



2024 Annual Report

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EDITORIAL

One year ago, I wrote here that The LOOP Zurich had successfully completed its setup phase and that we were now aiming to consolidate what had been achieved. In the reporting year 2024, however, we did not limit ourselves to consolidation. Instead, we purposefully expanded The LOOP Zurich to further advance our vision of innovative, data-driven research in the field of precision medicine.

A key milestone was the continued development of The LOOP Biomedical Informatics Platform (The LOOP BMIP). In 2024, it increasingly became a powerful infrastructure that strengthens Zurich as a research hub by making the existing wealth of data quickly, systematically, and user-friendly accessible to researchers. It forms the foundation for numerous new projects and research initiatives that are paving the way for precision medicine.

In 2024, two Platform Projects were launched with the goal of, on the one hand, expanding The LOOP BMIP through the integration of additional data types and, on the other hand, demonstrating its usability through concrete research questions. These projects compellingly illustrate how the close integration of technology and science can enable researchers to develop innovative solutions and overcome existing barriers to data-driven research.

We also launched a new type of project: the Incubator Projects. These are exploratory in nature and intended to lay the groundwork for potential subsequent Translational Projects.

There has also been significant progress in Translational Projects. The projects LOOBesity and mTORUS, launched in 2023, have started well and are expanding the scope of our research activities by exploring new avenues in the prevention and treatment of complex diseases. In parallel, the two first Translational Projects, StimuLOOP and INTeRCePT, are progressing according to plan. During the 2024 Midterm Review, which took place in the presence of our international scientific advisory board, promising progress was presented. Both projects are now entering a phase in which previous results will be consolidated and evaluated in clinical settings.

These developments are a testament not only to the outstanding work of the scientists involved but also to the effectiveness of the interdisciplinary and interinstitutional collaboration that is at the heart of The LOOP Zurich. By closely working with our partner institutions and with the support of private foundations, we will continue to create optimal conditions to sustainably connect and strengthen biomedical research in Zurich.

The year 2024 has demonstrated that we are consistently pursuing our mission to translate innovative scientific concepts into clinical application. We look forward to continuing this momentum in the coming years – with the aim of contributing to improved healthcare in the medium and long term.



Markus Rudin
Founding Director, The LOOP Zurich

NOTE OF THANKS

The LOOP Zurich thanks the following foundations for their dedication and generous support! Thanks to their valuable financial assistance, we are able to achieve important advances in medical research and drive groundbreaking discoveries. Their commitment makes it possible to develop new treatments, gain a deeper understanding of diseases, and sustainably improve the quality of life for many people. They are making a decisive contribution to the medicine of the future!

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

THE LOOP ZURICH

The LOOP Zurich is a translational research center in the field of precision medicine. It relies on interdisciplinary and interinstitutional collaboration to better understand disease mechanisms and develop new treatment approaches – for the benefit of patients and society. The goal is to efficiently translate scientific findings into medical practice to enable personalized healthcare.

The projects of The LOOP Zurich are based on the scientific expertise of researchers and on state-of-the-art infrastructure in the fields of biomedical informatics, quantitative biomedicine, and molecular biology. Comprehensive bio- and databanks and the use of artificial intelligence (AI) play a central role.

Founding institutions

The LOOP Zurich was founded by the University of Zurich (UZH), ETH Zurich (ETH), and the university hospitals: University Hospital Zurich (USZ), University Children's Hospital Zurich (KiSp), Balgrist University Hospital, and the Psychiatric University Hospital Zurich (PUK). The complementary strengths of these Zurich institutions are pooled in a joint research initiative.

Funding strategy

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

The LOOP Zurich projects

The LOOP Zurich supports both research projects (Translational and Incubator Projects) and the development and operation of clinical and technological platforms, including their associated Platform Projects:

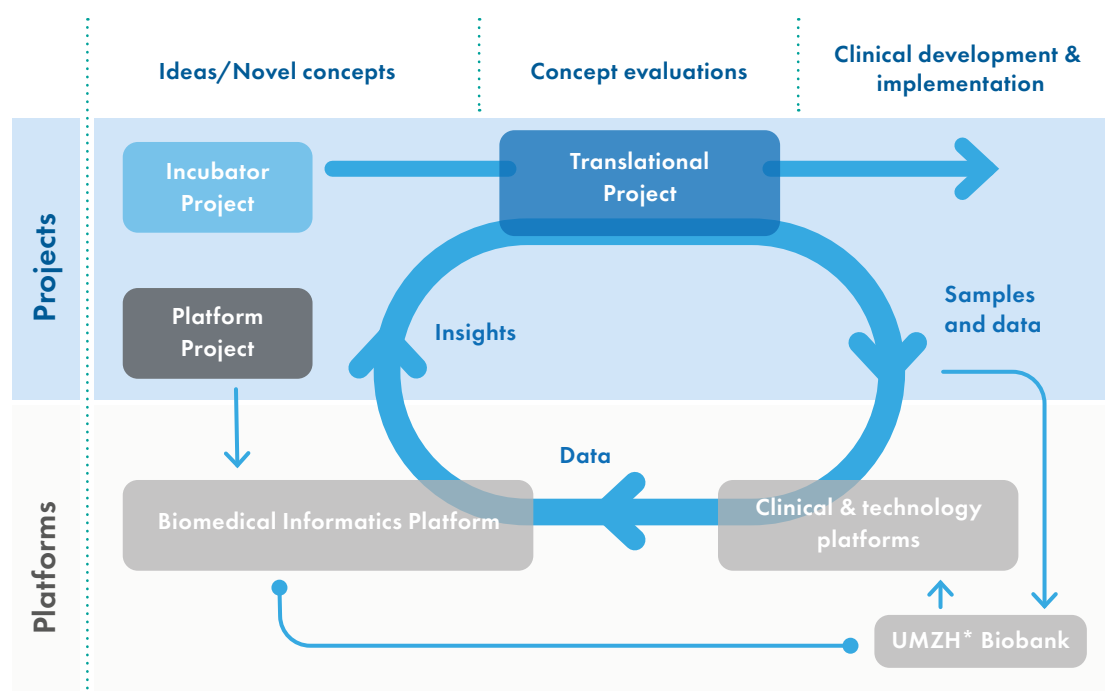
1. Research Projects: Translational Projects and Incubator Projects

Translational Projects aim to develop biomedical concepts to the point where their implementation in patients demonstrably produces the expected effect (proof-of-concept).

In 2024, two Incubator Projects were selected to begin in 2025. These exploratory projects are designed to develop new concepts that can later be refined further in Translational Projects

2. Platforms and Platform Projects

A key focus is the development of a Biomedical Informatics Platform (The LOOP BMIP, see page 36). This platform will aggregate clinical data from the four partner hospitals as well as data from the technology platforms and make it available for research purposes. The Platform Projects are intended to expand the application possibilities of these platforms.



The diagram illustrates the interaction between research projects (in blue) and technology platforms (in grey).

A central mechanism is the data flow.

In the Incubator Projects, new concepts and ideas are developed. These are further advanced in the Translational Projects. In doing so, clinical data and samples are analyzed within the technology platforms. The Biomedical Informatics Platform processes the resulting data. The insights gained are fed back into the projects, thereby completing the cycle – The LOOP Zurich. The UMZH Biobank brings together various biobanks from Zurich and facilitates access to biological samples for research purposes.

* University Medicine Zurich

TRANSLATIONAL PROJECTS

TRANSLATIONAL PROJECTS

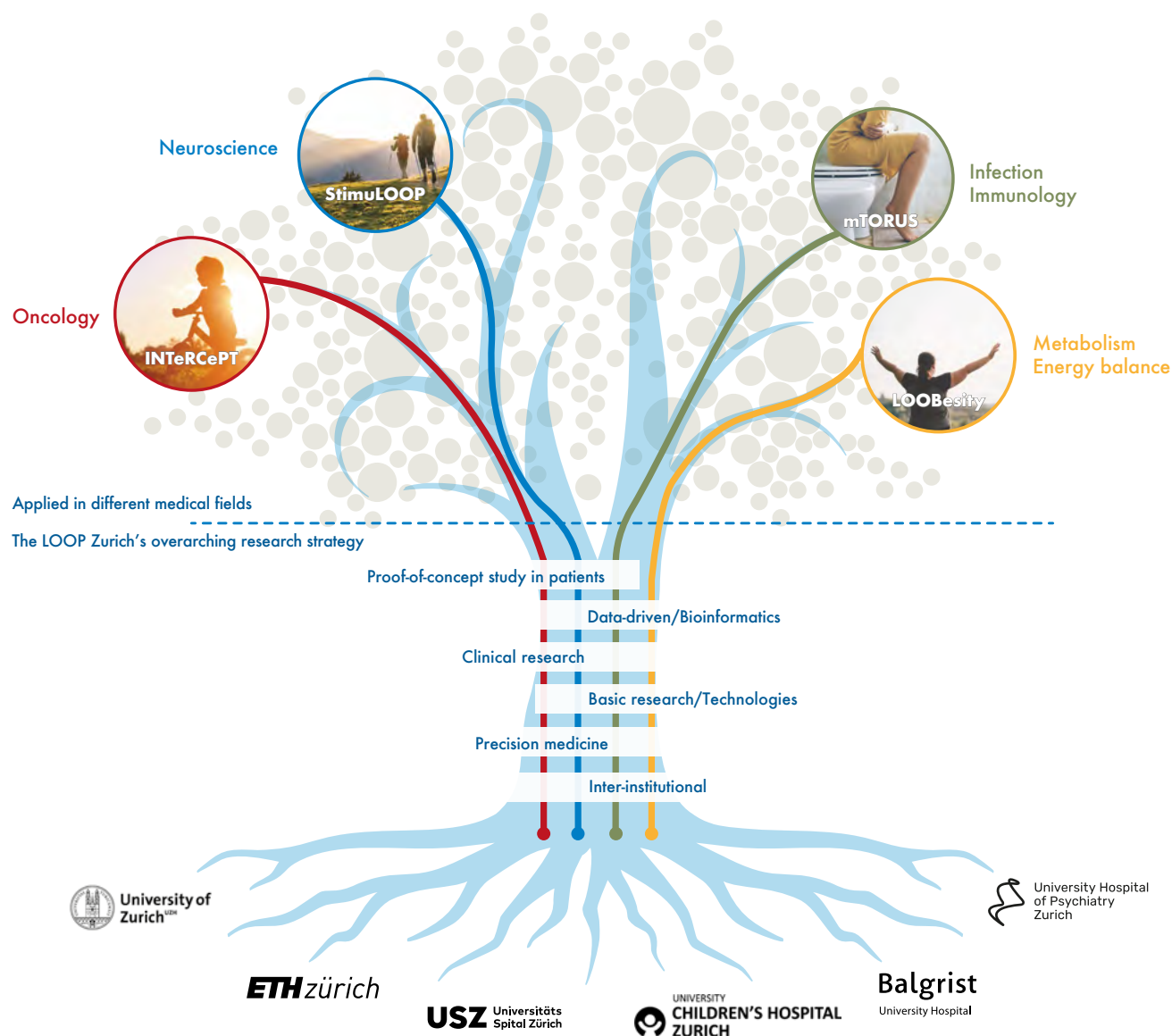
The Translational Projects are aimed at interdisciplinary consortia consisting of five to eight researchers whose groups are active in the field of precision medicine. Projects must be designed in such a way that the defined medical problem can only be successfully addressed if all participating research groups – from biomedical basic research, biomedical informatics, engineering, and clinical research – work together in a coordinated manner.

Another key criterion for the selection of projects funded by The LOOP Zurich is the collection of health-relevant data and biological samples.

In addition, projects must be strictly translational in nature. This means they must include clinical research components. Furthermore, over the course of the project, proof must be provided that the proposed method can be applied to patients (proof-of-concept). The aim is for Translational Projects to form the foundation for possible subsequent clinical development.

