THE LOOP ZURICH
MEDICAL
RESEARCH
CENTER

2025
Annual Report

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EDITORIAL

The year 2025 for The LOOP Zurich was marked by continued consolidation and targeted development. Building on the structures established in previous years, we strategically refined our activities to further advance our vision of innovative, data driven precision medicine.

The expansion of The LOOP Biomedical Informatics Platform *(The LOOP BMIP)* remains a central priority. Designed as a scalable, modular infrastructure, it has the potential to become a key backbone for future research projects. The initial build phase was completed in 2025. In the first half of 2026, the platform will undergo an intensive testing phase before being made available to researchers at the founding institutions of The LOOP Zurich in the second half of the year. At the same time, *The LOOP BMIP* will continue to be expanded in a targeted manner – particularly with regard to additional data types, analytical tools, and the integration of further projects and partners – to meet the growing needs of data driven research.

The interaction between Incubator Projects, Translational Projects, and Platform Projects was further strengthened in 2025. Incubator Projects create space for new ideas, while Translational Projects advance these concepts toward clinical proof of concept. Examples such as *StimuLOOP, LOOBesity, mTORUS,* and *INTeRCePT* – including *INTeRCePT 3.0* within the Zurich Precision Oncology Consortium – demonstrate how closely biomedical informatics and clinical research can be integrated. With new calls for Translational and Incubator Projects, these activities were further advanced in 2025; project launches are planned for the second half of 2026.

These developments highlight the high scientific quality of the researchers involved and the effectiveness of the interdisciplinary and interinstitutional collaboration that forms the core of The LOOP Zurich. Through close cooperation between partner institutions and the support of private foundations, sustainable conditions have been established to advance innovative precision medicine at the Zurich research hub over the long term.

The year 2025 has shown that we are successfully continuing to pursue our mission of translating innovative scientific concepts into clinical application. We look forward to maintaining this momentum – with the goal of embedding data-driven precision medicine in healthcare over the long term and delivering measurable benefits for patients.

Markus Rudin
Founding Director, The LOOP Zurich

NOTE OF THANKS

The LOOP Zurich thanks the following foundations for their continued commitment and generous support.

Their contributions make it possible to drive important advances in medical research and enable groundbreaking discoveries. They support the development of new diagnostic and therapeutic approaches, deepen our understanding of disease, and contribute to improving the quality of life for many people. In doing so, they play a key role in shaping 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 medical center for translational research and precision medicine. It promotes interdisciplinary and interinstitutional collaboration to better understand disease mechanisms and develop innovative treatment approaches – for the benefit of patients and society.

At the core of its activities is the efficient translation of scientific insights into clinical practice. The LOOP Zurich follows a systematic approach that closely integrates data-driven methods, biomedical informatics analyses, and clinical research to sustainably advance personalized healthcare.

The projects of The LOOP Zurich build on the scientific expertise of its researchers and on a continuously evolving, state-of-the-art research infrastructure. Core pillars include biomedical informatics, quantitative biomedicine, and molecular biology. Extensive bio- and data repositories, as well as the targeted use of artificial intelligence (AI), play an increasingly important 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 (KiSpi), Balgrist University Hospital, and the Psychiatric University Hospital Zurich (PUK). Its aim is to bring together the complementary strengths of these Zurich institutions within a joint research initiative and to further develop them in a sustainable way.

Funding strategy

The LOOP Zurich supports interdisciplinary research consortia aimed at addressing complex medical challenges. A key requirement is that funded projects do not stop at the generation of scientific knowledge, but are consistently advanced to clinical validation. The focus is on projects with clear translational potential and a tangible benefit for patients.

The LOOP Zurich projects

The LOOP Zurich supports both research projects – Translational Projects and Incubator Projects – as well as the development and operation of clinical and technological platforms, including the associated Platform Projects.

1. Research projects

The research projects of The LOOP Zurich are divided into **Incubator Projects** and **Translational Projects**. Both project types are designed to be complementary and together form the basis for a structured development of new medical concepts.

Incubator Projects are exploratory in nature. They create space for new ideas, methods, and hypotheses, which are evaluated within a limited timeframe and budget. The goal is to develop promising concepts to a level where they can serve as the foundation for a subsequent Translational Project.

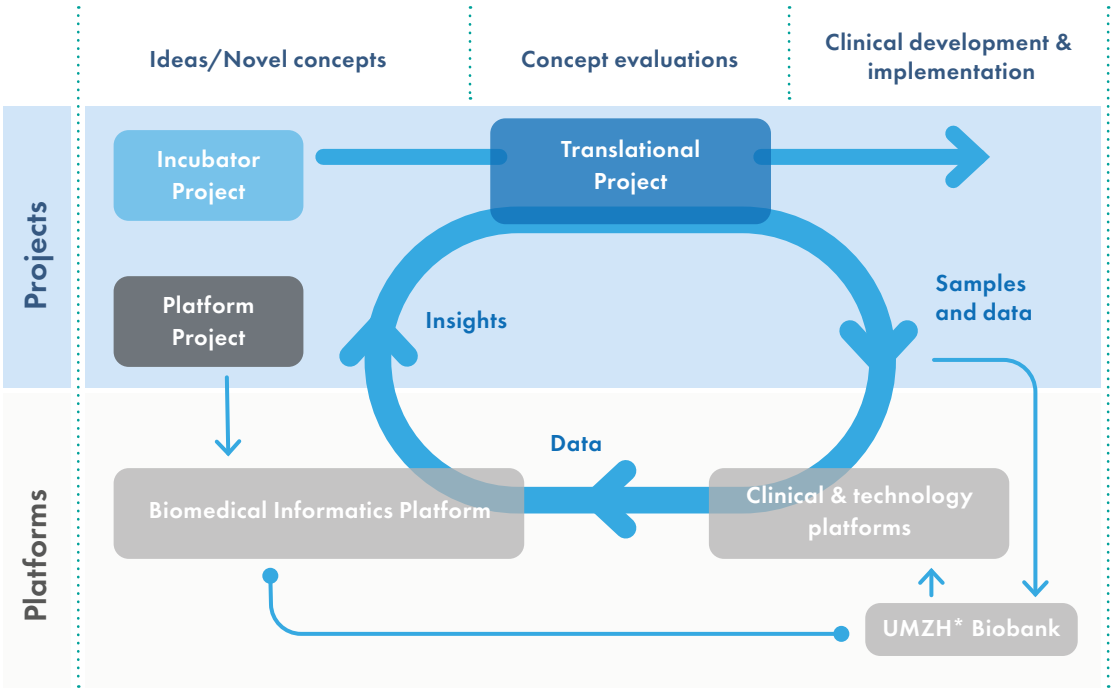
Translational Projects aim to advance biomedical concepts to clinical proof of concept (PoC). They are designed for interdisciplinary and interinstitutional consortia and necessarily include clinical research components, data-driven analyses, and a central biomedical informatics component. Demonstrating effectiveness in patients within the project duration is a key requirement for potential further clinical development.

2. Platforms and Platform Projects

Another central pillar of The LOOP Zurich is the development of the Biomedical Informatics Platform *The LOOP BMIP* (see page 44). This platform brings together clinical data from the four partner hospitals as well as data from the technology platforms and makes them available for research purposes. The initial build phase of the platform was completed in 2025. Platform Projects contribute to continuously expanding the scope and capabilities of this platform.

In addition, The LOOP Zurich has been mandated to establish a UMZH Biobank catalog and to link it with **The LOOP BMIP**, enabling biosamples to be efficiently identified and, in the long term, linked with patient data.

Interaction between projects and platforms



The diagram illustrates the interaction between research projects (in blue) and technology platforms (in grey). A central mechanism is the flow of data.

In the Incubator Projects, new ideas and concepts are developed and further advanced in the Translational Projects. Clinical data and samples are analyzed within the technology platforms, while the Biomedical Informatics Platform *(The LOOP BMIP)* consolidates the resulting data and makes it available for further processing. The insights gained flow back into the projects, thereby closing the cycle within The LOOP Zurich.

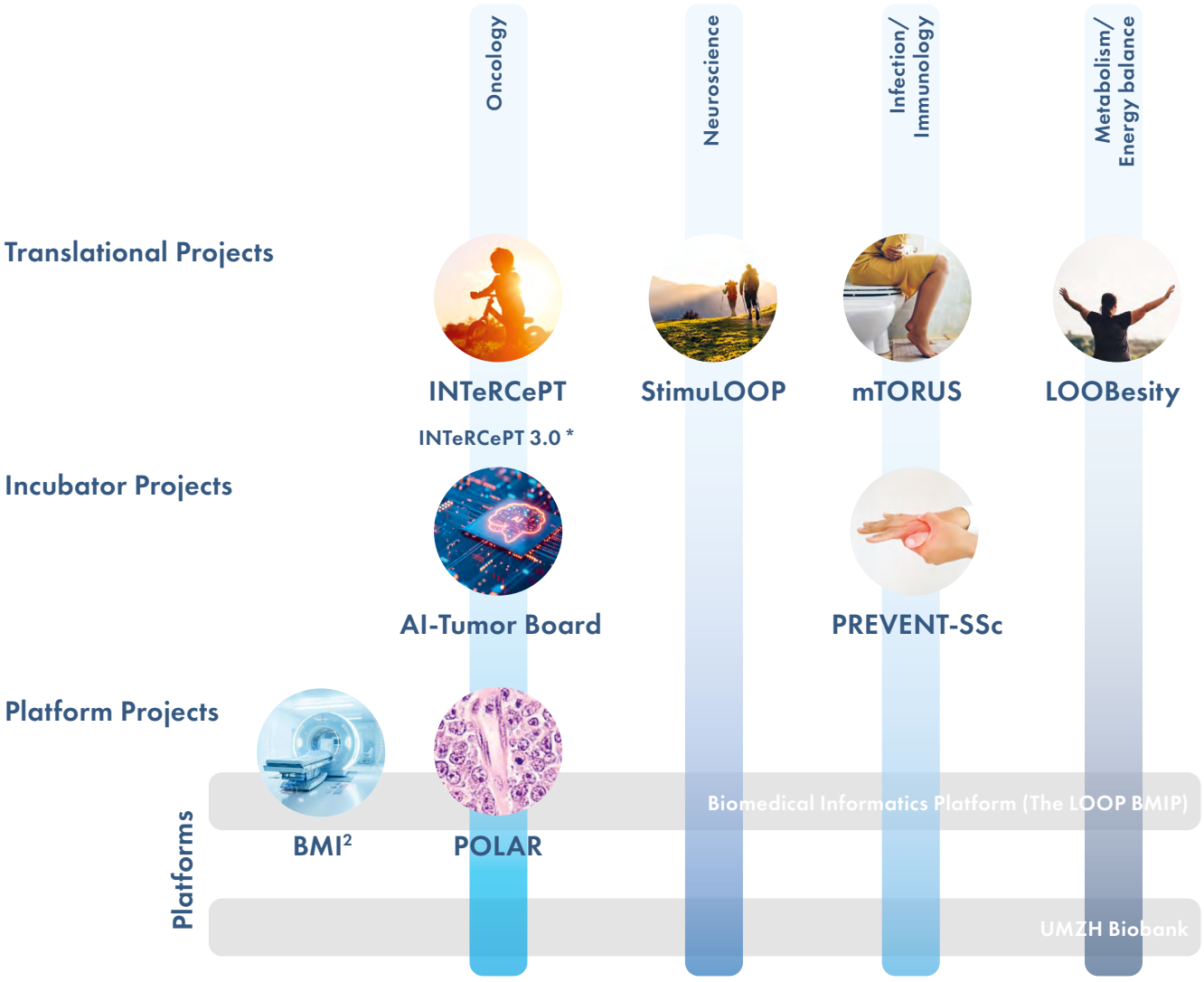
The UMZH* Biobank brings together various biobanks across Zurich and facilitates access to biological samples for research purposes.

** University Medicine Zurich*

Project portfolio

By the end of 2025, the project portfolio of The LOOP Zurich comprised four Translational Projects, two Incubator Projects, and two Platform Projects across the disciplines of oncology, neuroscience, immunology/infectious diseases, and metabolism.

In addition, the development of The LOOP Biomedical Informatics Platform *(The LOOP BMIP)* was further advanced. This includes an IT infrastructure designed to systematically link the biobanks of the partner institutions with *The LOOP BMIP*.



** INTeRCePT 3.0 is the project selected to serve as the Zurich Precision Oncology Consortium (ZPOC) and was jointly chosen by the Comprehensive Cancer Center Zurich, the Tumor Profiler Center, and The LOOP Zurich.*

TRANSLATIONAL PROJECTS

Translational Projects

The Translational Projects of The LOOP Zurich are aimed at interdisciplinary and interinstitutional research consortia from clinical practice, basic research, engineering, and biomedical informatics. Their goal is to systematically advance biomedical concepts toward clinical proof of concept (PoC), thereby laying the foundation for potential further clinical development.

A key selection criterion for Translational Projects is the close integration of clinical research, data-driven approaches, and biomedical informatics methods. Projects must be designed in such a way that the underlying medical question can only be successfully addressed through the coordinated collaboration of all participating disciplines.

All Translational Projects necessarily include clinical research components and the systematic collection of health-related data and samples. Over the course of the projects, it is evaluated whether the developed approach can be applied in patients and achieves the expected effect. Demonstrating this effect (PoC) within the maximum project duration is a core requirement.

The Translational Projects of The LOOP Zurich follow an overarching research strategy that is applied across different medical fields. These include, in particular, oncology, neuroscience, infection and immunology, as well as metabolism and energy balance. Regardless of the application area, all projects meet the criteria of precision medicine and are structured across institutions in order to bring together complementary expertise.

An integral component of all Translational Projects is the use and further development of existing infrastructures in biomedical informatics, biobanking, and clinical research at the University of Zurich, ETH Zurich, and the participating university hospitals. In this way, the projects not only contribute to the generation of new scientific insights but also sustainably strengthen the Zurich research ecosystem.

