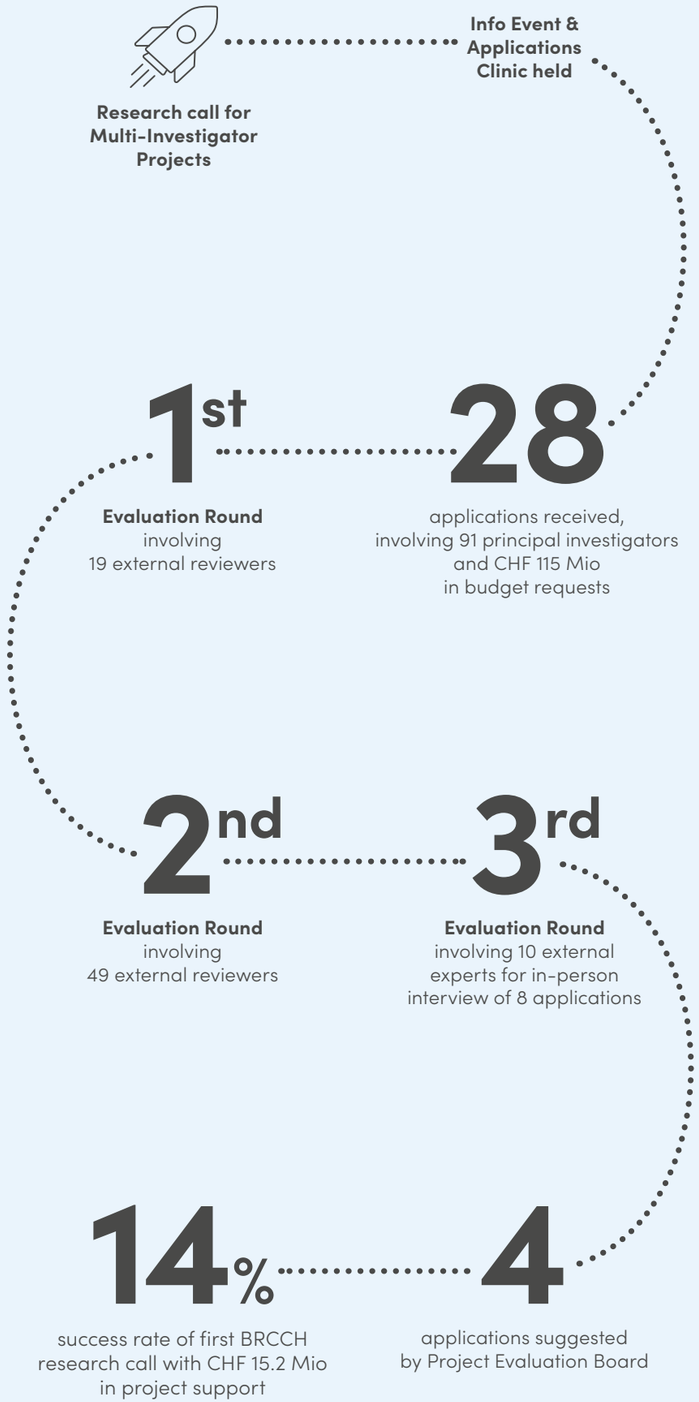
Research Portfolio and Pipeline

The partner institutions of the BRCCH contribute outstanding and complementary expertise in basic, clinical, translational and implementation research across various scientific disciplines. The BRCCH will create a research portfolio that is central to its mandate and that capitalises on the expertise and capabilities of its four partners, as well as its national and international collaborators. To deliver on its ambitious goals, the BRCCH will create and support an extensive pipeline of research that spans from early stage projects with significant innovative and translational potential, to late stage projects that are focused on validation and implementation. The BRCCH research pipeline will be developed through four main mechanisms. The first mechanism, Multi-Investigator Projects, was launched in 2019 and is highlighted here. The additional mechanisms, namely, Postdoctoral Excellence Programme, Principal Investigator Initiative and tenure-track Assistant Professorships will be initiated from 2020 onwards. Further information on these initiatives can be found in the Outlook section.



"With these **4 Multi-Investigator Projects,** the Centre realises its first promising cornerstone of the research portfolio."

Prof Marcel Tanner
Fondation Botnar



The BRCCH Multi-Investigator Projects
Multi-Investigator Projects (MIPs) represent the first research projects of the BRCCH research portfolio. The MIP initiative aims to forge multidisciplinary synergies between investigators from the four partner institutions and to foster international collaborations that will increase the likelihood of clinical translation and implementation worldwide. The call for MIPs was launched in Spring 2019 and, following a rigorous three-step evaluation process, resulted in the selection of four projects.

