



2023

Annual Report

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EDITORIAL

The LOOP Zurich was established in 2018 as a center for precision medicine by the University of Zurich, ETH Zurich, University Hospital Zurich, Zurich University Children's Hospital, Balgrist University Hospital, and the University Hospital of Psychiatry Zurich. In 2020 – amidst the Corona pandemic – the groundwork began. Since then, The LOOP Zurich has gradually evolved. At this point, we would like to report on our achievements and place particular emphasis on our activities in 2023.

The strategy for implementing the guidelines of the supporting institutions is based on two pillars:

1. Inter-institutional research projects
2. Inter-institutional platforms to support researchers in their project work

A fundamental requirement for research projects in the field of precision medicine is that they involve clinical translation. This means that researchers must demonstrate that their medical approaches work for patients. Correspondingly, they must be equipped with the appropriate resources to achieve this goal. Currently, four translational projects are operational.

The second major activity concerns the setup of the inter-institutional The LOOP Biomedical Informatics Platform (The LOOP BMIP). Anonymized patient data, which are a prerequisite for many precision medicine projects, should be made accessible for research purposes. After initial difficulties, the development of The LOOP BMIP has gained momentum, and we are confident that the first version for testing will be available by the end of 2024.

To fully exploit the benefits of The LOOP BMIP in the future, The LOOP Zurich is also expanding its project portfolio. Platform projects, which extend The LOOP BMIP by incorporating additional data types, are now being promoted. Through the development of applications, they will also demonstrate the value of The LOOP BMIP for research purposes. In 2023, two initial platform projects were recommended for funding and started their work in 2024.

I believe we can say today that the initial setup phase of The LOOP Zurich has largely been completed. Now it is time to consolidate what has been achieved.

I would like to conclude with thanks to our sponsors, the founding institutions backing us, and especially to the foundations whose generous support enables many of our ideas to become reality. They contribute significantly to the success of The LOOP Zurich.



Markus Rudin
The LOOP Zurich Founding Director

NOTE OF THANKS

The LOOP Zurich would like to thank the following foundations for their dedication and generous support! Through their financial assistance, we can achieve important advancements in medical research and initiate groundbreaking discoveries. Thanks to your valuable contributions, new treatment methods can be developed, diseases better understood, and the quality of life for many people improved.

- ∞ Georg and Berta Schwyzer-Winiker Foundation
- ∞ Helmut Horten Foundation
- ∞ Monique Dornonville de la Cour Foundation
- ∞ Uniscientia Foundation
- ∞ Vontobel-Stiftung

THE LOOP ZURICH

The LOOP Zurich is a medical center for translational research and precision medicine. It relies on interdisciplinary and inter-institutional collaboration to better understand disease mechanisms and develop new treatment methods for the benefit of patients and society. The goal is the efficient translation of scientific knowledge into medical applications for personalized healthcare.

The projects of The LOOP Zurich are based on – in addition to the scientific expertise of the researchers – state-of-the-art research infrastructures in biomedical informatics, quantitative biomedicine, molecular biology, extensive bio and data banks, and the use of Artificial Intelligence (AI).

Founder institutions

The LOOP Zurich was founded by the University of Zurich (UZH), ETH Zurich (ETH), and the four university hospitals of Zurich – i.e., the University Hospital Zurich (USZ), the Zurich University Children's Hospital (KiSpi), the Balgrist University Hospital, and The University Hospital of Psychiatry Zurich (PUK). The complementary expertise at these Zurich institutions shall be combined in a joint research initiative.

Funding strategy

The LOOP Zurich supports research consortia that solve complex medical problems. It is important that they not only address scientific questions but also develop their projects up to clinical testing – for the benefit of patients.

The LOOP Zurich projects

The LOOP Zurich supports research projects (Translational and Incubator Projects) as well as the establishment and operation of clinical and technological platforms along with their associated platform projects:

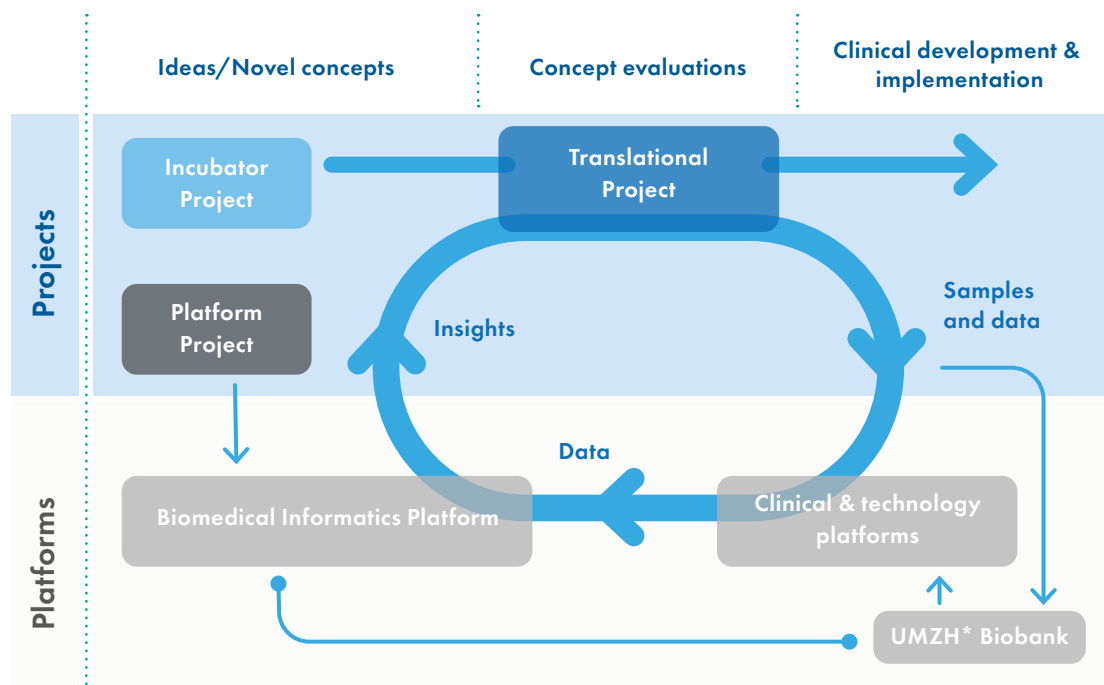
1. Research projects: Translational Projects and Incubator Projects

The goal of *Translational Projects* is to develop a biomedical concept to a point at which its efficacy can be demonstrated in patients (Proof-of-Concept).

The introduction of *Incubator Projects* is planned for 2024. They shall be exploratory in nature, aimed at developing novel concepts that might be further explored in Translational Projects.

2. Platforms and Platform Projects

In the initial phase, the efforts of The LOOP Zurich are focused on the development of a Biomedical Informatics Platform (The LOOP BMIP, see page 22). This platform will include clinical data from the four partner hospitals as well as data from the technology platforms in order to make them available for research purposes. Platform projects are intended to expand the applicability of the platforms.



Implementation of The LOOP Zurich strategy with research projects (in blue) and technology platforms (in gray): These two elements are linked via data flow. Clinical data and samples are analyzed in technology platforms, the resulting data is processed in the Biomedical Informatics Platform and flows back as new insights into the projects (The LOOP Zurich).