The total budget for a Translational Project is a maximum of CHF 5 million over a project duration of up to five years.

Personalized treatment for blood cancers

INTeRCePT

Problem: In blood cancers, relapses and treatment resistance frequently occur despite modern therapies. The molecular diversity of tumor and immune cells is still insufficiently considered.
Goal: Reduce relapse rates through optimized treatment strategies based on the molecular signature of tumor and immune cells.
Project lead: Thorsten Zenz, Department of Medical Oncology and Hematology, University Hospital Zurich

The research team led by Thorsten Zenz aims to determine which therapies are most effective for both children and adults with blood cancer. To this end, an "Innovation Clinic" is being established in Zurich for patients experiencing relapse. Analyses of tumor material and healthy blood cells make it possible to generate a detailed map of therapy response at the single-cell level. This improves understanding of how tumor cells and healthy immune cells behave and respond to different therapies.

For use in clinical practice, a simplified testing method is being developed – the so-called *INTeRCePT assay*. Despite its reduced complexity, this approach is designed to provide all information relevant for treating oncologists. The assay will be validated in clinical studies and tested for its practical applicability. The goal of this novel precision oncology approach is to increase patient response rates to therapy by 50 %.

Photo: Adobe Stock

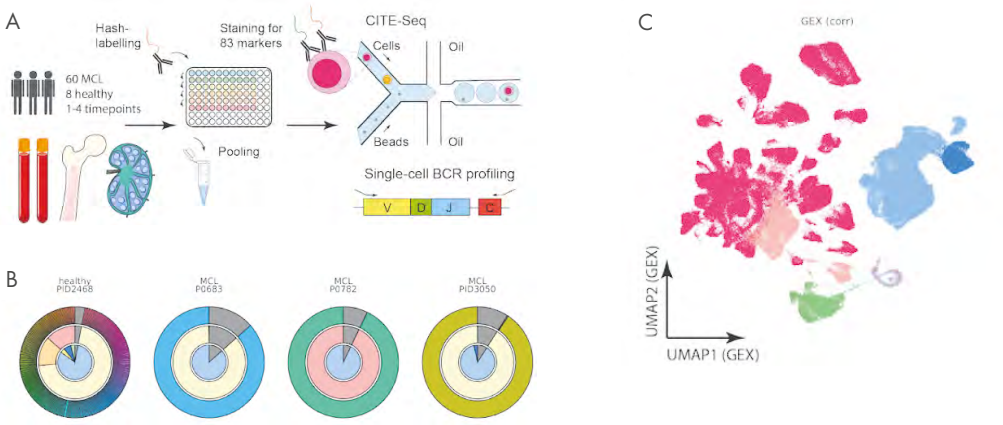
Selected research findings

Research to date has focused on the detailed analysis of tumor samples at the single-cell level – both in the untreated state and under drug treatment. The aim is to better understand the processes that determine the success or failure of a therapy. In this way, key cellular mechanisms as well as the interactions between tumor and immune cells have been characterized in greater detail.

The analysis of DNA from individual lymphoma cells has also enabled a precise description of the clonal tumor structure and a more targeted linking of genetic alterations with drug effects. By combining these multi-omics analyses, these processes can increasingly be understood in greater detail – an important prerequisite for the development and optimization of initial individualized therapeutic approaches.

Experimental setup and analyzed groups

The following figures provide insights into the experimental approach and the cell populations analyzed.



A) The figure illustrates how the samples were analyzed in the laboratory. First, the cells from each patient are labeled with a patient-specific marker (antibody). The cells from multiple individuals are then combined (pooled) and processed together. This approach reduces technical artifacts and increases sample throughput.

The pooled cells are subsequently labeled with additional antibodies, which, among other things, mark surface proteins of tumor cells. The cells are then transferred together into a droplet generator. This device encapsulates individual cells together with a nanoparticle (bead) into small droplets. These droplets serve as reaction compartments in which the cell is lysed, releasing its mRNA, which is captured by the bead. The bead also captures the surface markers added at the beginning.

The tumors under investigation originate from cells that are normally responsible for antibody production. Each of these cells produces a specific antibody, the sequence of which is determined by a unique combination of so-called V, D, and J gene segments (VDJ recombination). The same principle also applies to tumor cells. Tumors typically arise from a single cell clone whose cells have largely identical VDJ sequences. By specifically analyzing the corresponding mRNA regions, these clonal tumor cells can be clearly identified.

B) The results of BCR/VDJ profiling are shown for a healthy blood donor and for two patients. In the healthy donor, the clones are small; in tumor patients, a single clone (the tumor) dominates the repertoire of antibody-producing cells. Cells for which no BCR/VDJ sequence could be determined are shown in gray.

C) The scatter plot illustrates how cells cluster based on their gene expression (levels of mRNA for genes X, Y, Z). Cells with similar gene expression patterns are located closer together and are color-coded according to their cell type.

The insights gained form the basis for the INTeRCePT assay, a predictive testing approach with comparatively low complexity that is currently being validated in clinical studies. At the same time, further data analyses are being conducted and initial results are being published.

As part of the clinical studies, a dataset comprising more than 1,000 samples from over 200 patients with lymphoma has been established, including cases involving CD19 CAR T-cell therapy. The longitudinal collection of samples makes it possible to dynamically capture changes in the immune response and the tumor microenvironment. For patients, this means that therapies can be selected more precisely in the future, relapses can be detected earlier or even prevented, and the likelihood of long-term response can be significantly improved.

A globally unique dataset

The experiments and analyses planned for 2025 have largely been completed, resulting in a globally unique dataset. This has led to a deeper understanding of the immune landscape in non-Hodgkin lymphoma; corresponding publications are currently in preparation. In addition, initial prognostic biomarkers have been identified – including specific gene expression programs ("states") that influence disease progression in patients with mantle cell lymphoma and represent potential targets for new therapeutic interventions.

For the Innovation Clinic, standardized structures for clinical studies as well as a secure data and biobank system have been established. Data from more than 200 registered patients – including treatment history and biobank data – are now available in a structured format for research purposes and provide a sustainable foundation for future precision oncology studies.

Outlook 2026

In 2026, the focus will be on completing the *INTeRCePT 2.0* study, for which 15 of the planned 50 patients had been recruited by the end of 2025. A key objective of this study is to establish the feasibility of conducting complex analyses within short timeframes, enabling their more effective use in a follow-up study *(INTeRCePT 3.0)*.

Significance for the medical research community

The precision medicine concept of *INTeRCePT* has proven to be so impactful for the advancement of precision oncology that the follow-up project *INTeRCePT 3.0* was initiated on this basis. The detailed analysis of dynamic changes in tumor cells and their molecular response to treatment provides key insights for the planning of individualized therapies across a wide range of cancers.

These insights directly inform the development of optimized therapeutic approaches and contribute to further improving the success rates of cancer treatments. With *INTeRCePT* and the resulting follow-up project *INTeRCePT 3.0*, Zurich is also being positioned internationally.

What motivates young researchers

"My role is to help shape the project from a pediatric perspective and to provide clinical context. I have been part of the team from the beginning and have learned an enormous amount during this time.What matters most to me is that, through our interdisciplinary expertise, we can identify the best possible individualized treatment options – especially for children who do not respond to standard therapies.

It is inspiring to see how the project brings together young researchers from computational, clinical, and immunological backgrounds. This interdisciplinary collaboration is highly enriching and, at the same time, sets a direction for the future."

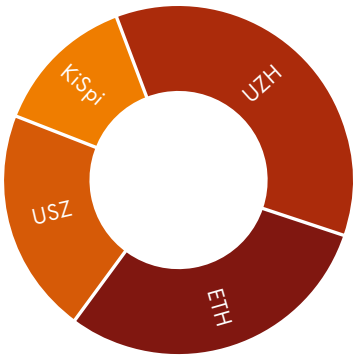
James Kim, MD
MD-PhD candidate, University Children's Hospital Zurich

Participating research groups

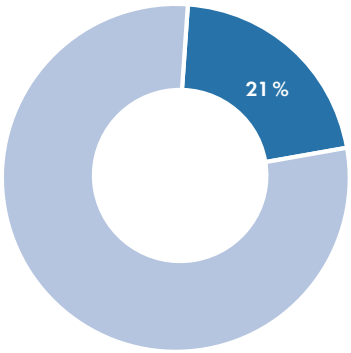
Thorsten Zenz	Department of Medical Oncology and Hematology, University Hospital Zurich
Burkhard Becher	Institute of Experimental Immunology, University of Zurich
Niko Beerenwinkel	Department of Biosystems Science and Engineering, ETH Zurich
Jean-Pierre Bourquin	Oncology, University Children's Hospital Zurich
Wolfgang Huber	Quantitative Biology and Statistics, EMBL Heidelberg
Stefanie Kreutmair	Department of Medical Oncology and Hematology, University Hospital Zurich and Institute of Experimental Immunology, University of Zurich
Andreas Moor	Department of Biosystems Science and Engineering, ETH Zurich
Berend Snijder	Department of Biology, ETH Zurich

Utilization of funds 2025

Per institution



For biomedical informatics



Share biomedical informatics

Dynamic risk prediction for personalized lymphoma treatment

INTeRCePT 3.0

Problem: In lymphoma, patients respond very differently to therapies. Despite modern diagnostics, data-driven models that can predict early how the disease will progress and how effective a treatment will be are still lacking.
Goal: Development of personalized prediction models that enable more precise and earlier guidance of therapy for lymphoma patients.
Project lead: Thorsten Zenz, Department of Medical Oncology and Hematology, University Hospital Zurich

The Zurich Precision Oncology Consortium (ZPOC) is formed by a team jointly selected by the Comprehensive Cancer Center Zurich (CCCZ), the Tumor Profiler Center (TPC), and The LOOP Zurich.

The project builds on the findings gained from previous *INTeRCePT* research and extends them with a new, data-driven approach. At its core is the development of dynamic risk-prediction models that combine clinical information with molecular data from tumor and blood samples. This will allow disease progression and treatment effects to be mapped more precisely in the future, allowing earlier and more targeted treatment decisions.

Photo: Adobe Stock

Scientific approach

The *INTeRCePT 3.0* project integrates high-dimensional molecular profiles with clinical data collected over an extended period. Using advanced bioinformatic and statistical models, patient-specific risk profiles will be developed that can dynamically adapt over the course of treatment.

The translational focus is on testing these models under real clinical conditions. The insights gained will be prepared in a way that allows physicians to use them in clinical decision-making, thereby further improving both the effectiveness and timing of lymphoma treatment.

Selection and integration

INTeRCePT 3.0 was selected through a competitive process by an international panel of experts. The evaluation focused on scientific excellence, degree of innovation, and clinical relevance. Funding as a ZPOC consortium project highlights the strategic importance of this initiative for precision oncology in Zurich.

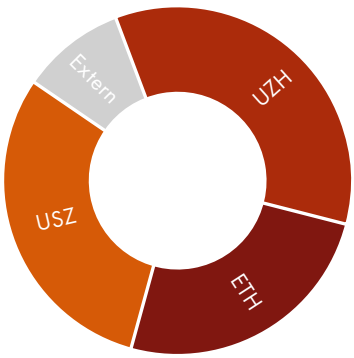
Significance for the medical research community

INTeRCePT 3.0 strengthens Zurich as a research hub in the field of data-driven precision oncology. Through the close collaboration of clinical oncology, molecular profiling, and data science, the project promotes the development of integrated, translational approaches to personalized cancer treatment.

The ZPOC is the first structured funding and collaboration initiative jointly established by The LOOP Zurich, the Comprehensive Cancer Center Zurich (CCCZ), and the Tumor Profiler Center (TPC). Its aim is to further strengthen translational precision oncology in Zurich.

Utilization of funds 2025

Per institution



Learning to walk again while sleeping

StimuLOOP

Problem: Severe impairment of gait in patients affected by stroke or Parkinson's disease
Goal: Personalized neurorehabilitation combining sensory stimulation with memory consolidation during sleep
Project leads: Andreas Luft, Department of Neurology, University Hospital Zurich; cereneo Center for Neurorehabilitation, Vitznau
Roger Gassert, Department of Health Sciences and Technology, ETH Zurich

The research team led by Andreas Luft and Roger Gassert is investigating how patients after stroke or with Parkinson's disease can improve their gait in a targeted and sustainable way. The aim is to precisely assess individual motor deficits and to develop personalized rehabilitation strategies that facilitate patients' daily functioning.

The researchers apply novel technological approaches in the *StimuLOOP* project. These include a personalized visual feedback method that supports patients in learning an individually adapted gait pattern. In addition, a combination of targeted auditory stimuli during sleep is used to stabilize newly learned movement patterns and consolidate them over the long term.

In an early phase of the project, the different *StimuLOOP* modules were systematically aligned. This included a detailed analysis of gait, the development of a training setup with realistic visual feedback, and the creation of an acoustic stimulation system synchronized with EEG signals during sleep. Disease-specific aspects were also taken into account, such as movement blocks in patients with Parkinson's disease.

Photo: Adobe Stock

Selected research findings

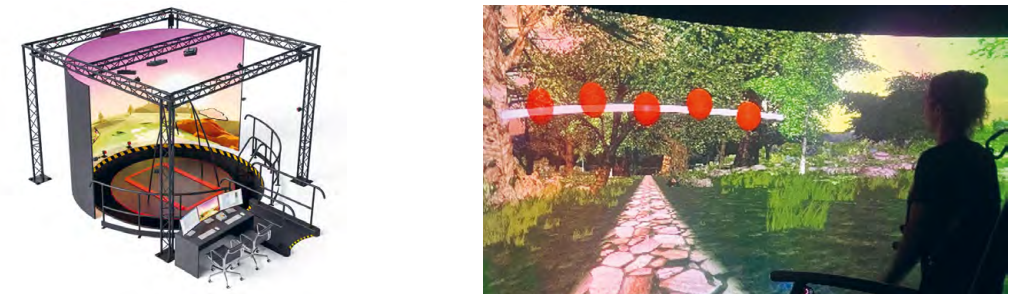
Since the start of the project in 2021, significant methodological and scientific progress has been achieved within *StimuLOOP*. In several preliminary and pilot studies, the underlying scientific approach was validated. New technologies were used, and key mechanisms of motor learning were systematically investigated.