All four MIPs are led by multi-institutional consortia and external collaborators, including stakeholders based in low- and middle-income countries, such as India, Zimbabwe and Peru. Two early and two late stage projects, each using innovative technologies, were selected, namely:

- Digital Support Systems to Improve Child Health and Development in Low-Income Settings *(late stage)*
- Burden-Reduced Cleft Lip and Palate Care and Healing *(late stage)*
- Living Microbial Diagnostics to Enable Individualized Child Health Interventions *(early stage)*
- Precision Microbiota Engineering for Child Health *(early stage)*

The MIP projects launched in January 2020.

Digital Support Systems to Improve Child Health and Development in Low-Income Settings

Prof Günther Fink

Prof Daniel Mäusezahl

The team led by Prof Günther Fink (Swiss TPH) and Prof Daniel Mäusezahl (Swiss TPH) brings together expertise in early childhood development, epidemiology, health economics and artificial intelligence (AI) to enhance a mobile application that aims to improve the well-being and life-course of children growing up in low- and middle-income countries.

The motivation behind this project is driven by the fact that approx. 250 million children under 5 years of age are currently at risk of not reaching their full developmental potential. Many of these children are living in low- and middle-income countries and are exposed to early life adversities such as poverty, malnutrition and infectious diseases which delay their development. In the long run, these early life adversities can undermine children's ability to live healthy and prosperous lives, leading to negative implications for society and the economy.

A growing number of studies indicate that the level of nurturing care that a child receives early in life plays an important role in influencing their development. Therefore, interventions that aim to improve the environment in which infants and young children are growing up are now being implemented to help improve their future life and health trajectories. Currently, the most promising interventions for improving child health and well-being in low-income settings are home-visiting programmes in which healthcare staff or social workers help parents to support the healthy development of their children. However, such programmes are challenging to scale-up in many countries due to various economic, social and logistical factors.

However, the growing universal availability of mobile phones is opening new avenues for overcoming these challenges, enabling healthcare services to reach even the most vulnerable populations. This MIP project aims to assess the impact, efficacy and equity of a new AI- and mobile phone-based early childhood platform named Afinidata. Afinidata, founded by CEO Andreana Castellanos, uses an AI platform to provide parents with a personal digital assistant for detailed guidance on child health development.

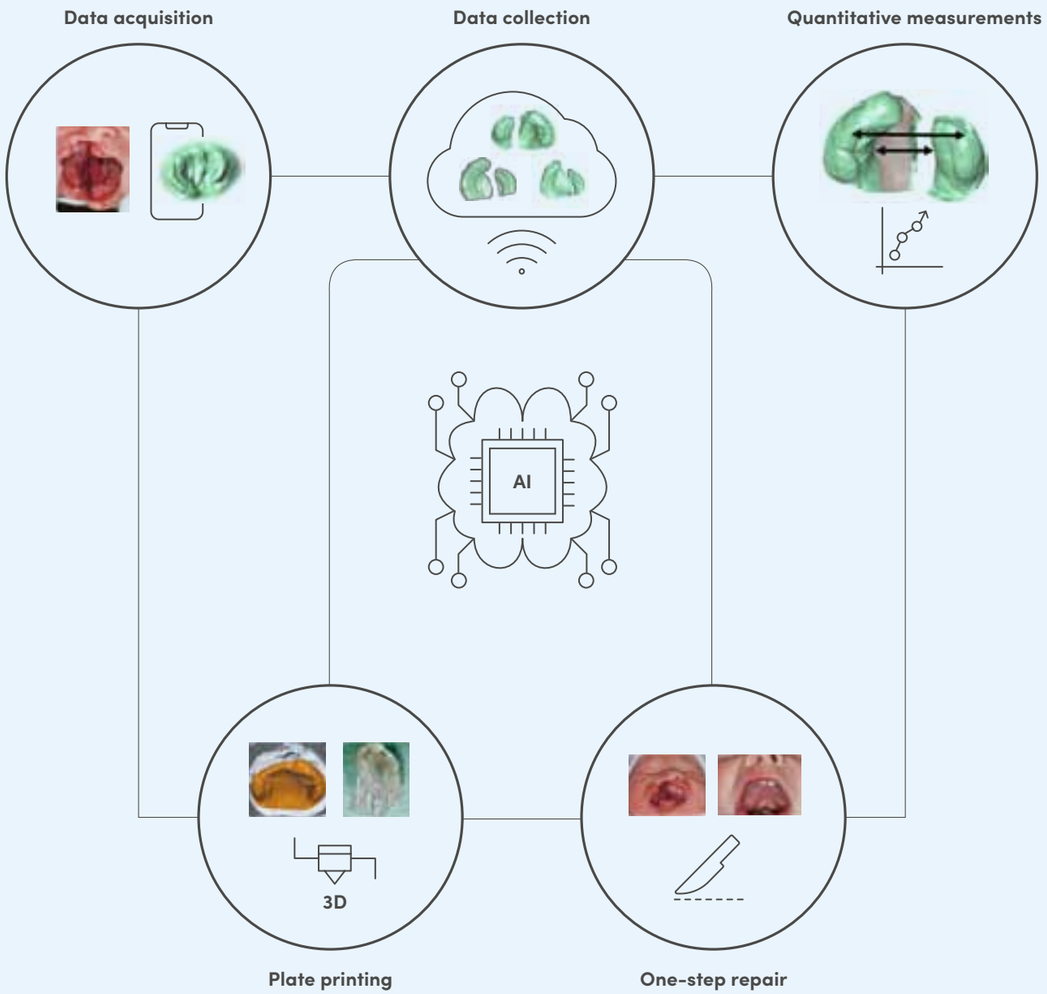
In this study, the team will assess the reach, impact and scalability of the Afinidata platform through a study involving 2,400 families with young children in San Marcos province, Peru. The project aims to:

