BRC CH Basel Research Centre for Child Health

Annual Report 2024
Basel Research Centre for Child Health

University of Basel ETH zürich

Supported by Fondation Botnar

Dear BRCCH community,

Prof. Georg Holländer
BRCCH Director

Prof. Daniel Müller
BRCCH Co-Director

Once again, we pause at the end of a dynamic year to reflect upon the BRCCH's activities over the past months. In 2024, the BRCCH persevered in its commitment to advancing the health and well-being of children and adolescents worldwide by maintaining its funded research activities. The BRCCH consortia in the Multi-Investigator Programme continued to harvest the fruits of their research efforts to develop innovative tools and methodologies to advance paediatric medical interventions. Similarly, the researchers from the Principal Investigator Initiative reached the mid-term points of their projects, whose outcomes and impact are currently being assessed by a panel of external reviewers. Moreover, 2024 witnessed the conclusion of a major BRCCH funding initiative, the Fast Track Call for COVID-19 Research, which resulted in the publication of 92 original research manuscripts and 70 conference and symposium presentations. Concurrently, many of the fellows in the Postdoctoral Excellence Programme are approaching the end of their fellowships.

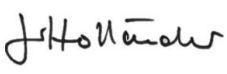
At the same time, the BRCCH initiated its transition towards becoming a Paediatric Digital Health Hub with the announcement of its new name, the Basel Research Centre for Child Health. This new name acknowledges the city's importance to the Centre's past and present achievements and to our funding agency, Fondation Botnar. In its new form, and with the goal of having a long-term impact on improving the health and well-being of young people worldwide, the BRCCH will bring together six new professors collaborating closely on developing novel digital tools

and data-driven methods to address the medical challenges faced by the most vulnerable populations. The past year has seen the start of most of the professorial recruitment processes at ETH Zurich and the University of Basel, and we are delighted that Dr Na Cai has been recruited as the first of the six BRCCH professors. She will hold an appointment at ETH Zurich as a professor in Medical Genomics from February 2025.

Also this year, Prof Daniel Müller joined the BRCCH, succeeding Prof Sai Reddy as co-director. Together with Prof Georg Holländer, he will guide the BRCCH's strategic orientation and initiatives as it consolidates itself as a Paediatric Digital Health Hub.

In this Annual Report, we are pleased to present a summary of the BRCCH's activities over 2024. This work would not have been possible without the generosity of our funder, Fondation Botnar, and the support of our partner institutions, the University of Basel, ETH Zurich, the University Children's Hospital of Basel, and the Swiss Tropical and Public Health Institute.

With our best wishes,



Prof Georg Holländer

Prof Daniel Müller

Research Programmes

Finances

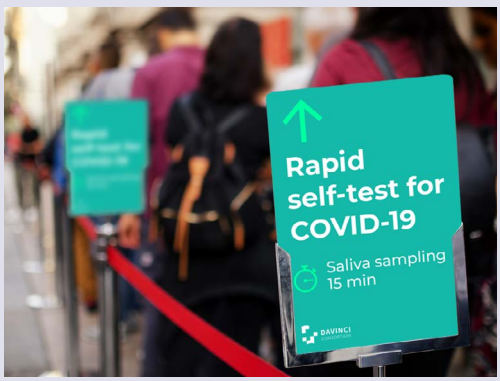
Research project funding across the various programmes since the start of the BRCCH amounts to 37.7 million Swiss francs. Approximately 4.7 million Swiss francs was spent on progressing BRCCH-funded research projects in 2024, and no additional programmatic funding call was launched in line with the Centre's Transition Plan.

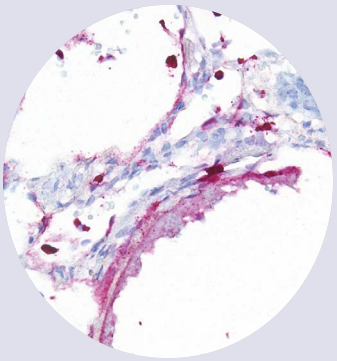
Fast Track Call: COVID-19 Research

The BRCCH launched the Fast Track Call (FTC) for Acute Global Health Challenges in March 2020 with a dual purpose: to quickly enable research to help mitigate public health challenges presented by the COVID-19 pandemic and to contribute to solutions that would enhance future preparedness and reduce global disease burden.

In total, 11 projects received funding to conduct ambitious research in three areas: COVID-19 diagnostics, the human immune response to COVID-19 and medical interventions and disease management. In 2024, the last four projects were concluded, thus bringing the overall FTC COVID-19 programme to an end.

Image: A mock waiting line for a COVID-19 test conducted with a saliva-based diagnostic device created by a BRCCH-funded project in the context of the Fast Track Call initiative. Credit: Daniel Paris.





