

Faculty of Medicine
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Annual Report 2023



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Foreword



Change is inherent to medicine. This is why we, the Faculty of Medicine, together with the Bern Medical Campus, must create the conditions for cutting-edge medicine now and in the future. I would like to give you three examples of areas in which we have made decisive progress in 2023.

As part of our strategic professorship planning based on Strategy 2030, we have developed new, forward-looking key topics for research, education, and clinical practice. Special focus was placed on digital medicine. Accordingly, in the last four years, we have been able to create 12 new structural professorships in digital medicine. Seven professors have been recruited, and five appointments are currently underway. In addition, a new digital platform is about to be created by our Faculty in collaboration with the university hospitals and the University of Bern to offer the best exchanges in research, education, and clinical care within our medical campus.

Our strategic measures to promote early-career scientists are also beginning to bear fruit. Through the newly created Talent4Bern program, we support researchers who apply for a highly competitive SNSF Starting Grant. Five researchers from our Faculty were awarded the grant in 2023 and can now establish their own research groups. In addition, the Faculty has decided that, starting in 2023, all sponsored professorships now have seats on the Faculty Council. In this way, we invite our promising young talents to play an active role in shaping the Faculty's future.

Cutting-edge infrastructure is also crucial to remaining competitive in the long term. Important milestones were reached in this respect in 2023. The Parliament of the Canton of Bern approved the construction of the new

Medical Research and Training Center. A modern laboratory infrastructure will provide around 50,000 m² of space for research, including practical and seminar rooms for training. Various university institutes involved in basic research will move from their current, scattered locations to the new building and thus to the Insel Campus. Just a few steps from the future Medical Research and Training Center, the Inselspital's new main building, Anna-Seiler-Haus, was inaugurated in September. It offers not only an attractive environment for patients but also a significantly improved clinical routine for staff. The Anna-Seiler-Haus is the most attractive hospital in Switzerland and ensures high-quality medical care and successful hospital management today and in the future. It was designed as a low-energy building and can be adapted to constantly changing needs in the hospital sector thanks to its standardized room design.

We report on these and many other activities and achievements in our new Annual Report.

I hope you enjoy reading it.

A handwritten signature in blue ink, appearing to read 'Bassetti', written in a cursive style.

Prof. Dr. med. Dr. h.c. Claudio Lino Alberto Bassetti
Dean, Faculty of Medicine, University of Bern



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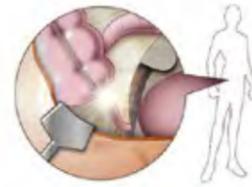
Highlights

12.1.2023 - Overtreatment of tumors of the appendix

In patients with neuroendocrine tumors of the appendix and a risk of lymph node metastases, the standard procedure is to remove the right half of the colon. Now, an international study led by the Department of Diabetes, Endocrinology, Nutritional Medicine and Metabolism (UDEM) of the Inselspital, and the Institute of Tissue Medicine and Pathology of the University of Bern shows that this burdensome procedure is disproportionate.



[Nesti et al., Lancet Oncol, 2023.](#)



Schematic representation of a neuroendocrine tumor of the appendix. The appendix is an appendage of the blind-ended initial part of the colon.

21.2.2023 - First description of a rare genetic syndrome with life-threatening aldosterone deficiency

An international research team led by the Department of Pediatric Endocrinology and Metabolism, University Hospital of Pediatrics at the Inselspital and the University of Bern, in collaboration with a research team from France, has detected a previously unknown genetic defect in the genome of a young female patient. This leads to malformations of the adrenal cortex and thus to an underproduction of the hormone aldosterone with a life-threatening loss of salt.



[Lucas et al., J Clin Invest, 2023.](#)



The adrenal gland is a gland that lies above the kidney and produces vital hormones.

23.2.2023 - Measurements of blood glucose by smartwatch

Researchers led by the Department of Diabetes, Endocrinology, Nutritional Medicine and Metabolism (UDEM) of the Inselspital and the University of Bern developed a method that uses smartwatch data and a machine learning algorithm to detect hypoglycemia. The approach is suitable as a valuable complement to existing methods for blood glucose monitoring.



[Lehmann et al., Diabetes Care, 2023.](#)



In future, smartwatches could also play a role in measuring blood glucose.

2.3.2023 - Questioning standard therapy for the prevention of kidney stones

Drugs from the class of thiazide diuretics have been considered the treatment of choice for preventing kidney stone recurrence for decades. Now, a new study led by the Department of Nephrology and Hypertension of the Inselspital and the University of Bern calls this therapy into question. The researchers found no significant difference between placebo and three different doses of hydrochlorothiazide.



[Dhayat et al., N Engl J Med, 2023.](#)



Kidney stones form when minerals dissolved in urine form crystals that grow larger over time. Some are often as small as grains of rice, others grow to several centimeters in size.

11.3.2023 - Graduation ceremony of the Faculty of Medicine

On Saturday, March 11, 2023, the achievements of the new graduates of the Faculty of Medicine were celebrated in a festive setting at the Kursaal Bern. The Faculty was delighted to be able to hold the ceremony again for the first time since the Covid pandemic and congratulates all the graduates on their degrees.

The keynote speaker, PD Dr. Monika Brodmann Maeder, President of the Swiss Institute for Continuing Medical Education SIWF, addressed the graduates with recognizing and motivational words, emphasizing the importance of lifelong learning, especially in such a dynamically evolving field as medicine.

The Bern Medical Orchestra (Medizinorchester Bern) also contributed to a beautiful and memorable ceremony.