1. Assess the feasibility of using the Afinidata platform to systematically reach vulnerable populations located in low-income settings.
2. Compare the cost and cost-effectiveness of using the Afinidata platform for supporting early childhood development to a current "gold-standard" home-visiting programme.
3. Improve the Afinidata platform through high frequency feedback from local families and through the integration of state-of-the-art machine learning algorithms.
4. Assess the overall scalability of this approach in other settings.

In addition to Profs Fink and Mäusezahl and Ms Andreana Castellanos, the team is joined by Prof Ce Zhang from ETH Zurich, who will lead the further development of the platform through his expertise in data systems and machine learning, Prof Stella Hartinger from Cayetano Heredia University in Lima, Peru, who is an expert in epidemiology and public health and will coordinate the field study in San Marcos, and Prof Dana McCoy from Harvard University, who is a leading expert in global early childhood development with significant expertise in early life interventions.

A healthcare worker assists a parent in supporting the well-being of her toddler as part of a home-visiting programme for families living in low-income settings.

Burden-Reduced Cleft Lip and Palate Care and Healing



Digital image data capture and collection, 3D printing of orthopaedic palatal plate and shift from multi- to one-step surgical repair will potentially revolutionize the standard course of treatment of cleft lip and palate.

Dr Andreas Mueller (University Hospital Basel, USB) and Dr Barbara Solenthaler (ETH Zurich) combine surgical expertise and 3D morphometric know-how in this impactful project aimed to simplify and optimise the postnatal care and surgical treatment of cleft lip and palate in young children.

With the use of machine learning algorithms, smartphone-based images of the palate malformation, and 3D printing of tailor-made palatal orthopaedic plates, this project will potentially revolutionise the standard course of treatment of cleft lip and palate. This project aims to reduce the burden of surgery from a multi-step to a single-step procedure by leveraging cutting-edge technology. The applicability of the proposed research project is especially relevant for children in low-income settings because current treatments are relatively high in cost and burdensome for the young patients and their parents, who, in addition, may also face challenges in securing the funding for the multiple surgeries presently needed. The project goals also ease the social integration of children with cleft lip and palate.

The motivation for this project is the recognition that orofacial clefts are the most frequent craniofacial malformation (1:700 births). No effective preventive measures exist. The focus is on an optimal treatment strategy with minimal burden for the patient and healthcare system. Currently, two principles are used and commonly applied complementary: (1) a palatal plate therapy after birth to keep the tongue out of the cleft space and to narrow the palatal cleft and (2) a multi-step surgical repair. However, this strategy necessitates a palatal impression that endangers the child's airway and a high surgical burden. The project therefore develops a non-invasive strategy for the palatal plate therapy followed by a one-step surgical repair of the entire cleft lip and palate malformation.

The methods rely on data-driven algorithms to digitally reconstruct the palatal shape in 3D from intraoral photographs. The model-based reconstruction approach will be integrated into photogrammetric setups. In addition, a neural network will be trained to predict/regress the 3D geometry from a single palatal image. To support the data-driven algorithm, a database from images and corresponding plaster casts from palatal impressions are available from USB. The 3D printing of palatal plates and surgical method for one-step surgical repair are already in clinical use at USB and its partner clinic in Warsaw, Poland. Thus, the novel treatment regimen will be ready for clinical use and scalability directly after successful development of the innovation.