In addition to producing specific scientific results, the projects are also expected to contribute to the further development of Zurich's research ecosystem. This is achieved by utilizing and enhancing the existing infrastructure in the areas of information technology, biobanks, and clinical research at the University of Zurich, ETH Zurich, and the four participating university hospitals.

The total budget for a Translational Project in precision medicine amounts to a maximum of CHF 5 million for a project duration of five years.



Translational Projects: A comprehensive research strategy is applied to different areas of medicine. Translational Projects must meet the criteria of precision medicine, be inter-institutionally structured (bringing together diverse expertise), and include an essential biomedical informatics component as well as clinical research elements. Finally, it is required that during the five-year project period, proof of concept (POC) for the biomedical approach is demonstrated in patients. As of 2024, the ongoing Translational Projects addressed the following fields of application: oncology, neurosciences, 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 cell

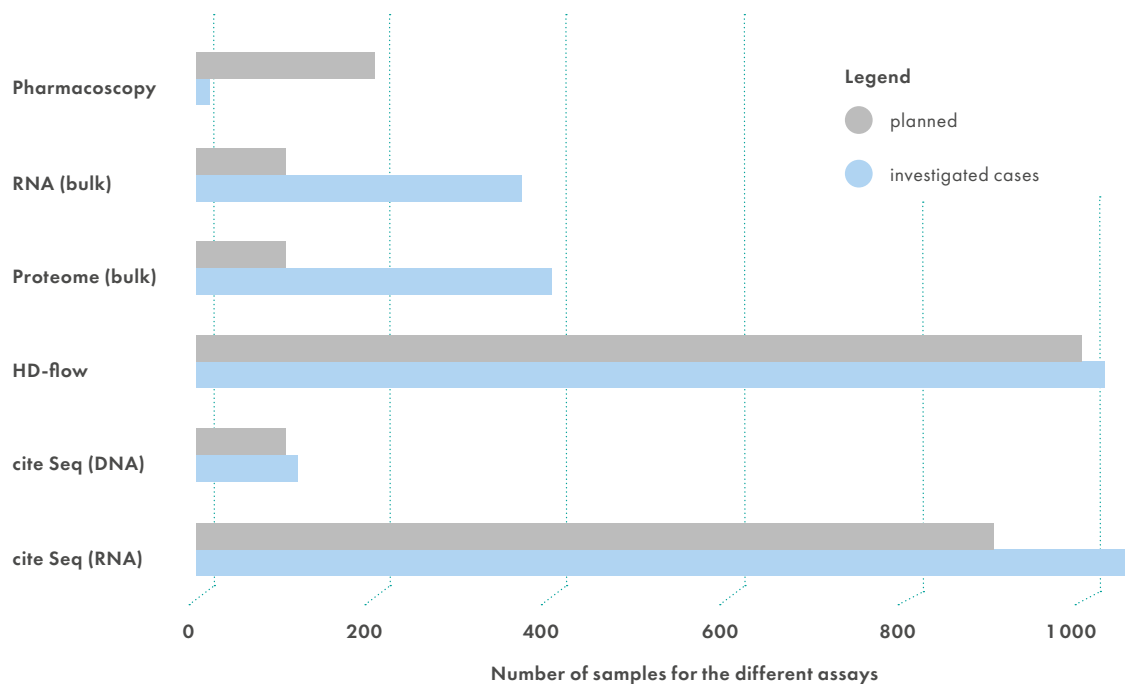
The research team led by Thorsten Zenz aims to determine which therapies work best for both children and adults with blood cancer. To this end, an “Innovation Clinic” is being established in Zurich for patients affected by relapse. Analyses of tumor material and healthy blood cells make it possible to create a detailed map of therapy response at the single-cell level. This enhances the understanding of how tumor and healthy immune cells behave and respond to various treatments.

For use in clinical practice, a simplified testing method is being developed – the so-called “INTeRCePT Assay”. This method is designed to provide all the key information that oncologists need for treatment decisions, despite its reduced complexity. The assay is being validated in clinical studies and tested for practical applicability. The goal of this novel precision oncology approach is to increase patient therapy response rates by 50%.



Selected research findings

An ex vivo testing program was developed that allows tumor samples to be studied over time at the single-cell level under the influence of drug treatments. This enables the dynamic observation of both intracellular and extracellular processes as well as their responses to drug therapy. As a result, the role of clonal drivers of tumor growth and the interactions between tumor and immune cells can be better understood.



By analyzing the DNA of individual lymphoma cells, the clonal structure of the tumor cells could be precisely described. These insights help improve the understanding of genetic data and the effects of medications on these cell clones. Based on these findings, and in combination with other so-called multi-omics analyses, drug treatments were individually tailored. Currently, further studies and analyses are underway to continue optimizing these approaches.

The results of the research conducted so far form the basis for the development of the INTeRCePT Assay, a predictive testing method of low complexity, which is to be used in clinical studies. Initial results will be published shortly, while in parallel, ongoing data analyses are being conducted to integrate multi-omics data. The next step is to verify these results in clinical trials.

Clinical studies

In this context, a dataset was compiled containing over 300 samples from 40 lymphoma patients who had received various treatments — including CD19 CAR T-cell therapy. Because samples were collected at multiple time points both before and after the CAR T-cell treatment, a unique dataset was created that allows for the dynamic tracking of changes in immune responses and the tumor microenvironment.

Using advanced biomedical informatics analyses, new therapeutic strategies are now being developed to improve the effectiveness of CAR T-cell therapy. These analyses are expected to be completed within the next year.

Due to recent adjustments in the standard therapy for B-cell non-Hodgkin lymphomas, the study design was revised in consultation with the scientific advisory board. The focus is now on the validation of the INTerCePT Assay. This represents an important breakthrough that will form the basis for future studies and optimized treatment strategies, laying the groundwork for more targeted interventional studies.

Outlook

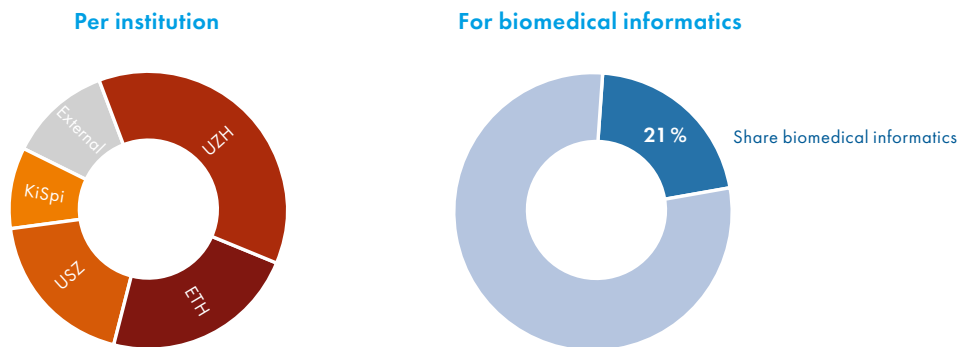
In the next twelve months, ongoing experiments and analyses are scheduled to be completed. A key focus will be to gain a deeper understanding of the immune landscape in non-Hodgkin lymphomas. Using multi-omics analyses, the project aims to identify prognostic biomarkers and target molecules for new therapeutic interventions. The INTerCePT Assay will help increase the efficiency of these analyses and enable better classification of patient groups in future studies, thereby facilitating more targeted therapies.

In parallel, standardized structures for clinical trials and a secure data system are being developed for the Innovation Clinic. Data from more than 300 registered patients – including treatment histories and biobank data – will be documented and made available for research purposes. This will further drive the development of personalized therapies.

Significance for the medical research community

The precision medicine concept of INTerCePT can serve as a model for planning therapies for a wide range of cancers. The detailed analysis of the dynamic changes in tumor cells and their molecular response to treatment provides insights that can be translated into optimized therapy plans, thereby improving the chances of successful cancer treatment. Projects like INTerCePT also help position Zurich as an internationally recognized leader in the field of precision oncology.

Utilization of funds



Participating research groups

Thorsten Zenz
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Niko Beerenwinkel
Jean-Pierre Bourquin
Wolfgang Huber
Stefanie Kreutmair

Andreas Moor
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What motivates young researchers

"Although various treatment options exist, patients with relapsed or therapy-resistant lymphoma or leukemia often respond poorly to therapy. Precision medicine offers a unique opportunity to better understand the underlying mechanisms of resistance and to select the best possible individualized treatment."



Marcel Pohly
Doctoral student at the Department of Biosystems Science
and Engineering, ETH Zurich



“Learning to walk again while sleeping”

StimuLOOP

Project leads: 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

With the StimuLOOP project, the research team led by Andreas Luft and Roger Gassert aims to help patients affected by stroke or Parkinson’s disease regain their normal walking ability as efficiently as possible.

The project incorporates novel technologies, including a visual feedback system that supports patients in learning a gait pattern tailored to their individual needs. In addition, a combination of acoustic stimulation during training and targeted auditory cues during sleep is designed to support long-term consolidation of newly learned motor patterns.

In the first phase, the project’s various complementary modules were synchronized. These include detailed gait pattern analysis, the development of a training setup with realistic visual feedback, and acoustic stimulation that is synchronized with EEG signals during sleep. Disease-specific features were also addressed, such as motor blocks (freezing) in patients with Parkinson’s disease.



Selected research findings

Since the launch of the StimuLOOP project in 2021, significant progress has already been made. Several preliminary studies were successfully conducted to validate the scientific foundation of the project. These studies tested novel technologies, explored methods and mechanisms of motor learning, and laid the groundwork for the complex main study.

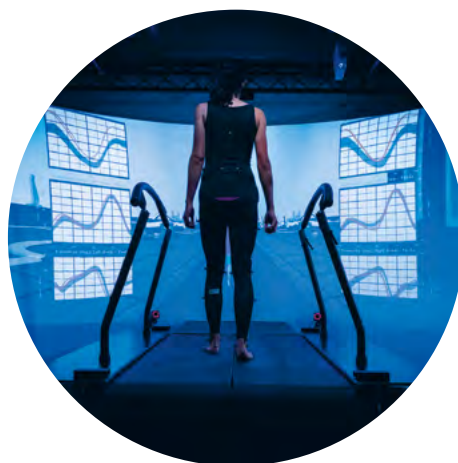
The pilot studies yielded valuable scientific insights, which were presented at international conferences and in renowned academic journals. A particular highlight was a dedicated session for StimuLOOP at the International Conference on Neurorehabilitation (ICNR 2024), which led to lively international discussions and new collaborations. Another highlight was StimuLOOP's strong presence at this year's Symposium of the Zurich Center for Neuroscience, where young researchers in particular were able to showcase their projects.

Completed pilot studies

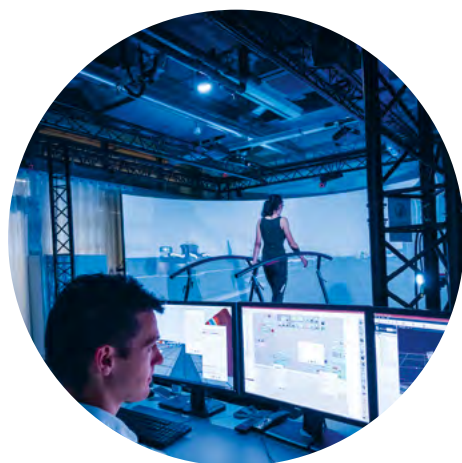
The following pilot studies have been completed within the StimuLOOP project:

- Study on the benefits of enhanced feedback for gait training in neurorehabilitation
- Reliability and validity of various training courses for patients with Parkinson's disease
- Feasibility study on personalized feedback to influence gait and balance parameters
- Targeted memory reactivation of feedback-based learning of motor adaptability
- Study on neurological biomarkers for pathological gait behavior in patients with Parkinson's disease
- Influence of voluntary suppression of beta-band power on the quality of movement patterns
- Use of observational gait classification for therapeutic guidance
- Feasibility of using Tosoo technology and high-resolution EEG in stroke patients

The results of these pilot studies have given rise to new research lines, which are now being developed into independent projects led by early-career researchers. These include initial efforts to integrate StimuLOOP methods into simplified mobile technologies.