The results of these pilot studies were presented at international conferences and published in scientific journals. Participation in the symposium of the Zurich Neuroscience Center (ZNZ) also highlighted the importance of the project, particularly through contributions from early-career researchers.

Completed pilot studies

As part of *StimuLOOP*, several pilot studies were successfully completed. They investigated, among others, the benefits of enriched feedback for gait training, the feasibility of personalized feedback systems, and neurological biomarkers for pathological gait. Further work focused on the targeted reactivation of motor learning during sleep and the classification of gait patterns.

The results of these pilot studies formed the basis for new research directions, which are now being pursued as independent projects under the leadership of early-career researchers. At the same time, initial approaches were developed to transfer *StimuLOOP* methods into simplified, mobile technologies.



Photos: Frank Brüderli

Virtual reality treadmill training. Left: Setup with treadmill, screen with integrated visual feedback for patients, cameras for precise movement analysis, and a control panel.
Right: Visual feedback for patients – the white line indicates the target value of the selected gait parameter, while the red dots display the current measurements during training.

Main studies in stroke and Parkinson's disease

Building on the preparatory work, the main studies *StimuLOOP.STR* (stroke) and *StimuLOOP.PD* (Parkinson's disease) are now in full progress. A substantial portion of the planned measurements has already been completed. Gait patterns, daily activity, and sleep are being recorded, including joint kinematics, step parameters, activity patterns, and analyses of sleep phases. In addition, standardized clinical tests are conducted to assess walking distance and balance. Falls and limitations in daily life are documented using questionnaires and diaries. Feedback from participants so far has been positive. However, final conclusions regarding the effectiveness of the intervention will only be possible once the studies have been completed.

In 2025, in addition to the recruitment and measurement of new participants, methodological developments in the area of data analysis were completed. The main study process is complex, with partial measurements carried out at different institutions in Zurich and a training stay in Lucerne. Each of the total of 34 visits per patient generates large datasets, which are analyzed using machine learning. The complexity of the data requires novel analytical processes, which are being developed in close collaboration with project partners from the Department of Computer Science at ETH Zurich.

Among the highlights of 2025 are the development of VAF-CI (Variance Accounted For – Coordination Index) and RT-CI (Relative Timing – Coordination Index) – two innovative metrics for the precise assessment of movement coordination. VAF-CI describes how well complex movement sequences can be explained by underlying coordination patterns and thus provides insights into the structural organization of movement. RT-CI complements this perspective by measuring the temporal coordination of individual movement components. In combination, these

two parameters enable a differentiated analysis of movement disorders. For patients, this means that even subtle changes can be objectively captured. This allows therapy progress to be evaluated more precisely and rehabilitation measures to be adjusted more specifically.

In addition, the widely used sleep stage algorithm YASA (Yet Another Sleep Algorithm) was validated for new pathologies for the first time. This open-source algorithm is used for the automatic analysis and classification of sleep stages based on polysomnography data. Based on this, the researchers applied it directly to sleep data from study participants in order to derive a recommendation for sleep measurement frequency. Sleep measurement frequency describes the optimal frequency or sampling rate at which sleep data (e.g., EEG, heart rate) should be recorded to enable accurate sleep stage analysis. It indicates, for example, how often measurements are required per second or per night to obtain valid results in pathological conditions.

In addition, the Clinic Lengg was integrated as an additional clinical center for extended clinical implementation in order to increase the number of patients and make the established intervention more widely accessible.

International visibility and promotion of early-career researchers

StimuLOOP early-career researchers had a strong international presence and presented their new methods at major scientific conferences in Europe, Canada, the United States, and Singapore. Several project members received awards, new collaborations were initiated, and Zurich's position as a center for neuroscience and precision medicine was further strengthened.

At universities in Zurich, a total of 24 student research projects on the topic of *StimuLOOP* have been supervised by the project team to date. The *StimuLOOP* results are so compelling that the research teams have secured additional funding of more than CHF 0.5 million to address secondary research questions.

StimuLOOP looks back on a highly successful year in 2025. A successful completion of the project in 2026 is well within reach.

Outlook 2026

In 2026, the target sample size for both main studies is expected to be reached. Accordingly, the focus will be on completing and analyzing the two central studies *StimuLOOP.STR* (*StimuLOOP* Stroke in stroke) and *StimuLOOP.PD* (*StimuLOOP* Parkinson's Disease in Parkinson's disease), as well as on applying the newly developed methods.

The results of the two main comparisons – "stroke versus Parkinson's disease" and "personalized versus non-personalized rehabilitation" (and, where applicable, "with versus without sleep consolidation") – are expected to provide insights into the effectiveness of the novel stimulation paradigms.

Significance for the medical research community

StimuLOOP makes a significant contribution to strengthening Zurich as a research hub in the field of translational neurorehabilitation. The innovative approach of systematically combining personalized neurofeedback and stimulation methods with data-driven analysis, sleep physiology, and clinical research is internationally competitive and positions Zurich as a leading center at the interface of neuroscience, engineering, and precision medicine.

The project strengthens collaboration across institutions between University Hospital Zurich, ETH Zurich, and additional partners, and makes a substantial contribution to the development of shared methodological standards – particularly in the acquisition, analysis, and interpretation of complex movement and sleep data. In doing so, *StimuLOOP* not only establishes new therapeutic perspectives for patients with stroke or Parkinson's disease, but also reinforces Zurich as a high-performing and forward-looking research environment in clinical neurorehabilitation.

What motivates young researchers

"I am responsible for the *StimuLOOP* project component focusing on sleep after stroke. Working directly with patients and their families inspires me, especially because the topic of sleep is highly relevant in the context of rehabilitation. I also greatly value the interdisciplinary exchange within the team. It motivates me to see patients actively engage in the study and to know that our work contributes to improving their rehabilitation."

Vanessa Kasties
Doctoral student in developmental pediatrics, University Children's Hospital Zurich

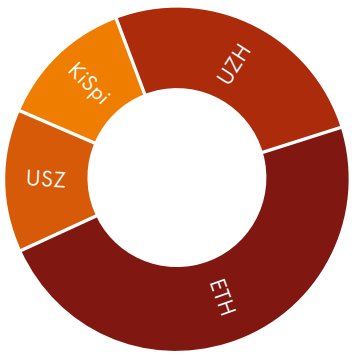
Participating research groups

Andreas Luft	Department of Neurology, University Hospital Zurich; cereneo Center for Neurorehabilitation, Vitznau
Roger Gassert	Department of Health Sciences and Technology, ETH Zurich
Christian Baumann	Department of Neurology, University Hospital Zurich
Reto Huber	Department of Neurology, University Hospital Zurich and University Hospital of Psychiatry Zurich
Olivier Lambercy	Department of Health Sciences and Technology, ETH Zurich
William Taylor	Department of Health Sciences and Technology, ETH Zurich
Julia Vogt	Department of Computer Science, ETH Zurich
Junior PIs	
Chris Awai	Data Analytics & Rehabilitation Technology, Lake Lucerne Institute
Meret Branscheidt	Department of Neurology, University Hospital Zurich
Angelina Maric	Department of Neurology, University Hospital Zurich

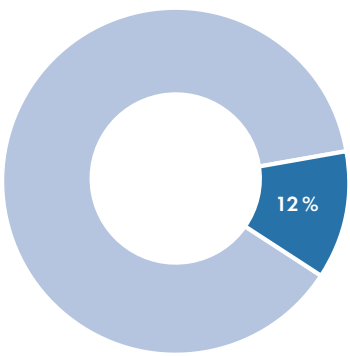
This project is made possible by the Vontobel Foundation.

Utilization of funds 2025

Per institution



For biomedical informatics



Share biomedical informatics

When passing water becomes painful

mTORUS

Problem: Recurrent urinary tract infections and antibiotic resistance
Goal: Restoration of a healthy urinary tract microbiome through the elimination of bacteria and microbiome transplantation
Project lead: Thomas M. Kessler, Neuro-Urology, Balgrist University Hospital and University of Zurich

Recurrent urinary tract infections are widespread and represent a significant burden for those affected. The *mTORUS* project aims to restore a healthy bladder microbiome and thereby sustainably prevent recurring infections. To achieve this, the research team led by Prof. Dr. Thomas M. Kessler is developing a two-step therapeutic approach.

In a first step, disease-causing bacteria are to be selectively eliminated using genetically modified bacteriophages (PUSH). Subsequently, a stable, healthy bacterial population is established in the bladder through microbiome transplantation (PULL). This targeted reconstitution of the microbiome is intended to strengthen the local immune system and reduce susceptibility to recurrent infections. At the same time, the project investigates the composition of a healthy urinary tract microbiome as well as changes in the microbiome and immune system during the course of infections.

In an initial project phase, key methodological foundations were established. These include optimized procedures for sample collection, processing, and analysis involving multiple laboratories, a successfully conducted microbiome validation study including bioinformatic analyses, as well as the implementation of metabolome analyses to identify infection-associated metabolic signatures. In addition, immunophenotyping of human bladder biopsies was further developed, and a secure computing environment for data-intensive analyses was established.

Photo: Adobe Stock

Selected research findings

Building on the methodological foundations established in the first project phase and the validation study, key insights into the biology of the bladder microbiome and its role in recurrent infections were obtained.

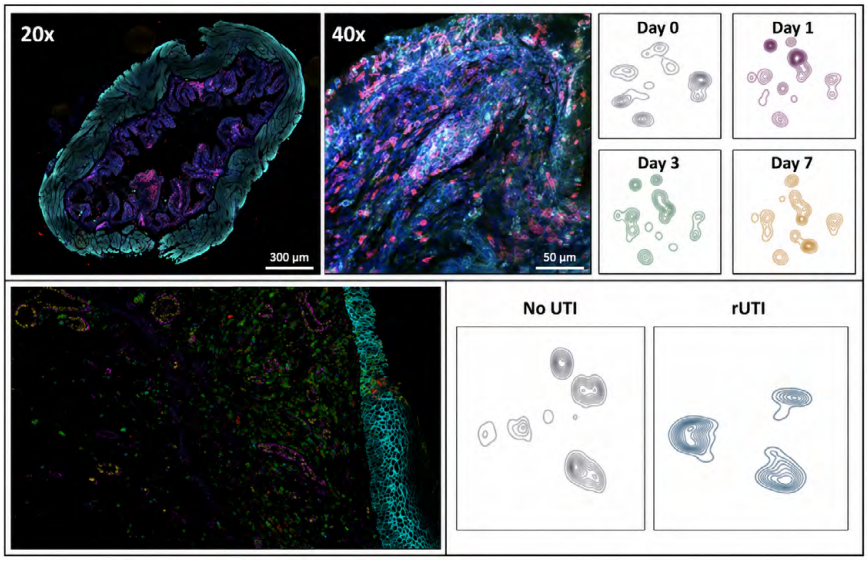
The methodological validation study clearly demonstrated how strongly analytical results can be influenced by technical factors. It was shown that the biomass of the bladder microbiome is very low. Under these conditions, larger sample volumes lead to more stable measurement results with less variability. It also became evident that different sampling methods can systematically produce different microbial profiles. These findings provide an important basis for generating robust and comparable datasets.

Clinical investigations confirmed a pronounced individual variability of the bladder microbiome. While some individuals exhibit a stable bacterial pattern over longer periods, others show clearly changing compositions. These differences provide important insights into why infections recur in some individuals but not in others.

Advanced culture methods made it possible for the first time to establish a structured collection of healthy bladder bacteria. To date, 91 different isolates have been obtained and functionally and genetically characterized. This collection represents a key resource for the development of future therapeutic approaches.

At the molecular level, new relationships were also identified. Metabolomic analyses of urine reveal individual chemical signatures and allow the identification of bacterial metabolites that may be associated with infections. These include, among others, iron-binding molecules of certain Escherichia coli strains, which may enhance their ability to survive in the human body.

The analysis of bladder tissue provided additional insights: a total of 13 different immune cell types were identified. In individuals with recurrent infections, an increased proportion of B cells was observed, which was associated with the frequency of infection recurrence. This points to an altered, persistently activated immune response. At the same time, a less invasive sampling method than biopsies was established, which reliably captures key immune cell populations.



Microscopic images of the bladder in urinary tract infections (UTIs).
Top left: In mice, high magnification images (20x–40x) show pronounced accumulations of immune cells (pink) in the bladder wall (turquoise).
Top right: Cluster visualizations show the time dependent changes in immune cell composition over the course of a UTI. Each cluster represents a specific immune cell type.
Bottom: Corresponding differences are also observed in humans; individuals with recurrent UTIs (rUTI) show a markedly altered immune cell profile compared with individuals without UTIs.

Finally, the integration of all collected data within a secure digital infrastructure enabled, for the first time, an integrated analysis of the microbiome, metabolic profile, and immune response. Based on this, models are being developed that allow biological relationships to be better understood and support more targeted planning of future therapeutic approaches.

For the PUSH approach of the project, genetically modified bacteriophages were tested for their effectiveness in a preclinical setting. These phages showed a reduced occurrence of resistance while at the same time enabling broader coverage of different E. coli strains.

Although genetic modification leads to reduced fitness of the phages, which may slightly decrease their stability and lifespan, this does not impair their ability to efficiently eliminate bacteria. On the contrary, the reduced stability may even be advantageous from a regulatory perspective in view of the planned submission of a randomized controlled trial to Swissmedic to evaluate the phage cocktail in patients with catheter-associated urinary tract infections.