The MIP project will build upon established success of the pilot work to develop a ground-breaking new cleft lip and palate treatment regime that focuses on three aims:

1. Non-invasive, data-driven 3D palatal shape reconstruction from images
2. Automated palatal plate design and manufacturing with 3D printing
3. One single surgical intervention

In addition to the principal investigators Dr Andreas Mueller and Dr Barbara Solenthaler, a number of partners will contribute to the success of the project with their strong expertise. Dr Gosla Reddy from GSR Institute of Craniofacial Surgery, Hyderabad, India, will further enhance clinical implementation and cover specific characteristics in the healthcare systems of LMICs. Dr Andrzej Brudnicki from the Institute of Mother and Child, Warsaw, and Cleft Lip and Palate Clinic Formmed, Warsaw, brings perspective and input from the world's largest cleft centre using single-surgery cleft repair. Prof Markus Gross from Disney Research brings the latest aspects and knowledge of digital face reconstruction and photo-realistic rendering.

Dr Andreas Mueller

Dr Barbara Solenthaler

Living Microbial Diagnostics to Enable Individualized Child Health Interventions

Prof Randall Platt

Prof Uwe Sauer

Prof Dirk Bumann

The consortium led by Prof Randall Platt (ETH Zurich), Prof Uwe Sauer (ETH Zurich) and Prof Dirk Bumann (University of Basel) will develop a novel biodiagnostic tool capable of recording the status of the gut environment to reveal novel signatures of disease and that will be used to inform treatment strategies for children with malnutrition and gastrointestinal pathologies.

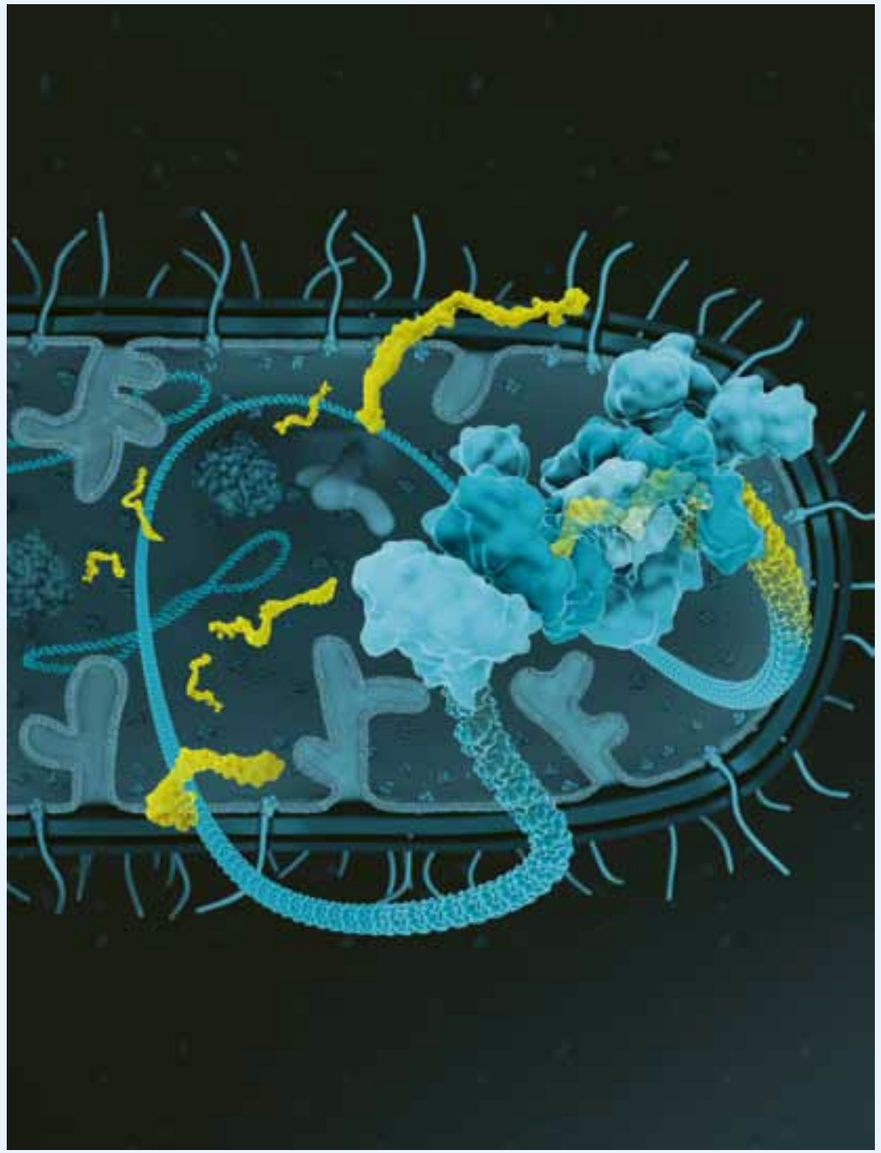
Over 3 million children under 5 years of age die annually in LMICs due to mostly preventable causes, including malnutrition, infectious diseases and acute respiratory pathologies. A further 200 million children annually do not reach their developmental potential. A major challenge towards providing effective diagnoses and treatments for these children is the lack of options for objectively measuring individual nutritional, infection and inflammation status of the gut. Microbes in the gut are known to undergo genetic and physiological changes in response to changes in diet, and to insults such as infection or disease. Therefore, the monitoring of the changes in the gut microbiome has the potential to serve as a functional readout of the status of our health.