15.3.2023 - New targeting opportunities discovered against canine distemper virus

The highly contagious canine distemper virus is dangerous to dogs and several species of wild animals. It is closely related to the highly contagious human measles virus. Researchers at the Institute of Biochemistry and Molecular Medicine, the Vetsuisse Faculty of the University of Bern and the Zurich University of Applied Sciences have now for the first time determined the structure of the canine distemper virus "docking protein" and depicted it at molecular level. This lays the groundwork to develop novel therapies for better management of the diseases induced by CDV and related viruses, such as the measles virus.



[Kalbermatter et al., Proc Natl Acad Sci U S A, 2023.](#)



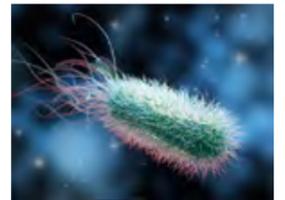
Side view of the "docking protein" of the canine distemper virus
© IBMM / University of Bern

23.3.2023 - Attack from the gut

Complications after surgery are often caused by intestinal bacteria, even when there has been no injury to the intestine during surgery. This was the conclusion of a new study by research teams from the Department for Visceral Surgery and Medicine of the Inselspital, the University of Bern and the University of Würzburg. A solution to this problem could come from the liver.



[Jakob et al., Cell Rep, 2023.](#)

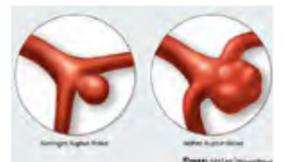


30.3.2023 - First simulation workshop for intracranial aneurysm microsurgery

Aneurysm surgery is challenging. It is therefore all the more important that every move is perfect. The first simulation workshop for aneurysm microsurgery was held at the Kursaal in Bern allowing hand-on training for neurosurgeons.



[Hands-on: Aneurysma-OP at Simulator](#)



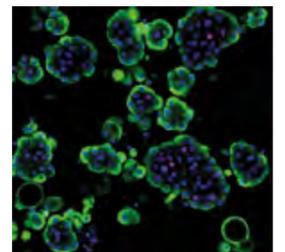
Different aneurysms
© CC BY-NC 4.0
© IBMM / University of Bern

24.4.2023 - Tumor organoids in the fight against bladder cancer

A team led by researchers from the Department of Urology of the Inselspital and the University of Bern, has succeeded in growing bladder tumor organoids in the laboratory. The organoids have great similarity to their parental tumors. In the future, they may play an important role in bladder cancer research and the development of personalized therapies.



[Minoli et al., Nat Commun, 2023.](#)



Bladder tumor organoids

10.5.2023 - Bern study on regulated cannabis sales approved

The project "SCRIPT - The Safer Cannabis Research In Pharmacies randomized controlled Trial" of the Institute of Primary Health Care (BIHAM) of the University of Bern has received the green light from the Federal Office of Public Health FOPH, the Cantonal Ethics Committee of Bern and the Ethics Committee of Northwestern and Central Switzerland. Together with the University of Lucerne and the cities of Bern, Biel and Lucerne, the health and social effects of regulated cannabis sales will be studied. The study is expected to start in the fall of 2023.



17.5.2023 - Mystery of important blood pressure drugs solved

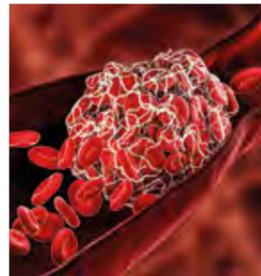
Diuretic drugs from the thiazide group have been used for 60 years to treat high blood pressure. But they also increase the risk of developing diabetes. Researchers at the University of Bern and Department of Nephrology and Hypertension, Inselspital have now pinpointed the cause of this side effect and in the process also gained new insights into the development of diabetes.



[Kucharczyk et al., J Am Soc Nephrol, 2023.](#)

24.5.2023 - Earlier treatment with blood thinners after stroke is safe and more effective

An international clinical trial led by the Department of Neurology of the Inselspital and the University Hospital of Basel, and the University of Bern has shown that anticoagulation (blood thinning) can be started earlier than previously recommended in guidelines for people with stroke and atrial fibrillation. The earlier treatment could reduce the risk of having another stroke without increasing the risk of bleeding.



3D rendering of a blood clot blocking the flow of red blood cells within an artery or vein



[Fischer et al., N Engl J Med, 2023.](#)

31.5.2023 - Oral anticoagulant offers effective and safe thrombosis protection after weight loss surgery

Severe obesity and weight loss surgery, so-called bariatric surgery, are known risk factors for the development of thrombosis. A recent study by researchers at the Department for Visceral Surgery and Medicine of the Inselspital and the University of Bern now shows promising results for the prevention of thrombosis after bariatric surgery. The study results, published in the journal JAMA Network Open, underscore the efficacy and safety of an oral anticoagulant as protection against thrombosis.



The number of surgical procedures to reduce obesity is steadily increasing. This makes optimal thrombosis prevention all the more important.



[Kröll et al., JAMA Netw Open, 2023.](#)

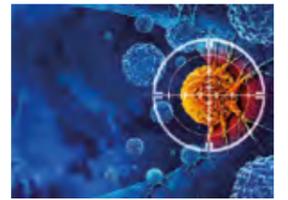
6.6.2023 - Launch of a new hearing implant center

The Department of ENT, Head and Neck Surgery (HNO) of the Inselspital is consolidating its range of services: patients now benefit from a specific center for hearing implants. The Hearing Implant Center integrates clinical services, research and teaching under one roof. This makes it possible to carry out complex investigations and operations at the center. An interdisciplinary team of specialists, including engineers in the field of hearing implants, ensures the best possible care for patients. Research plays a decisive role in the ongoing development of therapies. Close collaboration with the ARTORG Center, which is supported by the University of Bern, enables innovative advances in ear assessment and treatment.