Gait training in a virtual environment

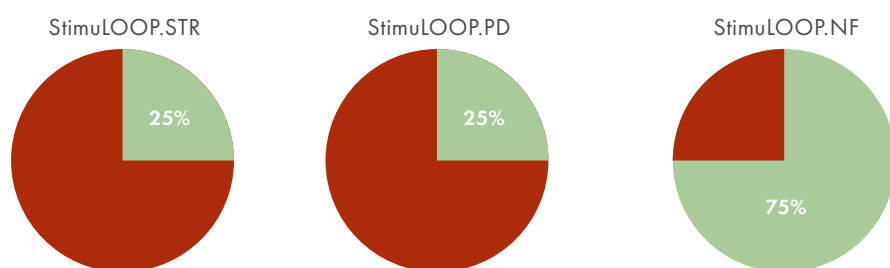


Analysis in the gait laboratory

Main studies on stroke and Parkinson's disease

In addition to these scientific advances, the main clinical studies have also been launched: StimuLOOP.STR (StimuLOOP Stroke) and StimuLOOP.PD (StimuLOOP Parkinson's Disease). The project team has already completed a quarter of the planned assessments, and the initial feedback from participants has been positive. However, concrete conclusions regarding the effectiveness of the intervention will only be possible after the study has been fully completed.

Research status of the main studies



Legend

StimuLOOP.STR = StimuLOOP Stroke

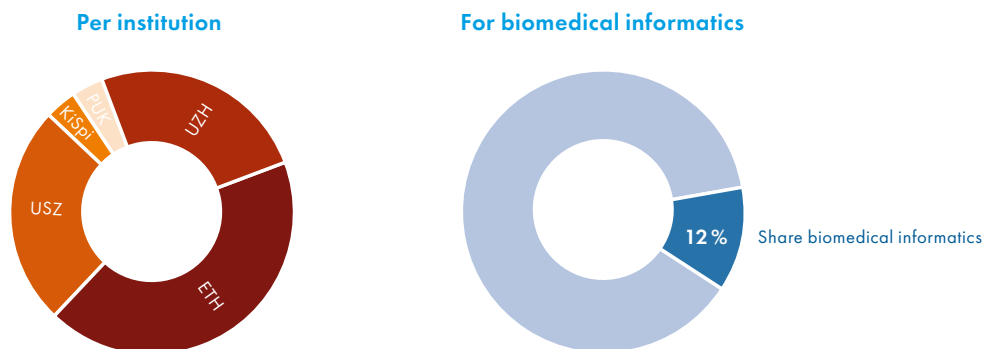
StimuLOOP.PD = StimuLOOP Parkinson's Disease

StimuLOPP.NF = Neurofeedback in Parkinson's Disease

Significance for the medical research community

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

Utilization of funds 2024



Participating research groups

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Department of Neurology, University Hospital Zurich

This project is made possible by the Vontobel Foundation.

What motivates young researchers

“Through my participation in StimuLOOP, I was able to collaborate with researchers from various disciplines such as data science and physiotherapy – fields I might not otherwise have encountered. These collaborations not only broadened my perspective but were also crucial for the progress of my project on personalized rehabilitation for patients with Parkinson’s disease and for the successful translation of knowledge into meaningful results.”



Lena Salzmann
Doctoral student at the Rehabilitation Engineering Laboratory (RELab),
Gassert Group, ETH Zurich



“When passing water becomes painful”

mTORUS

Project lead: Thomas M. 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

Recurrent urinary tract infections are widespread and represent a significant burden for those affected. The goal of the mTORUS project is to restore a healthy microbiome of the urinary tract. This is to be achieved through a two-step treatment: first, the pathogenic bacteria are eliminated using genetically modified bacteriophages (PULL). Subsequently, a “healthy” bacterial population is established in the bladder through a microbiome transplantation (PUSH). This approach, combined with strengthening of the immune system, will help preventing recurring infections. To this end, the team led by Thomas M. Kessler is researching the composition of a healthy urinary tract microbiome and analyzing how infections alter the microbiome and immune system.

In the first phase of the project, the researchers have already made the following progress: they optimized methods for sample collection, processing, and analysis involving several laboratories; conducted a successful microbiome validation study, including bioinformatic analyses; implemented metabolomic analyses to identify metabolism-related signatures in urinary tract infections; refined the immunophenotyping of human bladder biopsies; and established a secure computing environment for data-driven analyses. By integrating these data and using differentiated computer models, a consistent picture of healthy urinary tracts and the changes caused by infections is to emerge. This forms the basis for precision medicine treatment approaches.



Selected research findings

Validated procedures are required for clinical studies to ensure the reliable collection, preparation, and analysis of samples. These procedures were optimized in the course of the mTORUS project to ensure the quality and reproducibility of the results.

Examination of the bladder microbiome

For these validation studies, samples were collected from 66 patients in order to analyze the microbiome and metabolome, as well as to cultivate and produce bacterial cultures. Initial results show that the bladder microbiome varies considerably across the patient population. In addition, the choice of preparation method (buffer medium) influences the composition of the bacterial populations (graphic). It is therefore crucial for the project to define standardized processes and conditions in order to ensure optimal reproducibility of the results.

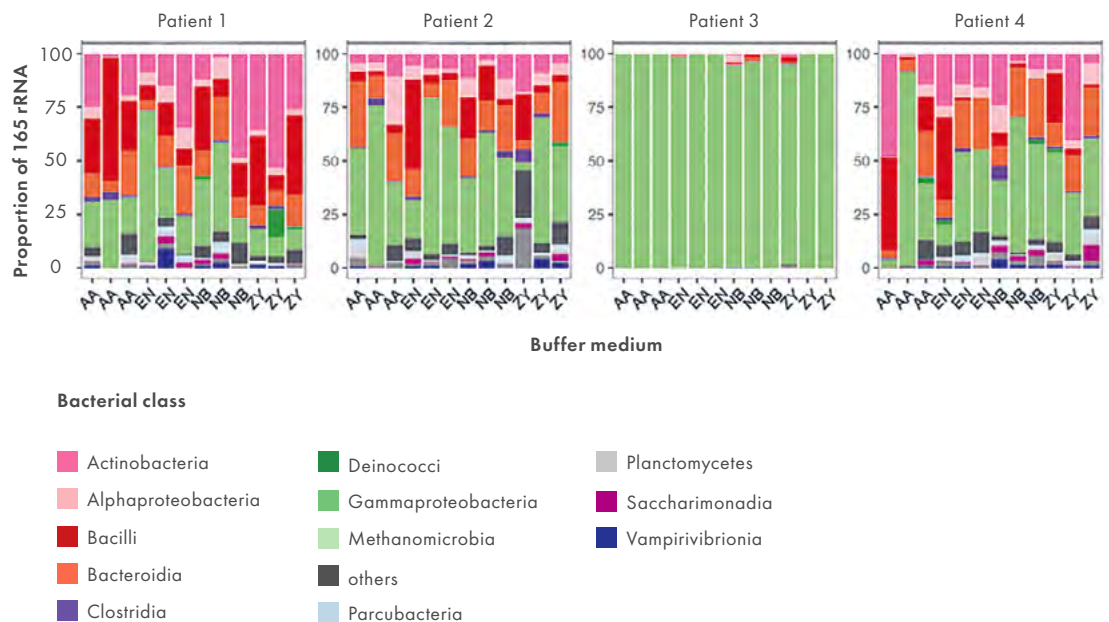


Figure: Variability of the bladder microbiome within the patient population and depending on the choice of buffer medium used.

Urine samples for metabolomic analyses

The processing of urine samples for the determination of the metabolome was also improved, particularly with regard to the normalization of urine concentration and the sensitivity in detecting metabolites at low concentrations. These improvements are essential for better capturing the metabolic effects of a urinary tract infection.

Investigation of immunological responses

The effects of urinary tract infections on the immune system were measured using flow cytometry-based immunophenotyping. In an initial study, 14 bladder biopsies were analyzed, divided into two patient groups (with and without urinary tract infection). Preliminary results indicate a type III immune response, which typically occurs with extracellular bacteria or fungi. These findings will be further explored in follow-up studies.

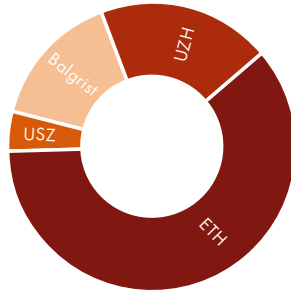
For the detailed analysis of the collected multidimensional data (clinical status, microbiome, metabolome, immune status), a secure computing environment was established. Currently, methods for data integration and computer-based models are being developed in order to better understand the changes in biological parameters resulting from urinary tract infections.

Significance for the medical research community

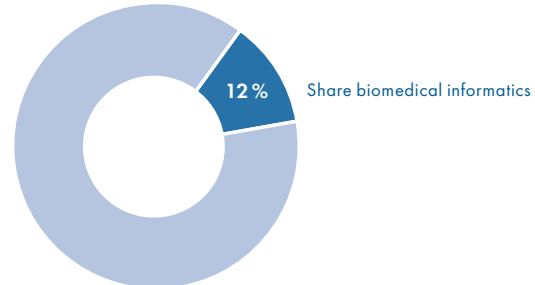
The innovative concept of mTORUS is highly relevant in times of increasing antibiotic resistance, especially since the use of bacteriophages can be extended to numerous infectious diseases. In doing so, mTORUS contributes to consolidating and expanding the leading position of the research hub in the field of infectious diseases. In addition, it lays the foundation for future developments in the field of microbiome-based personalized medicine.

Utilization of funds 2024

Per institution



For biomedical informatics



Participating research groups

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

What motivates young researchers

"Helping develop analytical tools for the identification of bacteria is important for treating urinary tract infections. It's exciting and rewarding to work on methods that not only advance scientific understanding but also have the potential to improve diagnostics, treatment, and patient care."



Julian Harrison

Postdoctoral researcher at the Department of Health Sciences and Technology, ETH 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 widespread disease that increases the risk of secondary conditions such as cardiovascular (e.g. high blood pressure) and metabolic (e.g. diabetes) complications. Diets and exercise often fail to achieve lasting success. Moreover, the choice of therapy depends on the personal experience of the treating physicians, and there is a lack of concrete indicators for which therapy is most suitable for which individual. This is precisely where the LOOBesity research project, led by Felix Beuschlein, comes in: the goal is to develop individualized and therefore more effective therapies against obesity for a selected group of affected individuals.

Particularly affected are people with elevated glucocorticoid metabolism, which is typically associated with stress. This group exhibits a higher risk for secondary diseases. For this patient group, molecular and radiological criteria are used to derive insights into the composition and distribution of body fat. Using artificial intelligence (AI), the individual risk for secondary diseases is assessed, and based on this, a personalized therapy recommendation is developed. Individuals at increased risk should then receive optimized treatment that leads to long-term weight reduction.



LOOBesity combines various data sources such as cohort studies, molecular signature analyses, imaging techniques, and computer-assisted decision support systems to develop targeted personalized treatment strategies for obese patients. In 2024, the project made significant progress and largely achieved its set goals.

Selected research findings

An important milestone was the expansion of the Zurich obesity cohort to 437 individuals. In addition, the study protocol was extended to include microbiome analysis. This added dimension helps to better understand the different manifestations of obesity and to predict their response to various treatments.

Personalized pharmacotherapy

Progress has also been made in the field of personalized pharmacotherapy. A functional prototype of a decision support system was developed that evaluates the benefits and risks of treatment with so-called GLP-1 receptor agonists in real time (graphic). These agents (GLP-1 receptor agonists) are used to treat type 2 diabetes, and some of these substances can lead to a reduction in body weight. Based on successful pilot experiments, this decision support system will be integrated into clinical processes over the course of 2025.