The motivation for this project is to develop a novel and non-invasive means for assessing the status of the gut. The laboratory of Prof Platt has recently developed a novel CRISPR-based technology which enables engineered bacteria to continuously record a history of the genes they are expressing by encoding this information within their own genome. In this MIP project, consortium members will utilise these engineered bacteria to sense and report on the environment within the gut in the presence of nutritional changes, infectious agents and inflammation. In this way, the team aspires to use these bacteria as a diagnostic tool that will provide the basis for improving individualised medical and lifestyle interventions for children and adolescents in the future.

The key aims of the project are to:

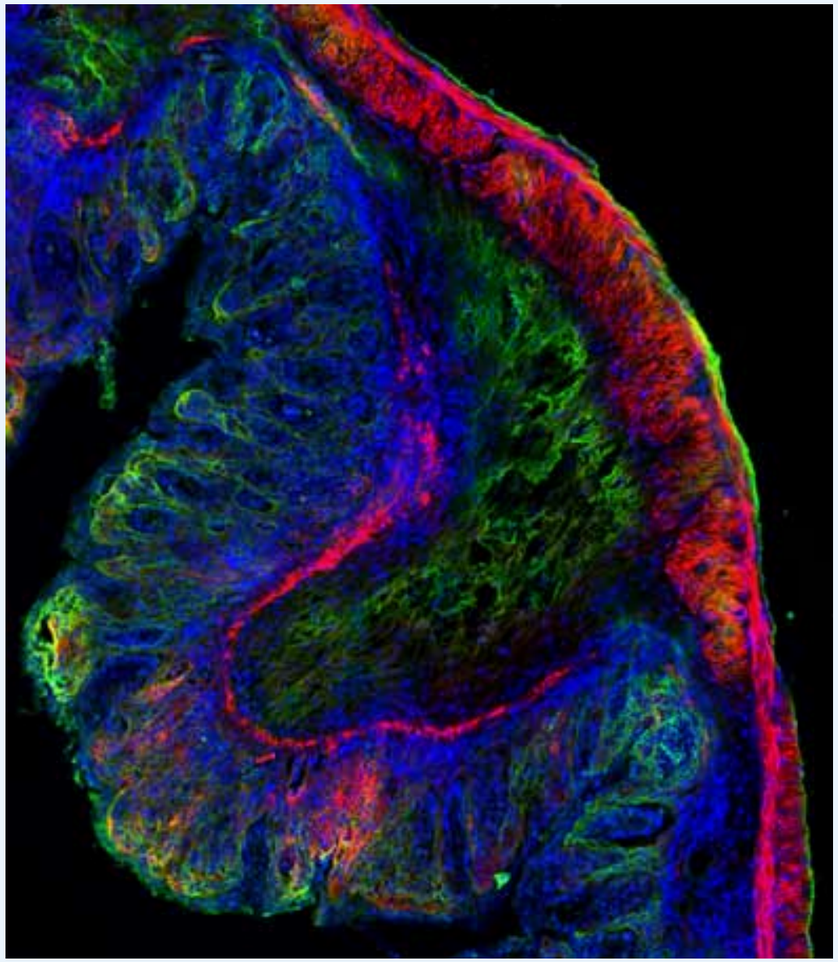
1. Assess the ability of engineered bacteria to sense and record pathophysiological conditions in models of nutritional deficiency, infection and inflammatory conditions.
2. Utilise these bacteria to identify novel biomarkers of pathologies that impact children's health and development.
3. Investigate changes in microbiome composition and metabolism that are associated with growth stunting in children.
4. Investigate the effects of environmental conditions, nutritional intake and pathogen exposure on the gut microbiota of young children living in Zimbabwe.