The potential future impacts of the outcomes of the FTC COVID-19 programme are wide-ranging and significant. Major advancements have been made in understanding the short- and long-term effects of the SARS-CoV-2 virus on human organs and systems, and this knowledge can contribute to the development of new therapeutic interventions while enhancing preparedness for future pandemic situations. With the support of the BRCCH, the FTC COVID-19 research consortia, involving 32 lead researchers from the BRCCH's four partner institutions and 41 collaborators from five different countries, developed new technology to detect SARS-CoV-2, investigated new COVID-19 therapies, identified risk factors for severe COVID-19 and designed modelling methods to predict disease spread and virus evolution.

To mark the end of the programme, the BRCCH produced podcast episodes featuring researchers from selected projects. These podcasts form part of a content hub that is accessible through the BRCCH website. The hub acts as a repository of information about the FTC programme, the research carried out, the impacts facilitated and the range of resources produced.

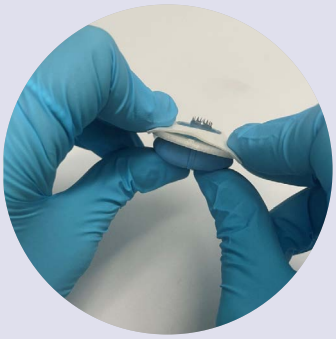
Image: Histological image showing SARS-CoV-2 antigens in the alveolar walls within the lungs. Credit: Alexandar Tzankov.

Postdoctoral Excellence Programme

Launched in 2021, the BRCCH's Postdoctoral Excellence Programme (PEP) is a three-year initiative designed to support the next generation of scientists pursuing interdisciplinary research in paediatric digital health.

Five postdoctoral researchers from ETH Zurich, the University of Basel and the Swiss Tropical and Public Health Institute were awarded BRCCH grants to conduct research projects that address the unmet medical needs faced by the paediatric population. These projects tackle a wide range of paediatric challenges, from tailoring medical devices for paediatric patients to harnessing digital and molecular solutions to improve medical treatment.

Image: A PEP fellow presents her work on evaluating the acceptability of digital tools for the diagnosis and treatment of children from resource-constrained settings at the Future of Paediatric Health Research Spotlight Day. Credit: BRCCH Management Office.



In 2024, the five early career researchers presented their research findings at a BRCCH-hosted symposium entitled "The Future of Paediatric Health Research Spotlight Day." This one-day seminar and networking event brought together renowned scientific experts with the common goal of improving child and adolescent health. Additionally, the PEP postdoctoral fellows disseminated the outcomes of their projects at international conferences and published them in prestigious journals.

To mark the end of the Postdoctoral Excellence Programme, an exhaustive end-of-programme report will be prepared in 2025 detailing the outcomes and impacts facilitated by the PEP projects.

Image: A blood sampling prototype adapted for paediatric patients Credit: Nicole Zoratto.

Principal Investigator Initiative

The Principal Investigator Initiative (PII) kicked off in 2022, funding projects addressing the current medical challenges faced by the paediatric population, with a particular focus on the Global South.

Six projects, involving 15 lead researchers from the BRCCH's four partner institutions, were awarded four-year grants. The projects' are collaborating with 38 international partners across 15 countries such as Romania, Uganda and Tanzania to find innovative solutions to the most pressing needs of children and adolescents. By integrating digital tools into the currently available methods, they are revolutionizing the prevention, diagnosis and management of a wide range of diseases such as asthma, thyroid diseases and personality disorders.

Image: A social scientist interviews a school teacher in the context of a deworming initiative for children at a primary school in Buranga in the Kabale district of Uganda. Credit: Yuling Lin.

The six PII projects submitted materials for their mid-term evaluation at the end of 2024. During this process, international scientific experts will assess the progress and scientific quality of the outcomes resulting from this initiative.

Over the course of 2025, the BRCCH will organize a seminar series covering the research topics addressed by PII projects. Together with their international collaborators, the PII principal investigators will present the main findings of their projects as well as the potential impacts facilitated by their research. These events will be broadcast online and on our website to ensure that they reach all interested stakeholders across the world.

Image: A prototype of arapid diagnostic device to detect Buruli ulcer, a chronic necrotizing skin disease. Credit: Hemetron AG.

Multi-Investigator Programme

The Multi-Investigator Programme (MIP) was launched in 2020 as the BRCCH's flagship research programme. This initiative aims to forge multidisciplinary collaborations among our four partner institutions and international universities, with the ultimate goal of enhancing the likelihood of clinical translation and implementation worldwide.

Four ambitious projects with 13 lead researchers are currently being supported by this initiative.The main outcomes of their research activities are described in the following sections.

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

The first years of life are a cornerstone of child development, as they establish the foundations for all future learning, emotional and physical paediatric skills. However, more than 250 million children under the age of five are at risk of not realizing their full developmental potential. Many of these children reside in low- and middle-income countries (LMICs) and face early life adversities such as poverty and malnutrition, which hinder their development. Over time, these challenges can compromise children's capacity to lead healthy and prosperous lives, thereby having a negative impact on both society and the economy.