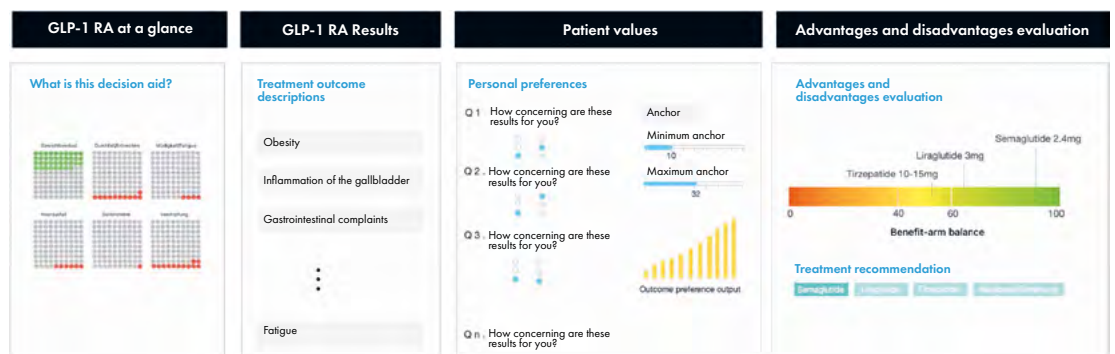


Figure: Decision support systems for personalized pharmacotherapy

Another central field of research is the molecular analysis of adipose tissue. Significant progress has been made in the molecular characterization of adipose tissue samples. The methods for sample collection and RNA sequencing were optimized, which has significantly improved the quality of the data. The goal is to identify correlations between gene expression data and individual responses to therapies.

Imaging techniques for the characterization of body fat

In addition to molecular analysis, phenotyping using non-invasive imaging techniques also plays a crucial role. For this purpose, special magnetic resonance imaging (MRI) methods were developed to quantitatively measure fat distribution in muscle tissue. In parallel, machine learning-based methods were developed for the automatic segmentation of body fat. An important application of artificial intelligence (AI) in image analysis is the quantitative determination of metabolically active brown adipose tissue.

The current standard method for assessing the metabolic activity of this tissue is to measure local glucose consumption using positron emission tomography (PET) – a costly method that requires radioactive substances ([¹⁸F]-FDG, a short-lived radioisotope fluorine-18) and is therefore not suitable for use in large groups. However, the LOOBesity project was able to demonstrate that comparable results can be obtained through the analysis of X-ray computed tomography (CT) images. Using neural network analyses, it was shown that glucose consumption data correlate with X-ray attenuation in CT images. Since CT is more cost-effective and also involves significantly lower radiation exposure, this method could potentially be used more broadly in the future.

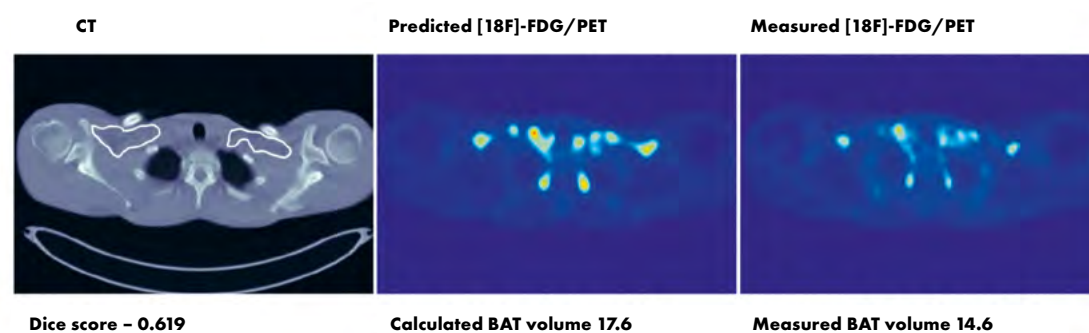


Figure: Cross-section of the pelvic region using CT (left), [¹⁸F]-FDG PET (right), and the [¹⁸F]-FDG PET image predicted based on the CT data (center). BAT: Brown adipose tissue / Erdil E et al. (2024) Nat Commun. 15(1): 8402.

Outlook

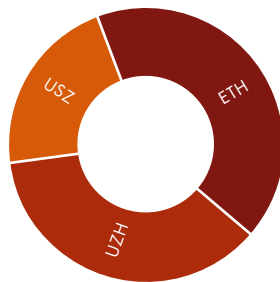
In summary, LOOBesity developed key tools in its first year to successfully advance the project. The combination of microbiome, molecular, imaging, and clinical data forms the foundation for a precise characterization of different types of obesity and the development of tailored therapies. These approaches will be further refined in the next project phase in order to sustainably improve the treatment of obesity.

Significance for the medical research community

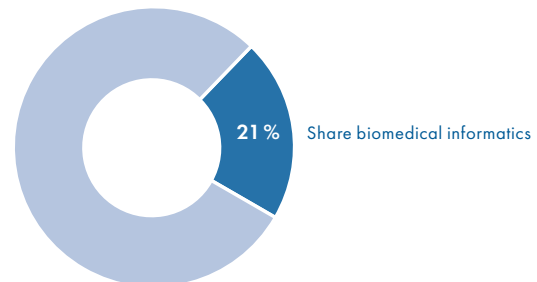
The AI-based analysis of molecular information and imaging data makes it possible to identify obese patients at increased risk for secondary diseases and to provide them with an appropriately optimized therapy. This project thus leverages complementary expertise in endocrinology, radiology, and artificial intelligence through machine learning at the Zurich research hub to establish a focus area in clinical obesity research.

Utilization of funds 2024

Per institution



For biomedical informatics



Participating research groups

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University Hospital Zurich

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Institute for Diagnostic and Interventional Radiology, University Hospital Zurich

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Department of Information Technology and Electrical Engineering, ETH Zurich

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Department of Health Sciences and Technology, ETH Zurich

What motivates young researchers

"Obesity is a complex condition with highly variable health outcomes. I find it incredibly exciting that this project aims to leverage advanced imaging and machine learning techniques, combined with single-cell analysis, to identify personalized treatment strategies for obese patients. By integrating deep learning with MRI data, we have the potential to revolutionize how we assess and manage obesity-related health risks, ultimately improving patient care."



Ertunc Erdil

Postdoctoral researcher at the Department of Information
Technology and Electrical Engineering, ETH Zurich



INCUBATOR PROJECTS

Incubator Projects

Precision medicine aims to improve the individualized treatment of patients by taking molecular and phenotypic characteristics into account. To enable innovative approaches in this area, The LOOP Zurich launched a new project type in 2024: The LOOP Zurich Incubator Projects.

These projects are intended to bring together research groups from at least two LOOP partner institutions, enabling them to combine their complementary expertise and resources to jointly address an ambitious medical problem. In contrast to the Translational Projects, the focus of the Incubator Projects is on the early research phase – such as understanding molecular disease mechanisms, identifying new targets for diagnostics and therapy, or developing novel medical technology concepts.

In the first call for proposals, researchers were invited to submit Incubator Projects that contribute to:

- decoding new disease-relevant molecular mechanisms or identifying innovative targets for diagnostics and therapy,
- developing novel biological concepts or technologies with the potential to transform precision medicine in the long term.

The development of these projects is intended not only to drive scientific innovation, but also to strengthen Zurich as a research hub. Furthermore young researchers are expected to take on key roles in the Incubator Projects. For example, postdocs will have the opportunity to assume responsibility as junior principal investigators (Junior PIs) and to actively advance their academic careers.

The total funding for an Incubator Project amounts to a maximum of CHF 1 million over a period of three years. Already in the first call for proposals, numerous exciting research approaches were submitted – a clear sign of the great potential and momentum within Zurich's research community. Among the many applications, the following two projects were selected for funding.

Artificial intelligence for better decision-making in cancer treatment

AI-Tumor Board

Project Leads: Michael Krauthammer, Department of Quantitative Biomedicine, University of Zurich
 Andreas Wicki, Department of Medical Oncology and Hematology, University Hospital Zurich
 Jean-Pierre Bourquin, Oncology, University Children's Hospital Zurich

Goal **Development of an AI-supported dashboard to assist personalized treatment decisions in tumor boards**

The increasing availability of clinical and genetic data, along with advances in artificial intelligence (AI), is opening up new possibilities for personalized cancer medicine. The Incubator Project "AI-Tumor Board" is developing an intelligent platform that supports medical decision-making in tumor boards through AI-based analyses and the structured preparation of complex data. Tumor boards are interdisciplinary meetings of experts from various specialties – including oncology, surgery, and pathology – who decide on the optimal diagnostic and therapeutic approach for individual cancer patients.

The project follows a three-step approach:

1. First, medical guidelines are converted into a machine-readable format so they can be automatically compared with patient data.
2. Based on this, AI algorithms analyze previous treatment histories and identify patterns to derive personalized therapy recommendations.
3. In the final step, the findings are consolidated in a user-friendly dashboard that will be made available to physicians at the University Hospital Zurich (USZ) and the University Children's Hospital Zurich (KiSpi).

Significance for the medical research community

The AI-Tumor Board combines clinical expertise with cutting-edge AI research. By integrating established guidelines and real patient data, it creates evidence-based decision support that can set new standards in oncological care. The project makes a significant contribution to the digitization of cancer treatment and promotes the implementation of personalized therapies at the Zurich research hub.

Participating research groups

Michael Krauthammer	Department of Quantitative Biomedicine, University of Zurich
Andreas Wicki	Department of Medical Oncology and Hematology, University Hospital Zurich
Jean-Pierre Bourquin	Oncology, University Children's Hospital Zurich
Gabriele Gut	Department of Medical Oncology and Hematology, University Hospital Zurich
Ana Claudia Sima	Swiss Institute of Bioinformatics
Fabio Steffen	Oncology, University Children's Hospital Zurich

This project is made possible by the Promedica Foundation.

Early detection and prevention: A new approach to systemic sclerosis (SSc)

PREVENT-SSc

Project Lead: Oliver Distler, Department of Rheumatology, University Hospital Zurich

Goal Development of an early warning system to prevent disease progression in systemic sclerosis

Systemic sclerosis (SSc) is one of the most severe autoimmune diseases and is associated with a high mortality rate. The Incubator Project PREVENT-SSc takes an innovative approach to detect the disease at an early stage and to initiate treatment before permanent organ damage occurs. The goal of the project is to develop a personalized risk calculator that predicts the likelihood of disease progression using clinical markers, blood tests, and mechanical skin analyses. This early warning system is intended to enable targeted treatment before irreversible symptoms appear.

In addition, the research team is using single-cell RNA sequencing and proteomics to create a molecular map of early-stage SSc development in order to identify novel therapeutic targets.

Significance for the medical research community

The project brings together experts in rheumatology, chemistry, biology, bioinformatics, and proteomics in an interdisciplinary consortium. PREVENT-SSc not only strengthens precision medicine in the field of autoimmune diseases but also positions Zurich as a leading center for the research and prevention of chronic diseases. The preventive approach also serves as a model for the early detection and treatment of other complex diseases.