8.6.2023 - A potential milestone in cancer therapy

Researchers from the Department of BioMedical Research and the Bern Center for Precision Medicine of the University of Bern, the Department of Urology of the Inselspital, and the University of Connecticut have made a significant breakthrough in the fight against cancer. They identified a previously unknown weak point of prostate cancer cells. This could also lead to entirely new therapeutic approaches for other types of cancer.



Targeting prostate cancer



[Augspach et al., J Mol Cell, 2023.](#)

8.6.2023 - Thermoablation offers an effective treatment alternative for colorectal cancer liver metastases

For a long time, colorectal cancer liver metastases have been treated by partial removal of the liver. A study involving a research team from the Department for Visceral Surgery and Medicine of the Inselspital and the ARTORG-Center of the University of Bern, has now shown that a tissue-sparing treatment using a microwave probe, known as thermoablation, offers just as high a survival rate for colorectal cancer liver metastases as the conventional partial removal of the liver.



One in three people with colorectal cancer also develops metastases in the liver during the course of the disease (so-called colorectal cancer liver metastases).



[Tinguely et al., Eur J Cancer, 2023.](#)

14.6.2023 - A new vicious circle in allergic reactions discovered

A study led by the Department of Dermatology of the Inselspital and the University of Bern, suggests a previously unknown link between the sugar metabolism of immune cells and their involvement in allergic diseases. The researchers were able to show that the regulator protein PPAR- γ stimulates sugar metabolism in these cells, thereby stimulating the release of inflammatory substances.



Typical symptoms of type 2 inflammation include itchy skin and sometimes bleeding skin areas



[Bertschi et al., Nat Commun, 2023.](#)

24.7.2023 - Study with Bern Cantonal Police provides new insights into antibodies and protection against Corona infections

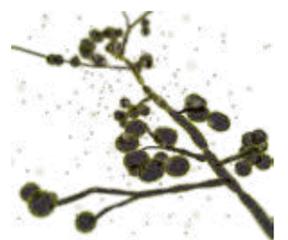
Researchers at the Institute for Infectious Diseases (IFIK) of the University of Bern have studied antibody levels against Sars-CoV-2 and their influence on infections with different variants of the virus in employees of the Bern Cantonal Police for over a year. Among other things, the results show that antibody levels offered different levels of protection depending on the variant of the virus and that police officers did not become infected with Covid-19 more frequently than the rest of the population, even though they have very frequent contact with people.



[Sendi et al., J Med Virol, 2023.](#)

31.8.2023 - How fungal infections cause blood poisoning

Blood poisoning caused by a fungal infection is a severe, life-threatening condition. Researchers at the Institute of Tissue Medicine and Pathology of the University of Bern have now discovered a mechanism that helps a yeast fungus to spread more easily within the body. Surprisingly, cells of the immune system play a major role in this process. These findings could open up new therapeutic avenues for blood poisoning caused by yeast, but also for other invasive fungal infections.



Candida albicans. © Data-Base Center for Life Science (DBCLS), Wikimedia Commons



[Gander-Bui et al., Immunity, 2023.](#)

7.9.2023 - International research initiatives led by University of Bern receive funding

The Swiss National Science Foundation (SNSF) has awarded funding to three projects (whereof one was awarded to the Faculty of Medicine) led by the University of Bern as part of the SPIRIT program, promoting cross-border and collaborative research endeavors. PD Dr. Monica Müller of the University Clinic of Psychiatry and Psychotherapy, University Psychiatric Services Bern (UPD) and Dr. Andreas Limacher, from the Department of Clinical Research, Clinical Trials Unit (CTU Bern) are awarded by the SNF for their project "Combining antidepressants with psychological therapy to improve depression outcome in Zimbabwe - the Friendship Bench Plus trial (FB+ trial)."



Dr. Andreas Limacher,
PD Dr. Monica Müller

25.9.2023 - Better reconciliation of clinical routine and research work thanks to Protected Research Time

The results of the last study need to be evaluated, the slides for the next lecture still need fine-tuning and at the same time, patients need high-quality treatment and compassionate care. If doctors want to do research as well as providing medical services, this can be a labor-intensive and time-consuming balancing act. Protected Research Time is there to alleviate this challenge and creates space for doctors in the Insel Gruppe to carry out research in addition to providing medical services.



4.10.2023 - Multiple sclerosis therapy: through the nose into the brain

Multiple sclerosis causes damage to nerve fibers in the central nervous system. Currently, there is no treatment that promotes the regeneration of these nerves. This is partly because many active substances cannot cross the blood-brain barrier. A new study by researchers at the Department of Neurology of the Inselspital and the University of Bern now shows a promising new approach: the delivery of active substances via the nose using a specialized delivery system.



Active ingredients administered directly to the olfactory mucosa travel from there straight to the brain via the olfactory nerve. This allows the blood-brain barrier to be bypassed.



[Pernet et al., Cell Death Discov, 2023.](#)

9.10.2023 - Emergency chat via app: digital support for suicidal adolescents

During an acute suicidal crisis, adolescents seeking help are hesitant to make a phone call, as direct contact with strangers is often an insurmountable barrier. That's why the University Hospital of Child and Adolescent Psychiatry and Psychotherapy at the UPD developed an emergency chat via an app, which enables suicidal adolescents to communicate directly with specialists at the department's emergency center. This is a way to provide immediate support in emergency and acute crisis situations at any time.