* University Medicine Zurich

TRANSLATIONAL PROJECTS

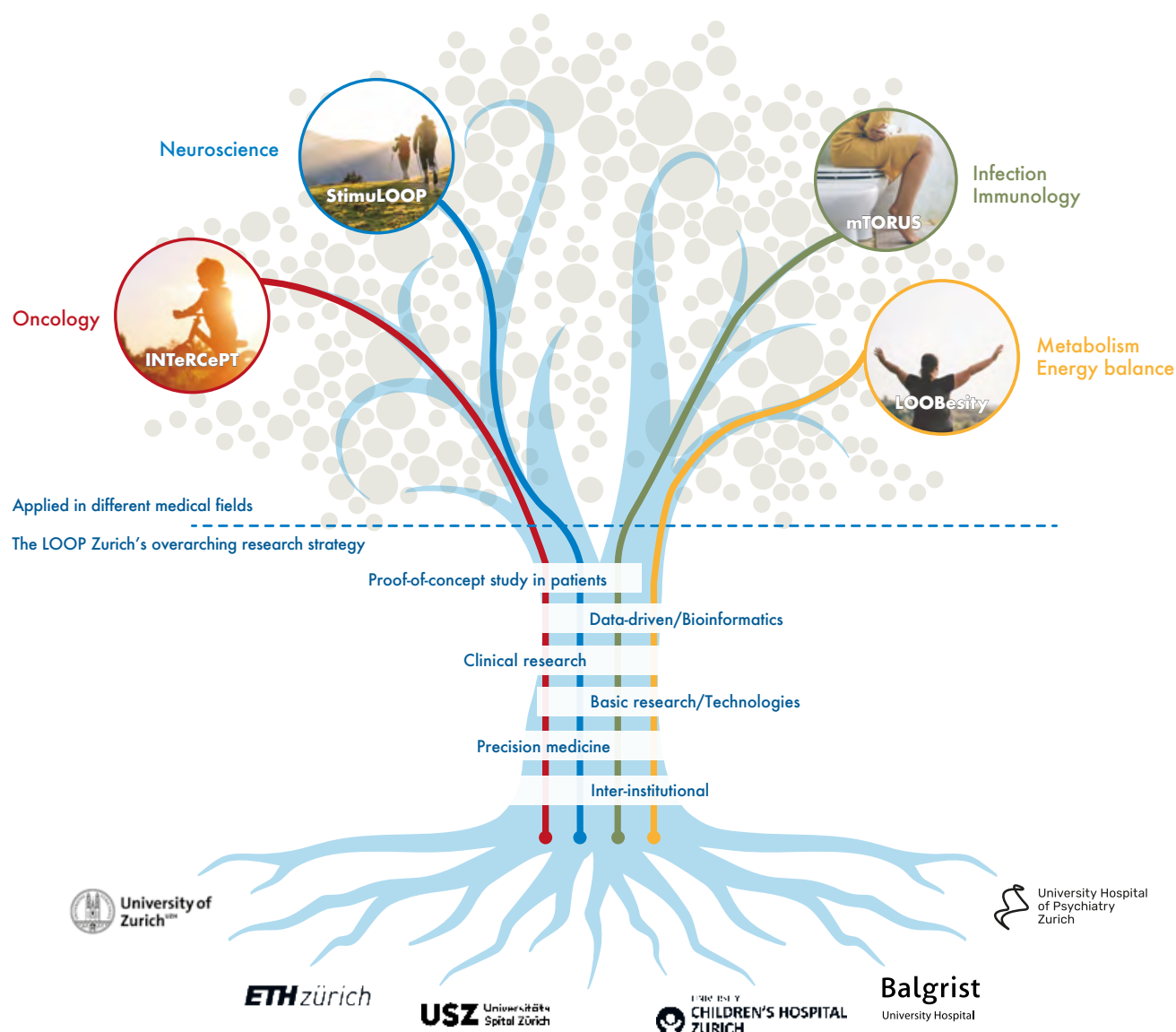
TRANSLATIONAL PROJECTS

The *Translational Projects* are designed for interdisciplinary consortia of five to eight researchers, who work with their groups in the field of precision medicine. The projects must be developed in such a way that the medical problem formulated therein can only be successfully addressed if all involved research groups from biomedical basic research, biomedical informatics, engineering, and clinical research collaborate. Moreover, the projects supported by The LOOP Zurich should collect health-relevant data and samples enriching the platforms.

Furthermore, the translational nature of the projects imposes the inclusion of clinical research aspects, and in particular the demonstration that the proposed approach can be applied to patients (Proof-of-Concept) over the course of the project. Thereby, the *Translational Projects* should lay the foundation for a potential subsequent clinical development.

In addition to the specific scientific results, the projects are also expected to contribute to the further development of the research ecosystem in Zurich. This is achieved by utilizing and contributing to the existing infrastructure in information technology, biobanks, and clinical research at the University of Zurich, ETH Zurich, and the four involved university hospitals, thereby contributing to their further development.

The total budget for a *Translational Project* in precision medicine is up to CHF 5 million with a project duration of five years.



Translational Projects: A overarching research strategy is applied to various areas of medicine. Translational projects must meet the criterion of precision medicine, be structured inter-institutionally (pooling expertise), include an essential biomedical informatics component, as well as clinical research elements. Finally, it is required that within the five-year project duration, evidence of efficacy for the biomedical approach (Proof-of-concept) is demonstrated in patients. The 2023 portfolio of Translational Projects covers the areas of precision oncology, neuroscience, infection/immunology, and metabolism/energy balance.

“Personalized treatment for blood cancers”

INTeRCePT

Project lead: Thorsten Zenz Department of Medical Oncology and Hematology, University Hospital Zurich

Problem High relapse rate and development of therapy resistance in blood cancer treatment

Goal Reduce relapse rate through optimized treatment strategies based on the molecular signature of tumor and immune cells

Blood cancers are usually well treatable with a combination of chemotherapy, targeted drugs, and immunotherapy. However, cancer recurs in many patients after some time. In Switzerland alone, over 1100 people die annually from leukemia and lymphoma. In particular, aggressive lymphomas or acute lymphoblastic leukemia are difficult to treat.

The research team led by Thorsten Zenz aims to determine which therapies are most effective for both children and adults with blood cancer. For this purpose, an “Innovation Clinic” for patients affected by relapse is being established in Zurich. Prior to treatment, tumor material and healthy blood cells are collected. They are examined for their characteristics, and their response to treatment with various drugs is assessed. Analyzing these data yields a detailed map of therapy responses at the single-cell level. This improves understanding of the behavior of tumor and healthy immune cells and their response to different therapies.

The goal of INTeRCePT is to increase the response rate of patients to therapy by 50%.

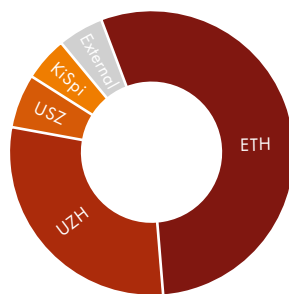


Significance for medical research community

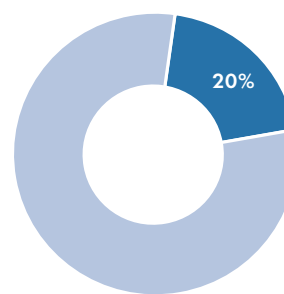
The concept of precision medicine from INTeRCePT can serve as a template for planning therapies for a variety of cancer types. The detailed analysis of the dynamic changes in tumor cells and their molecular response to treatment allows conclusions that can be implemented into an optimized treatment plan, thereby improving the prospects for cancer patients. With projects like INTeRCePT, the medical research community in Zurich is positioned internationally at the forefront in the field of precision oncology of hematological cancers.

Utilization of funds

Per institutions



For biomedical informatics



Groups involved

Thorsten Zenz
Burkhard Becher
Nico Beerenwinkel
Jean-Pierre Bourquin
Wolfgang Huber
Andreas Moor
Berend Snijder

Department of Medical Oncology and Hematology, University Hospital Zurich
 Institute of Experimental Immunology, University of Zurich
 Department of Biosystems Science and Engineering, ETH Zurich
 Oncology, Zurich University Children's Hospital
 Quantitative Biology and Statistics, EMBL Heidelberg
 Department of Biosystems Science and Engineering, ETH Zurich
 Department of Biology, ETH Zurich

What motivates young researchers

"In our team, we have the opportunity to examine blood cancer and lymphomas from all perspectives. This enables us to identify targets for improving treatment. That drives me."



Stefanie Reisenauer
 Ph.D. student in the Zenz research group
 at the Department of Medical Oncology and Hematology
 at the University Hospital Zurich



“Learning to walk again while sleeping”

StimuLOOP

Project lead: **Andreas Luft** Department of Neurology, University Hospital Zurich
Roger Gassert Department of Health Sciences and Technology, ETH Zurich

Problem Severe impairment of gait behavior in stroke and Parkinson’s patients

Goal Personalized neurorehabilitation combined with sensory stimulation and memory consolidation during sleep

Walking, hiking, or running: Being able to move on both legs is important for our quality of life. With the StimuLOOP project, the research team led by Andreas Luft and Roger Gassert aims to help individuals affected by stroke or Parkinson’s disease regain their normal walking behavior as efficiently as possible.

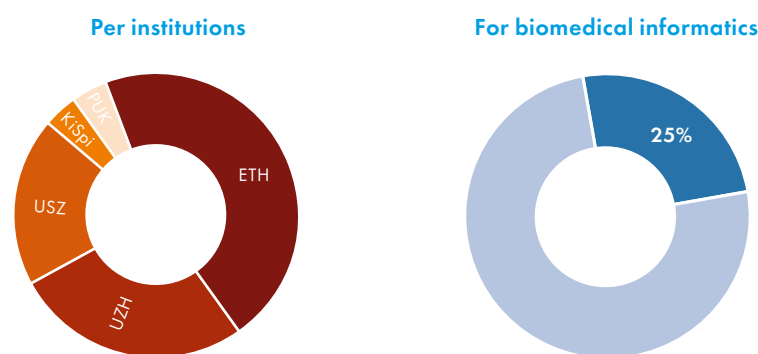
Each person has their own unique walking pattern, and so are the consequences of Parkinson’s or stroke on walking behavior. However, patients in rehabilitation have been treated more or less the same – adapted only based on the experience of the therapists. StimuLOOP introduces novel technologies to consolidate the “proper” walking pattern learned in rehabilitation. During training, individuals learn to influence their brain activity using a visual feedback method, allowing them to relearn an optimal walking pattern tailored to their needs. To enhance learning, the acquired skills can be consolidated through a combination of auditory stimulation during training and playing corresponding stimuli during sleep.