Outlook 2026

In 2026, the focus will be on the deeper integration of microbiome, metabolome, and immunological data in order to better understand the functional relationships between the bladder microbiome, immune response, and susceptibility to infection.

At the microbial level, bacterial species associated with a protective bladder microbiome in healthy individuals are being isolated using advanced culture methods and analyzed with regard to their functional interactions. In parallel, the interaction between the innate and adaptive immune systems of the bladder is being further characterized in order to identify potential therapeutic targets.

An ongoing prospective observational study involving patients with urinary tract infections as well as healthy individuals will be continued.

In addition, the production of genetically modified bacteriophages in accordance with Good Manufacturing Practice will begin in the second quarter of 2026. This will be followed by the formal submission of an application to the competent authority, Swissmedic, for approval of a clinical trial. The goal is to begin treating the first patients by the end of 2026.

Significance for the medical research community

mTORUS strengthens Zurich as a research hub in the strategically important fields of infection medicine and microbiome-based precision medicine. The approach pursued in the project – combining targeted bacterial elimination with controlled reconstitution of the bladder microbiome – addresses a central challenge of modern medicine: the sustainable management of increasing antibiotic resistance.

Through the close integration of clinical research with microbiological and immunological analyses, as well as data-driven modeling, *mTORUS* contributes to the establishment of new translational standards. The methodological infrastructure developed within the project – ranging from standardized sample processes and secure data environments to computational models – provides a robust foundation for future clinical applications and further studies.

Furthermore, *mTORUS* positions Zurich as an internationally visible center for innovative, microbiome-based therapeutic approaches. The insights gained are not only relevant for urinary tract infections but also have strong transfer potential to other infectious diseases, thereby strengthening the long-term competitiveness of the research landscape in the field of personalized medicine.

What motivates young researchers

"Antimicrobial resistance is one of the most pressing global health challenges and is expected to become one of the leading causes of death worldwide by 2050. This development underscores the need for alternative therapeutic approaches beyond conventional antibiotics. My motivation to work in this field is driven both by scientific interest and by a personal awareness of the serious clinical consequences that resistant infections can have for patients. Through my research on bacteriophage therapy, I aim to contribute to the development of innovative approaches that help combat antibiotic-resistant infections and improve future treatment options."

Fatih Abdula
Doctoral student at Balgrist University Hospital

Participating research groups

Thomas M. Kessler	Neuro-Urology, Balgrist University Hospital and University of Zurich
Onur Boyman	Department of Quantitative Biomedicine, University of 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

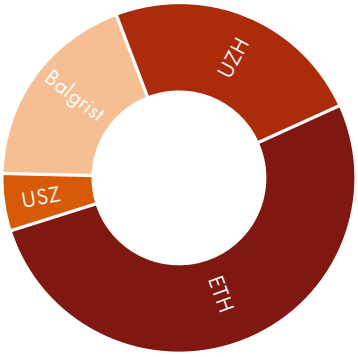
Junior PIs

André Kahles	Department of Computer Science, ETH Zurich
Lorenz Leitner	Neuro-Urology, Balgrist University Hospital and University of Zurich
Enea Maffei	Department of Health Sciences and Technology, ETH Zurich
Shawna McCallin	Neuro-Urology, Balgrist University Hospital and University of Zurich
Alaz Özcan	Center for Human Immunology, University of Zurich

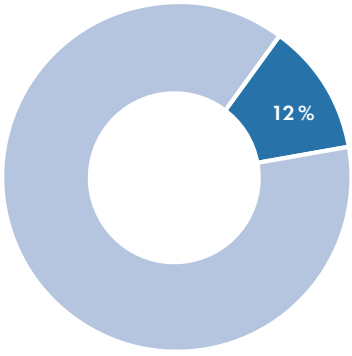
This project is made possible by the Monique Dornonville de la Cour Foundation.

Utilization of funds 2025

Per institution



For biomedical informatics



Share biomedical informatics

Stress and obesity—a health risk

LOOBesity

Problem: An altered glucocorticoid metabolism increases the risk of metabolic and cardiovascular comorbidities in individuals with obesity
Goal: Development of personalized treatment strategies for patients with obesity and specific metabolic risk profiles
Project lead: Felix Beuschlein, Department of Endocrinology, Diabetology and Clinical Nutrition, University Hospital Zurich

Obesity is a widespread chronic disease that is often associated with hypertension, diabetes, and other metabolic complications. Lifestyle-based interventions often do not have a lasting effect, and therapeutic decisions are still only to a limited extent based on reliable predictors of individual treatment response.

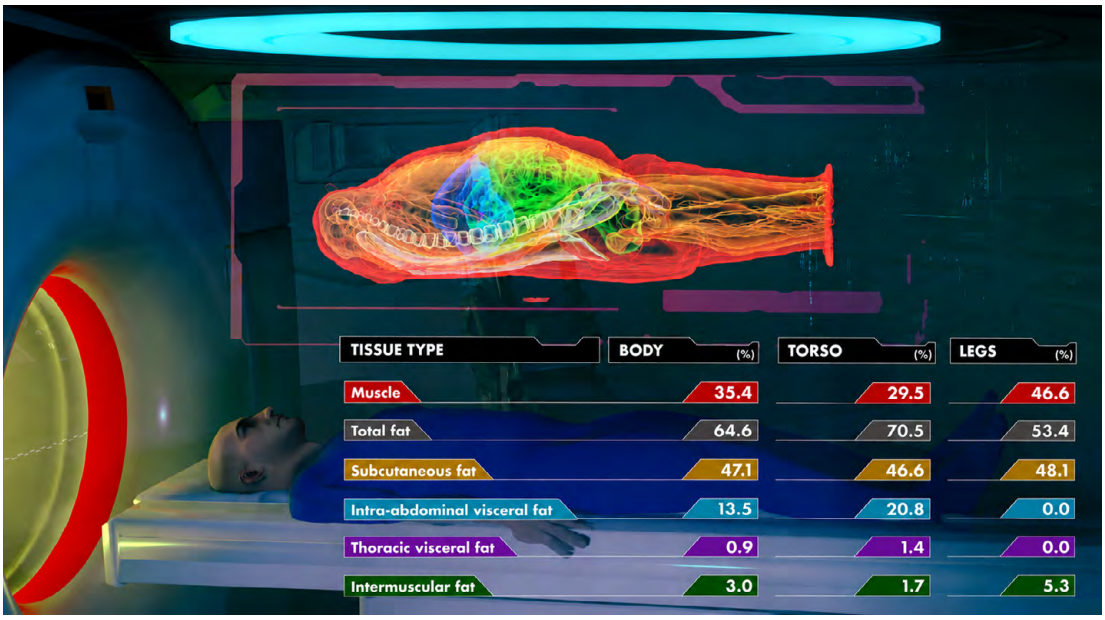
LOOBesity, a Translational Project of The LOOP Zurich, follows a precision medicine approach to address this gap. The focus is on patients with increased glucocorticoid metabolism – a pattern often associated with chronic stress and linked to an increased risk of comorbidities. The aim is to generate individual risk profiles by combining molecular, imaging, and data-driven analyses and, based on these, to derive personalized treatment recommendations.

Photo: Adobe Stock

Selected research findings

The focus of research to date has been on translating key findings into clinically applicable solutions. A major milestone was the integration of an AI-based clinical decision support system for personalized pharmacotherapy into the IT infrastructure of the University Hospital Zurich. The system supports physicians in weighing the benefits and risks of therapy with GLP-1 receptor agonists and is used directly in the obesity outpatient clinic.

At the same time, an international online study involving around 2,000 participants was conducted to systematically assess patient preferences regarding the benefits and side effects of such therapies. These data, together with clinical outcomes, are incorporated into a benefit–risk model that enables individualized treatment decisions. Substantial progress has also been made in the molecular characterization of adipose tissue. The establishment of a systematic adipose tissue biobank has been advanced, analysis pipelines have been developed, and initial samples have been successfully processed. Optimized RNA sequencing methods have significantly improved data quality and provide the foundation for further bulk and single-cell analyses, which are to be linked with long-term treatment outcomes in the future.



MRI-based quantification of body composition with automated segmentation of muscle and adipose tissue (including subcutaneous and visceral fat). The color overlay visualizes the distribution of tissue types; the regions captured in the scan (trunk and legs) are analyzed.

Innovations in imaging

Another focus of *LOOBesity* lies in non-invasive phenotyping using imaging techniques. The automated analysis pipeline for whole-body MRI scans is in operation at the University Hospital Zurich and enables largely automated quantification of body fat distribution and intramuscular fat infiltration.

In addition, it has been demonstrated that analyses based on computed tomography using neural networks provide information on the metabolic activity of brown adipose tissue comparable to PET imaging – but with lower effort and reduced burden. This methodology opens up new possibilities for large-scale studies and broader clinical application.

Outlook 2026

In 2026, the focus will be on the in-depth analysis of the collected data, the integration of molecular and imaging markers with long-term clinical outcomes, and the further scaling of the developed tools in clinical practice.

Significance for the medical research community

LOOBesity strengthens Zurich as a research hub in the field of clinical obesity research and precision medicine in metabolic diseases. *LOOBesity* demonstrates how precision medicine approaches can be translated into clinical care through the integration of clinical data, molecular analyses, advanced imaging, and artificial intelligence.

By systematically linking molecular analyses, modern imaging, and AI-based decision models, the project contributes to the development of new data-driven therapeutic approaches that go beyond established standard treatments.

The project brings together complementary expertise from endocrinology, radiology, epidemiology, and computer science and promotes close collaboration across institutional boundaries. The developed analysis pipelines, biobanks, and clinical decision-support tools create a sustainable infrastructure that can also be used for future research and healthcare projects.

In this way, *LOOBesity* positions Zurich as a strong center for translational obesity research and makes an important contribution to the development of personalized treatment strategies in the field of metabolic diseases.

What motivates young researchers

"In this project, I have the opportunity to gain insight into different areas and to integrate data from multiple disciplines. Through structured benefit-risk assessments, the inclusion of patient preferences, and the development of a decision aid for GLP-1 receptor agonists, we support shared decision-making between patients and clinicians.
In this way, we contribute to the further development of personalized treatment options for people with obesity."

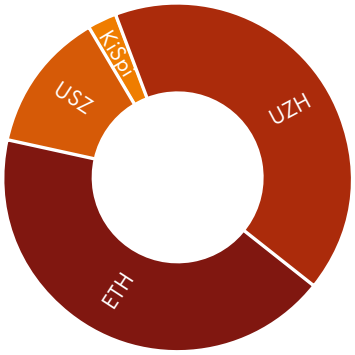
Hannah Moll
Doctoral student at the Institute of Epidemiology, Biostatistics and Prevention, University of Zurich

Participating research groups

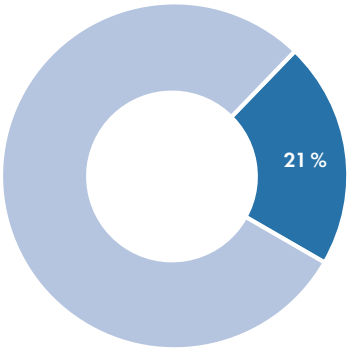
Felix Beuschlein	Clinic for Endocrinology, Diabetology and Clinical Nutrition, University Hospital Zurich
Katrien De Bock	Department of Health Sciences and Technology, ETH Zurich
Thomas Frauenfelder	Institute for Diagnostic and Interventional Radiology, University Hospital Zurich
Ender Konukoglu	Department of Information Technology and Electrical Engineering, ETH Zurich
Milo Puhan	Epidemiology, Biostatistics and Prevention Institute, University of Zurich

Utilization of funds 2025

Per institution



For biomedical informatics



Share biomedical informatics

INCUBATOR PROJECTS

Incubator Projects

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

In contrast to Translational Projects, Incubator Projects do not primarily focus on clinical validation or proof of concept, but on scientific feasibility, methodological innovation, and the conceptual refinement of new approaches. Incubator Projects are deliberately designed to be exploratory and allow new research questions with a higher level of risk to be addressed.

A central objective of Incubator Projects is to develop promising concepts to a level where they can subsequently be transferred into a Translational Project. This includes, among other things, the establishment of new experimental or analytical methods, the generation of initial data, and the formation of interdisciplinary project consortia.

Incubator Projects thus make an important contribution to the innovation dynamics of The LOOP Zurich. They strengthen the early phase of idea development and ensure that Translational Projects are built on a solid scientific and methodological foundation.

In the first call, researchers were invited to propose Incubator Projects that contribute to,

- identifying new disease-relevant molecular mechanisms or novel targets for diagnostics and therapy,
- developing new 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 advance scientific innovation but also to sustainably strengthen Zurich as a research hub. A particular focus is placed on the targeted promotion of early-career researchers. Postdoctoral researchers are given the opportunity to take on responsibility as Junior Principal Investigators (Junior PIs) and to further develop their academic careers.

The total funding for an Incubator Project is a maximum of CHF 1 million over a period of three years.

Artificial intelligence for better decision-making in cancer treatment

AI-Tumor Board

Goal: Development of an AI-supported dashboard to support personalized treatment decisions in tumor boards
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

The increasing availability of clinical and genetic data, together with advances in artificial intelligence (AI), is opening up new possibilities for personalized cancer medicine. The Incubator Project *AI-Tumor Board* is developing a platform that supports medical decision-making processes in tumor boards through AI-based analyses and the structured presentation of complex data.

The project follows a three-step approach: first, medical guidelines are converted into machine-readable formats so that they can be automatically matched with patient data. Next, AI algorithms analyze previous disease courses and treatments to identify patterns and derive personalized therapy recommendations. In a final step, these functions are integrated into 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).

Photo: Adobe Stock

Selected research findings

In 2025, a key milestone was achieved: a language model specifically developed for oncology can automatically transform unstructured clinical data from reports and free-text entries into a clear, standardized format. This includes diagnoses, tumor stages (TNM stages according to the internationally established system for describing the extent and severity of solid tumors), treatments, and therapy response. This creates an important foundation for the AI-supported analysis of patient data.