24.10.2023 - Treating the inflamed intestinal wall locally

Treatment of the chronic inflammatory bowel disease ulcerative colitis often produces unsatisfactory results. Researchers from the Department of Chemistry, Biochemistry and Pharmaceutical Sciences and the Institute of Tissue Medicine and Pathology at the University of Bern, together with colleagues from the University Hospital Zurich have now developed a lipid gel that is administered directly to the inflamed part of the intestine, where it remains and releases its active substance evenly. This could result in a new, targeted therapy approach with fewer side effects.



[Carone et al., Nat Commun, 2023.](#)

6.11.2023 - Medtech hub in Bern on the way to success

The canton of Bern wants to establish itself as a leading international medical location by 2030. To achieve this, the Insel Group, the University of Bern, and the technology innovation center, CSEM, will combine their exceptional medical expertise and work together on research and development projects. Their goal is to strengthen the competitiveness of local industrial businesses and start-ups.



8.11.2023 - Systemic sclerosis and pulmonary fibrosis: inflammatory markers as signposts

In Switzerland, around 2500 people suffer from the rare rheumatic disease systemic sclerosis (SSc), in which the immune system attacks the connective tissue and damages the skin and internal organs such as the lungs. A recent study led by Inselspital, Bern University Hospital, and the University of Bern shows that an inflammatory marker provides crucial information on the course of the disease and could help predict the effectiveness of therapies that dampen the immune system.



Inflammation marker provides crucial information on disease progression in systemic sclerosis and pulmonary fibrosis and could help predict the efficacy of immunosuppressants.



[Guler, Sarbu et al., Thorax, 2023.](#)

20.12.2023 - Swiss Aortic Center Bern founded at Inselspital

Prof. Drosos Kotelis, Clinic Director and Chief Physician of the University Clinic for Vascular Surgery, and Prof. Matthias Siepe, Clinic Director and Chief Physician of the University Clinic for Cardiac Surgery, have jointly founded the Swiss Aortic Center Bern at the Inselspital. This should enable optimal and patient-oriented care for patients with aortic pathologies at the highest university level in the future.



From left to right: Prof. Drosos Kotelis (Vascular Surgery), Prof. Vladimir Makaloski (Vascular Surgery), Prof. Florian Schönhoff (Cardiac Surgery), and Prof. Matthias Siepe (Cardiac Surgery.)

21.12.2023 - University of Bern supports the WHO in the area of biosafety and biosecurity

The World Health Organization (WHO) has appointed the Biosafety Center of the Institute for Infectious Diseases at the University of Bern as a Collaborating Center. The Biosafety Center will support the WHO with advice, training and the development of guidelines and instructions. It is the only WHO Biosafety Collaborating Center in the world to be based at a university.



Transport of infectious material in the BSL-3 containment laboratory of the IFIG.
© Pascal Gugler



[About the Biosafety Center](#)

23.12.2023 - Altered intestinal flora influences surgical outcome

Infections are the most common complication following surgical procedures. A new study led by Inselspital, Bern University Hospital, and the University of Bern shows that changes in the intestinal flora during surgery could play an important role in the development of this complication. This finding opens up new perspectives for preoperative examinations and the adaptation of treatment before, during and after surgery.