Significance for the medical research community

The approach of StimuLOOP, combining personalized neurorehabilitation with a neurofeedback method and targeted memory consolidation through sensory stimulation, is unique worldwide. The project contributes to establishing a strategic focus in clinical neurorehabilitation for stroke and Parkinson's patients at the research site in Zurich.

Utilization of funds



Groups involved

Andreas Luft	Department of Neurology, University Hospital Zurich
Roger Gassert	Department of Health Sciences and Technology, ETH Zurich
Christian Baumann	Department of Neurology, University Hospital Zurich
Reto Huber	Developmental Pediatrics, Zurich University Children's Hospital
William Taylor	Department of Health Sciences and Technology, ETH Zurich
Julia Vogt	Department of Computer Science, ETH Zurich

This project is made possible by the Vontobel-Stiftung.

What motivates young researchers

"In an interdisciplinary network of scientists from the fields of medicine, engineering, and data science, we develop methods at the forefront of neuroscience and technology and directly apply them to patients. This is substantial, practical transfer of knowledge, and for me personally, the greatest motivation in this project."



Chris Awai
Director DART Lab at Lake Lucerne Institute &
Scientific Project Manager StimuLOOP



“When passing water becomes painful “

mTORUS

Project lead: Thomas Kessler Neuro-Urology, Balgrist University Hospital

Problem Recurring urinary tract infections and antibiotic resistance

Goal Restoration of a healthy urinary microbiome through elimination of bacteria and microbiome transplantation

Urinary tract infections can affect anyone. Instead of treating them with antibiotics as before, a research team led by neuro-urologist Thomas Kessler from Balgrist University Hospital is opting for a combination therapy with genetically modified bacteriophages (phages) and a microbiome transplant. Phages are viruses that infect, replicate within, and ultimately kill bacteria. In mTORUS, the phages are genetically modified to specifically target pathogenic bacteria involved in urinary tract infections.

To further reduce the risk of recurrent urinary tract infections, a healthy population of bacteria in the urinary tract and bladder will be established through transplantation in a second step in addition to treatment with phages. For this purpose, the team is researching the composition of a healthy urinary microbiome. The microbiome will then be produced in the laboratory and eventually applied to the bladder and urinary tract of the affected individuals. Moreover, strengthening the immune system shall help to prevent the recurrence of infections.

The project aims to lay the groundwork for the use of phages. They represent a promising alternative to the use of antibiotics and can be used not only for the treatment of urinary tract infections.

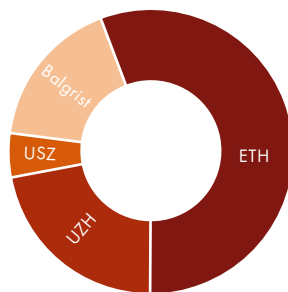


Significance for the medical research community

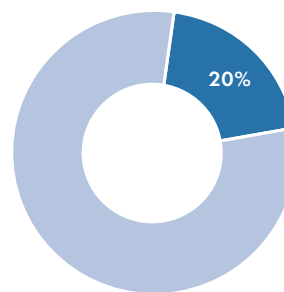
The innovative concept of mTORUS is highly relevant in times of increasing antibiotic resistance, especially since the use of phages can be extended to numerous infectious diseases. Thus, mTORUS contributes to consolidating and expanding the leading position of the research site in the field of infectious diseases. Additionally, it lays the groundwork for future developments in the field of microbiome-based personalized medicine.

Utilization of funds 2023

Per institutions



For biomedical informatics



Groups involved

Thomas Kessler

Neuro-Urology Balgrist University Hospital

Onur Boyman

Department of Immunology, University Hospital Zurich

Martin Loessner

Department of Health Sciences and Technology, ETH Zurich

Gunnar Rätsch

Department of Computer Science, ETH Zurich

Shinichi Sunagawa

Department of Biology, ETH Zurich

Emma Wetter Slack

Department of Health Sciences and Technology, ETH Zurich

Nicola Zamboni

Department of Biology, ETH Zurich

This project is made possible by the Monique Dornonville de la Cour Foundation.

What motivates young researchers

"Through direct collaboration with physicians, I have access to bladder biopsies that I can analyze using modern immunological methods. This allows me to enter completely new territory with patients suffering from urinary tract infections. I have already found significant differences in immune responses in humans and animals. May our findings improve the quality of life for those affected in the near future!"



Joris Veger

Ph.D. Student at the Department of Immunology,
University Hospital Zurich



“Stress and obesity – a health risk”

LOOBesity

Project lead: Felix Beuschlein Clinic for Endocrinology, Diabetology, and Clinical Nutrition, University Hospital Zurich

Problem Elevated stress hormone metabolism (glucocorticoid) exacerbates health risks in obesity

Goal Optimization of treatment for obese patients with altered metabolism

Obesity is a common disease that increases the risk of cardiovascular and metabolic complications such as vascular complications and diabetes. Diets and exercise often do not result in lasting benefit. Therapeutic interventions depend on the personal experience of the treating physician, as there is a lack of specific indicators for determining which therapy is best suited for whom.

With the LOOBesity project, the research team led by Felix Beuschlein aims to develop individual and thus more effective therapies for a selected group of obese individuals in the fight against obesity. Obese individuals with elevated glucocorticoid metabolism have a higher risk of developing comorbidities. Elevated glucocorticoid concentrations occur during stress. A first goal is to develop biomarkers for this patient group based on molecular signatures as well as radiological criteria that provide information about the composition and distribution of body fat. Following integration of this information an Artificial Intelligence (AI)-based analysis, the risk of developing comorbidities is estimated for affected individuals, enabling the development of personalized therapy suggestions. Individuals at high risk subsequently receive optimized treatment – with the aim of achieving sustained weight reduction.

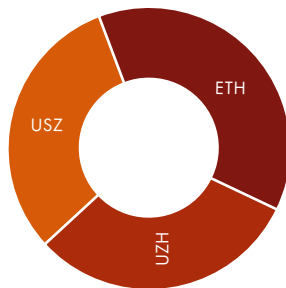


Significance for the medical research community

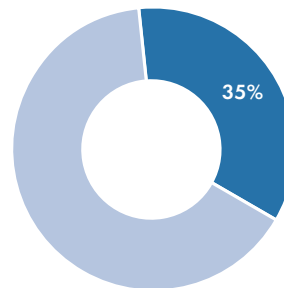
The AI-based analysis of molecular information and imaging data enables the identification of obese patients at increased risk of complications and provides them with appropriately optimized therapy. This project thus leverages the complementary expertise in endocrinology, radiology, machine learning, and study design at the research site in Zurich to establish a focus in the field of clinical obesity research.

Utilization of funds

Per institutions



For biomedical informatics



Groups involved

Felix Beuschlein

Clinic for Endocrinology, Diabetology, and Clinical Nutrition, University Hospital Zurich

Thomas Frauenfelder

Institute for Diagnostic and Interventional Radiology, University Hospital Zurich

Ender Konukoglu

Department of Information Technology and Electrical Engineering, ETH Zurich

Milo Puhan

Department of Health Sciences and Technology, University of Zurich

Christian Wolfrum

Department of Health Sciences and Technology, ETH Zurich

What motivates young researchers

"Personalized medicine or precision medicine has long been primarily associated with the treatment of cancer or autoimmune diseases. I find it very exciting and important that we are now trying to apply this approach to improve the treatment of obese patients."



Nina Derron

Postdoctoral researcher at the Clinic for Endocrinology, Diabetology, and Clinical Nutrition, University Hospital Zurich



PLATFORMS

“Data – the digital key to the medicine of the future”

The LOOP Biomedical Informatics Platform (The LOOP BMIP)

Project lead: Markus Rudin and Jens Selige, The LOOP Zurich

The goal of The LOOP BMIP is to establish and promote an interdisciplinary data-driven research culture.

This includes:

- the integration, storage, and maintenance of project-specific databases as well as the harmonization of clinical data from patients at the Zurich university hospitals along the interoperability guidelines of the national network SPHN (Swiss Personalized Health Network).
- the development of a secure infrastructure for data exchange between The LOOP BMIP and the Zurich university hospitals, ensuring full data and patient protection.
- the establishment of an infrastructure for the application of Artificial Intelligence (AI) in medicine to improve patient care.

The LOOP BMIP is an essential part of the digital transformation of the Zurich university hospitals and thus of crucial importance for data-driven research in medicine.



In 2022 The LOOP Zurich was mandated by the Coordination Committee of University Medicine Zurich (UMZH) to coordinate the setup of inter-institutional data platform The LOOP BMIP. Funds were allocated for a two-and-a-half-year setup and a two-year pilot phase.

Implementation planning for The LOOP BMIP began in 2022. The final plan, which included a detailed budget, was submitted in mid-May 2023, and ultimately approved by all supporting institutions of The LOOP Zurich in July 2023. Recruiting additional IT professionals proved challenging given the competitive job market situation. Nevertheless, by the end of November 2023, the desired staffing levels were achieved, and the organizational structure with clear reporting lines was defined.

Four central working groups (Architecture, Terminology, Data Usage, and Governance) and IT groups at the four hospitals have taken charge of the implementation. The hospital groups are responsible for developing protocols for data transfer between their institutions and The LOOP BMIP.