The performance of this approach was validated using a comprehensive oncology dataset from the University Hospital Zurich (USZ), including data from 2,049 patients, as well as international comparison data, and was published in the journal *Scientific Reports*.

Significance for the medical research community

The *AI-Tumor Board* combines clinical expertise with modern AI research. By integrating established guidelines with real-world patient data, it enables evidence-based decision support that has the potential to set new standards in oncology care.

The project thus makes a significant contribution to the digitalization of cancer medicine and to the implementation of personalized therapies at the Zurich research hub.

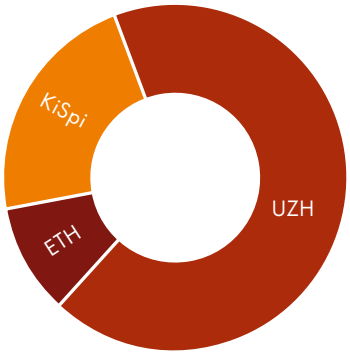
Participating research groups

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.

Utilization of funds 2025

Per institution



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

PREVENT-SSc

Goal: Early detection system for the prevention of disease progression in systemic sclerosis
Project lead: Oliver Distler, Department of Rheumatology, University Hospital Zurich

Systemic sclerosis (SSc) is one of the most severe autoimmune diseases of connective tissue, in which the immune system mistakenly attacks the body's own tissues. It is associated with a high mortality rate. The Incubator Project *PREVENT SSc* pursues an innovative approach to detect the disease at an early stage and intervene therapeutically before permanent organ damage occurs.

The goal of the project is to develop a personalized risk system that uses clinical markers, blood analyses, and mechanical skin measurements to predict the likelihood of disease progression. This early warning system is intended to enable targeted treatment before irreversible symptoms occur. In addition, the research team is creating a molecular map of early SSc disease development using single cell RNA sequencing and proteomics to identify new therapeutic targets.

Selected research findings

The project was launched in December 2024. During this initial meeting, the interdisciplinary consortium defined the key foundations for collaboration. In October 2025, a further milestone was reached: a consortium meeting was held to present progress and to further develop methodological approaches in a targeted manner. Regular meetings ensure coordination among all partners and actively involve patients as research partners.

Currently, two study protocols – one for the use of biosamples and one for the clinical study NIMBLE – are under ethical review. The NIMBLE study includes, among other components, a newly developed test for the standardized measurement of skin properties. In addition, agreements have been concluded for the exchange of samples between USZ, UZH, ETH Zurich, and the University of Freiburg im Breisgau.

Photo: Adobe Stock

Based on longitudinal data from the international EUSTAR registry, a comprehensive database containing clinical course data from patients with systemic sclerosis, a clinical risk model was developed using machine learning. This model helps to identify at an early stage which patients have an increased risk of organ involvement.

For clinical application, a standardized NIMBLE test protocol was developed, which captures key mechanical properties of the skin – such as stiffness and deformability – within approximately 40 minutes. Using a dedicated computational model that simulates the influence of material parameters on measurement results in silico, the sensitivity of the clinical procedure was evaluated.

At the molecular level, new fluorescent probes were developed that allow the activity of key enzymes to be measured precisely in complex biological environments. These include LOXL2 (lysyl oxidase-like 2), an amine oxidase that plays a key role in connective tissue synthesis, and vascular adhesion protein 1 (VAP-1), which is associated, among other things, with inflammatory processes. This method opens up new possibilities for diagnostics and research.

A major advance was achieved through single-cell analyses of clinically unaffected skin from individuals with pre-SSc. Even at very early stages, clear changes in connective tissue cells (activation of fibroblasts) can be observed. At the same time, changes in immune status occur, indicating active recruitment of immune cells. The results suggest that the interaction between stroma and the immune system is a key driver of disease progression and precedes the actual tissue hardening. This opens an early window for potentially preventive therapies.

In addition, an ex vivo model using precision-cut skin samples was developed. This model closely reflects the complex tissue structure and enables the testing of new therapeutic approaches under controlled conditions.

Significance for the medical research community

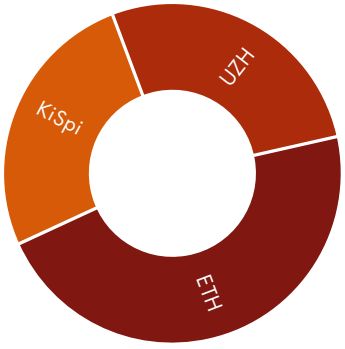
The project brings together experts from rheumatology, chemistry, biology, bioinformatics, and proteomics in an interdisciplinary consortium. *PREVENT-SSc* not only strengthens precision medicine in the field of autoimmune diseases but also positions Zurich as a center for the research and prevention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

Participating research groups

Oliver Distler	Department of Rheumatology, University Hospital Zurich
Jörn Dengjel	Department of Biology, University of Fribourg
Rucsandra Dobrota	Department of Rheumatology, University Hospital Zurich
Edoardo Mazza	Department of Mechanical and Process Engineering, ETH Zurich
Christian Stockmann	Institute of Anatomy, University of Zurich
Helma Wennemers	Department of Chemistry and Applied Biosciences, ETH Zurich
Sabine Werner	Department of Biology, ETH Zurich

Utilization of funds 2025

Per institution



PLATFORMS AND PLATFORM PROJECTS

Platforms and Platform Projects

At Zurich's university hospitals, vast amounts of clinical data are generated every day – including blood test results, findings from tissue samples, as well as ultrasound and X-ray images. However, accessing these data and using them for research purposes is complex and involves significant technical, legal, and organizational requirements.

Against this background, the six medical 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 infrastructure that enables the Zurich research community to access structured patient data. At the same time, the insights generated are to be systematically fed back into the hospitals – to improve patient care and increase efficiency in hospital operations.

To specifically support the development of *The LOOP BMIP*, The LOOP Zurich introduced Platform Projects in 2023. Similar to Translational Projects, Platform Projects must involve at least two institutions. In addition, they are designed to bring together complementary competencies, expertise, and resources in a targeted way in order to advance the further development of *The LOOP Biomedical Informatics Platform*.

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

In the first call, researchers were invited to propose Platform Projects that contribute to

1. integrating novel and complementary health-related data types – such as omics data, imaging data, and/or quasi real-time data (high-frequency recordings) – into *The LOOP BMIP*,
2. developing new analytical methods capable of processing large volumes of heterogeneous medical data. These methods should generate new insights into medical questions and/or enable better prediction of disease progression or treatment response – with the aim of supporting and improving clinical decision-making.

An expert panel recommended two Platform Projects for funding. Both were launched at the beginning of 2024 and continued during the reporting year 2025.

Data—the digital key to the medicine of the future

The LOOP Biomedical Informatics Platform (The LOOP BMIP)

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

The Biomedical Informatics Platform *(The LOOP BMIP)* is a central component of the digital transformation at Zurich's university hospitals and provides the foundation for the sustainable, data-driven advancement of research and healthcare. As an integrative platform, it connects clinical data, technological infrastructure, and regulatory requirements into a future-ready overall system.

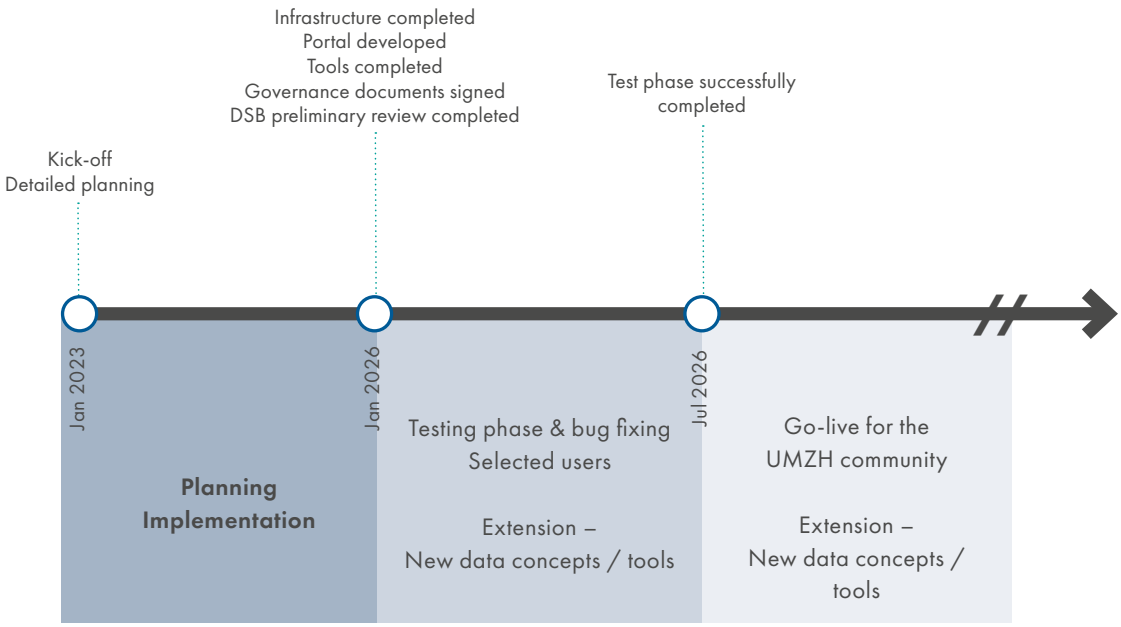
The highly secure and compliant data environment enables controlled access to clinical information while also laying the groundwork for the responsible use of artificial intelligence (AI) in medicine. The goal is to gain new insights and improve patient care in the long term.

Conceptually and structurally, the Biomedical Informatics Platform builds on the results of the SPHN initiative (Swiss Personalized Health Network). Its established governance and IT structures are being further developed in a targeted manner and form the foundation for a scalable, cross-institutional data platform.

Implementation milestones

In 2025, the implementation of *The LOOP BMIP* was advanced by four central working groups – architecture, terminology, data use, and governance – as well as specialized implementation groups. This organizational structure ensured coordinated handling of technological, content-related, and regulatory aspects.

A key outcome was the development of standardized protocols for cross-institutional data transfer into the central research infrastructure.



Timeline for the development of *The LOOP BMIP*

During the reporting year, the implementation of the platform was largely completed and the transition to the testing phase was prepared. The core technical infrastructure as well as a central user portal were established, clinical data were prepared in an interoperable manner, and the legal framework for cross-institutional data exchange and data processing was created. Towards the end of 2025, the platform was released for an extended testing phase with selected users.

The completed user portal serves as the central interface between research and the clinical data repositories of the university hospitals. It supports structured data queries, cohort building, and the submission of data access requests. These are reviewed by a Data Access Committee, ensuring controlled, transparent, and timely access to the data.

Another important milestone in 2025 was the development of a cross-institutional General Agreement. This framework agreement defines the fundamental legal and organizational conditions for collaborative data projects, reduces project-specific legal effort, and accelerates the initiation of research projects.

Validation of *The LOOP BMIP* platform will continue in the first quarter of 2026. The insights gained will be systematically incorporated into the optimization of system architecture and processes. The release of the Biomedical Informatics Platform for researchers at the participating institutions is planned for June 2026.

Data protection

In 2025, particular attention was again given to compliance with legal requirements regarding patient data protection and privacy. For this purpose, the project team worked closely with the Data Protection Officer (DPO) of the Canton of Zurich.

The data protection impact assessment (DPIA) was submitted in a beta version at the beginning of 2025 and was further developed continuously over the course of the year. In parallel, an information security and data protection concept (ISDS) as well as a legal framework analysis were developed and submitted to the DPO for preliminary review.

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) Psychiatric University Hospital 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

ProteOmics for Lymphoma and Prognostication *(POLAR)*

POLAR

Goal: Integration of molecular data (proteome) into *The LOOP BMIP* to improve diagnostics and therapy prognosis in lymphomas
Project lead: Thorsten Zenz, Department of Medical Oncology and Hematology, University Hospital Zurich

The Platform Project *POLAR* aims to systematically integrate proteome data into routine diagnostics and prognostic assessment of lymphoma diseases. The platform is based on extensive clinical data, established analysis algorithms, and biobanks containing more than 2,500 patient samples. In combination with an ultra-fast proteomics technology as well as innovative visualization and analysis methods, multidimensional (multi-omics) datasets will be analyzed and prediction models for lymphoma subtyping will be developed.

POLAR is being further developed for both research purposes and clinical applications in prognostic assessment and therapy optimization. In the future, the platform will be closely linked with *The LOOP BMIP* and will provide data-driven decision support for personalized oncology.

Selected research findings

In 2025, the *POLAR* project achieved significant progress and established itself as one of the world's leading platforms in the field of proteomics research in lymphomas. With more than 1,000 analyzed samples, the project is currently generating the world's largest systematic proteome dataset for lymphoma diseases – a unique resource for research and clinical application.