Participating research groups

Oliver Distler
Jörn Dengjel
Rucsandra Dobrota
Edoardo Mazza
Christian Stockmann
Helma Wennemers
Sabine Werner

Department of Rheumatology, University Hospital Zurich
Department of Biology, University of Fribourg
Department of Rheumatology, University Hospital Zurich
Department of Mechanical and Process Engineering, ETH Zurich
Institute of Anatomy, University of Zurich
Department of Chemistry and Applied Biosciences, ETH Zurich
Department of Biology, ETH Zurich

PLATFORMS

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

The LOOP Biomedical Informatics Platform (The LOOP BMIP)

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

The Platform Project “The LOOP BMIP” is a central component of the digital transformation at the Zurich university hospitals and is essential for data-driven medical research. It includes:

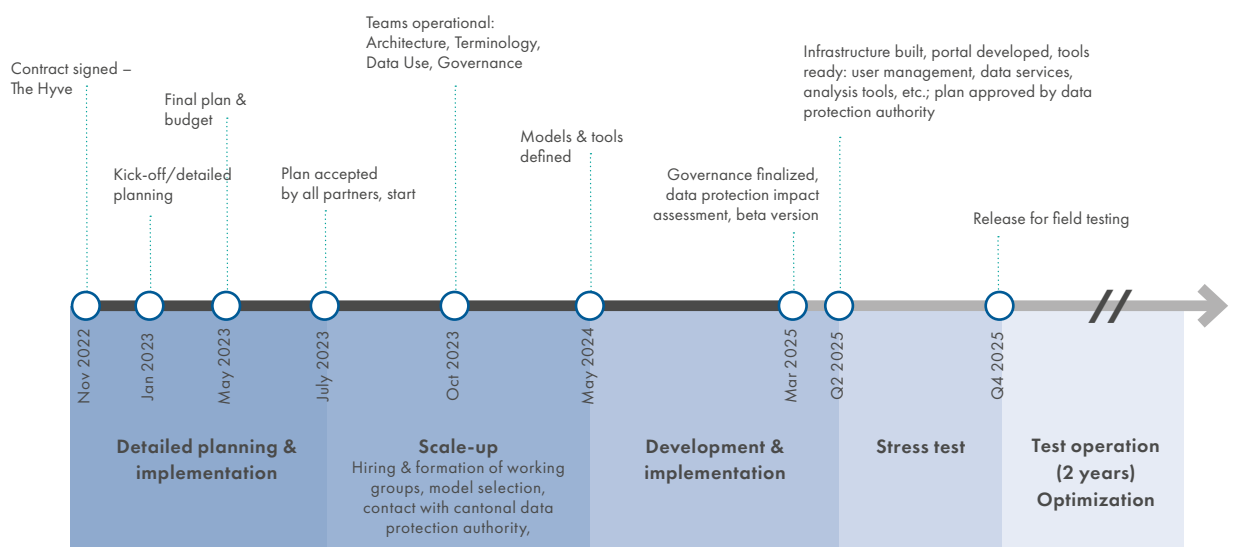
- the integration, storage, and maintenance of project-specific databases as well as the harmonization of clinical patient data from Zurich’s university hospitals,
- the development of a secure infrastructure for data exchange between The LOOP BMIP and the university hospitals in Zurich, compliant with legal data protection and patient privacy regulations,
- the establishment of infrastructure for the application of artificial intelligence (AI) in medicine, with the goal of improving patient care.

The LOOP BMIP builds on the outcomes of the SPHN initiative (Swiss Personalized Health Network), particularly in the areas of governance and IT structures. The technical core is the Leonhard Med research IT platform developed by ETH Zurich.

Implementation milestones

Four central working groups – Architecture, Terminology, Data Use, and Governance – along with various specialized implementation teams are responsible for execution. They are developing protocols for data transfer between the participating institutions and the central research infrastructure.

The project is currently in the final implementation phase and is about to begin an internal testing phase. By the end of 2025, The LOOP BMIP is scheduled to be released for an extended testing phase by users



Timeline for the development of The LOOP BMIP

In May 2024, tools for user management, data services, and analysis were defined. This marked the start of the development and implementation phase, which includes building the infrastructure and user portal, converting data into an exchangeable format, and developing the legal foundations for data exchange and processing between the participating institutions.

A comprehensive stress test for a selected group of users is planned for the second quarter of 2025. The release of The LOOP BMIP to researchers at the participating institutions is scheduled for late 2025. The first two years will be dedicated to field testing and platform optimization.

Data protection

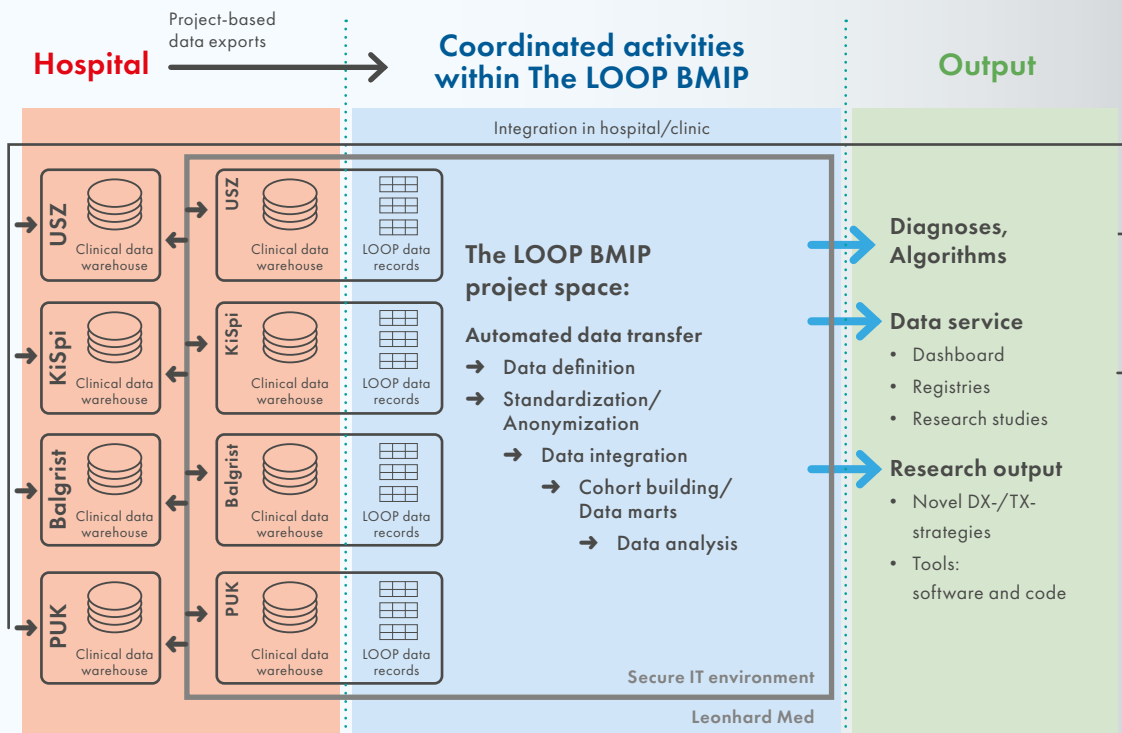
Particular attention is being paid to compliance with legal requirements for patient and data protection. To this end, the project team is working closely with the Data Protection Officer (DPO) of the Canton of Zurich. A beta version of the Data Protection Impact Assessment (DPIA) is expected in early 2025.

The LOOP BMIP represents an innovative infrastructure for biomedical research, enabling interdisciplinary exchange of health data in accordance with the highest technical and ethical standards

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 6,85 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 our hospitals, enormous amounts of data are generated every day: blood values, tissue sample results, ultrasound or X-ray images – to name just a few examples. However, accessing this clinical data and using it for research purposes is not straightforward. For this reason, the six medically oriented research institutions of The LOOP Zurich have agreed to establish a shared, central biomedical informatics platform – The LOOP Biomedical Informatics Platform (The LOOP BMIP). The goal is to create a compatible data processing structure that enables Zurich's research community to access structured patient data. In addition, the findings and results obtained can be fed back to the hospitals – for patient care or for more efficient operations.

To support the development of The LOOP BMIP, The LOOP Zurich launched a new project type in 2023: The LOOP Zurich Platform Projects. Similar to the Translational Projects, at least two institutions must be involved in each Platform Project. Moreover, complementary skills, expertise, and resources are to be brought together to further advance The LOOP BMIP.

The total funding for a Platform Project amounts to a maximum of CHF 1 million, granted over a period of three years.

In the first call for proposals, researchers were invited to submit Platform Projects that aim to:

1. Integrate novel and complementary types of health-related data – such as omics data, imaging data, and/or quasi-real-time data (high-frequency recordings) into The LOOP BMIP.
2. Develop new analytical techniques capable of processing large amounts of relevant medical data of various types. These techniques should lead to new insights into a medical problem and/or predict possible 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 launched in early 2024



Biomedical Informatics Imaging Platform (BMI²)

Project leads: Bjoern Menze, Department of Quantitative Biomedicine, University of Zurich
Viktor Kölzer, Department 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 are an essential – yet so far underutilized – source of information for clinical diagnostics. Until now, image interpretation has been carried out by specialists and is therefore heavily dependent on individual experience. Modern image analysis based on machine learning algorithms enables more precise disease characterization and the identification of clinically relevant biomarkers.

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

Following the implementation phase, the advantages of this extension of The LOOP BMIP will be demonstrated through selected examples from radiology, neuroradiology, pathology, and radiation oncology. This is intended to centralize medical imaging research in Zurich and tightly link it to The LOOP BMIP.

Objectives of BMI²

- Development of interfaces for the exchange of diagnostic imaging data from various imaging modalities among the partner institutions in Zurich
- Standardization and quality control of essential metadata, including instrumentation, resolution, orientation, and measurement parameters
- Extraction of essential diagnostic information on morphology and texture, as well as functional data (e.g., blood flow) from imaging datasets, to be made available as search criteria
- Linkage of de-identified imaging data with clinical, cellular, and molecular parameters
- Clarification of governance, legal, and data protection issues in the field of imaging, in collaboration with the Clinical Trial Center (CTC) at University Hospital Zurich (USZ).



Selected research findings

In 2024, the BMI² platform achieved significant progress in the integration, management, and analysis of medical imaging data.

1. Infrastructure: Imaging parameters were reformatted to ensure metadata compatibility with the national SPHN initiative (Swiss Personalized Health Network) and thus with The LOOP BMIP. This standardization guarantees consistent metadata across imaging modalities – a crucial prerequisite for efficient data search and integration. Moreover, a prototype database was established using publicly accessible data converted into the SPHN standard. This serves as a testing ground for future data integration and evaluation algorithms.

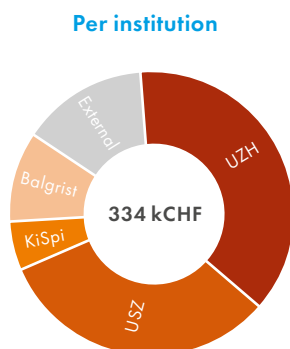
2. Driver projects: Clinical pilot projects are evaluating the suitability of the BMI² platform for a variety of clinical applications – ranging from specific imaging method extensions to data availability for federated analyses.

- **Digital pathology:** In collaboration with SPHN and the Swiss Digital Pathology Initiative (SDPI), BMI² contributes to expanding medical imaging concepts by integrating pathology data (digitized tissue sections).
- **Pediatrics:** The University Children's Hospital Zurich (KiSpi) is developing specific extensions for MRI imaging and improving anonymization algorithms for pediatric imaging data.
- **Federated query system:** In partnership with University Hospital Zurich (USZ), a cross-institutional query system was adapted to enable the search and aggregation of imaging metadata for research project.

Significance for the medical research community

Imaging technologies are a central component of modern diagnostics. Advances in image analysis – especially through machine learning and AI – allow for more precise and efficient interpretation of diagnostic data. At the same time, they make it easier for researchers to access and apply advanced machine learning methods.