Prof Randall Platt will lead this project together with Prof Uwe Sauer (ETH Zurich), who brings expertise in systems biology and microbial metabolomics, Prof Dirk Bumann (University of Basel), who is an expert in microbial physiology and infectious diseases, and Prof Andrew Macpherson (University Hospital of Bern), who is an expert in gastroenterology, mucosal immunology and the human gut microbiome.



CRISPR-engineered bacteria can record the history of the genes they expressed and this information can inform researchers about the microenvironment in the gut.

Precision Microbiota Engineering for Child Health



Staining of digestive tract tissue infected with *Salmonella typhimurium* shows extracellular matrix in green and red and cellular nuclei in blue.

Prof Emma Wetter Slack (ETH Zurich), Prof Médéric Diard (University of Basel), Prof Viola Vogel (ETH Zurich), Prof Ferdinand von Meyenn (ETH Zurich), Prof Johannes Bohacek (ETH Zurich) and Prof Shinichi Sunagawa (ETH Zurich) will develop novel intervention strategies for two very serious diseases of newborns, namely inborn errors of metabolism and necrotising enterocolitis. These conditions currently have high mortality rates, long-term consequences for child development and limited treatment options.

From shortly after birth, the large intestine is colonised by billions of bacteria, which make up the intestinal microbiota. Researchers have only recently begun to understand the extent and the mechanisms by which these bacteria influence child health and development. However, current studies support causal roles of bacteria in diseases as diverse as allergy and autism. The focus of this project is to develop novel tools to precisely engineer the microbiota of individuals with inborn errors of metabolism or necrotising enterocolitis. The project aims to replace individual species, either to remove a disease-driving organism or to alter the metabolism of the microbiota. This modification will be achieved by combining highly specific selective pressures exerted by intestinal antibodies, with the direct targeting of individual genes in intestine-resident bacteria using CRISPR-Cas9 methodology. Since microbiota engineering can be applied across a wide range of childhood diseases, this collaborative effort has far-reaching implications for the future of medicine.

The motivation of this highly collaborative project is to understand the mechanisms by which intestinal microbiota composition influences the development and prognosis of necrotising enterocolitis, neonatal sepsis and inborn errors of metabolism. Recent research by the consortium demonstrated strong associations between microbiota composition and disease severity and revealed mechanisms of host-microbiota crosstalk, indicating a major untapped therapeutic potential. However, a huge gap remains in therapeutic precision engineering of the microbiota. The consortium will further develop over the coming years two precision microbiota engineering tools to the point of human trial readiness. These complementary approaches will be tested in different murine models for four serious childhood diseases with strong links to microbiota function and the urgent need for better therapy/prophylaxis, namely urea cycle disorders, methylmalonic aciduria, neonatal sepsis and necrotising enterocolitis. These diseases are prevalent in many low- and middle-income countries.

The methods employed by the consortium range from the latest state-of-the-art molecular biology and antibody engineering technologies, to detailed analysis of tissue scarring, single-cell analysis of organ development and quantitative analysis of brain function. This range of expertise allows not only to develop microbiota engineering technologies, but also to develop detailed mechanistic insight into modification of the disease course, and biomarkers to assess efficacy in clinical trials. Secretory IgA, either delivered orally as a recombinant protein, naturally in breast milk or induced via oral vaccination, is used to generate a selective pressure on individual components of the microbiota. This permits replacement of the target bacterium with a desirable niche competitor. Additionally, the consortium will employ established CRISPR technology to genetically engineer a broad range of microbiota species directly in the gut lumen. Combining these techniques will allow antibiotic-independent selection of successfully modified bacteria, generating a robust and predictable change in microbiota function/composition. Fundamental insight into microbiota, and preclinical insight of therapy efficacy will be generated. Toxicity analyses, GMP and scale-up will be carried out for clinical trial readiness. Most of the tools can be produced, distributed and administered in low-cost and low-technology environments. As correction of pathological microbiota functions is relevant to a broad range of diseases, this represents a disruptive therapeutic approach with major consequences for medicine.

In addition to the principal investigators from ETH Zurich and the University of Basel, a number of local collaborators complete the consortium with their strong know-how in paediatrics and microbiology. Collaborators from the University Children's Hospital Zurich (Prof Matthias Baumgartner, Prof Johannes Häberle, Dr Sean Froese, Dr Johannes Trück), University Hospital Zurich (Prof Giancarlo Natalucci) and ETHZ (Prof Christian Wolfrum) strengthen the consortium by bringing expertise in clinical metabolism, paediatric immunology, murine models as well as the recruitment of paediatric cohorts. Researchers from the Paul Scherrer Institute (Dr Martin Behe) will investigate intestinal damage by novel imaging approaches and from the University Hospital Basel (Prof Adrian Egli) will focus on *E. coli* genome sequencing and its annotation in premature birth cohorts.