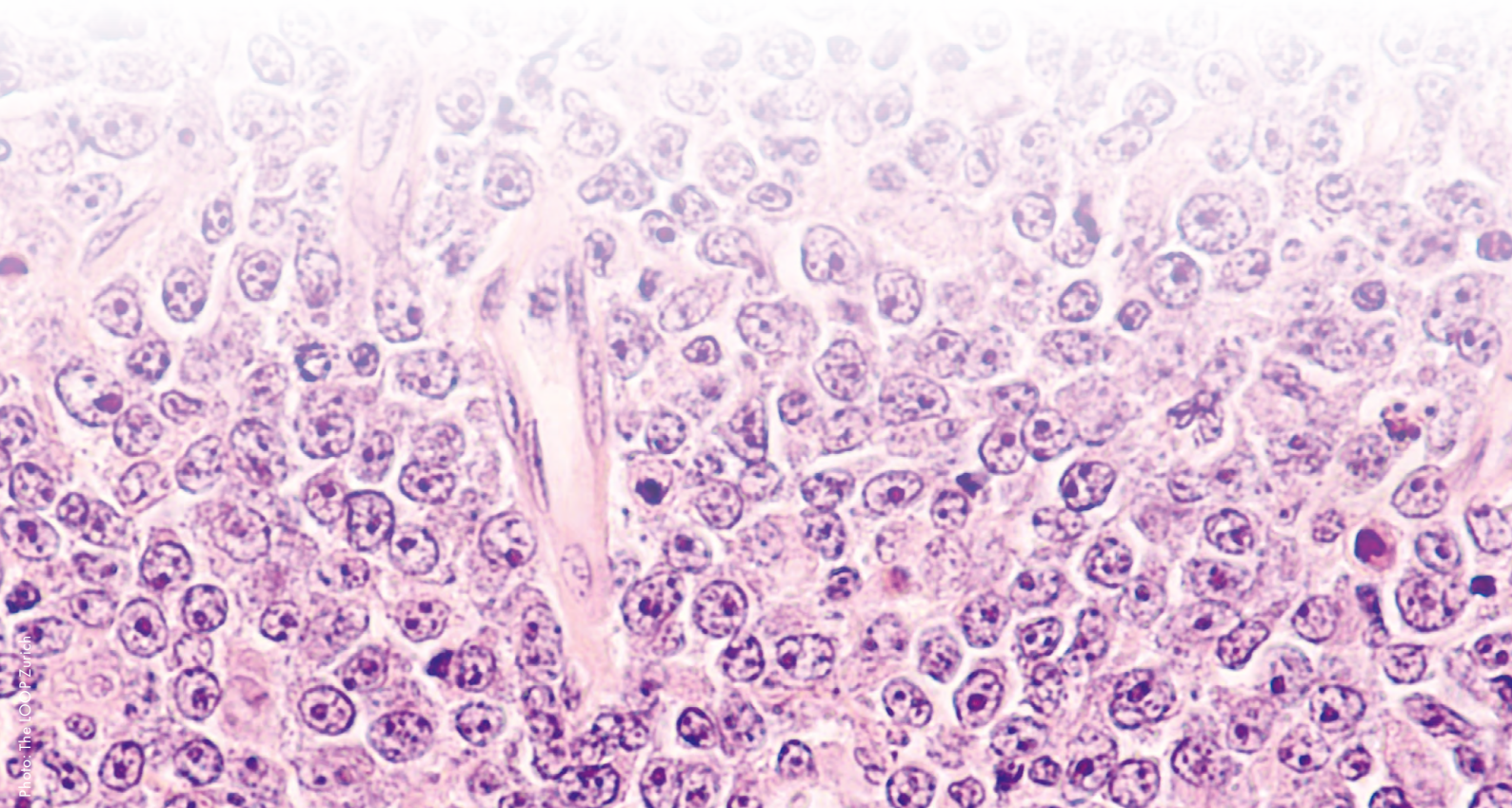


Photo: the LOOP Zurich

A particular breakthrough is the successful integration of so-called formalin-fixed tissue samples (FFPE). These samples originate from routinely archived tumor tissue and are the most widely available clinical samples worldwide. Until now, they have only been of limited use for modern proteome analyses. Through the methods developed within the project, these samples can now be reliably analyzed – a decisive step toward translating new technologies directly into clinical practice.

At the same time, laboratory and analysis processes have been further optimized and partially automated. This makes it possible to analyze large numbers of samples efficiently and with consistently high quality. The resulting data are integrated into a continuously growing, internationally connected database that is structured according to FAIR principles and can therefore be made accessible and usable for other researchers.

The extensive datasets are analyzed using modern computational methods. The goal is to identify patterns that help to better distinguish different lymphoma types, predict disease progression more accurately, and select therapies more precisely. Initial analyses show that combining proteome data with additional molecular and clinical information provides clear added value compared to previous approaches.

In addition, international collaboration has been further intensified. Through the exchange of data and samples with partner institutions, findings can be validated and expanded more rapidly – an important factor in translating new diagnostic and therapeutic approaches into practice.

Significance for the medical research community

POLAR provides the foundation for a new generation of molecular diagnostics in lymphoma. The planned database and analysis platform not only strengthen translational research in Switzerland but also promote international collaboration.

In the long term, the project will contribute to the establishment of a national lymphoma registry and further position Switzerland as an innovation hub in oncological systems medicine.

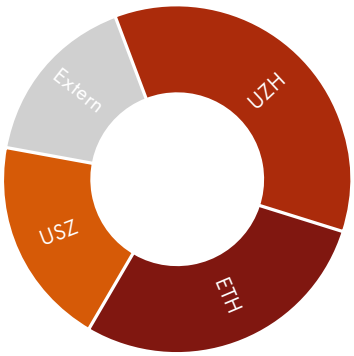
Participating research groups

Thorsten Zenz	Department of Medical Oncology and Hematology, University Hospital Zurich
Valentina Boeva	Department of Computer Science, ETH Zurich
Marco Bühler	Institute of Pathology and Molecular Pathology, University Hospital Zurich
Christoph Messner	Swiss Institute for Asthma Research (SIAF), Davos, University of Zurich

This project is made possible by the Uniscientia Foundation.

Utilization of funds 2025

Per institution



Biomedical Informatics Imaging Platform *(BMI²)*

BMI²

Goal: Further development of the integration of imaging data into *The LOOP BMIP* to support clinical and translational research
Project leads: Bjoern Menze, Department of Quantitative Biomedicine, University of Zurich
Viktor Kölzer, Institute of Pathology and Molecular Pathology, University Hospital Zurich;
Department of Pathology and Molecular Pathology, University Hospital Basel

Medical imaging data from radiology and pathology are a central component of modern diagnostics and research. The Biomedical Informatics Imaging Platform *(BMI²)* is continuously expanding its infrastructure to integrate these data into *The LOOP BMIP* in an SPHN-compatible manner (Swiss Personalized Health Network). The focus is on interoperability, data-driven innovation, and clinical utility.

Objectives of *BMI²*

- Development of interfaces for the exchange of diagnostic imaging data between partner institutions in Zurich
- Standardization and quality control of key metadata (e.g., resolution, orientation, measurement parameters)
- Extraction of diagnostically relevant information on morphology, texture, and functional parameters (e.g., blood flow, tissue perfusion)
- Linking of de-identified imaging data with clinical, cellular, and molecular information
- Clarification of governance, legal, and data protection issues in collaboration with the Clinical Trial Center (CTC) of the University Hospital Zurich

Following the successful establishment of a standardized image database in 2024, the focus in 2025 was on developing specific research applications, integrating additional imaging modalities, and connecting further clinical departments. At the same time, applications for AI-supported analysis and visualization of medical image data were developed. This resulted in a growing ecosystem that opens up new diagnostic perspectives for research and clinical practice.

Photo: Adobe Stock

Selected research findings

Over the course of 2025, significant progress was achieved in several key areas – ranging from the development of clinically applicable AI tools and the standardization of metadata to the expansion of secure research infra-structures.

Clinical application

To support radiologists in the interpretation of chest X-rays, more than 700,000 labeled image – text pairs were compiled from publicly available data sources. Based on this, an AI model was developed that can analyze image content and answer related questions in a dialogue-like format.

For therapy planning and monitoring in patients with limited metastatic disease (e.g., melanoma or non-small cell lung cancer), a comprehensive PET/CT dataset was established. This dataset includes around 1,000 patients with more than 8,000 examinations, many of them longitudinal. A portion of the data has already been clinically curated and annotated and served as the basis for developing initial automated methods for detecting and delineating tumors and organs in imaging data.

In the field of pediatric neuro-oncology, MRI data from children with brain tumors were anonymized and made available on the clinical analysis platform Leonhard Med. In addition, an automated evaluation method was developed that identifies and marks different brain structures and tumor regions. This method was successfully tested and validated.

Metadata standardization

Within *BMI²*, standardized concepts for metadata in medical imaging were developed. These were officially incorporated into the SPHN (Swiss Personalized Health Network) schema 2025.2. The new standards have already been implemented at the Zurich partner institutions University Hospital Zurich, Balgrist University Hospital, and University Children's Hospital Zurich, and are expected to be rolled out to additional SPHN institutions across Switzerland.

In addition, the *SCALE-QMR* project is developing AI-based methods to automatically verify and improve metadata. The goal is to make data acquisition and quality control more efficient and reliable in the future.

Infrastructure development

AAt all three *BMI²* sites, data pipelines for DICOM imaging data were established or expanded. Integration with the secure computing platform Leonhard Med was further strengthened. In addition, the technical integration into *The LOOP BMIP* was prepared through a shared data architecture. At the same time, the infrastructure for digital pathology (SDPI) was further developed in a targeted manner.

Governance and regulatory framework

Together with the Clinical Trials Center (CTC) of USZ, a dedicated governance and data protection concept for imaging data was largely developed. Final alignment is being carried out in accordance with the overarching governance framework of *The LOOP BMIP*. At the same time, the ethical and legal foundations were established at KiSpi to enable the responsible use and joint analysis of pediatric MRI data collected over many years.

Significance for the medical research community

The *BMI²* Platform Project strengthens imaging-based precision medicine within the infrastructure of The LOOP Zurich and promotes the integration of clinical practice and data-driven research. Through standardized, interoperable technologies, *BMI²* creates a sustainable foundation for innovative applications in diagnostics, therapy, and biomedical research in Zurich.

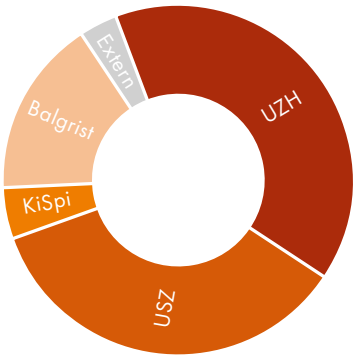
Participating research groups

Bjoern Menze	Group for Biomedical Image Analysis and Machine Learning, University of Zurich
Viktor Kölzer	Laboratory for Computer-Assisted and Translational Pathology, University Hospital Zurich; Department of Pathology and Molecular Pathology, University Hospital Basel
Sebastiano Caprara	Digital Medicine Unit, Balgrist University Hospital
Thomas Frauenfelder	Institute for Diagnostic and Interventional Radiology, University Hospital Zurich
Matthias Guckenberger	Department of Radiation Oncology, University Hospital Zurich
Andras Jakab	Center for MR Research, University Children's Hospital Zurich

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

Utilization of funds 2025

Per institution



COMMUNITY

1st The LOOP Zurich retreat

From 22 to 24 May 2025, the community of The LOOP Zurich gathered for the first time for a retreat at the Centre Loewenberg in Murten. The event provided a space for interdisciplinary exchange, reflection, and networking across institutional and disciplinary boundaries.

Researchers, physicians, data experts, and members of the Scientific Advisory Board used the opportunity to discuss the current status of projects, exchange experiences, and generate new momentum for precision medicine. The focus was on ongoing Translational Projects such as *INTeRCePT, mTORUS, StimuLOOP,* and *LOOBesity*. In addition, further developments of The LOOP Biomedical Informatics Platform *(The LOOP BMIP)* were presented and jointly reflected upon.

Intensive discussions

An important format for exchange was the poster sessions, which took place on two mornings. They provided a low-threshold setting for in-depth discussions on methodological approaches, scientific questions, and potential collaborations. The intensive exchange among participants underlined the importance of this format for the further development of joint projects.

Thematic presentations addressed current topics in biomedical research, including data-driven clinical studies and the use of artificial intelligence (AI) in diagnostics and therapy. Guest speakers contributed additional perspectives and established links to the activities of The LOOP Zurich. For example, Laetitia Philippe, Vice Director at the State Secretariat for Education, Research and Innovation, spoke about aspects of the national strategy in precision medicine and placed them in the current context.

Two keynote lectures expanded the program with overarching strategic perspectives: Katharina Gasser, General Manager of Roche Pharma Switzerland, highlighted the role of industry in a changing research landscape. Matthias H. Tschöp, CEO of Helmholtz Zentrum München and, since 2026, President of Ludwig Maximilian University of Munich, presented transdisciplinary research approaches and institutional developments in an international context.

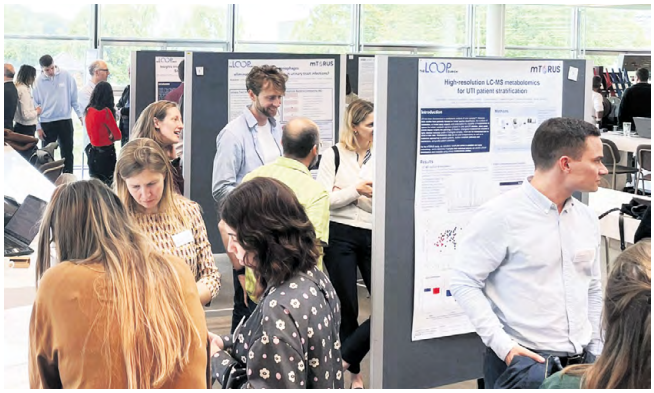
Sustainable exchange

The quiet setting of the Centre Loewenberg proved conducive to focused work and open discussion. Informal conversations between program sessions contributed significantly to networking.

The 2025 retreat demonstrated how valuable personal interaction is for the joint advancement of research projects at The LOOP Zurich. At the same time, it highlighted the importance of deliberately created spaces for interdisciplinary collaboration and innovative ideas.

Retreat 2025

Markus Rudin and Katharina Gasser (General Manager of Roche Pharma Switzerland)



Poster sessions

Lecture in the auditorium

Excursion

Lake Murten

Photos: The LOOP Zurich

Annual event of The LOOP Zurich 2025

The fourth annual event hosted by The LOOP Zurich, titled "Precision medicine – progress reaching the clinic," took place on 1 December 2025, at the Careum Auditorium in Zurich and highlighted how closely data-driven precision medicine and clinical application are now interconnected in Zurich. The event provided a comprehensive overview of key developments in the LOOP ecosystem and highlighted the importance of cross-institutional collaboration.