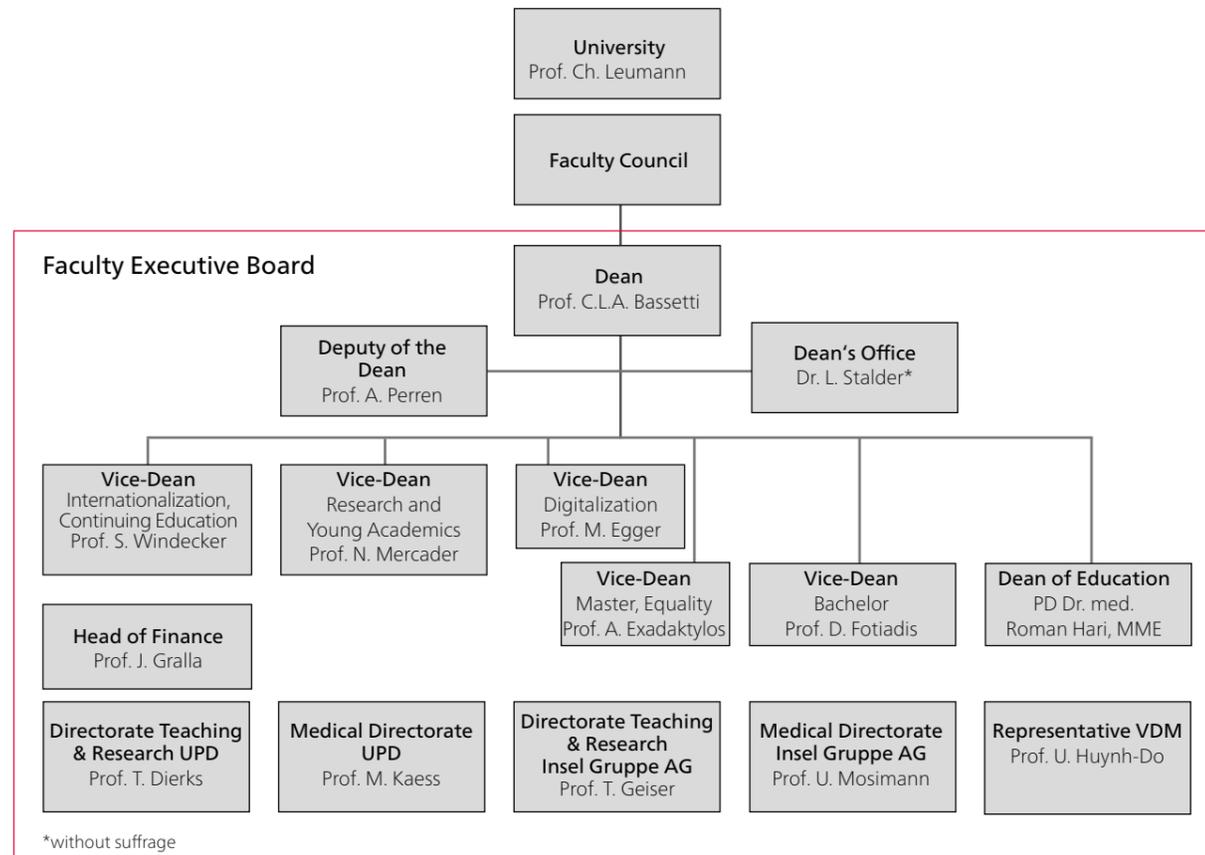


An altered intestinal flora can influence the outcome of the operation.



[Spari et al., Sci Rep, 2023.](#)

Organigram



Dean and Vice-Deans

Prof. Dimitrios Fotiadis
Vice-Dean Bachelor Studies

Prof. Claudio L.A. Bassetti
Dean

Prof. Stephan Windecker
Vice-Dean Internationalization
and Continuing Education

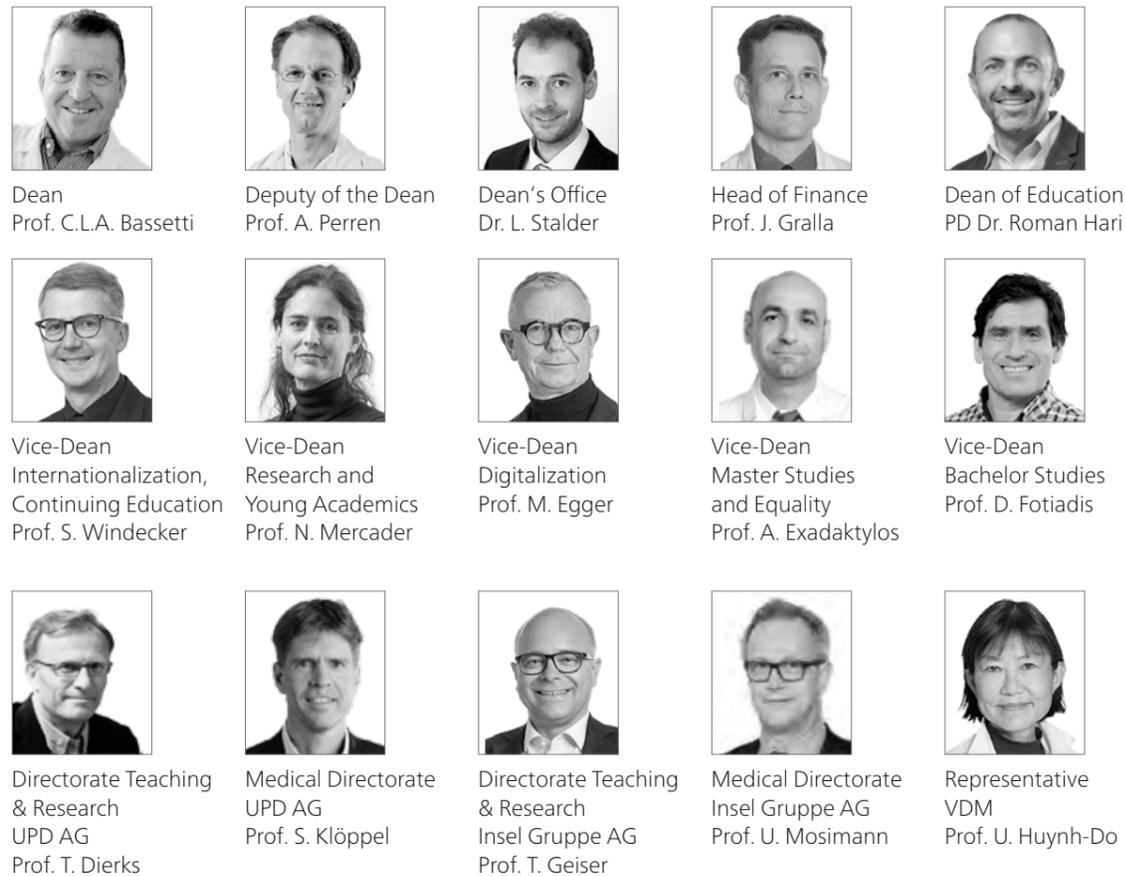
PD Dr. Roman Hari, MMD
Dean of Education

Prof. Marcel Egger
Vice-Dean Digitalization

Prof. Aristomenis Exadaktylos
Vice-Dean Master Studies
and Equality

Prof. Nadia Isabel Mercader Huber
Vice-Dean Research and
Young Academics

Prof. Aurel Perren
Deputy-Dean



Faculty of Medicine in Numbers

1 faculty
3 organisations
15 institutes
40 clinics

2,411 students in
2 bachelor programs
6 master programs

347 final master degrees
235 Human Medicine
34 Dental Medicine
8 MSc in Biomedical Sciences
34 MSc in Pharmacy
32 MSc in Biomedical Engineering
4 MSc in Artificial Intelligence in Medicine

451 doctoral degrees
298 Dr. med.
40 Dr. med. dent.
83 from the Graduate School for Cellular and Biomedical Sciences
30 from the Graduate School of Health Sciences

106 ordinary and extraordinary professors
18 assistant professors
193 associate professors

355 students in
42 CAS/DAS/MAS programs

3,234 original articles published

211.1 million budget in CHF, plus:
43.7 million from the Swiss National Science Foundation
55.3 million third-party funds for research

Rankings of World Universities

Over the years, the Faculty of Medicine has consolidated its position as one of the world's top 100 medical universities. Although international rankings are only one way among others to measure and reflect academic performance, we are proud that our scores have improved in several subjects in 2023.