Utilization of funds 2024



Participating research groups

Bjoern Menze

Viktor Kölzer

Sebastiano Caprara

Thomas Frauenfelder

Matthias Guckenberger

Andras Jakab

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

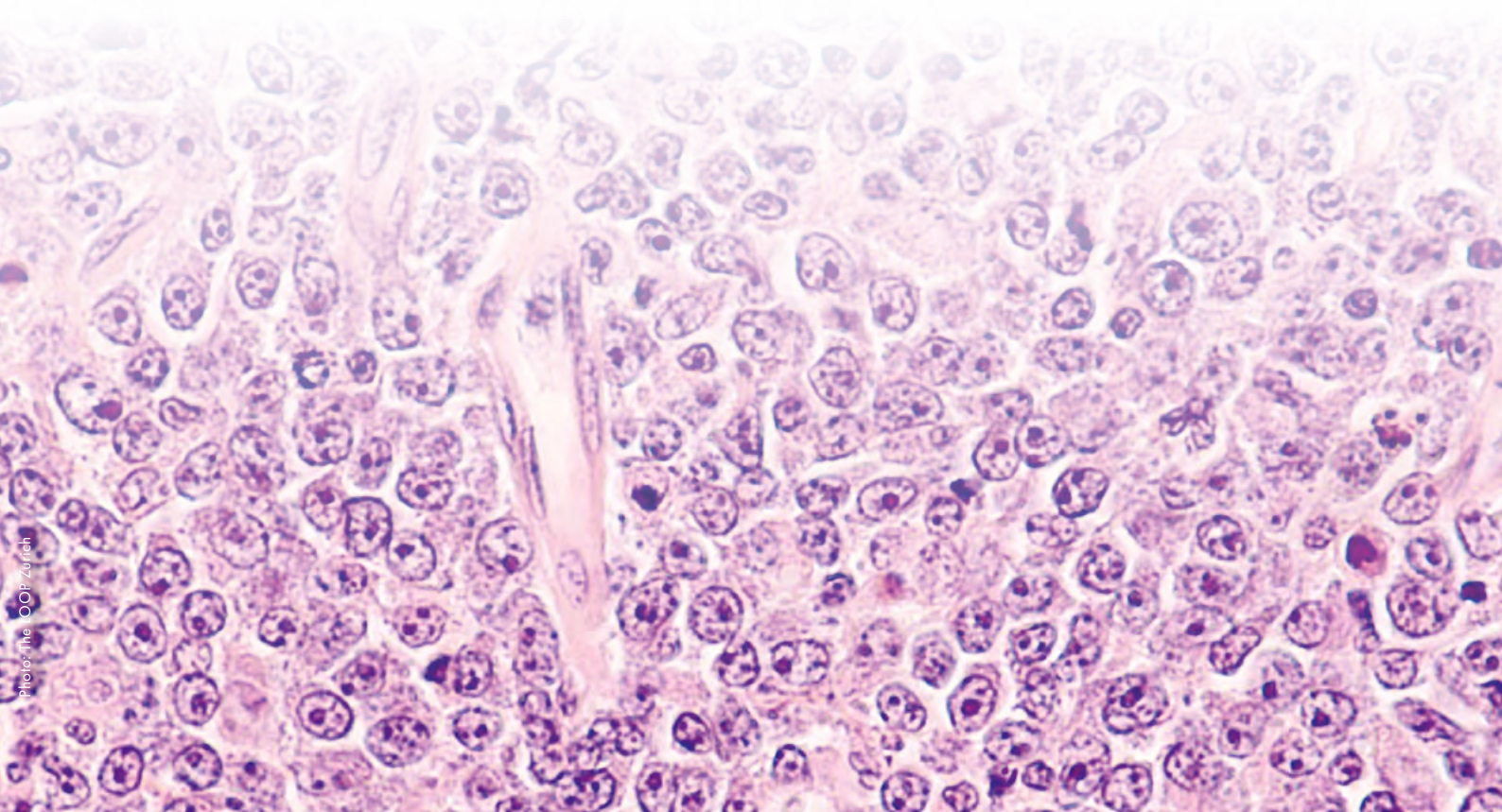
This project is made possible by the Georg and Berta Schwyzer-Winiker Foundation.

ProteOmics for Lymphoma and Prognostication (POLAR)

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

Goal Integration of molecular data (proteome) into The LOOP BMIP

As part of the POLAR project, a platform is being developed to enable the integration of proteomic data from tumor and immune cells into routine diagnostics for lymphoma patients. The project builds on existing clinical and research data, algorithms, and biobanks which now contain more than 2,500 patient samples. These data are combined with an ultra-fast proteomics platform and new analytical methods to optimize the visualization of proteomics data, integrate multidimensional (multi-omics) datasets, and enable robust predictions of lymphoma subtypes. The platform is intended for both research purposes and for prognostic assessments, and optimization of therapeutic interventions.



Selected research findings

In a first subproject, a robust proteomics platform was established to systematically characterize the proteome of lymphomas. The following objectives were fully or partially achieved:

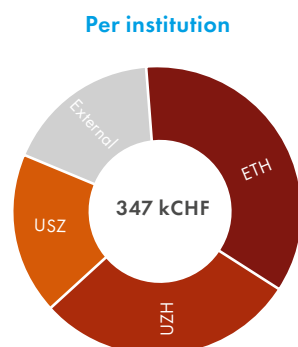
- Standardization and semi-automated execution of proteomic measurements (completed)
- Establishment of a digitization process for H&E-stained pathology slides (ongoing)
- Production of tissue microarrays (TMA) from pathology samples (ongoing)
- Development of a proteomics dataset for research purposes (ongoing)

A comprehensive database of proteomic data from malignant lymphomas is planned for 2025. This database will comply with the FAIR principles, meaning that data from different sources can be exchanged and reused. In parallel, innovative analytical methods for the visualization of proteomics data and multi-omics data integration will be developed within the same timeframe.

Significance for the medical research community

A comprehensive, publicly accessible proteomics dataset of lymphoma samples will offer researchers around the world new opportunities for discovering diagnostic and therapeutic approaches. At the same time, the project lays the foundation for a national lymphoma registry, which will foster closer collaboration between leading research institutions. In doing so, POLAR strengthens Switzerland's position as an innovation hub for cancer research.

Utilization of funds 2024



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.

COMMUNITY

Successful midterm review of INTeRCePT and StimuLOOP

In May 2024, The LOOP Zurich reached an important milestone: the first midterm review of the INTeRCePT and StimuLOOP projects. Both projects began in late 2021. On 23 and 24 May, researchers presented their progress at the Hotel Zürichberg, discussed challenges, and planned the next steps.

Before the Scientific Advisory Board, the teams provided detailed insights into their progress. Deviations from the original plans were also discussed openly and transparently. This created a constructive atmosphere, that enabled the development of solutions and the definition of strategies for the upcoming project phases.

The commitment of early-career researchers was particularly impressive, as they presented their work packages and findings. In subsequent poster sessions, topics were explored in greater depth and valuable insights for further research were generated.

A highlight was the dinner at the Giraffe House in Zurich Zoo, which gave researchers and board members the opportunity to connect in a relaxed setting. There was also a visit to the Rehabilitation Engineering Laboratory (RELab) at ETH Zurich, where the StimuLOOP team provided insights into their gait analyses.

The midterm review was positively received by all participants. It demonstrated not only the impressive progress of the projects but also promoted continued collaboration. With this successful event, The LOOP Zurich further strengthened transdisciplinary research and laid another foundation for the future of the INTeRCePT and StimuLOOP projects.



Presentation INTeRCePT



Poster session



Dinner at the Giraffe House, Zurich Zoo



Presentation StimuLOOP



Poster session



Visit to RELab at ETH Zurich



Poster session



Poster session

A turning point in medicine: Annual event of The LOOP Zurich 2024

The LOOP Zurich Annual Event 2024 was entirely dedicated to precision medicine. Experts from research, medicine, politics, and industry gathered on 27 November 2024 at the Careum in Zurich to present current developments and engage in open discussions about challenges and public acceptance.

The event began with a remarkable presentation by the AI avatar of Johann Lukas Schönlein, the first dean of the University of Zurich's Faculty of Medicine, demonstrating how artificial intelligence is transforming medicine – from genetically tailored therapies to precise risk assessments based on biomarkers.

Under the title “Who cares about precision medicine? Societal perspectives,” the focus shifted to the interdisciplinary and digital future of medicine. Successful projects such as the The LOOP Biomedical Informatics Platform (The LOOP BMIP), the AI-Tumor Board, and preventive strategies for autoimmune diseases highlighted the potential of personalized approaches. The LOOP BMIP, which will harmonize medical data from all university hospitals in the future, is laying a key foundation for faster and more efficient research. The relevance of precision medicine for the pharmaceutical industry was highlighted in an inspiring lecture by Tobias Junt from Novartis Pharma in Basel.

In addition to technological advances, central societal and ethical questions as well as data security were also in the spotlight. During a high-profile panel discussion, personalities from politics, law, ethics, economics, biomedical research, and industry emphasized the importance of aligning innovation with social responsibility. The close collaboration between scientists, physicians, and patients was also highlighted as key to implementing precision medicine.

The event not only showcased the progress of The LOOP Zurich projects but also served as an inspiration for future work. The established Translational Projects and new initiatives such as the Incubator Projects, including Prevent-SSc for the prevention of systemic sclerosis and the AI-Tumor Board, underscore the goal of rapidly and effectively translating medical knowledge into practice.

With this event, The LOOP Zurich succeeded in building a bridge between research and society, demonstrating the tremendous potential of precision medicine to sustainably improve healthcare.

Panel discussion participants

- ∞ Dr. med. Bettina Balmer, Member of the National Council (FDP)
- ∞ Prof. Dr. Stefan Felder, Head of the Health Economics Research Group, University of Basel
- ∞ PD Dr. Tobias Junt, Director & Co-leader Integrated Translational Research, Immunology, Novartis
- ∞ M. Sc. ETH Annette Magnin, Managing Director of the Cantonal Ethics Commission Zurich
- ∞ Prof. Dr. med. Oliver Senn, Head of Research, Institute of General Practice, University of Zurich
- ∞ Prof. Dr. iur. et Dr. med. Kerstin Noëlle Vokinger, LL.M., Professor of Law and Medicine, University of Zurich



Founding Director Markus Rudin



Welcome remarks by Beatrice Beck Schimmer and Julia Dannath-Schuh



AI avatar Johann Lukas Schönlein and Jens Selige at the opening



Presentation by Tobias Junt



Panel discussion



Festive reception (Apéro)

OUTLOOK 2025

Translational Projects

The four ongoing projects – INTerCePT, StimuLOOP, mTORUS, and LOOBesity – are continuing as planned. A new call for additional Translational Projects is scheduled for mid-2025.

Incubator Projects

Two Incubator Projects selected for funding in 2024 will start in the first quarter of 2025. A new call for an additional Incubator Project is planned for the third quarter of 2025.

Platform Projects

The two Platform Projects – BMI² and POLAR – are proceeding according to plan. A new call for an additional Platform Project is scheduled for the fourth quarter of 2025.

The LOOP Biomedical Informatics Platform

The year 2025 will be a decisive one for The LOOP BMIP: the contractual foundations for the secure exchange and use of data from the participating institutions have largely been developed and are currently under legal review. Our goal is to minimize the regulatory burden on researchers.

In the second half of 2025, The LOOP BMIP will undergo a comprehensive stress test, followed by the start of field testing at the end of the year. Particular attention will be paid to compliance with legal data protection requirements. These requirements are being developed in close coordination with the staff of the Data Protection Officer of the Canton of Zurich.

The LOOP BMIP is intended to become an innovative, ethically and technically pioneering platform for interdisciplinary exchange of health data.

UMZH Biobank

At the end of 2023, The LOOP Zurich received the mandate to network the biobanks of the founding institutions. The goal is to make samples visible and accessible to researchers. The LOOP Zurich, together with the respective biobank operators, will develop the necessary IT infrastructure. A feasibility study is to be completed by June 2025.

The activities of the UMZH Biobank are coordinated on a national level with the Swiss Biobanking Platform. In the longer term, samples will be linked with clinical data, for which appropriate regulatory requirements will need to be developed.

Upcoming events

1st LOOP Zurich Retreat

22 – 24 May 2025, 2 in Murten (FR)

In 2025, The LOOP Zurich will organize its first retreat. The aim of the event is to promote interdisciplinary exchange on precision medicine across the Translational Projects. The program will include internal presentations, keynotes by external experts, presentations on the Translational Projects, and several poster sessions.

The LOOP Zurich Annual Event

1 December 2025, in Zurich

The traditional annual event will once again focus on precision medicine. The detailed program will be announced in summer 2025.