The LOOP BMIP builds on the results of the SPHN initiative, both in terms of governance and IT structures. The technical core is the research IT platform "Leonhard Med" of ETH Zurich. This platform is also part of the national BioMedIT network, enabling data exchange at the national level in the future. It is essential that the new research infrastructure complies with the legal requirements of patient and data protection. To this end, close coordination with the data protection officer of the Canton of Zurich is sought during the setup of The LOOP BMIP.

Project figures The LOOP BMIP

Timeframe

- Construction	2.5 years (July 2023 – December 2025)
- Pilot phase/Test operation	1 – 2 years (starting January 2026)

Finances

- Construction	CHF 6,48 million
- Pilot phase/Test operation	CHF 1,33 million

Funded by

UMZH (University Medicine Zurich)

Involved institutions

University Hospital Zurich (USZ)
University Children's Hospital Zurich (KiSpi)
Balgrist University Hospital (Balgrist)
University Hospital of Psychiatry Zurich (PUK)
ETH Zurich (ETH)
University of Zurich (UZH)

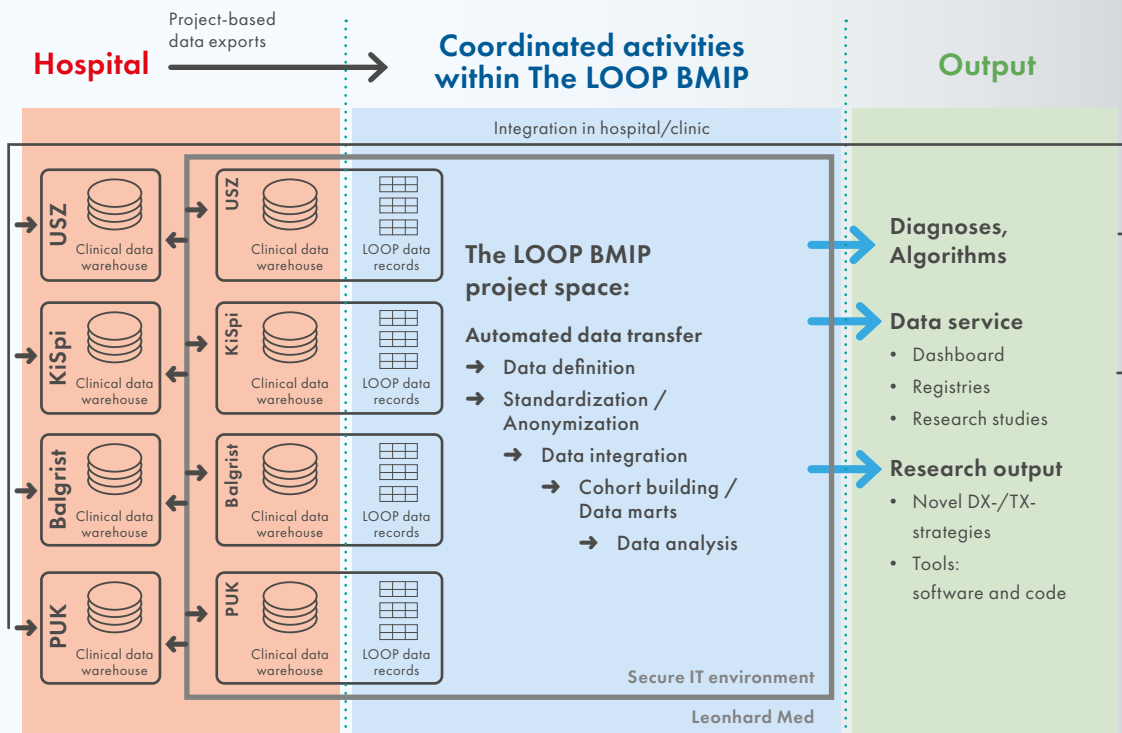
Number of persons involved in the project

~ 40

IT project support

The Hyve B.V., Utrecht, The Netherlands





How does The LOOP BMIP work?

Clinical data is exported from each hospital into a secure IT environment (Leonhard Med, ETH, gray frame), which is under the full control of the hospitals (red background).

Data available and relevant for research purposes from all hospital datasets can be accessed through a portal. Cohort-building functions allow data to be grouped for specific questions and clinical studies. Projects meeting all legal and ethical requirements, are formally approved and the corresponding data are transferred to the project area of The LOOP BMIP.

Data exploration in The LOOP BMIP environment (blue background) can lead to novel biomedical insights and innovative diagnostic/therapeutic options (DX/TX) for patient care, as well as the development of novel data services (including AI applications) that can be integrated into the hospitals' internal systems.

Platform Projects

In its initial implementation, The LOOP BMIP focuses on clinical and laboratory data provided by the hospitals. While this restricted scope of data is sufficient for testing and optimizing the operability of platform as such, it limits its value for research purposes. This prompted The LOOP Zurich to introduce a new project type in 2023: The LOOP Zurich Platform Projects. Generally speaking, Platform Projects are geared towards enhancing the value of a platform or leading to the setup of novel clinical and/or technological platforms. Like Translational Projects, Platform Projects must involve at least two institutions to combine their complementary capabilities, knowledge, and resources.

The total funding for a Platform Project is a maximum of CHF 1 million and is awarded over a period of three years.

In the first call for proposals, researchers were invited to propose Platform Projects that contribute to The LOOP BMIP by:

1. Integrating novel and complementary types of health-related data such as omics data, image data, and/or quasi-real-time data (high-frequency recordings) into The LOOP BMIP.
2. Developing new analysis techniques capable of processing large amounts of relevant medical data of different types. These techniques should lead to new insights into a medical problem and/or predict potential outcomes and/or treatment responses, with the potential to guide and improve clinical decision-making.

An expert panel recommended two Platform Projects for funding, both of which started in early 2024.



The LOOP BMIP Imaging Platform – BMI²

Project lead: Bjoern Menze Department of Quantitative Biomedicine, University of Zurich
Viktor Kölzer Institute of Pathology and Molecular Pathology, University Hospital Zurich

Goal Integration of imaging data from radiology and pathology into The LOOP BMIP

Imaging data from radiology and pathology represent a valuable but underutilized resource for medical research. Modern image analysis based on machine learning algorithms enables a more precise characterization of disease and the identification of clinically relevant biomarkers.

The Biomedical Informatics Imaging Platform (BMI²) is developing an SPHN-compatible extension for The LOOP BMIP to process biomedical imaging data. This will be complemented by applications for biomedical and clinical research based on machine learning and artificial intelligence (AI).

After the implementation phase, the benefits of this extension to The LOOP BMIP will be demonstrated through selected examples from the fields of radiology, neuroradiology, pathology, and radiation therapy.

Significance for the medical research community

Imaging techniques have become an integral part of diagnostics. Modern image analysis in radiology and pathology, incorporating machine learning and artificial intelligence, may provide diagnostic information more efficiently and accurately and thus become indispensable supportive tools for both radiologists and pathologists. BMI² is expected to provide a significant boost for integrating machine learning into clinical routine. In a first step, BMI² aims to enable researchers getting access to advanced machine learning methods.

Participating research groups

Bjoern Menze
Viktor Kölzer
Sebastiano Caprara
Thomas Frauenfelder
Matthias Guckenberger
Andreas Jakob

Group for Biomedical Image Analysis and Machine Learning, University of Zurich
Computational and Translational Pathology Lab, University Hospital Zurich
Digital Medicine Unit, Balgrist University Hospital
Institute for Diagnostic and Interventional Radiology, University Hospital Zurich
Department of Radiation Oncology, University Hospital Zurich
Center for MR Research, Zurich University Children's Hospital

This project is made possible by the Georg and Berta Schwyzer-Winiker Foundation.

ProteOmics for lymphoma and prognostication (POLAR)

Project lead: Thorsten Zenz Clinic for Medical Oncology and Hematology, University Hospital Zurich

Goal **Integration of molecular data (proteomics) into The LOOP BMIP**

The goal of POLAR is to link complete protein profiles (proteomics) of lymphomas with other available patient data (e.g., clinical data, laboratory values, treatment outcomes, pathological characterizations, genetic analyses) using The LOOP BMIP and to develop novel analysis capabilities. This comprehensive integration of various data types will improve diagnosis and identify new target structures for treatment. It will also help assess the effectiveness of medications before they are administered to patients. The platform will enable physicians and researchers to access the vast amounts of data generated by proteomic analyses and make them usable for research and diagnosis.

Significance for the medical research community

The project will generate a large proteomic dataset of lymphoma samples, which will be a unique resource for the lymphoma research community. Additionally, the project will lay the foundation for a national lymphoma registry, in which the University Hospital Basel and the Institute for Biomedical Research in Bellinzona (IRB) will also participate. The precise alignment of diagnosis and individual therapy with molecular profiles is a prerequisite for personalized, precision oncological lymphoma treatment.