Presently, the most promising interventions for enhancing child health and well-being in LMICs involve home visits, where healthcare staff or social workers assist parents in supporting the healthy development of their children. However, these programmes are expensive and logistically challenging, making them unfeasible on a large scale in many resource-constrained settings.

The rapid proliferation of mobile phones in LMICs in recent years has enabled the generation and implementation of digital parental tools that can reach vulnerable populations. One such platform is Afini, an AI-based application that offers parental guidance with age-appropriate activities to support the development of young children..

Image: Two healthcare workers visit a family in San Marcos (Peru) as part of a home-visiting programme to support families during their children's early development. Credit: Stella Hartinger Peña.

Lead Researchers

Günther Fink
Swiss TPH

Daniel Mäusezahl
Swiss TPH

To assess the cost-effectiveness and acceptability of this digital tool in LMICs, this consortium is conducting a randomized controlled study involving approximately 2,500 families with young children in the Peruvian highlands. Their main goal is to assess the impact of this digital parenting platform on the cognitive and motor development of 2.5-year-old children whilst evaluating parental engagement with the child. Within this study, families are randomly assigned to either a control group or a treatment group receiving digital support through the Afini platform. Moreover, the developmental skills of the children from the Afini group will be compared to those from a cohort receiving home visits from trained staff, which is considered the gold standard intervention for supporting vulnerable families.

In 2024, the research team completed all the home visits and compiled all the necessary data, which will be analysed in spring 2025. Additionally, over 200 new educational activities in video format were added to the Afini app, catering to the growing demand for concise, demonstrative content. The integration of ChatGPT improved the platform's ability to respond to user queries, enhancing the overall user experience. Finally, the team from Afini launched a new educational programme specifically designed for professionals in early childhood education, leveraging insights from multiple international paediatric education programmes.

The results of this study will be of significant interest to practitioners and policymakers seeking innovative ways to support families with young children in resource-constrained settings.

Collaborators: Ce Zhang (ETH Zurich); Stella Hartinger Peña (Cayetano Heredia University); Dana McCoy (Harvard University); Andreana Castellanos (Afinidata).

Image: A home visit to assess the cognitive and motor development of a child enrolled in the clinical study in San Marcos (Peru). Credit: Stella Hartinger Peña.

Lead Researchers

Günther Fink
Swiss TPH

Daniel Mäusezahl
Swiss TPH

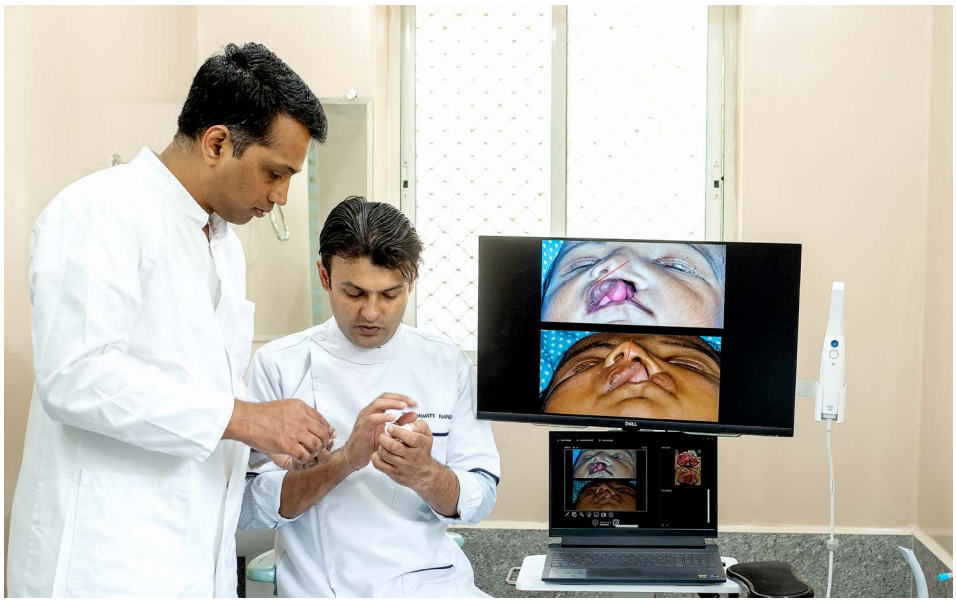
Burden-Reduced Cleft Lip and Palate Care and Healing

Children born with a cleft lip and palate, or a gap in the upper lip and/or roof of the mouth, often experience difficulties in feeding, breathing, and denting. Unfortunately, no measures exist to prevent this malformation, which affects one in 700 newborns worldwide. The only available treatment for these patients is undergoing multiple surgeries, a costly option that is not easily accessible for millions of children living in low-income settings.