6 institutions

34 research groups

7.4 million CHF in
research funding

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

17 informaticians funded

4 Translational Projects

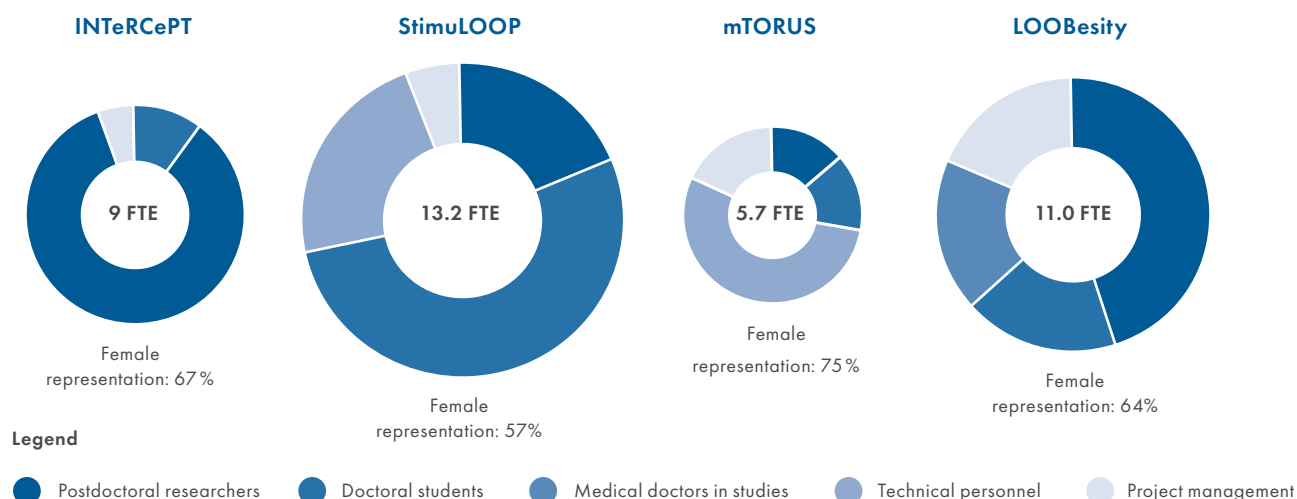
2 Platform Projects

68 % research funding
from philanthropy

FACTS & FIGURES

The LOOP Zurich Financed employees

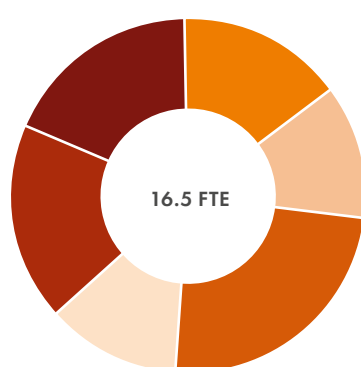
The LOOP Zurich Translational Projects



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 Foundation	Dornonville de la Cour Foundation	UZH/ETH	
CHF	619,370	1,150,805	1,146,912	872,512	3,789,598
Project start date	01.07.2021	01.08.2021	01.07.2023	01.03.2023	
Postdoctoral researchers	1	2.5	0.8	5	9.3
Doctoral students	8	7	0.8	2	17.8
Medical doctors in studies	0	0	0	2	2
Technical personnel	0	3	3.1	0	6.1
Project management	0.5	0.7	1	2	4.2
TOTAL	9.5	13.2	5.7	11	39.4
Female representation (%)	67	57	75	64	62

Table: Number of positions and research expenditure 2024

The LOOP BMIP



Legend

- KiSpi
- Balgrist
- USZ
- PUK
- UZH
- ETH

FTE: Full Time Equivalent

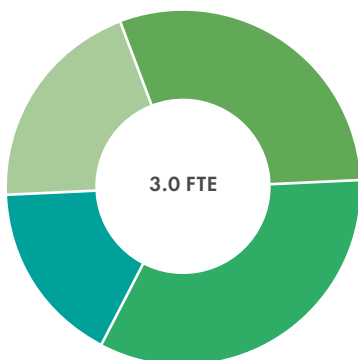
Institutions

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 The LOOP BMIP

The LOOP Zurich Managing Office



Legend

- Directorate
- Management
- Administration
- Communications

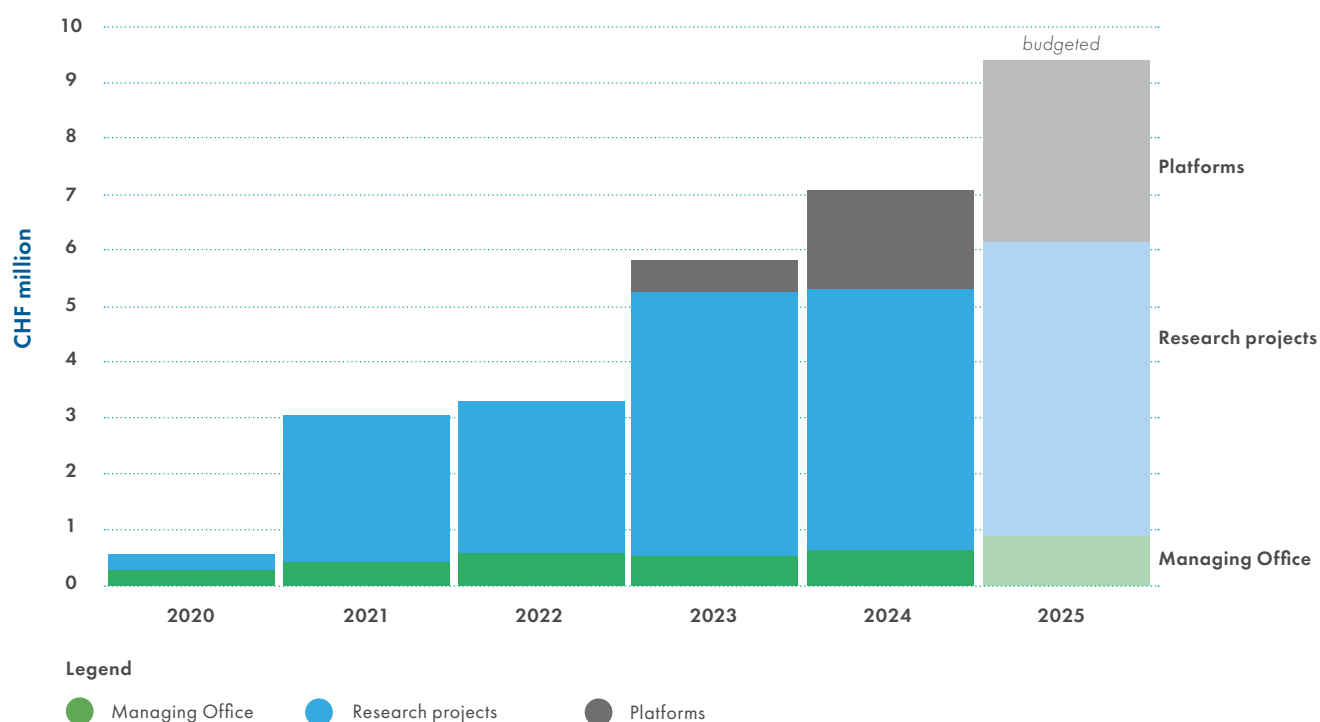
FTE: Full Time Equivalent

FTE

Directorate	0.9
Management	1
Administration	0.5
Communications	0.6
TOTAL	3.0

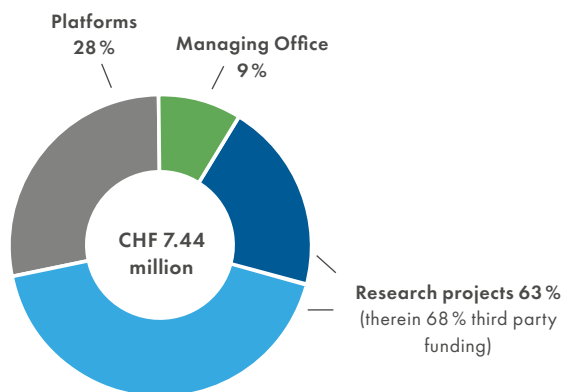
Table: The LOOP Zurich Managing Office

The LOOP Zurich Total expenditures 2020 – 2024 & budget 2025

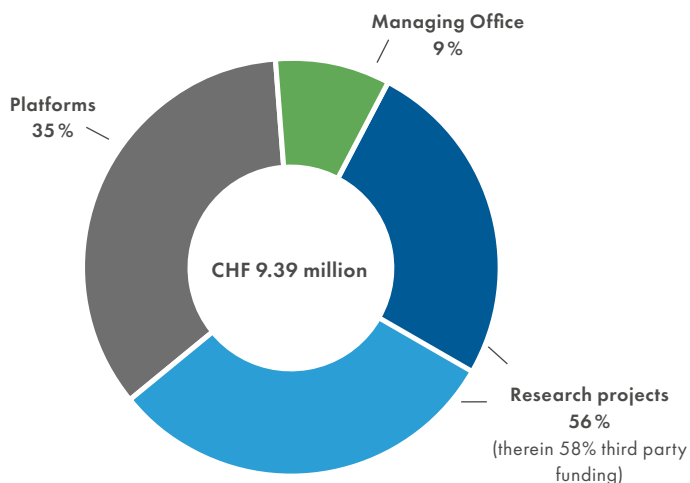


The LOOP Zurich Annual financial statement 2024 & budget 2025

Expenses 2024



Budget 2025



Legend

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

			Expenses 2024			Budget 2025		
		Funding source	CHF per item	CHF per category	%	CHF per item	CHF per category	%
Managing Office		Sponsoring institution	640,732			882,000		
TOTAL				640,732	9		882,000	9
Research projects	LTP	ETH/UMZH	1,491,881			1,960,640		
		Donors	2,297,717			1,935,727		
	LTP+	Donors	200,000			200,000		
	LPP	ETH/UMZH	0			0		
		Donors	680,400			667,250		
	LIP	ETH/UMZH	0			255,447		
		Donors	0			255,000		
TOTAL				4,669,998	63		5,274,063	56
Platforms	BMIP	UMZH	2,095,227			3,032,000		
	UBB	UMZH	30,658			200,000		
TOTAL				2,125,885	28		3,232,000	35
TOTAL				7,436,615	100		9,388,063	100

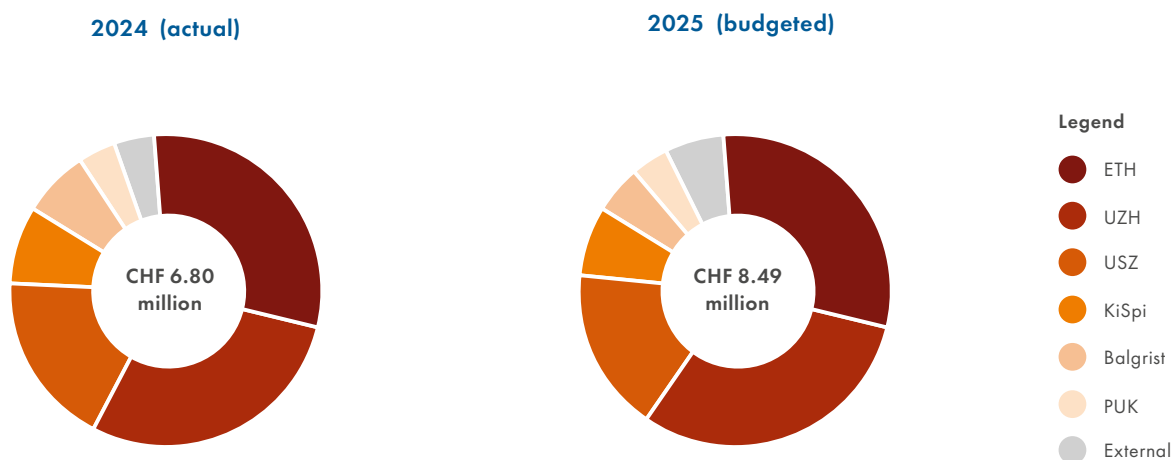
Table: The LOOP Zurich – Expenses 2024, budget 2025

Legend

LTP The LOOP Zurich Translational Projects
LTP+ Associated LTP Project (Helmut Horten Foundation Anniversary Project)
LPP The LOOP Zurich Platform Projects

LIP The LOOP Zurich Incubator Projects
BMIP The LOOP Biomedical Informatics Platform
UBB UMZH Biobank
UMZH University Medicine Zurich

The LOOP Zurich Allocation of research funding to institutions



Allocation of funds to institutions for The LOOP Zurich's research activities (research projects and platforms) (see table)

	Expenses 2024		2025 (budgeted)	
	CHF	%	CHF	%
ETH	1,995,372	29	2,582,599	30
UZH	1,965,701	29	2,621,682	31
USZ	1,201,090	18	1,485,968	17
KiSpi	584,430	9	575,462	7
Balgrist	492,171	7	408,080	5
PUK	242,598	4	299,396	4
External	314,520	4	517,332	6
TOTAL	6,795,883	100	8,490,519	100

Table: Allocation of funds to institutions for The LOOP Zurich's research activities (research projects and platforms). Funds for research groups at hospitals were allocated 50% to UZH and 50% to the respective hospitals.