In their opening remarks, Beatrice Beck Schimmer, Director of University Medicine Zurich, and Annette Oxenius, Vice President Research at ETH Zurich, emphasized the central role of close collaboration between the partner institutions. Markus Rudin, Founding Director of The LOOP Zurich, outlined key milestones of the reporting year 2025. A particular focus was the completion of the build phase of The LOOP Biomedical Informatics Platform *(The LOOP BMIP)*, which provides structured access to high-quality medical data and thus forms an essential foundation for data-driven research and clinical applications.

Data-driven projects and clinical applications

The scientific program featured selected projects from precision oncology. Contributions on *INTeRCePT, POLAR,* and the *AI-Tumor Board* illustrated how clinical questions, molecular data, and data-driven approaches are brought together within The LOOP Zurich to further refine diagnostics and therapy.

A particular highlight was the keynote lecture "From Code to Clinic" by Jens Kleesiek, Director of the Institute for Artificial Intelligence in Medicine at University Hospital Essen. Using concrete international examples, he demonstrated how AI systems are already being directly integrated into clinical information systems and diagnostic workflows and are being applied in everyday medical practice. What is decisive, he emphasized, is not primarily technological feasibility, but the consistent focus on clearly defined clinical questions.

Kleesiek made it clear that, in this context, AI should be understood less as a research tool and more as a practical instrument to support medical decision-making. Research and development take place in close interaction with clinical practice, with the aim of generating measurable benefits for patients. The lecture illustrated that comparable developments are also feasible in the Zurich environment and that the transition from research to clinical application is increasingly becoming a strategic priority.

Interdisciplinary exchange

The subsequent discussion underscored the role of The LOOP Zurich as a now-established platform for interdisciplinary dialogue and shared visions. The 2025 annual event demonstrated: Precision medicine is by no means merely a promise for the future in Zurich, but is increasingly becoming part of everyday clinical practice.

Andreas Wicki on the AI-Tumor Board

Lopamudra Chatterjee presents the POLAR project.

Thorsten Zenz and Markus Rudin

Jens Kleesiek presents on AI in medicine.

The LOOP Zurich team

Festive reception (Apéro)

Photos: bigfish.ch

Outlook 2026

Translational Projects

The four ongoing Translational Projects – *INTeRCePT, StimuLOOP, mTORUS,* and *LOOBesity* – will continue as planned in 2026. The focus will be on further clinical validation, the deeper integration of molecular and clinical data, and – where applicable – the completion of key study phases.

INTeRCePT will be completed at the end of July 2026 and will be succeeded by the follow-up project *INTeRCePT 3.0,* which is jointly funded by the Comprehensive Cancer Center Zurich, the Tumor Profiler Center, and The LOOP Zurich.

A midterm review is scheduled for the *mTORUS* and *LOOBesity* projects in 2026. This review serves to provide a structured assessment of the projects' progress to date and to set the strategic course for the remaining project duration.

The Translational Projects newly announced in 2025 will begin in the second half of 2026.

Incubator Projects

The two Incubator Projects *AI-Tumor Board* and *PREVENT-SSc* will undergo further consolidation in terms of content in 2026. The aim is to further strengthen the methodological foundations and to assess the potential for further development toward a Translational Project.

In 2025, a call for proposals was also launched for two new Incubator Projects to promote new exploratory approaches in precision medicine. The evaluation process will be completed by mid-2026, and the project is scheduled to start in the third quarter of 2026.

Platform Projects

The Platform Projects *BMI*^{2} and *POLAR* will continue in 2026. The focus will be on the integration of additional data types and close linkage with The LOOP Biomedical Informatics Platform *(The LOOP BMIP).*

The LOOP BMIP

Following the completion of the implementation phase, the extended testing and validation phase will continue in 2026. The release of the platform for researchers at the participating institutions is planned for mid-2026.

At the same time, processes for data requests, governance, and quality assurance will be further optimized. The goal is to establish *The LOOP BMIP* as a stable, secure, and scalable infrastructure in everyday research, while keeping the regulatory burden for researchers as low as possible.

UMZH Biobank

In 2026, the gradual development of the technical infrastructure for a cross-institutional biobank catalog will begin. The goal is to make biological samples visible across sites and, in the long term, to link them with clinical data in *The LOOP BMIP.*

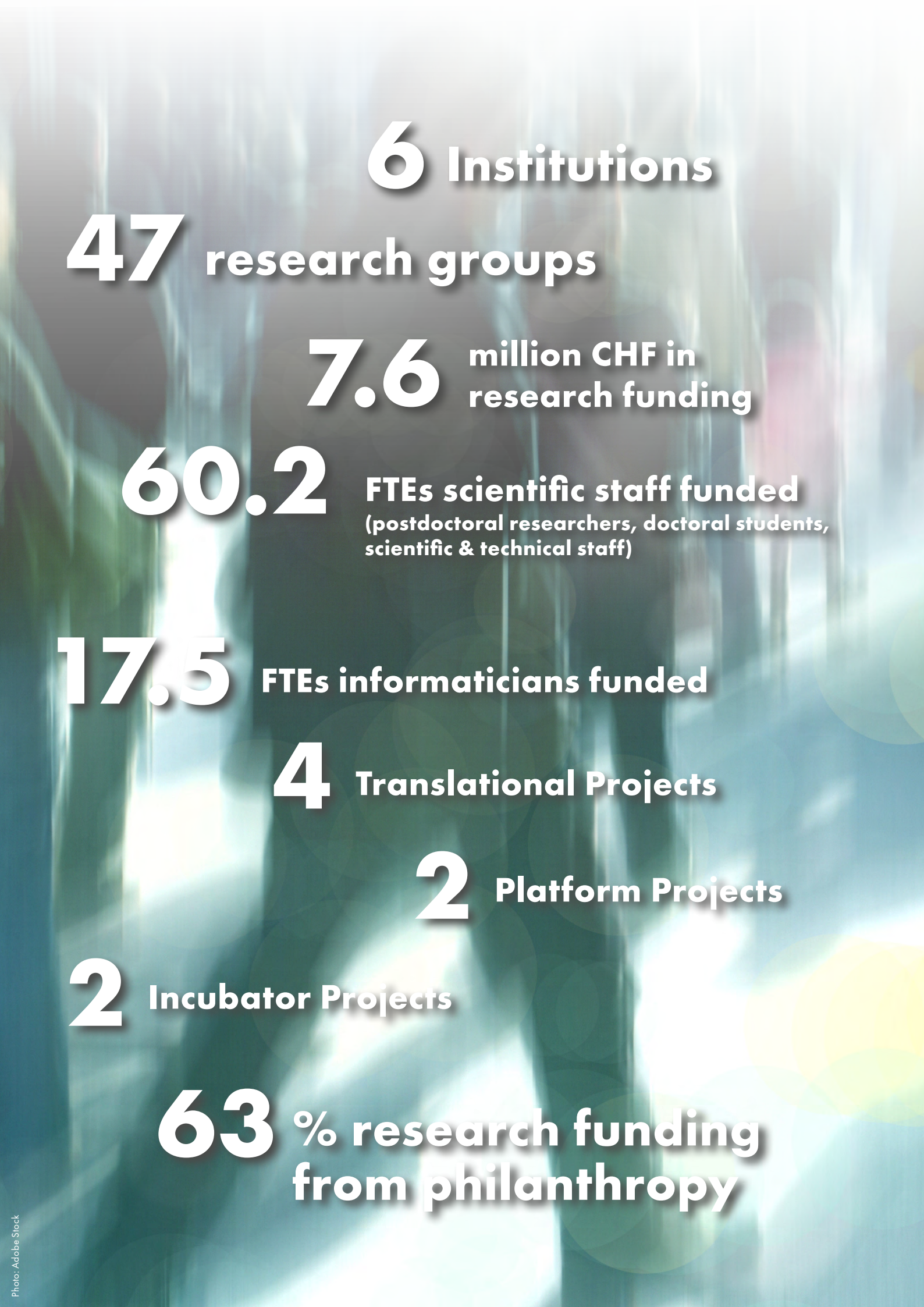
These activities will remain closely aligned with national initiatives, in particular with the Swiss Biobanking Platform. In the long term, the regulatory framework for a structured and data-protection-compliant linkage of samples and clinical data is to be established.

Upcoming events

Midterm Review 2026 for the Translational Projects *LOOBesity* and *mTORUS*
2–3 March 2026, in Zurich

The LOOP Zurich Annual Event 2026
25 November 2026, in Zurich

As in previous years, precision medicine will again be the focus of the traditional annual event. The detailed program will be announced in summer 2026.



6 Institutions

47 research groups

7.6 million CHF in research funding

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

17.5 FTEs informaticians funded

4 Translational Projects

2 Platform Projects

2 Incubator Projects

63 % research funding from philanthropy

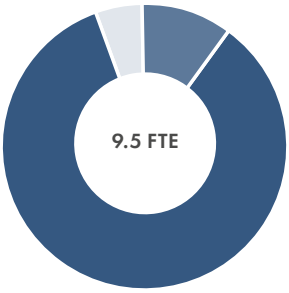
Photo: Adobe Stock

FACTS & FIGURES

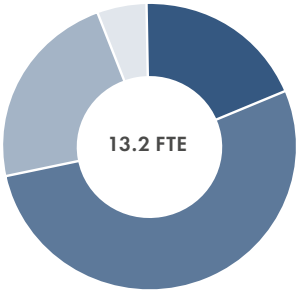
The LOOP Zurich
Financed employees

Translational Projects

INTeRCePT

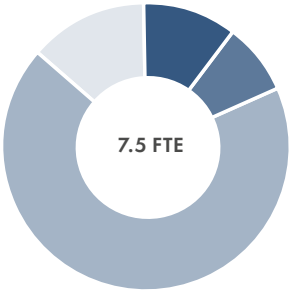


StimuLOOP



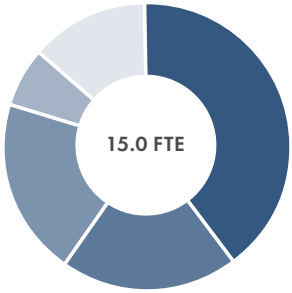
This project is made possible by the Vontobel Foundation.

mTORUS



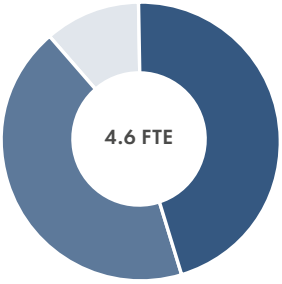
This project is made possible by the Monique Dornonville de la Cour Foundation.

LOOBesity



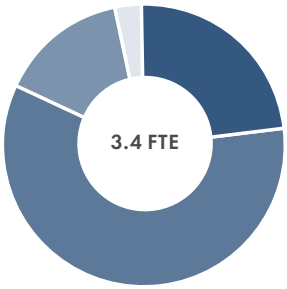
Incubator Projects

AI-Tumor Board



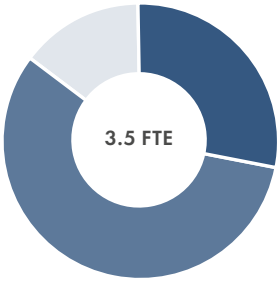
This project is made possible by the Promedica Foundation.

PREVENT-SSc



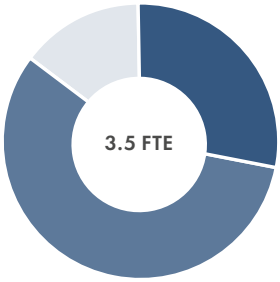
Platform and Platform Projects

BMI²



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

POLAR



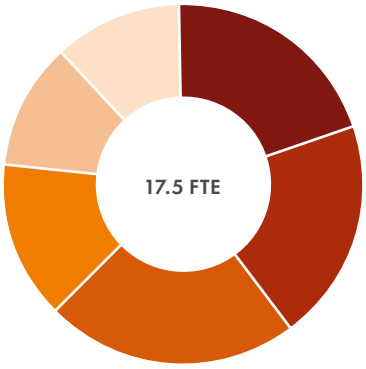
This project is made possible by the Uniscientia Foundation.