The following table shows the ranking of the University of Bern from 2020 to 2023, either in clustered form (not specified more precisely by the authors of the ranking) or as an exact rank (for top rankings).

Shanghai Ranking: Global Ranking of Academic Subjects				
	2020	2021	2022	2023
Clinical Medicine	76-100	76-100	76-100	76-100
Public Health	201-300	201-300	151-200	76-100
Dentistry & Oral Science	17	16	13	9
Nursing	101-150	76-100	101-150	101-150
Medical Technology	51-75	51-75	51-75	51-75
Pharmacy & Pharmaceutical Sciences	151-200	201-300	151-200	51-75
Times Higher Education (THE): World University Rankings by Subject				
	2020	2021	2022	2023
Clinical and Health	101-125	92	76	73
QS World University Rankings by Subject				
	2020	2021	2022	2023
Medicine	101-150	114	94	91
Dentistry	9	9	7	7
Pharmacy & Pharmacology	201-250	201-250	151-200	151-200

Top 5 Institutes and Departments

The annual research evaluation of all institutes and departments is a measure to promote quality and provides the basis for performance-based resource allocation. The broadly applicable indicators Relative Citation Ratio (RCR), number of publications in relation to resources, and amount of external funding are used for this evaluation and are also the basis for the ranking presented here.

Institutes of the Faculty of Medicine

- Institute of Social and Preventive Medicine (ISPM)
- Institute of Primary Health Care (BIHAM)
- ARTORG Center for Biomedical Engineering Research
- Institute for Infectious Diseases (IFIK)
- Department for BioMedical Research (DBMR)

Departments of the Inselspital

- Department of Diabetes, Endocrinology, Nutritional Medicine and Metabolism (UDEM)
- Department of Infectious Diseases
- Department of Diagnostic, Interventional and Pediatric Radiology (DIPR)
- Department of Hematology and Central Hematology Laboratory
- Department of Radiation Oncology

Awards and Honors

Presidency of the Swiss Society for Hematology

Prof. Dr. Anne Angelillo-Scherrer, Director and Chief Physician of the Department of Hematology, was elected President of the Swiss Society for Hematology.

Pfizer Research Prizes 2023 in Neuroscience/Neurology and Pediatrics

Dr. Mattia Aime, Department for BioMedical Research (DBMR) and Department of Neurology, received a Pfizer Research Prize for his study that identified the neuronal mechanisms by which the brain distinguishes positive from negative emotions during sleep.

Dr. Amanda Gisler, University Children's Hospital Basel and Department of Pediatrics, University of Bern, received a Pfizer Research Prize for her findings that exposure to grass and tree pollen increases the risk of respiratory symptoms during the first year of life.

Mark Rubin granted „Fellow of the AAAS“

Prof. Dr. Mark Rubin, Director of the Department for BioMedical Research (DBMR) and Head of the Bern Center for Precision Medicine (BCPM) Management Board, was appointed Fellow of the American Association for the Advancement of Science (AAAS), the world's largest general scientific society. Of the more than 500 AAAS Fellows, he is the only one from Switzerland and one of the few from Europe.

Challenge Award of the Prostate Cancer Foundation

Together with colleagues from ETH Zürich and the University of Connecticut, USA, Prof. Dr. Mark Rubin, Department for BioMedical Research (DBMR) and Bern Center for Precision Medicine (BCPM), and Dr. Anke Augspach, DBMR, received a Challenge Award from the Prostate Cancer Foundation (PCF).

Presidency of the CED-IADR

Prof. Dr. Anton Sculean, Director of the University Clinic of Periodontology, was elected President of the Continental European Division (CED) of the International Association for Dental, Oral, and Craniofacial Research (IADR).

Young Talent Award in Thrombosis and Haemostasis Research

At the annual meeting of the Society for Thrombosis and Haemostasis Research (Gesellschaft für Thrombose und Hämostaseforschung GTH) in Frankfurt, Germany, Dr. Erika Tarasco, Department of Hematology and Central Hematological Laboratory and Department for BioMedical Research (DBMR), was awarded the Young Talent Award "Thrombosis 2023".

Graduation Ceremony of the Faculty of Medicine

At the 2023 Graduation Ceremony of the Faculty of Medicine, the following awards were presented:

Faculty prizes for the three best doctoral theses of the year 2023:

1. prize: Dr. Carl Alessandro Starvaggi, Department of Pediatrics
2. prize: Dr. Fabio Simon Ryser, Department of Rheumatology and Immunology
3. prize: Dr. Baptiste André Pasquier, Institute of Primary Health Care

Recognition award from the Schweizerische Zahnärzte-Gesellschaft SSO (Swiss Dental Association) for outstanding achievements in the studies of dental medicine:

Dr. James Imhof

Ärztegesellschaft/Medical Society of the Canton of Bern, Federal Licensing Examination:

Clinical Skills: Véronique Marty

Clinical Knowledge: Corinne Kalbermatten, Jonas Andreas Schmid

CSL Behring Prize for outstanding achievements in the Master of Science in Biomedical Sciences program:

- 1st Place: Janine Andrea Fuhrer
- 2nd Place: Ladina Hörtensteiner
- 3rd Place: Nadia Fasel

Alumni Award for the best Master's thesis in the Master of Science in Biomedical Sciences program:

Nadia Fasel

The RMS Foundation Award for the best graduate in the Master of Science in Biomedical Engineering program:

Florian Kessler

Honorary Doctorate for Christos Katsaros

Prof. Dr. Christos Katsaros, Director of the University Clinic of Orthodontics and Dentofacial Orthopaedics, received an honorary doctorate from the University of Medicine and Pharmacy „Carol Davila“ of Bucharest, Romania, for his outstanding and significant scientific achievements.