PUBLICATIONS & PEOPLE

Publications

The LOOP Zurich Publications & conference contributions

StimuLOOP

1. Neumann S, Ducrot M, Vavanan M, Naef A, Easthope CA. "Providing Personalized Gait Feedback in Daily Life". In: Converging Clinical and Engineering Research on Neurorehabilitation V. La Granja: ICNR; 2024.
2. Nastasi L, Jelitto R, Lestoille M, Branscheidt M, Luft AR, Gassert R, Easthope CA, Lambercy O. "Towards Personalized Real-time Biofeedback for Gait: Implementation of a Co-design Process to Improve Usability". In: Converging Clinical and Engineering Research on Neurorehabilitation V. La Granja: ICNR; 2024.
3. Naef A, Berthet M, Böni A, Nastasi L, Branscheidt M, Luft AR, Lambercy O, Gassert R, Easthope CA. "Closing the loop – Implementing personalized real-time biofeedback for gait rehabilitation in stroke and Parkinson's patients". In: Converging Clinical and Engineering Research on Neurorehabilitation V. La Granja: ICNR; 2024.
4. Legrand M, Magrini C, Branscheidt M, Gassert R, Lambercy O, Easthope CA. "Augmented feedback to influence gait symmetry: a feasibility study to quantify effects on the global gait pattern". In Heidelberg: IEEE BIOROB; 2024.
5. Legrand M, Hess J, Luft A, Gassert R, Lambercy O, Easthope CA. "Balance training in Virtual Reality: influence of the frequency and the amplitude of the environment motion on body sway". In: Converging Clinical and Engineering Research on Neurorehabilitation V. La Granja: ICNR; 2024.
6. Böni A, Menard T, Ryser A, Legrand M, Ravi DK, Branscheidt M, Vogt JE, Luft AR, Easthope CA. "Towards AI-Driven clinical decision support for post-stroke gait rehabilitation". In: Converging Clinical and Engineering Research on Neurorehabilitation V. La Granja: ICNR; 2024.
7. Böni A, Maffei T, Ryser A, Legrand M, Ravi DK, Branscheidt M, Vogt JE, Luft AR, Easthope CA. "AnomGait: Data-driven extraction of movement features using contrastive learning". In: Converging Clinical and Engineering Research on Neurorehabilitation V. La Granja: ICNR; 2024.
8. Berthet M, Naef A, Branscheidt M, Luft AR, Lambercy O, Easthope CA, Gassert R. "Protocol to Assess Cognitive Load During Real-time Biofeedback Training and its Effect on Gait Performance". In: Converging Clinical and Engineering Research on Neurorehabilitation V. La Granja: ICNR; 2024.
9. Kasties V, Meier N, Moser NH, Sassenburg R, Karlen W, Ferster ML, Fattinger S, Maric A, Huber R. Longer "Interstimulus Intervals Enhance Efficacy of Automated Phase-Targeted Auditory Stimulation on Procedural Memory Consolidation". bioRxiv. 2024:2024-12.
10. C Lang, JH van Dieen, MA Brodie, J Welzel, W Maetzler, NB Singh, DK Ravi. "Complexities and challenges of translating intervention success to real world gait in people with Parkinson's disease". Frontiers in Neurology, 2024.
11. G Amprimo, Z Mei, C Ferraris, G Olmo, DK Ravi. "A Data-driven Exploration and Prediction of Deep Brain Stimulation Effects on Gait in Parkinson's Disease". IEEE Journal of Biomedical and Health Informatics, 2024.
12. Salzmann L, Bichsel O, Rohr-Fukuma M, Charrin TD, Naef AC, Stieglitz L, Oertel M, Bujan B, Jedrysiak P, Imbach LL, Lambercy O, Gassert R. "DBS neurofeedback for motor task enhancement in Parkinson's disease". In preparation.

INTeRCePT

1. Hale BD, Severin Y, Graebnitz F, Stark D, Guignard D, Mena J, Festl Y, Lee S, Hanimann J, Zangger NS, Meier M, Goslings D, Lamprecht O, Frey BM, Oxenius A, Snijder B. "Cellular architecture shapes the naïve T cell response". *Science*. 2024 Jun 7;384(6700):eadh8697.
2. Pohly MF, Putzker K, Scheinost S, Ben Taarit L, Walther T, Kummer S, Wertheimer T, Lin M, Do THL, Handler K, Michler J, Kivioja J, Bach K, Kisele S, Kim J, Dietrich S, Bornhauser B, Wong WW, Becher B, Moor A, Lewis JD, Ficht XM, Lu J, Huber W, Zenz T. "IAP dependency of T-cell prolymphocytic leukemia identified by high-throughput drug screening". *Blood*. 2025 Jan 27;blood.2024027171.
3. Chong SJF, Lu J, Valentin R, Lehmborg TZ, Eu JQ, Wang J, Zhu F, Kong LR, Fernandes SM, Zhang J, Herbaux C, Goh BC, Brown JR, Niemann CU, Huber W, Zenz T, Davids MS. "BCL-2 dependence is a favorable predictive marker of response to therapy for chronic lymphocytic leukemia". *Molecular Cancer*, in press.
4. Borgsmüller N, Kuipers J, Gawron J, Roncador M, Pohly M, Acar E, Do THL, Reisenauer S, Feldkamp MJ, Beisel C, Zenz T, Moor A, Beerenwinkel N. "DemoTape: Computational demultiplexing of targeted single-cell sequencing data". *bioRxiv* 2024.12.06.627152.

LOOBesity

1. Moll H, Frey E, Gerber P, Geidl B, Kaufmann M, Braun J, Beuschlein F, Puhon MA, Yebyo HG. "GLP-1 receptor agonists for weight reduction in people living with obesity but without diabetes: a living benefit-harm modelling study". *EClinicalMedicine*. 2024 May 27;73:102661.
2. Erdil E, Becker AS, Schwyzer M, Martinez-Tellez B, Ruiz JR, Sartoretti T, Vargas HA, Burger AI, Chirindel A, Wild D, Zamboni N, Deplancke B, Gardeux V, Maushart CI, Betz MJ, Wolfrum C, Konukoglu E. "Predicting standardized uptake value of brown adipose tissue from CT scans using convolutional neural networks". *Nat Commun*. 2024 Sep 27;15(1):8402. Erratum in: *Nat Commun*. 2024 Nov 19;15(1):10022.
3. Sangalli S, Erdil E, Konukoglu E. "Expert load matters: operating networks at high accuracy and low manual effort". *arXiv:2308.05035*.
4. Cekmeceli K, Himmetoglu M, Tombak GI, Susmeli A, Erdil E, Konukoglu E. "Do Vision Foundation Models Enhance Domain Generalization in Medical Image Segmentation?". *arXiv:2409.07960*

The LOOP Zurich International conference contributions

StimuLOOP

1. Salzmann L, Bichsel O, Rohr-Fukuma M, Stieglitz LH, Oertel MF, Bujan B, Jedrysiak P, Imbach LL, Lambercy O, Gassert R. "Effects of visual DBS-neurofeedback on movement quality in Parkinson's disease". rtFIN, 2024, Heidelberg, Germany.
2. Jelitto R, Lestoille M, Luft AR, Gassert R, Lambercy O, Easthope CA. "Developing personalized augmented feedback for gait rehabilitation: a co-design process". Poster presented at: World Conference of NeuroRehabilitation 2024, Vancouver, Canada.
3. Naef et al. "Developing personalized augmented feedback for gait rehabilitation: a co-design process". Poster presented at: ZNZ 2024, Zurich, Switzerland.
4. Naef et al. "Towards Personalized Feedback for Gait Rehabilitation: Influence of Visual and Vibrotactile Feedback on Gait Asymmetry in Healthy Participants". Poster presented at: ZNZ; 2024; Zurich, Switzerland.
5. C Lang, NB Singh, DK Ravi. "Closing the gap between Lab and Real-World: Translating outcomes of gait interventions in Parkinson's disease". ICAMPAM 2024, Rennes, France.
6. Jelitto R, Lestoille M, Luft AR, Gassert R, Lambercy O, Easthope CA. "Developing personalized augmented feedback for gait rehabilitation: a co-design process". World Conference of NeuroRehabilitation, 2024, Vancouver, Canada.
7. Naef A, et al. "Developing personalized augmented feedback for gait rehabilitation: a co-design process". ZNZ, 2024, Zurich, Switzerland.
8. Naef A, et al. "Towards Personalized Feedback for Gait Rehabilitation: Influence of Visual and Vibrotactile Feedback on Gait Asymmetry in Healthy Participants". ZNZ, 2024, Zurich, Switzerland.

INTeRCePT

1. Do THL, Lohoff C, Jung F, Kummer S, Benes V, Huber W, Lu J, Zenz T. "Cancer pathway connectivity resolved by drug perturbation and RNA sequencing". Poster presented at: 66th ASH Annual Meeting, 2024, San Diego, USA.
2. Lin M. "Deciphering the immune landscape of B-cell non-Hodgkin's lymphoma patients under in vitro and in vivo drug perturbation". Poster presented at: Croucher Summer Course on Translational Immunology, 2024, Hong Kong S.A.R., China.
3. Mamozai W, Boschet E, Bögeholz J, Ceriani L, Zimmermann K, Wertheimer T, Gutwein O, Reisenauer S, Pohly M, Beerenwinkel N, Snijder B, Papadopoulou V, Manz M, Bühler M, Bourquin J-P, Schneidawind D, Becher B, Balabanov S, Moor A, Huber W, Schetelig J, Zenz T#, Kreutmair S#. "INTeRCePT2.0 – Feasibility study for individualized risk profiling in lymphoma patients receiving CAR T-cell therapy". EHA-SfPM Precision Medicine Meeting, 2024, Copenhagen, Denmark.
4. Zenz T. "Targeting heterogeneity in CLL: Pathway connectivity resolved by drug perturbation and RNA sequencing". EHA-SfPM Precision Medicine Meeting, 2024, Copenhagen, Denmark.
5. Bornhauser B. "Precision medicine in childhood leukemia". EHA-SfPM Precision Medicine Meeting, 2024, Copenhagen, Denmark.
6. Kreutmair S, "CAR T cells and their immune environment shape distinct immune profiles in response and toxicity in B cell lymphoma patients", Swiss Oncology & Hematology Congress 2024, Basel, Switzerland.

mTORUS

1. McCallin, S. "Emerging Strategies to Tackle AMR: Bacteriophages and their Potential in Urology". S BAUS 2024, Birmingham, UK.
2. McCallin, S. "Bacteriophage therapy plus fecal microbiota transplantation to treat recurrent urinary tract infections". Poster presented at: ESCMID Global 2024, Barcelona, Spain.
3. McCallin, S.: "Key variables in clinical research to assess efficacy of phage therapy". ESCMID Global 2024, Barcelona, Spain.
4. McCallin, S. "What role do Swiss and Indian industry play in countering antimicrobial resistance (AMR)?" Panel discussion The Swiss-Indian AMR Industry Roundtable (World Economic Forum), Davos, Switzerland.
5. McCallin, S. "International registry for patients treated with phage therapy". Workshop for the Sustainable Development of Phage Therapy (WHO), Tbilisi, Georgia.

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