Participating research groups

Thorsten Zenz
Valentina Boeva
Marco Bühler
Christoph Messner

Department of Medical Oncology and Hematology, University Hospital Zurich
 Department of Computer Science, ETH Zurich
 Institute of Pathology and Molecular Pathology, University Hospital Zurich
 Swiss Institute for Asthma Research SIAF, Davos, University of Zurich

This project is made possible by the Uniscientia Foundation.

COVID-19 PROJECTS

COVID-19 projects

The pandemic development of COVID-19 has prompted The LOOP Zurich to support projects related to SARS-CoV-2 infections. Projects from the Zurich research area that have been evaluated by the Swiss National Science Foundation and received funding were invited to submit additional projects that meet the principles of The LOOP Zurich: precision medicine, being data-driven, and preferably including a clinical research component. Four projects were selected.



Dissecting the complex interplay between SARS-CoV-2 and the immune system for identification of COVID-19- and hyper-inflammation-specific immune signatures

Project lead: Burkhard Becher Institute of Experimental Immunology, University of Zurich

Prediction of severe disease courses at an early stage – Burkhard Becher and his research team identified a bio-marker that can predict severe courses of COVID-19. This allows doctors to distinguish patients with good perspectives of rapid recovery from those expected to develop a severe course of illness. This enables early initiation of targeted drug therapies and optimal planning of transfers to intensive care units. The approach can also be used to optimize vaccination strategies.

Pre-existing conditions can indicate severe courses. With the help of computer-assisted analyses, it was possible to evaluate the data of over fifty COVID-19 patients and demonstrate that people suffering from kidney disease have a significantly increased risk for developing a severe course of illness than those without or with another pre-existing condition.

Funded by the Vontobel-Stiftung.



Development of a gender-sensitive risk assessment tool to predict short- and long-term outcomes of COVID-19 (COvid-GENder: COGEN)

Project lead: Catherine Gebhard Department of Nuclear Medicine, University Hospital Zurich

Women have a higher risk than men of developing Long COVID. Conversely, men are more likely to develop severe forms of COVID-19 and die more frequently from SARS-CoV-2 infection. This was the finding of Catherine Gebhard and her team. They analyzed thousands of patient data and conducted patient surveys to learn more about the socioeconomic environment and socio-cultural gender roles. For women, a traditional gender role involving more housework and childcare could constitute a risk factor. Especially in the case of Long COVID, the study might recommend preventive measures, such as stress reduction in the home environment.

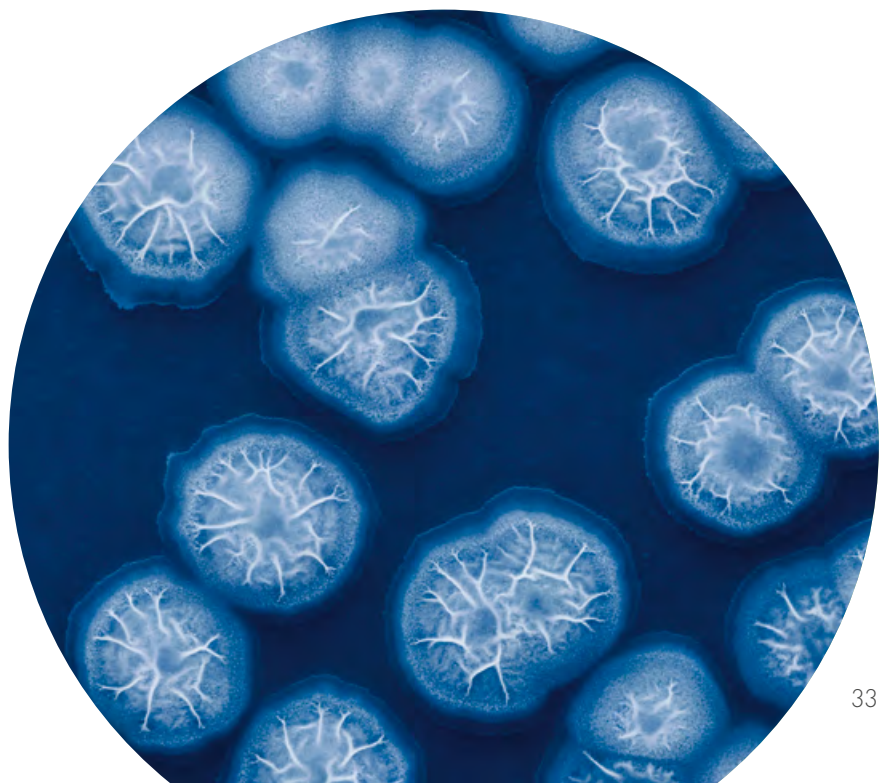


Defeating SARS-CoV-2 with *Bacillus subtilis* biofilms

Project lead: Cornel Fraefel Institute of Virology, University of Zurich

A team of researchers from the University of Zurich and ETH Zurich, led by Cornel Fraefel, aims to develop a novel vaccination against the coronavirus SARS-CoV-2. This vaccination would not need to be administered as an injection but could be taken as a tablet. This would significantly facilitate a vaccination campaign. Unlike conventional vaccines that use components of foreign viruses, this approach utilizes a bacterium – *Bacillus subtilis* – naturally found in the gut. These bacteria are, in a way, “programmed” to target SARS-CoV-2 and trigger a response from the body’s immune system in the small intestine upon oral intake. This novel and patient-friendly vaccination method could also be used for other diseases.

Funded by the Helmut Horten Foundation.



SARS-CoV-2-induced immune alterations and their role in post-COVID syndrome

Project lead: Roland Martin Institute of Experimental Immunology, University of Zurich

One in three individuals affected by COVID-19 suffers from the Long COVID syndrome. This has significant implications for their quality of life. Excessive, debilitating fatigue and a decline in cognitive function are just two of the symptoms. Affected individuals struggle to return to normal. For this to happen, comprehensive therapeutic and medical care is necessary.

Roland Martin and his research team aim to identify the causes of this syndrome and develop treatment options. They suspect that the body's immune response to SARS-CoV-2 disrupts immune function in the long term. Precisely understanding how this occurs could be valuable in selecting vaccines for individual patients and finally enabling a long-awaited therapy for Long COVID

Funded by the Helmut Horten Foundation.



Outlook 2024

Translational Projects

The four ongoing projects INTerCePT, StimuLOOP, mTORUS, and LOOBesity will continue. A mid-term evaluation involving the Scientific Advisory Board will take place in May for INTerCePT and StimuLOOP. No further project calls are planned for 2024.

Incubator Projects

A new category of inter-institutional projects, the Incubator Projects, will be initiated in 2024. The aim is to evaluate novel biomedical concepts that might eventually be continued as Translational Projects. Incubator Projects cover a wide range of topics and may include mechanistic aspects, novel diagnostic, and therapeutic approaches, or new MedTech solutions. The first project call has been launched in the first quarter of 2024. The total budget for the Incubator Projects is CHF 1 million, with a project duration of three years.

Platform Projects

In 2024, the first two The LOOP Zurich Platform Projects commenced: BMI² and POLAR. They will significantly expand The LOOP BMIP by integrating imaging and pathology data as well as molecular information as new data types.

Biomedical Informatics Platform The LOOP BMIP

Building the Biomedical Informatics Platform will be one of the core activities of The LOOP Zurich for 2024. The implementation teams have been recruited and will address aspects such as system architecture, semantics, data utilization, and governance/controlling. The goal is to minimize the hurdles for using patient data for research purposes, allowing researchers to focus on project-specific questions – of course, provided that all legal requirements, especially regarding data protection, are met. The first version of the platform is expected to be functional by the end of 2024.

UMZH Biobank

As another inter-institutional infrastructure platform, the UMZH Biobank for tissue and body fluid samples will be established. Existing biobanks of partner institutions will be linked with The LOOP BMIP, enabling researchers to access not only clinical, radiological, and molecular data but also bio samples for further analysis. Detailed planning will take place in the first half of 2024, and implementation will be synchronized with the establishment of The LOOP BMIP.