Benjamin Castle Award for Antonio Rodriguez Calero

Dr. Antonio Rodriguez Calero, Institute of Tissue Medicine and Pathology, received the 2023 Benjamin Castleman Award of the United States and Canadian Academy of Pathology for his research on metastatic prostate cancer.

Golden Malpighi Medal for Britta Engelhardt

Prof. Dr. Britta Engelhardt, Director of the Theodor Kocher Institute, was awarded the Golden Malpighi Medal, the most prestigious award presented by the European Society for Microcirculation (ESM).

Honorary Doctorate for Valentin Djonov

Prof. Dr. Valentin Djonov, Director of the Institute of Anatomy, received an honorary doctorate from the University of Kragujevac in Serbia for his outstanding contributions to medical science, his dedication to advancing tumor therapy, and his collaboration with several research groups at the University of Kragujevac.

Research Prize of the Swiss Heart Foundation

Prof. Lorenz Räber, Department of Cardiology, was awarded the 2023 Research Prize of the Swiss Heart Foundation for his studies in which he has shown for the first time how drugs reduce and stabilize particularly dangerous cholesterol deposits in the arteries.

Two research prizes of the SSGIM Foundation

As part of its 2022/2023 call for project proposals on the topic of "Diagnostic quality and excellence," the Swiss Society of General Internal Medicine (SSGIM) awarded two research projects of the Department of General Internal Medicine: Dr. Stefanie Mosimann received a prize for her project on the improvement of delirium management in elderly hospital patients and Dr. Caterina Eva Marx for her project on reducing the risk of diagnostic errors in inpatient general internal medicine.

Hans-Werner-Feder Prize goes to Switzerland for the first time

The Hans-Werner-Feder Prize is an innovation prize awarded by the German Society for Interdisciplinary Emergency and Acute Medicine (DGINA). Prof. Dr. Wolf Hautz, PD Dr. Tanja Birrenbach, Dr. Gert Krummrey, Dr. Beat Lehmann and Prof. Dr. Thomas Sauter, all from the Department of Emergency Medicine, won this prize in 2023 for their project entitled "HALO Assist".

Prof. Dr. Max Cloëtta Medical Research Position for Joel Zindel

Prof. Dr. Joel Zindel, Attending Physician at the Department of Visceral Surgery and Medicine, was awarded a five-year research position by the Prof. Dr. Max Cloëtta Foundation.

Presentation award of the German Society of Human Genetics

Dr. Anne Gregor, Department of Human Genetics, received the presentation award at the 2023 annual meeting of the German Society of Human Genetics for her presentation entitled „LHX2 loss of function causes neurodevelopmental deficits in humans and flies“.

Claudia Kuehni wins the Guido Fanconi Prize

Prof. Claudia Kuehni, Deputy Director a.i. and Head of the research group Child and Adolescent Health at the Institute of Social and Preventive Medicine (ISPM), is the winner of the 2023 Guido Fanconi Prize awarded by pädiatrie schweiz, the Swiss Society of Pediatrics. The Guido Fanconi Prize is the most prestigious award presented in pediatrics in Switzerland.

DBMR Prizes at the Day of BioMedical Research

At the Day of BioMedical Research organized by the Department for BioMedical Research (DBMR), the following awards were presented:

Johanna Dürmüller-Bol DBMR Research Award 2023:

Dr. Mattia Aime, Department of Neurology
"REM sleep and emotions: the missing link for a better life quality"

Benoît Pochon Prize 2022:

Jana Remlinger, Department of Neurology
"Investigation of Antibody-driven Central Nervous System Autoimmunity with Focus on Involvement of the Visual Pathway"

Prize for the Best DBMR Publication 2022:

Jakob Zimmermann, Department for BioMedical Research
"Noninvasive assessment of gut function using transcriptional recording sentinel cells"

DBMR Prize for Innovative Research Idea 2023:

Christa König, Division of Pediatric Hematology/Oncology, Department of Pediatrics
"When time matters: Association of time to antibiotics (TTA) with outcome in children undergoing chemotherapy for cancer with fever in neutropenia (FN) – an international individual patient data (IPD) Meta-analysis"

Federico La Manna, Department for BioMedical Research

"A cross-omic toolkit to approach residual disease in prostate cancer"

Mattia Aime, Department of Neurology

"REM sleep and emotions: the missing link for a better life quality"

Poster prizes of the Day of BioMedical Research 2023:

Best preclinical project:

Fabian Luther, Department of Dermatology
"PPAR- γ regulates the effector function of human TH9 cells by promoting glycolysis"

Best clinical project:

Matteo Bargagli, Department of Nephrology and Hypertension
"Selective V2R blockade with Tolvaptan increases urinary exosome Pendrin expression in patients with Autosomal Dominant Polycystic Kidney Disease"

Best project by a medical student:

Nick Kirschke, Institute of Anatomy
"Influence of macronutrients on heart regeneration in zebrafish"

Stem Cell Project Prize:

Inês de Paula Costa Monteiro, Department of Medical Oncology
"Role of ILC2s in the regulation of colorectal cancer stem cells"

Alumni MedBern Research Award:

Nic Krummenacher, ARTORG Center for Biomedical Engineering Research
"Validation of the usability of a new interactive and sensor-based hand trainer, the Smart Sensor Egg, for training hand coordination and dexterity"

KIPRIME Fellowship for Sören Huwendiek

Prof. Sören Huwendiek, Head of the Department of Assessment and Evaluation at the Institute for Medical Education, received a distinction from the Karolinska Institute in Stockholm. He was invited to participate in the Fellows Program of the Karolinska Institutet Prize for Research in Medical Education (KIPRIME). The KIPRIME is probably the most prestigious prize in the world for research in medical education.