This consortium's main objective is to develop digital tools that can streamline cleft and lip palate care, particularly by automating key parts of the treatment. This starts with the generation of therapeutic intraoral plates that sit on the roof of the baby's mouth, alleviating their symptoms and improving tissue conditions for gap closure. Traditionally, these plates have been manufactured manually using plaster casts and intraoral scanners in a highly technical and expensive process. However, this team has successfully created an innovative method that overcomes these challenges: they can create a three-dimensional (3D) reconstruction of the patient's palate using smartphone-based scans and design a personalized therapeutic plate, which can subsequently be 3D-printed using biocompatible materials.

The integration of a machine learning (ML) model to automatically produce personalized therapeutic plates with a high degree of accuracy has rendered this technique a cost-effective and easily implemented tool. The plate design software is an open-access platform, where users can upload scans, receive tailored designs and produce plates locally. Together, this digital methodology ensures access to treatment for underserved paediatric populations, democratizing cleft lip and palate care worldwide.

Image: Dr Prasad Nalabothu analyses the best individualized treatment for a patient with a palatal cleft at the GSR Institute of Craniofacial Surgery in Hyderabad, India. Credit: GSR Institute of Craniofacial Surgery.



Lead Researchers

Andreas Müller
University Hospital Basel and University of Basel

Barbara Solenthaler
ETH Zurich

In 2024, the consortium's efforts were devoted to enhancing ML capabilities in automated anatomical surface segmentation and 3D palatal reconstruction from 2D images. Frequently challenged by poor-quality images captured in variable settings (e.g., fluctuating light conditions in the operating room), the team designed and started manufacturing an innovative intraoral mirror. The integration of this device into the digital workflow offers a standardized method for capturing high-quality images. An additional challenge the team encountered when refining their ML model was the scarcity of available videos from patients' intraoral cavities. To create a larger and more diverse video dataset, synthetic data was generated from 21 manually annotated videos including 100 images per mesh from a total of 90 meshes.

The clinical implementation of this workflow has been tested on 60 patients from India, South Africa and Basel, highlighting the tangible benefits of this technique in real-world settings: it reduced hospital visits, improved preoperative planning and was associated with positive patient outcomes. Ultimately, the outcomes of this project will revolutionize cleft lip and palate care by reducing healthcare costs while improving its efficacy, particularly in low-resource settings.

Collaborators: Srinivas Gosla Reddy (GSR Institute of Craniofacial Surgery); Andrzej Brudnicki (Institute of Mother and Child and Formmed Clinic); Markus Gross (Disney Research Studios, Zürich).

Image: Prof Müller capturing the palatal cleft of a patient with a smartphone camera for 3D reconstruction, using a wing-mirror, retracting the cheeks, and a "Jakobi dental" light and ventilation source. Credit: GSR Institute of Craniofacial Surgery.

Lead Researchers

Andreas Müller
University Hospital Basel and
University of Basel

Barbara Solenthaler
ETH Zurich

Living Microbial Diagnostics to Enable Individualized Child Health Interventions

The gut microbiome, or in other words, the billions of microorganisms colonizing the human large intestine, is acquired in the first years of life and is shaped over time as the diet becomes more complex. It is integral to child health, as it contributes to food digestion and the development of children's immune and central nervous systems. Hence, monitoring the gut microbiome is critical to ensuring that millions of children reach their full developmental potential, even though non-invasive monitoring methods have not yet been developed.

Over the last few years, this consortium has successfully used CRISPR-based technology to engineer a bacterium capable of traversing animal gastrointestinal tracts while sensing, remembering and reporting on the gut environment it encounters. As the engineered bacterium travels through the intestine, its gene expression changes depending on the encountered environment.

When used in specific-pathogen-free mice fed with different perturbed diets, the engineered bacterium detected fluctuations in certain micronutrients such as iron or zinc, whereas it remained insensitive to vitamin B12, folate, or changes in short-chain fatty acids produced via fibre fermentation. This set of experiments, among others, enabled the team to establish 10 marker genes indicative of iron and zinc concentrations. Changes in the expression of these genes can be used to infer micronutrient concentration with an accuracy of 75% and 81% for each compound respectively. These findings serve as a proof of concept in the diagnostic validation of this technique.

Image: An image displaying future healthcare technology to create probiotic bacteria to improve digestive health. Credit: Adobe Stock image.