Prof Emma Wetter Slack

Prof Médéric Diard

Prof Viola Vogel

Prof Ferdinand von Meyenn

Prof Johannes Bohacek

Prof Shinichi Sunagawa

Outlook

"With BRCCH's explicit aim for science to reach people, all efforts of the Centre share a common direction: projects are translational, applicable and scalable, in particular for low- and middle-income settings, to enable the desired impact for paediatrics worldwide."

Georg Holländer

Strategy
Following its first year of operations, and with its mandate and remit firmly positioned, the BRCCH looks forward to further defining its strategic path.

In order to provide the best scientific research in close collaboration with its four partner institutions, the BRCCH initiated an in-depth strategy review process to identify the current global gaps and unmet clinical needs in health research for neonates, children and adolescents. It is in these places where the BRCCH aims to make step-changing contributions. To be effective, the initial blueprint of the BRCCH is being transformed into a strategic roadmap for the upcoming five years.

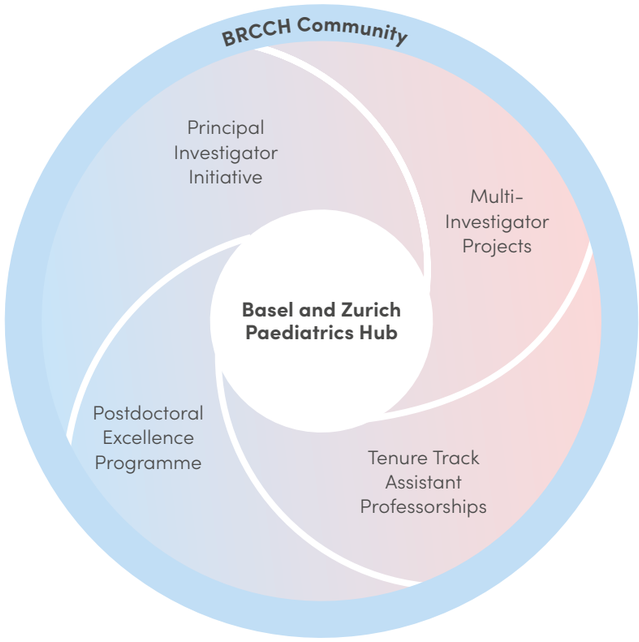
Research Portfolio
Over the past months, the BRCCH Executive and Management teams have laid the groundwork for the next steps in 2020 and beyond. BRCCH's research portfolio was shaped by the inaugural call for MIPs that led to the identification of four scientifically excellent projects fitting within the Centre's remit. The remit will be further realised with additional research activities in the general domains of digital health, bioengineering for medicine, essential medical devices and ethics and society. Additional mechanisms will be used to expand the portfolio: Postdoctoral Excellence Programme, Principal Investigator Initiative and tenure-track Assistant Professorships.

The BRCCH Postdoctoral Excellence Programme (PEP) aims to foster highly talented early career scientists who aspire to pursue outstanding research in domains relevant to paediatric health, including global and digital medicine. The programme aspires to foster the development of exceptional scientists at an early stage who wish to pursue further career opportunities that reflect the mandate of the BRCCH.

The Principal Investigator Initiative (PII) will focus on engaging established Basel-Zurich researchers and clinicians to embark on multidisciplinary work between the partner institutions. Conceived as an enabling initiative, PIIs will complement research areas represented by existing MIPs and address current gaps in the BRCCH's research programme.

The BRCCH, in close collaboration with University of Basel and ETH Zurich, is in the process of selecting the scientific areas of interest for several tenure-track Assistant Professorships (TTAPs), whose recruitment will establish a vibrant research community focused on child and adolescent health. The TTAPs will be embedded within the four partner institutions and be hosted in existing departments. Three TTAP positions are initially envisioned in the following relevant domains:

1. Paediatric Digital Health Data Analytics and Modelling
2. Engineering Biomolecular Systems for Diagnostics
3. Ethics in Paediatric Digital Health



"The BRCCH will benefit crucially from the close local proximity of its key partner institutions, their complementary expertise and the access to state-of-the-art research facilities and core platforms."

Sai Reddy

Community Building
Part of the BRCCH's mission is to establish in Basel and Zurich a hub for paediatric healthcare research. This means that not only does the Centre aim to foster the best science, but it also wants to create a vibrant environment where cutting-edge science in domains relevant to BRCCH's mandate can flourish and grow.