6 institutions

25 research groups

5.4 million CHF in
research funding

38 funded employees
(postdoctoral researchers, doctoral students,
research & technical staff)

17 funded informaticians
(system architects, data scientists,
software engineers)

4 Translational Projects

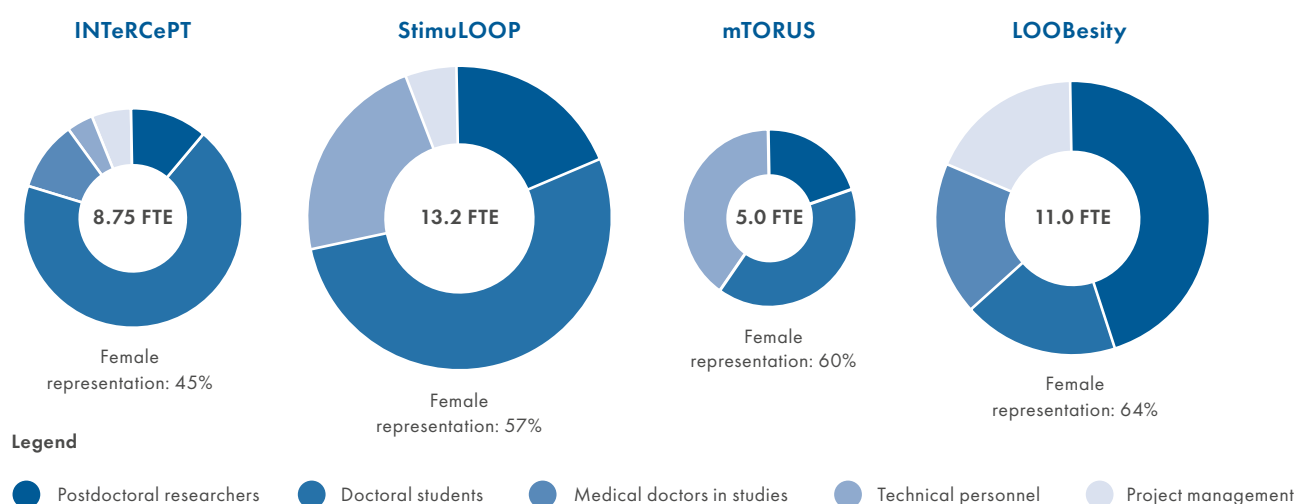
2 Platform Projects

51 % research funding
from philanthropy

FACTS & FIGURES

The LOOP Zurich financed employees

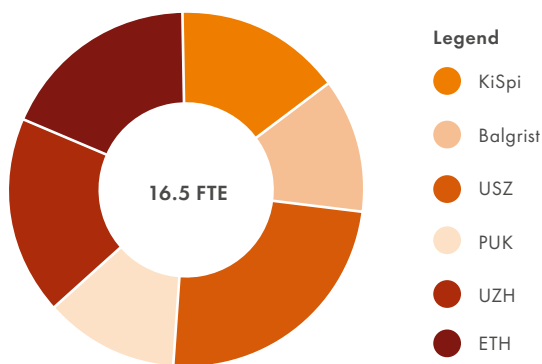
The LOOP Zurich Translational Projects



Translational Projects	INTeRCePT	StimuLOOP	mTORUS	LOOBesity	Total
Responsible for application	Thorsten Zenz	Andreas Luft Roger Gassert	Thomas Kessler	Felix Beuschlein	
Funding source	UZH/ETH	Vontobel-Stiftung	Dornonville de la Cour Foundation	UZH/ETH	
CHF	1,413,150	1,072,000	916,047	998,640	4,399,837
Project start date	01.07.2021	01.08.2021	01.07.2023	01.03.2023	
Postdoctoral researchers	1	2.5	1	5	9.5
Doctoral students	6	7	2	2	17
Medical doctors in studies	0.9	0	0	2	2.9
Technical personnel	0.35	3	2	0	5.35
Project management	0.5	0.7	0	2	3.2
TOTAL	8.75	13.2	5	11	37.95
Female representation (%)	45	57	60	64	56.5

Table: Number of positions and research expenditure 2023

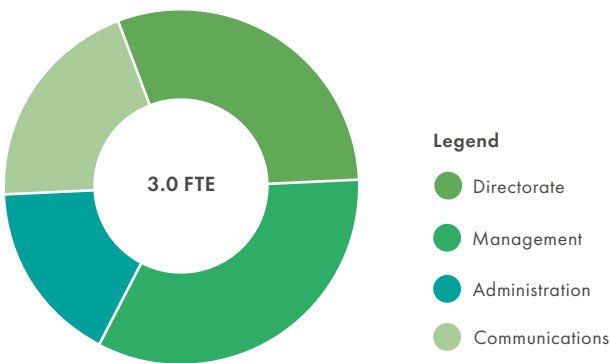
The LOOP BMIP



Institutions	FTE
Zurich University Children’s Hospital (KiSpi)	2.5
Balgrist University Hospital	2
University Hospital Zurich (USZ)	4
University Hospital of Psychiatry Zurich (PUK)	2
University of Zurich (UZH)	3
ETH Zurich (ETH)	3
TOTAL	16.5

Table: Number of positions in Biomedical Informatics Platform The LOOP BMIP

The LOOP Zurich Managing Office



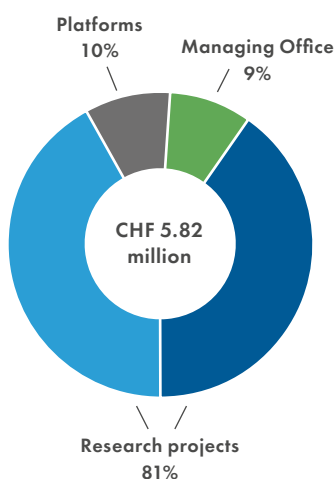
	FTE
Directorate	0.9
Management	1
Administration	0.5
Communications	0.6
TOTAL	3.0

Table: The LOOP Zurich Managing Office

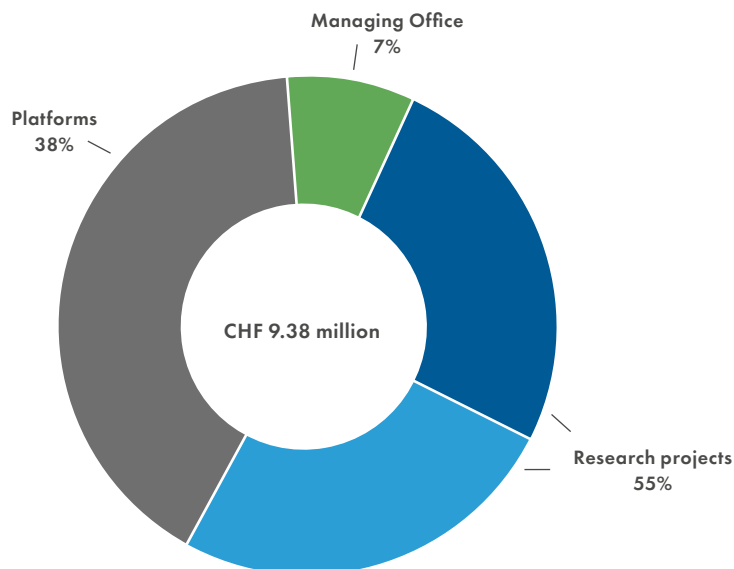
FTE: Full Time Equivalent

The LOOP Zurich annual financial statement 2023 & budget 2024

Expenses 2023



Budget 2024



Legend

Research projects funded by ETH/UZH (dark blue) and foundations (light blue);
Platforms funded by UMZH (gray); Administrative office funded by sponsoring institutions (green)

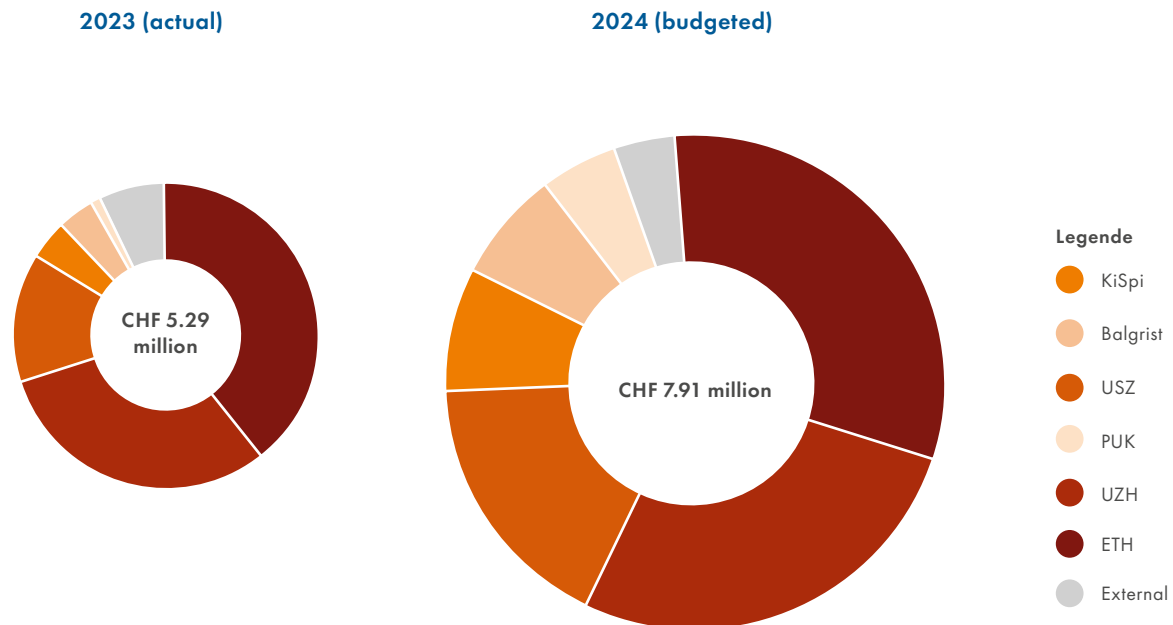
		Expenses 2023				Budget 2024		
		Funding source	CHF per item	CHF per category	%	CHF per item	CHF per category	%
Managing Office		Sponsoring institution	532,649			650,000		
	TOTAL			532,649	9	650,000	650,000	7
Research projects	LTP	ETH/UMZH	2,411,790			2,000,000		
		Donors	1,988,047			2,000,000		
	LTP+	Donors	200,000			200,000		
	COVID	Donors	137,616			0		
	LPP	ETH/UMZH	0			0		
		Donors	0			666,667		
	LIP	ETH/UMZH	0			333,333		
		Donors	0			0		
	TOTAL			4,737,453	81		5,200,000	55
Platforms	BMIP	UMZH	547,992			3,030,000		
	UBB	UMZH	0			500,000		
	TOTAL			547,992	10		3,530,000	38
TOTAL			5,818,094	5,818,094	100	9,380,000	9,380,000	100