Legend

- Postdoctoral researchers
- Doctoral students
- Medical doctors in studies
- Technical personnel
- Project management

FTE: Full Time Equivalent

The LOOP BMIP Informaticians funded



Legend

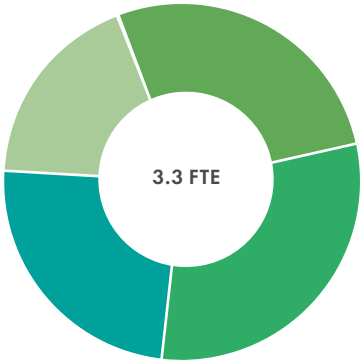
- ETH
- UZH
- USZ
- KiSpi
- Balgrist
- PUK

FTE: Full Time Equivalent

Institutionen	FTE
ETH Zurich (ETH)	3.5
University of Zurich (UZH)	3.5
University Hospital Zurich (USZ)	4
University Children's Hospital Zurich (KiSpi)	2.5
Balgrist University Hospital	2
University Hospital of Psychiatry Zurich (PUK)	2
TOTAL	**17.5**

Table: Number of positions *The LOOP BMIP*

The LOOP Zurich Managing Office



Legend

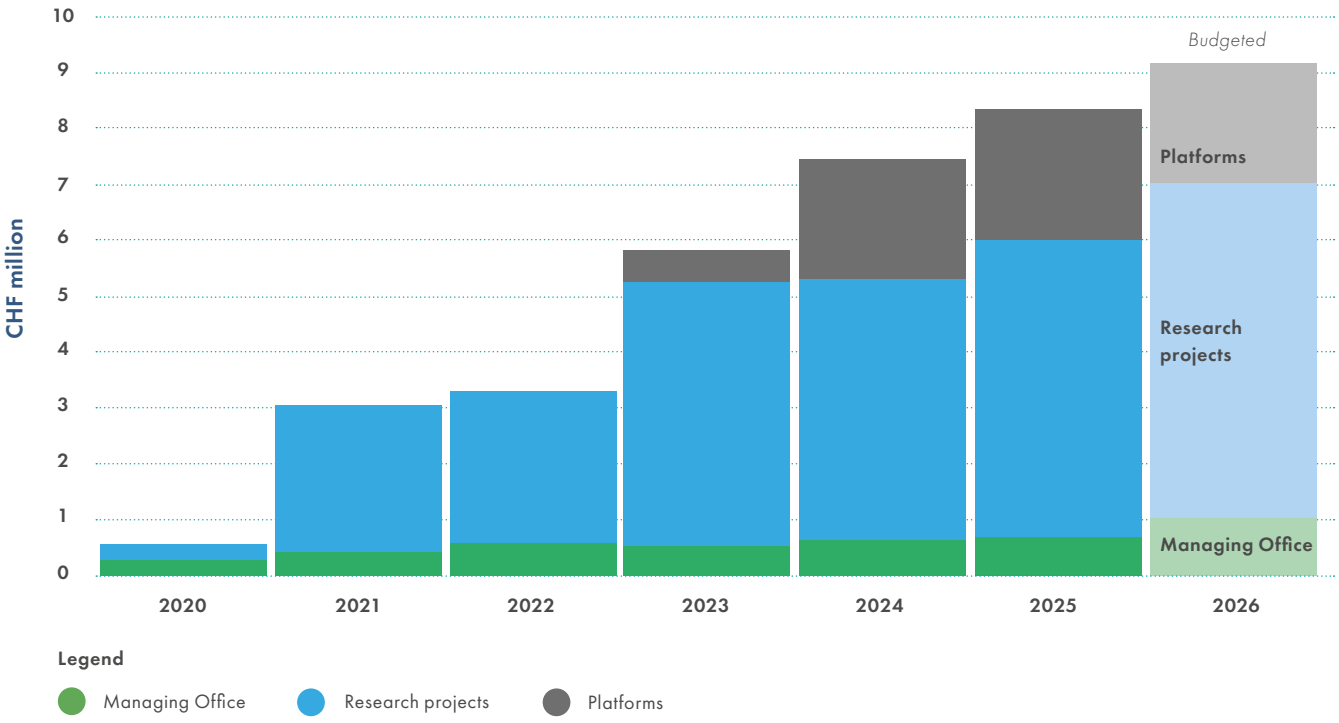
- Directorate
- Management
- Administration
- Communications

FTE: Full Time Equivalent

	FTE
Directorate	0.9
Management	1
Administration	0.8
Communications	0.6
TOTAL	**3.3**

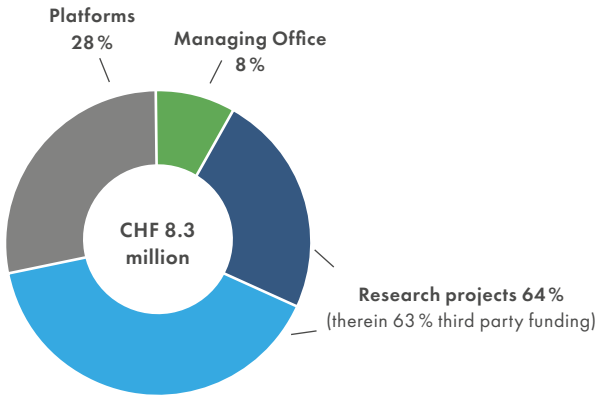
Table: The LOOP Zurich Managing Office

The LOOP Zurich Total expenditures 2020—2025 & budget 2026

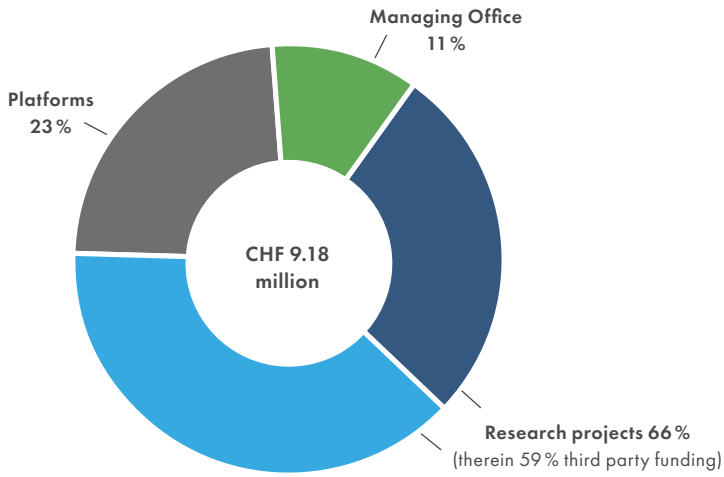


The LOOP Zurich
Annual financial statement 2025 & budget 2026

Expenses 2025



Budget 2026



Legend

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

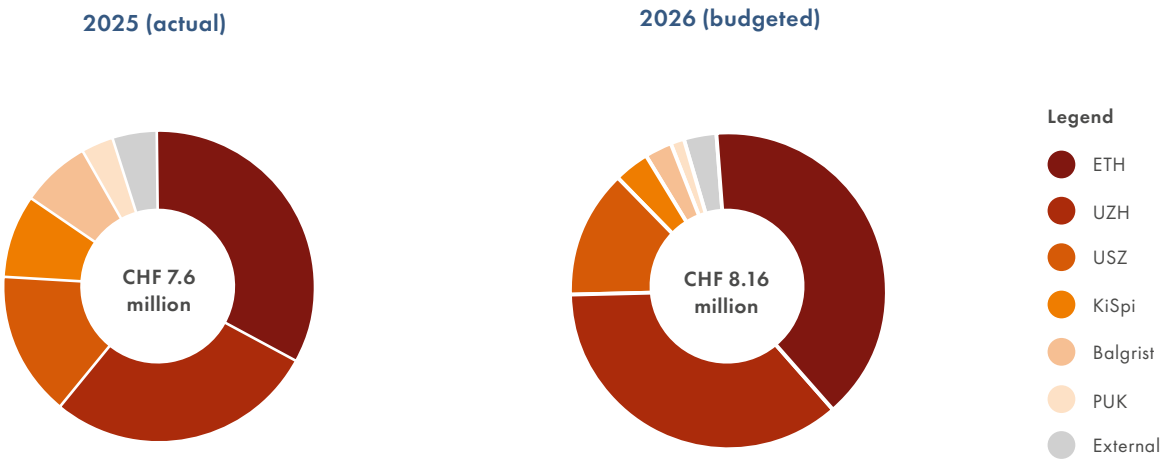
			Expenses 2025			Budget 2026		
		Funding source	CHF per item	CHF per category	%	CHF per item	CHF per category	%
Managing Office		Sponsoring institution	694,965			1,022,000		
	TOTAL			**694,965**	**8**		**1,022,000**	**11**
Research projects	LTP	ETH/UMZH	1,813,097			2,000,000		
		Donors	2,525,107			2,000,000		
	LTP+	Donors	174,512			200,000		
	LPP	ETH/UMZH	0			0		
		Donors	515,869			667,000		
	LIP	ETH/UMZH	176,268			500,000		
		Donors	109,741			666,700		
	TOTAL			**5,314,594**	**64**		**6,033,700**	**66**
Platforms	BMIP	UMZH	2,264,288			1,824,500		
	UBB	UMZH	59,920			300,000		
	TOTAL			**2,324,208**	**28**		**2,124,500**	**23**
TOTAL				**8,333,767**	**100**		**9,180,200**	**100**

Table: The LOOP Zurich – Expenses 2025, budget 2026

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



The LOOP Zurich Allocation of research funding to institutions

	Expenses 2025		2026 (budgeted)	
	CHF	%	CHF	%
ETH	2,543,265	33	3,249,798	40
UZH	2,143,452	28	2,946,217	36
USZ	1,139,524	15	1,070,751	13
KiSpi	666,570	9	306,252	4
Balgrist	544,150	7	212,256	3
PUK	248,426	3	122,150	1
External	353,415	5	250,776	3
TOTAL	**7,638,802**	**100**	**8,158,200**	**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

INTeRCePT

1. Pohly, M. F., Putzker, K., Scheinost, S., Ben Taarit, L., Walther, T., Kummer, S., Wertheimer, T., Lin, M., Do, T. H. L., Handler, K., Michler, J., Kivioja, J., Bach, K., Kisele, S., Kim, J., Dietrich, S., Bornhauser, B., Wong, W. W., Becher, B., Moor, A., Lewis, J., Ficht, X., Lu, J., Huber, W., & Zenz, T. "IAP dependency of T-cell prolymphocytic leukemia identified by high-throughput drug screening". Blood. 2025;145(20):2336–2352.
2. Gremmelspacher, D., Gawron, J., Vetter, M., Beerenwinkel, N., & Aceto, N. "Phylogenetic inference reveals clonal heterogeneity in circulating tumor cell clusters". Nature Genetics. 2025;*57*(6):1357–1361.
3. Gabbutt, C., Duran-Ferrer, M., Grant, H., Mallo, D., Nadeu, F., Househam, J., Villamor, N., Müller, M., Heath, S., Raineri, E., Krali, O., Nordlund, J., Zenz, T., Gut, I. G., Campo, E., Lopez-Guillermo, A., Fitzgibbon, J., Barnes, C. P., Shibata, D., Martin-Subero, J. I., & Graham, T. A. "Fluctuating DNA methylation tracks cancer evolution at the clinical scale". Nature. 2025 (in press).

StimuLOOP

1. Berthet, M., West Jr, M., Branscheidt, M., Awai, C.E. VAF-CI: Quantifying low-dimensional global movement complexity during a novel lower limb motor learning task. Gait & Posture. 2025; 121: S.30–31.
2. Naef, A. C., Brunner, A. S., Legrand, M., Jelitto, R., Nastasi, L., Gassert, R., Lambercy, O., & Awai, C. E. "User experience of people with stroke in co-designing real-time gait biofeedback: mixed-methods study". JMIR Preprints. 2025.
3. Naef, A. C., Duarte, G., Neumann, S., Shala, M., Branscheidt, M., & Awai, C. E. "Toward unsupervised capacity assessments for gait in neurorehabilitation: validation study". Journal of Medical Internet Research. 2025;*27*:e66123.
4. Salzmann, L., Bichsel, O., Rohr-FVereinigtes Königreichuma, M., Naef, A. C., Stieglitz, L., Oertel, M. F., Easthope Awai, C., Gassert, R., & Lambercy, O. "Assessing the effects of DBS-neurofeedback for Parkinson's disease through IMU-based UPDRS movement quality metrics". Research Square. 2025 (preprint).
5. Legrand-Lestoille, M., Grenet, F., Hochstrasser, O., Luft, A., Gassert, R., Lambercy, O., & Awai, C. E. "Real-time augmented feedback for gait training: are gait responses affected by the choice of target parameter?" Frontiers in Bioengineering and Biotechnology. 2025;13:1645390.
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1. Zhao, X., Niederhauser, T., Balázs, Z., Wicki, A., Fan, B., & Krauthammer, M. "Real-world EHR-derived progression-free survival across successive lines of therapy informs metastatic breast cancer risk stratification". medRxiv. 2026.

The LOOP Zurich Conference contributions

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3. Naef, A. C., Legrand, M. L., Jungi, Z., Gassert, R., Lambercy, O., & Easthope Awai, C. "Design and application of vibrotactile feedback to influence gait symmetry". IEEE International Conference on Rehabilitation Robotics (ICORR), 2025, Chicago, USA.
4. Berthet, M., Nastasi, L., Awai, C. E., Gassert, R., & Lambercy, O. "Protocol to assess cognitive load during real-time biofeedback training and its effect on gait performance". Converging Clinical and Engineering Research on Neurorehabilitation V, Proceedings of ICNR 2024 (2025)
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9. Easthope Awai, C. "AI-driven clinical decision support for gait rehabilitation". European Society of Biomechanics (ESB), 2025, Zurich, Switzerland.
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1. Several presentations at the INUS Annual Congress, 2025, Zermatt, Switzerland: Leitner, L., McCallin, S., Milek, S., O'Brien, J., Bichet, M., Wolfer, K., Ozcan, A., Harrison, J., Kahles, A.
2. Maffei, E. "Phage therapy 2.0 – Development and preclinical characterization of engineered phages against chronic UTI". Advances in Phage Therapeutics, 2025, Braga, Portugal.
3. Bernauer, S. "Phage therapy 2.0 – Genetic engineering of bacteriophages to overcome their natural limitations". SYMS, 2025, Zürich, Switzerland.
4. Bernauer, S. "Phage therapy 2.0 – Genetic engineering of bacteriophages to overcome their natural limitations". Summer School "The New Microbiology", 2025, Spetses, Greece.
5. Abdula, F. "Engineered phage therapy for CAUTIs: Preclinical and translational development of uroCOLE7-01". Swiss Urology Annual Meeting (SGU), 2025, Basel, Switzerland.
6. Gollmart, T., Kerekes, A., Sergeev, F., Kahles, A., & Rätsch, G. "Relative Lotka Volterra – A novel approach to model microbiome dynamics from relative abundance data". Basel Computational Biology Conference (BC2), 2025, Basel, Switzerland.

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1. Sangalli, S., Sarwin, G., Erdil, E., Serra, C., Carretta, A., Staartjes, V., & Konukoglu, E. "Conformal forecasting for surgical instrument trajectory". Medical Image Computing and Computer-Assisted Intervention (MICCAI), 2025, Daejeon, South Korea.

AI-Tumor Board

1. Balázs, Z. "KI – Potenziale für Diagnosen und Therapien in der Onkologie". R3 Imaging Conference, 2025, Konstanz, Germany.

People

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