Lead Researchers

Randall Platt
ETH Zurich

Dirk Bumann
University of Basel

Uwe Sauer
ETH Zurich

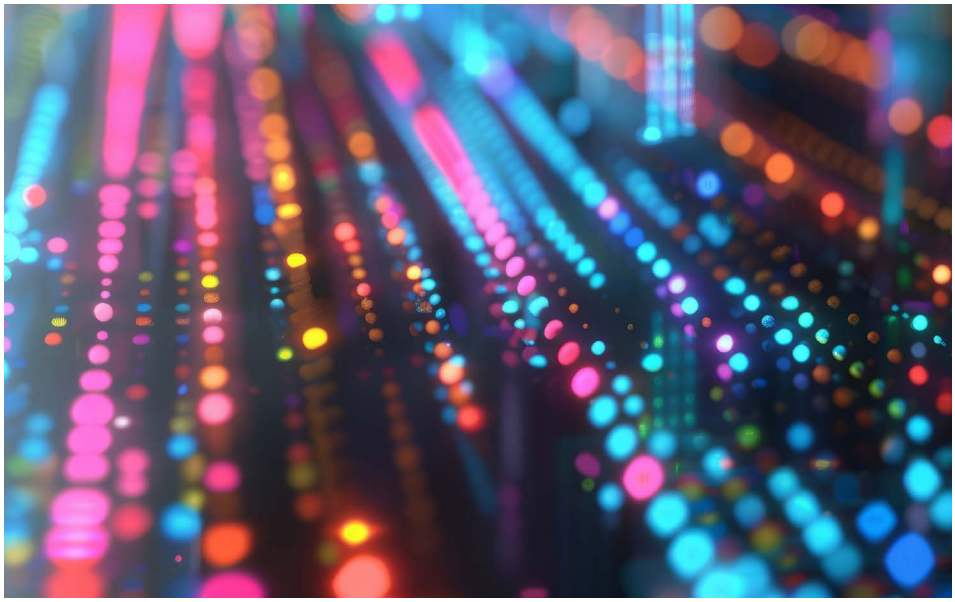
Andrew Macpherson
University Hospital of Bern

In a complementary approach, the consortium has optimized the engineered bacterium's reporting abilities by creating two new temperature-inducible recording systems and improving the algorithm underlying the read-out gene expression analysis. All of these approaches are bringing this non-invasive diagnostic tool one step closer to its clinical translation.

An additional focus of this project is to analyse the impact of malnutrition and related disorders on the shaping of the gut microbiome in the first years of life. To determine the risk factors in the vertical transmission of an impaired gut microbiota, this consortium has been longitudinally collecting samples from mothers and babies living in Zimbabwe and Switzerland. By analysing and comparing faecal and breast milk samples, among other variables, they will be able to determine which factors are responsible for certain paediatric outcomes such as stunted growth. The outcomes of this study could help to inform nutritional guidance to improve gut microbiome health in breastfeeding mothers and, in turn, improve child growth.

Collaborators: Christian Wolfrum (ETH Zurich); Adrian Egli (University of Zürich); Matthias Baumgartner, Johannes Häberle, Sean Froese and Johannes Trück (University Children's Hospital Zürich); Giancarlo Natalucci (University Hospital Zürich); Martin Behe (Paul Scherrer Institute).

Image: A transcriptional recording techniques by CRISPR spacer acquisition from RNA, an integral methodology for this project. Credit: Adobe Stock Image.



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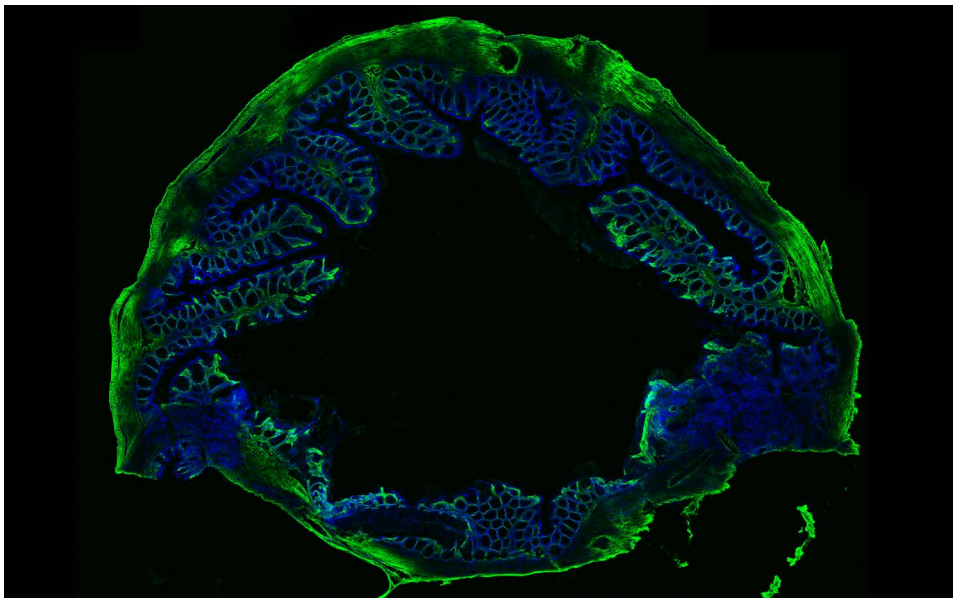