Table: The LOOP Zurich – Expenses 2023, budget 2024

Legend

LTP	The LOOP Zurich Translational Projects	LIP	The LOOP Zurich Incubator Projects
LTP+	Associated LTP Project (Helmut Horten Foundation Anniversary Project)	BMIP	The LOOP Biomedical Informatics Platform
COVID	The LOOP Zurich COVID-19	UBB	UMZH Biobank
LPP	The LOOP Zurich Platform Projects	UMZH	University Medicine Zurich

The LOOP Zurich allocation of research funding to institutions



Allocation of funds to institutions for The LOOP Zurich research activities (Research projects and Platforms) (see Table)

	2023 (actual)		2024 (budgeted)	
	CHF	%	CHF	%
ETH	2,122,000	40	2,490,000	31
UZH	1,638,000	31	2,174,000	28
USZ	730,000	14	1,353,000	17
KiSpi	187,000	3	634,000	8
Balgrist	206,000	4	548,000	7
PUK	46,000	1	393,000	5
External	356,000	7	319,000	4
TOTAL	5,285,000	100	7,910,000	100

Table: Values in the table represent actual and budgeted allocations of funds to institutions for The LOOP Zurich research activities, including research projects and platforms. Funding for research groups at hospitals was allocated 50% to UZH and 50% to the respective hospital. Project funds for The LOOP Zurich Incubator Projects (CHF 333,000) and UMZH Biobank (CHF 500,000) have not been allocated for 2024.

PUBLICATIONS & PEOPLE

Publications

The LOOP Zurich Translational Projects

INTeRCePT

1. Liebers N, Bruch PM, Terzer T, Hernandez-Hernandez M, Paramasivam N, Fitzgerald D, Altmann H, Roider T, Kolb C, Knoll M, Lenze A, Platzbecker U, Röllig C, Baldus C, Serve H, Bornhäuser M, Hübschmann D, Müller-Tidow C, Stölzel F, **Huber W**, Benner A, **Zenz T**, Lu J, Dietrich S. "Ex vivo drug response profiling for response and outcome prediction in hematologic malignancies: the prospective non-interventional SMARTrial". *Nat Cancer*. 2023 Oct 2. Online ahead of print.
2. Lütge A, Lu J, Hüllein J, Walther T, Sellner L, Wu B, Rosenquist R, Oakes CC, Dietrich S, **Huber W**, **Zenz T**. "Subgroup-specific gene expression profiles and mixed epistasis in chronic lymphocytic leukemia". *Haematologica* 2023. 108:2664–2676.
3. Apostolova P, **Kreutmair S**, Toffalori C, Punta M, Unger S, Burk AC, Wehr C, Maas-Bauer K, Melchinger W, Haring E, Hoefflin R, Shoumariyeh K, Hupfer V, Lauer EM, Duquesne S, Lowinus T, Gonzalo Núñez N, Alberti C, da Costa Pereira S, Merten CH, Power L, Weiss M, Böke C, Pfeifer D, Marks R, Bertz H, Wäsch R, Ihorst G, Gentner B, Duyster J, Boerries M, Andrieux G, Finke J, **Becher B**, Vago L, Zeiser R. "Phase II trial of hypomethylating agent combined with nivolumab for acute myeloid leukaemia relapse after allogeneic haematopoietic cell transplantation-immune signature correlates with response". *Br J Haematol*. 2023 Oct; 203(2):264–281.

StimuLOOP

1. Salzmann L, Bichsel O, Ravi DK, Lestoille M, Easthope CA, **Baumann CR**, **Luft AR**, **Taylor WR**, **Gassert R**, Lamercy O. "Neurofeedback for precision rehabilitation of Parkinson's patients". *Brain Stimulation: Basic, Translational, and Clinical Research in Neuromodulation* 2023; 16(1).
2. Conde C, Lang C, **Baumann CR**, Easthope CA, **Taylor WR**, Ravi DK. "Triggers for Freezing of Gait in Individuals with Parkinson's Disease: A Systematic Review". *Frontiers in Neurology: Sec. Movement Disorders*; 2023; Volume 14 <https://doi.org/10.3389/fneur.2023.1326300>.
3. Pohl J, Ryser A, Veerbeek JM, Verheyden G, **Vogt JE**, **Luft AR**, Easthope CA. "Classification of Functional and Non-functional Arm Use by Inertial Measurement Units in Individuals with Upper Limb Impairment after Stroke". *Frontiers of Physiology*. 28. Sept 2022, Vol 13.
4. Pohl J, Ryser A, Veerbeek JM, Verheyden G, **Vogt JE**, **Luft AR**, Easthope CA. "Accuracy of Gait and Posture Classification using Movement Sensors in Individuals with Mobility Impairment after Stroke". *Frontiers of Physiology*. 26. Sept 2022, Vol. 13.

The LOOP Zurich COVID-19 projects

Becher, Burkhardt: Dissecting the complex interplay between SARS-CoV-2 and the immune system for identification of COVID-19- and hyper-inflammation-specific immune signatures.

1. **Kreutmair S**, Unger S, Núñez NG, Ingelfinger F, Alberti C, De Feo D, Krishnarajah S, Kauffmann M, Friebe E, Babaei S, Gaborit B, Lutz M, Puertas Jurado N, Malek NP, Goepel S, Rosenberger P, Häberle HA, Ayoub I, Al-Hajj S, Nilsson J, Claassen M, Liblau R, Martin-Blondel G, Bitzer M, Roquilly A, **Becher B**. "Distinct immunological signatures discriminate severe COVID-19 from non-SARS-CoV-2-driven critical pneumonia". 2021, *Immunity* 54, 1578–1593.e5.
2. **Kreutmair S**, Kauffmann M, Unger S, Ingelfinger F, Núñez NG, Alberti C, De Feo D, Krishnarajah S, Friebe E, Ulutekin C, Babaei S, Gaborit B, Lutz M, Jurado NP, Malek NP, Göpel S, Rosenberger P, Häberle HA, Ayoub I, Al-Hajj S, Claassen M, Liblau R, Martin-Blondel G, Bitzer M, Roquilly A, **Becher B**. "Preexisting comorbidities shape the immune response associated with severe COVID-19". 2022. *J Allergy Clin Immunol.* 150, 312–324.
3. Núñez NG, Schmid J, Power L, Alberti C, Krishnarajah S, **Kreutmair S**, Unger S, Blanco S, Königheim B, Marín C, et al. "Distinct immune signatures discriminate SARS-CoV-2 vaccine combinations". 2022. *MedRxiv* 2022.09.05.22279572.
4. Núñez NG, Schmid J, Power L, Alberti C, Krishnarajah S, **Kreutmair S**, Unger S, Blanco S, Königheim B, Marín C, Onofrio L, Kienzler J, da Costa Pereira S, Ingelfinger F, Pasinovich M, Castelli J, Vizzotti C, Schaefer M, Villar-Vesga J, Mundt S, Merten C, Sethi A, Wertheimer T, Lutz M, Vanoaica D, Sotomayor C, Gruppi A, Münz C, Cardozo D, Barbás G, Lopez L, Carreño P, Castro G, Raboy E, Gallego S, Morón G, Cervi L, Rodríguez E, Maletto B, Maccioni M, **Becher B**. "High-dimensional analysis of sixteen SARS-CoV-2 vaccine combinations reveals lymphocyte signatures correlating with immunogenicity". 2023. *Nature Immunology*; 24, pages 941–954.

Catherine Gebhard: Development of a gender-sensitive risk assessment tool to predict short- and long-term outcomes of COVID-19 (COvid-GENder: COGEN).