Spotlight Day
The flagship event of BRCCH's public engagement efforts is the Spotlight Day. This event is a programme of research-based talks that showcases the BRCCH research portfolio and involves external experts related to the remit of the Centre as keynote speakers. The inaugural Spotlight Day (January 30, 2020) will be featured in next year's annual report.

Seminar Series
The Centre and its involved researchers will organize a research seminar series featuring international experts in domains relevant to BRCCH's current activities. The series will be a platform for community building with the aim to increase awareness of the challenges in global paediatric health, highlight outstanding work on solutions to these challenges and strengthen the Centre's global links.

Governance

The strategic responsibility of the Centre lies in the hands of the Board of the BRCCH, combining representatives from the University of Basel and ETH Zurich. The BRCCH Executive Team comprises the Director Prof Georg Holländer and the Vice Director Prof Sai Reddy and is responsible for the operations of the Centre, including the processes of project initiation and evaluation. The Strategic Scientific Advisory Board (SSAB) consists of local and international experts in relevant fields who advise the Directors and the Board. The Project Evaluation Board (PEB) includes internationally respected academic and clinical experts and is responsible for the independent evaluation of research applications.

BRCCH Board

Prof Andrea Schenker-Wicki
Chair of BRCCH Board
President
University of Basel

Prof Detlef Günther
Co-Chair of BRCCH Board
Vice President for Research
and Corporate Relations
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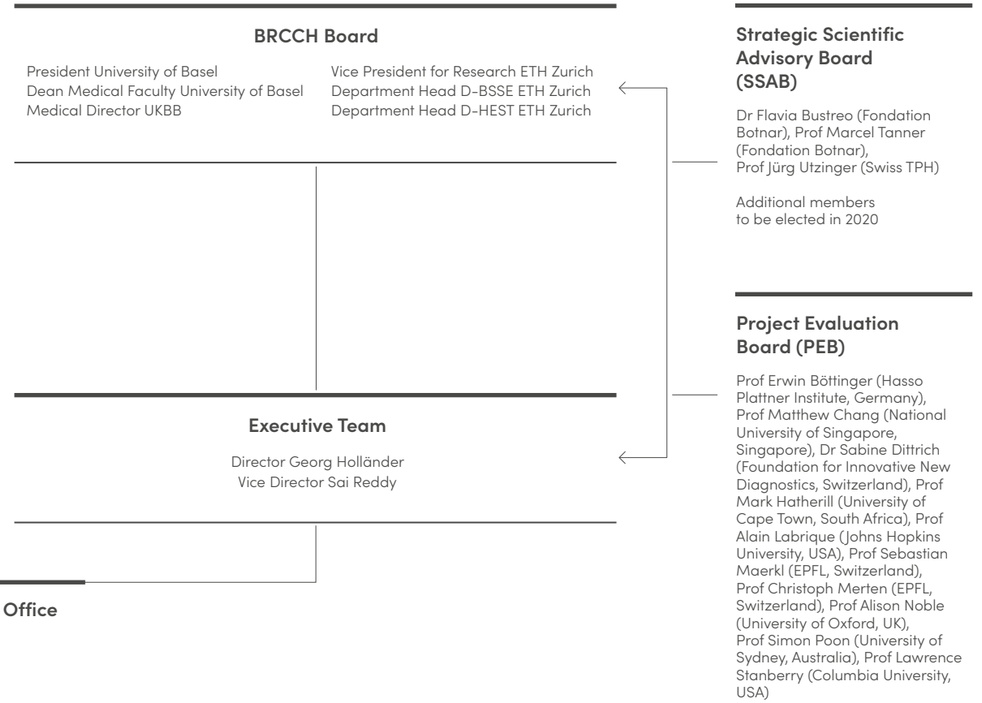

Finance

The Botnar Research Centre for Child Health benefits from a generous donation by the Fondation Botnar of CHF 100 Mio from 2019 to 2028. The budget is equally shared between the University of Basel and ETH Zurich. This financial basis allows the BRCCH to establish a research project portfolio comprising Multi-Investigator Projects, Principal Investigator Initiative, and a Postdoctoral Excellence Programme. In 2019/2020, the BRCCH deployed CHF 15.2 Mio for four projects (each with a duration of five years). An additional crucial cornerstone will be the establishment of up to six Assistant Professorships initially supported by the BRCCH. Furthermore, the BRCCH will foster an international research network built on projects supported by the Centre to meet its mandate to support child and adolescent health in low- and middle-income countries and to complement the research community in Basel and Zurich.

Pictorial Representations of the Multi-Investigator Projects

1

2

3

4

1. Fink et al. **2.** Mueller et al. **3.** Platt et al. **4.** Slack et al.

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