Precision Microbiota Engineering for Child Health

The gut microbiome is often considered a hidden organ based on its contribution to human health: it not only produces essential metabolites via food fermentation, but also plays a key role in stimulating the immune system. The composition of the gut microbiota is mostly defined in the first years of life and rarely varies during adulthood. The gut microbial communities act as a honed ecosystem, which protects the host by impeding pathogenic bacteria from colonizing the lumen, a step that precedes infection. Moreover, they endow humans with additional enzymatic activities such as the ability to transform unwanted compounds like ammonia into harmless substances like nitrogen. It is therefore not surprising that an imbalanced gut microbiota composition results in dysregulated bodily functions, such as chronic inflammation, autoimmune diseases or brain disorders. However, to date, our ability to alter the composition and function of the gut microbiome remains very limited.

Over the last year, this consortium developed a novel bioengineering tool called "vaccine-enhanced competition" to prevent the invasion and subsequent infection of Salmonella in the gastrointestinal tract. Using animal models, they demonstrated that the concomitant administration of oral vaccines with a fast-growing competitor (i.e., a non-pathogenic bacterium whose enzymatic activities overlap with those of the virulent one) excluded the pathogenic Salmonella from the mouse gut. The oral vaccine stimulates the host's antibody-mediated recognition and subsequent elimination of the invasive pathogen, which is replaced within the bacterial ecosystem

Image: A microscopy image displaying a cross-section of a mouse colon. The tissue is stained to visualize the extracellular matrix protein laminin (green) and cell nuclei (blue). The outer layer represents the muscularis externa, the highly folded layers represent the mucosa, and the lumen is the most inner part (in black). Credit: Ronja Rappold.

Lead Researchers

Emma Slack
ETH Zurich

Johannes Bohacek
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Médéric Diard
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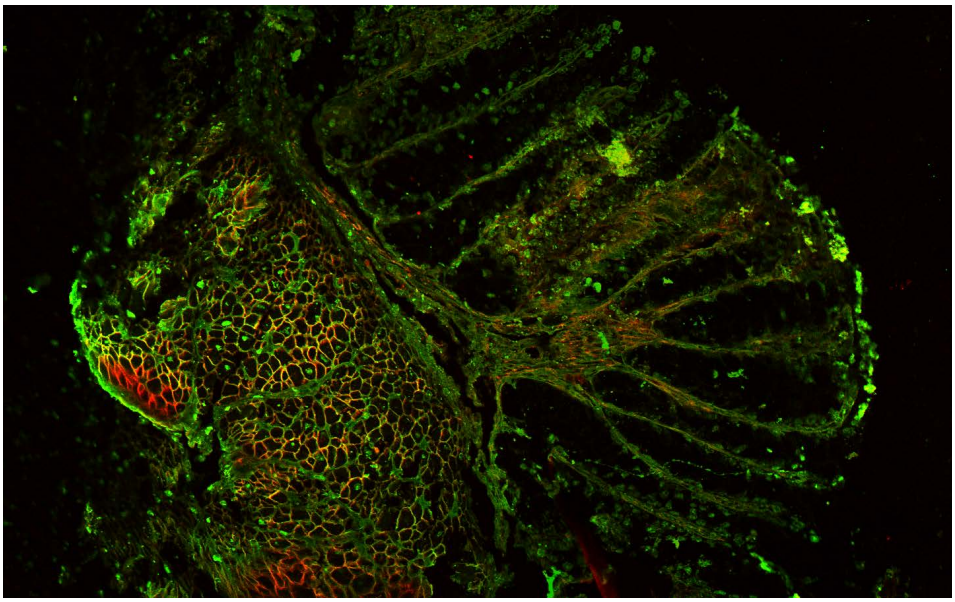
ETH Zurich

by a harmless competitor. The clearing of Salmonella from the mouse gut hindered disease progression. Similar outcomes were obtained when targeting pathogenic strains of *Escherichia coli (E. coli)* present in the mouse gut. These findings highlight the broad medical implications of this technique, especially in the prevention of neonatal infections driven by *E. coli*, such as sepsis in newborns.

Using a similar concept, the team successfully altered the gut microbiome's metabolic functions in mice using the CRISPR/Cas9 gene editing system. They simultaneously mutated genes coding for metabolic enzymes and antigenic capsule components, which favoured the selective growth of bioengineered bacteria with enhanced metabolic functions while clearing out unmodified microorganisms. This tour de force is particularly relevant for children with inborn metabolic diseases who suffer from hyperammonaemia, an excess of ammonia in the blood that can result in liver failure and neurodvelopmental disorders. As these children lack ammonia-detoxifying enzymes, one potential line of treatment is to rely on the gut microbiota's enzymatic ability to convert ammonia into nitrogen. Yet, the diversity of the gut microbiota of patients with hyperammonaemia disorders is severely compromised, as this consortium revealed by analysing faecal samples from children with this type of inborn error metabolic disorder. The ultimate goal of this consortium is to increase the diversity of the gut microbiota as well as its metabolic properties, an approach that could contribute to ameliorating patients' symptoms and preventing liver dysfunction.