1. Gebhard CE, Hamouda N, Gebert P, Regitz-Zagrosek V- & COGEN Investigators, **Gebhard C**. "Sex versus gender-related characteristics: which predicts clinical outcomes of acute COVID 19?". 2022. *Intensive Care Med.*; 48(11):1652–1655.
2. Gebhard CE, Sütsch C, Gebert P, Bengs S, Deforth M, Buehler KP, Hamouda N, Meisel A, Schuepbach RA, Zinkernagel AS, Brugger S, Acevedo A, Patriki D, Wiggli B, Beer JH, Friedl A, Twerenbold R, Kuster GM, Pargger H, Tschudin-Sutter S, Schefold JC, Spinetti T, Dussault-Cloutier A, Henze C, Pasqualini M, Sager DF, Mayrhofer L, Grieder M, Tontsch J, Franzeck F, Wendel Garcia PD, Hofmaenner DA, Scheier T, Bartussek J, Chrobok L, Stähli D, Lott N, Haider A, Grämer M, Mikail N, Rossi A, Zellweger N, Opic P, Portmann A, Todorov A, Pazhenkottil AP, Messerli M, Buechel RR, Kaufmann PA, Treyer V, Siegemund M, Held U, Regitz-Zagrosek V, **Gebhard C**. "Impact of sex and gender on post-COVID-19 syndrome, Switzerland, 2020". 2023. *Eurosurveillance*; Volume 29, Issue 2.
3. Jurisic S, Komminoth M, Todorov A, Bertschi DA, Jurisic M, Vranjic I, Wiggli B, Schmid H, **Gebhard C**, Gebhard CE, Heidecker B, Beer JH, Patriki D. "Long-Term Mortality after New Onset Atrial Fibrillation in COVID-19". 2023. *J Clin Med*; 12(8):2925.
4. Deforth M, Gebhard CE, Bengs S, Buehler PK, Schuepbach RA, Zinkernagel AS, Brugger SD, Acevedo CT, Patriki D, Wiggli B, Twerenbold R, Kuster GM, Pargger H, Schefold JC, Spinetti T, Wendel-Garcia PD, Hofmaenner DA, Gysi B, Siegemund M, Heinze G, Regitz Zagrosek V, **Gebhard C**, Held U. "Development and validation of a prognostic model for the early identification of COVID-19 patients at risk of developing common Long-COVID symptoms". 2022. *Diagn Progn Res*; 6:22.

The LOOP Zurich international conference contributions

INTeRCePT

1. Apostolova P, **Kreutmair S**, Toffalori C, Punta M, Unger S, Burk AC, Wehr C, Maas-Bauer K, Melchinger W, Haring E, Hoefflin R, Shoumariyeh K, Hupfer V, Lauer EM, Duquesne S, Lowinus T, Gonzalo Núñez N, Alberti C, da Costa Pereira S, Merten CH, Power L, Weiss M, Böke C, Pfeifer D, Marks R, Bertz H, Wäsch R, Ihorst G, Gentner B, Duyster J, Boerries M, Andrieux G, Finke J, **Becher B**, Vago L, Zeiser R. *Br J Haematol*. 2023 Oct; 203(2):264–281. doi: 10.1111/bjh.19007. Epub 2023 Aug 4. PMID: 37539479.
2. Wertheimer T, Baniadam H, Reisenauer S, Pohly M, Rindlisbacher L, Lin M, **Kreutmair S**, Unger S, Kivioja J, **Moor A, Becher B, Huber W, Zenz T**. "Dissecting the Single Cell Landscape of Leukemic Mantle Cell Lymphoma". ASH – Annual Meeting and Exposition – Session 622. Lymphomas: Translational – Non-Genetic: Illuminating the Tumor Microenvironment and Immune Landscape in Lymphoma.
3. Baniadam H, Wertheimer T, Reisenauer S, Gutwein O, Huong Lan Do T, Pohly M, Cannizzaro E, Rindlisbacher L, **Kreutmair S**, Unger S, Ulutekin C, Vermeer M, Sparano C, **Moor A, Huber W, Becher B, Zenz T**. "Deciphering the Dynamics of the B-NHL Single-Cell Landscape during BTK Inhibition". ASH – Annual Meeting and Exposition – Session 622. Lymphomas: Translational – Non-Genetic: Illuminating the Tumor Microenvironment and Immune Landscape in Lymphoma.

StimuLOOP

1. Sutter TM, Manduchi L, Ryser A, **Vogt JE**. "Learning Group Importance using the Differentiable Hypergeometric Distribution". 2023. 11th International Conference on Learning Representations, ICLR 2023, Kigali, Rwanda.
2. Sutter* TM, Ryser* A, Liebeskind J, **Vogt JE**. "Differentiable Random Partition Models". 36th Conference on Neural Information Processing Systems. 2023. New Orleans, USA.
3. Sutter* TM, Ryser* A, Liebeskind J, **Vogt JE**. "Uncovering Latent Structure Using Random Partition Models. Workshop on Structured Probabilistic Inference & Generative Modeling". 2023. International Conference on Machine Learning, Honolulu, Hawaii.
4. Sutter* TM, Ryser* A, Liebeskind J, **Vogt JE**. "Differentiable Set Partitioning. Workshop Differentiable Almost Everything: Differentiable Relaxations, Algorithms, Operators, and Simulator". 2023. International Conference on Machine Learning, Honolulu, Hawaii.
5. Manduchi* L, Vandenhertz* M, Ryser A, **Vogt JE**. "Tree Variational Autoencoder". 2023. 36th Conference on Neural Information Processing Systems. New Orleans, USA.
6. Böni A, Menard T, Ryser A, Lestoille M, Ravi DK, **Branscheidt M, Vogt JE, Luft AR**, Easthope CA. "The Handshake: Merging clinical and data-driven therapy target selection processes forgait quality". 2023. Motek European User Group Meeting. Cereneo Clinic in Vitznau, Switzerland.
7. Böni A, Menard T, Ryser A, Lestoille M, Ravi DK, **Branscheidt M, Vogt JE, Luft AR**, Easthope CA. "Handshake-algorithm: AI-Driven clinical decision support for post-stroke gaitrehabilitation". 2023. International Society of Gait and Posture Research. Brisbane, Australia.
8. Kasties V, Moser NH, Zamora S, Maffei T, Sassenburg R, Ferster ML, Easthope CA, **Baumann CR, Luft AR, Huber R, Branscheidt M**, Maric A. "Processing of musical cues in the context of targeted memory reactivation for lower-limb motor learning". 2023. Psychologie und Gehirn. Tübingen, Germany.
9. Moser NH, Kasties V, et al., **Branscheidt M**, Maric A. "Sleep tight, move right: The role of targeted memory reactivation in motor learning". 2023. Interdisciplinary College Spring School. Guenne, Germany.
10. Zamora SA, Kasties VI, Moser NH, Easthope CA, Ferster ML, Maric A, **Luft AR, Huber R, Branscheidt M**. 2022. "Targeted memory reactivation of feedback-based motor adaptation learning". World Conference of Neurorehabilitation. Vienna, Austria.

People

The LOOP Zurich Managing Office

Markus Rudin	Founding Director
Giatgen Spinaz	Co-Director
Jens Selige	Managing Director
Marc Lutz	Communications
Karin Wettstein	Administration

The LOOP Zurich Steering Committee

Beatrice Beck Schimmer	(Chair) Vice President Medicine Zurich, University of Zurich
Christian Wolfrum	(Chair) Vice President for Research, ETH Zurich
Matthias Baumgartner	Director Research Center for the Child University, Children's Hospital Zurich
Gabriela Senti	Executive Director Research and Education, University Hospital Zurich
Jess Snedeker	Deputy Chair Orthopedics (Research) and Chief Scientific Officer, Balgrist University Hospital
Susanne Walitza	Director Clinic for Child and Adolescent Psychiatry and Psychotherapy, University Hospital of Psychiatry Zurich

The LOOP Zurich Scientific Advisory Board

Ruedi Aebersold	Professor emeritus at the Institute for Molecular Systems Biology, ETH Zurich
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Nicholas Schork	Director of Quantitative Medicine and Systems Biology Division at TGen, Phoenix; Director of Human Biology, J. Craig Venter Institute; Professor at Division of Biostatistics at University of California, San Diego, USA
Markus Schwaiger	Professor emeritus Technical University Munich, Germany; former Medical Director Klinikum rechts der Isar; President Bavarian Academy of Sciences and Humanities, Munich, Germany
Matthias Tschöp	Neuroendocrinologist and Chief Executive Officer and Scientific Director of Helmholtz Zentrum München, German Research Center for Environmental Health, Germany
George Hripcsak*	Chair, Department of Biomedical Informatics, Columbia University and Director, Medical Informatics Services, New York-Presbyterian Hospital/Columbia Campus, New York, USA
Miriam Merad*	Director Institute for Precision Immunology at Icahn School of Medicine at Mount Sinai, New York, USA

New member as of January 2024

Cornelia van Duijn	Professor of Epidemiology at the Nuffield Department of Population Health (NDPH), University of Oxford, UK
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*Resignation December 2023

The LOOP Zurich Precision Medicine Council

Burkhard Becher	Institute of Experimental Immunology, University of Zurich
Felix Beuschlein	Department of Endocrinology, Diabetology and Clinical Nutrition, University Hospital Zurich
Roger Gassert	Department of Health Sciences and Technology, ETH Zurich,
Thomas Kessler	Neuro-Urology, Balgrist University Hospital
Ender Konukoglu	Department of Information Technology and Electrical Engineering, ETH Zurich
Michael Krauthammer	Department of Quantitative Biomedicine, University of Zurich
Andreas Luft	Department of Neurology, University Hospital Zurich
Gunnar Rätsch	Department of Computer Science, ETH Zurich
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April 2024