Collaborators: Christian Wolfrum (ETH Zurich); Adrian Egli (University of Zürich); Matthias Baumgartner, Johannes Häberle, Sean Froese and Johannes Trück (University Children's Hospital Zürich); Giancarlo Natalucci (University Hospital Zürich); Martin Behe (Paul Scherrer Institute).

Image: Extracellular matrix remodelling in the inflamed cecum of a mouse. Credit: Dr. Ronja Rappold.



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ETH Zurich

Research Outputs and Communications

Over the last year, BRCCH-funded researchers continued to publish their findings in scientific journals, providing evidence based information for public health decision-making and reaching lay audiences via media-based communication. A summary of the BRCCH's facts and figures is displayed below.

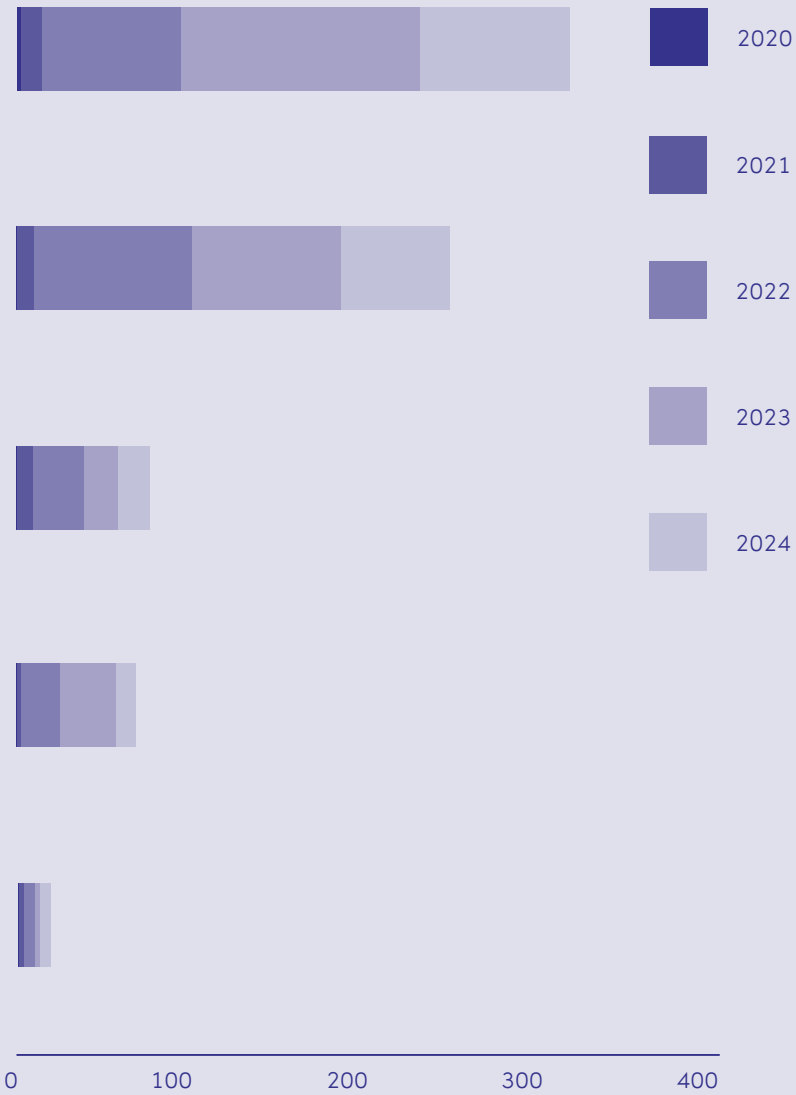
328 Research Presentations (Oral talks and poster presentations)

257 Publications and Data (Scientific articles, reviews and datasets)

80 Public Engagement and Outreach activities (Communications with the public)

71 Capacity Building Activities (Education and training activities for scientists)

20 IP and spin-off (patent applications and company establishment)



A Paediatric Digital Health Hub

Na Cai
ETH Zurich

Daniel Baumhoer
University of Basel

In 2024, the BRCCH began to transition into a Paediatric Digital Health Hub embedded within the University of Basel and ETH Zurich. In its new form, it aims to pioneer digital tools and data-driven approaches that address the preventive, diagnostic and therapeutic challenges faced by paediatric patients worldwide.

As part of this mission, the BRCCH is bringing together six new professorships – three at the University of Basel and three at ETH Zurich – working collaboratively in a new research facility located on the Life Science Campus in Basel. These professorships' research activities will be dedicated to a wide range of topics, spanning from new cellular-based tools for precision diagnostics to innovative computational methods for analysing large health datasets. Complementary to these research activities, two capacity building platforms will strengthen the research efforts of the Centre as a whole.

The recruitment processes for the six professorships are now at varying stages of completion. Dr Na Cai has been appointed as a professor of Medical Genomics at ETH Zurich, where she will start her research activities in February 2025. Her research revolves around the characterization of the genetic bases of psychiatric disorders, with a special focus on major depressive disorders (for further explanation of her research, please visit our **website**). While the professorship in Ethics and Policy in Paediatric Digital Health will be re-advertised in 2025, major progress has been made regarding the professorship in Biomolecular Engineering for Health: in January 2025, four talented candidates for this position were invited to deliver talks and undergo in-depth interviews about their current and future research projects.

At the University of Basel, the professorship in Paediatric Digital Health Data Analytics has been offered to a highly qualified candidate, and an official appointment is expected before the end of spring 2025. Moreover, in February 2025, potential candidates for the professorship in Paediatric Emerging Infectious Diseases Modelling will participate in the selection symposium, while the advertisement for the professorship in Systems Developmental Medicine is expected to be released in spring 2025.

Another important milestone in the realization of the paediatric digital health cluster was achieved in 2024 with the appointment of Dr Daniel Baumhoer as a member of the BRCCH's capacity-building platforms. Dr Baumhoer is a BRCCH-associated professor of Bone and Soft Tissue Pathology, and a description of his ongoing research projects can be viewed on our **website**. Progress has also been made towards the establishment of the second capacity-building platform (i.e., the professorship in Paediatric Innovative Clinical Trials), as the committee that will structure the hiring process has been established and the generation of a profile paper for this position has been initiated. At the same time, the BRCCH professorships' access to the high-end technology platforms and facilities that support research, diagnosis and translation at ETH Zurich (DBSSE) and the University of Basel has now been formalized.

Additional Activities

Conference: The Future of Paediatric Health Research Spotlight Day

On 19 April 2024, the BRCCH hosted a one-day seminar and networking event that brought together over 50 researchers from the BRCCH's four partner institutions working under the common theme of paediatric digital health. This event included talks from BRCCH PEP researchers, who shared the main outcomes of their projects, and keynote lectures from internationally renowned scientists. The scientific presentations covered challenges associated with designing medical devices for paediatric patients, the latest insights on fragile X syndrome and paediatric brain tumours and the difficulties in implementing digital health interventions in LMICs. These presentations laid the ground for future collaborations among researchers from different institutions, while being one of the first steps towards establishing the BRCCH community on paediatric digital health.

Image: A PEP fellow presents her work on designing medical devices for newborns during the Future of Paediatric Health Research Spotlight Day. Credit: BRCCH Management Office.

Research Seminars

As in previous years, the BRCCH hosted seminars to highlight the outcomes of its research projects, which were accessible online to ensure the largest possible reach. In 2024, these seminars attracted over 100 attendees. The topics of the presentations included:

- "Lessons from the Deceased to the Living and Back" featuring BRCCH researchers Prof Alexander Tzankov (University Hospital Basel) and Dr Jasmin Haslbauer (University Hospital Basel) alongside the guest speaker Prof Maximilian Ackermann (RWTH University Clinics and Helios University Clinics)
- "Recent Advances in the Molecular Understanding and Diagnostics of Bone Tumours", an inaugural lecture delivered by the BRCCH-associated Prof Daniel Baumhoer (University Hospital Basel) presenting his current and future research activities

Support for Early Career Researchers

The Early Career Programme remained a core part of the BRCCH's activities in 2024, providing training opportunities for the next generation of paediatric health researchers. Over the course of the year, we partnered with experts from Unitectra and the Innovation Office (University of Basel) to deliver two workshops on "Fundamentals of Intellectual Property" and "Science Translation", respectively. Additionally, the BRCCH hosted a workshop on "Defining and Growing Your Personal Brand," in which researchers learnt how to maximize their research impact via social media channels while unlocking future professional opportunities. Our training efforts were complemented by an additional workshop on "Leadership and Nurturing Research Teams," in which both junior and established researchers were familiarized with the opportunities and challenges associated with different leadership styles.

All of our workshops were well attended by researchers at different academic stages, who provided very positive overall feedback about the content of the sessions and the impact on their careers.

Image: A lecture delivered by experts from Unitectra during the BRCCH workshop on Fundamentals of Intellectual Property. Credit: Greet van Malderen.

Outreach activities

In an effort towards disseminating knowledge to the public, the BRCCH produced three podcast episodes in 2024 featuring interviews with BRCCH-funded researchers. This podcast series, entitled **"Science Speaks: Conversations on Health,"** discusses a wide variety of scientific topics, ranging from the past, present and future challenges of diagnosing viral infections to the role of machine learning in protein engineering. Combining real-life examples with cutting-edge scientific discoveries, it aims to bridge the gap between specialized scientific knowledge and public curiosity about new scientific facts.

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