Outstanding Achievement Award for Yvonne Döring

The Council for Basic Cardiovascular Science (CBCS) of the European Society of Cardiology (ESC) honored Prof. Yvonne Döring, Head of Research at the Department of Angiology, for her scientific accomplishments and gave her a 2023 Outstanding Achievement Award.

ESICM Paper of the Year Award for Marie-Madlen Jeitziner

Dr. Marie-Madlen Jeitziner, research associate in nursing at the Department of Intensive Care Medicine, and the ICU KIDS Study Group received the Paper of the Year Award from the European Society of Intensive Care Medicine (ESICM) for their article on a family and child-friendly intensive care unit.

Finalist of the Eppendorf & Science Prize for Neurobiology

Dr. Mattia Aime, Department of Neurology, was one of the three 2023 finalists for the Eppendorf & Science Prize in Neurobiology. He was awarded for his essay on the processing of emotions during sleep.

Marie Heim-Vögtlin Prize for Maria Luisa Balmer

In recognition of her achievements, Prof. Maria Luisa Balmer, Department of BioMedical Research, was awarded the 2023 Marie Heim-Vögtlin Prize by the Swiss National Science Foundation (SNSF). With this prize, the SNSF honors an outstanding young female researcher and role model each year.

Honorary Doctorate for Claudio Bassetti

Prof. Dr. Claudio Bassetti, Director of the Department of Neurology, received an honorary doctorate from the Medical University of Sofia, Bulgaria.

Scientific Advisor for the Robert Koch Institute

Prof. Dr. Parham Sendi, Institute for Infectious Diseases, was appointed to the Scientific Advisory Board for Public Health Microbiology by the Robert Koch Institute (RKI) for his outstanding achievements as an expert in the fields of bacteriology, clinics, and epidemiology. The RKI is the German government's central scientific institution in the field of biomedicine and one of the most important bodies for the safeguarding of public health in Germany.

Award of the Swiss Society of Surgery for Cédric Nesti

At the 2023 annual meeting of the Swiss Society of Surgery (SGC), Dr. Cédric Nesti, Department of Visceral Surgery and Medicine, was awarded the SGC's award for the promotion of surgical research.

SGV Award for Alessandra Bergadano

PD Dr. Alessandra Bergadano, Department for BioMedical Research (DBMR), received the 2023 Award of the Swiss Laboratory Animal Science Association (SGV) for her excellent work for the welfare of laboratory animals and the people who work with them.

Stroke Prize of the German Neurological Society and the German Stroke Society

Prof. David Seiffge, Department of Neurology, was awarded the Stroke Prize of the German Neurological Society (DGN) and the German Stroke Society (DSG). The prize is awarded every two years for outstanding research achievements in the field of cerebrovascular diseases, cerebral blood flow or brain metabolism.

DCR Prizes at the Day of Clinical Research

At the Day of Clinical Research organized by the Department of Clinical Research (DCR), the following awards were presented:

Best junior research speakers:

1. Yuly Paulin Mendoza Jaimes
2. Francois Jardot
3. Diana Höhn & Salik Iqbal

Poster prizes in seven different categories:

Best investigator-initiated clinical trial: Maria Christine Thurnheer Zürcher
Best trial in progress: Clemens Alexis Haupt
Best poster by a medical student: Fabienne Steinauer
Best poster by a PhD candidate: Carlotta Riebensahm
Best poster by a Master's candidate: Charlene Gretener
Best multidisciplinary research: Anna Wyss
Best visual presentation: Esther Bill

New Professors at the Faculty of Medicine



José Garcia-Tirado

Since January 1, 2023, Assistant Professor with tenure track of Diabetes Technology, Smart Control Algorithms and Applied Diabetes Research at the Department of Diabetes, Endocrinology, Nutritional Medicine and Metabolism (UDEM)

Before joining UDEM and leading UDEM's PrecisionLab, José Garcia-Tirado was an Assistant Professor at the University of Virginia's Center for Diabetes Technology, where he initiated and consolidated the translation of a novel, fully automated insulin delivery (fAID) system. His research interests encompass mechanistic and physiologically informed data-driven models as well as the refinement of the next generation of fAID systems for insulin-dependent diabetes with and without adjuvant therapies.



Martin D. Berger

Since March 1, 2023, Extraordinary Professor of Medical Oncology with a special focus on Gastrointestinal Oncology at the Department of Medical Oncology

Martin D. Berger received his medical doctorate at the University of Zurich in 2007. He holds the specialist titles of Internal Medicine and Medical Oncology. During his training as an oncologist at the Inselspital, Bern University Hospital, Martin D. Berger has put his scientific focus on the field of gastrointestinal oncology and has turned with great enthusiasm to clinical and translational research in colon cancer. The successful acquisition of external funding enabled him a research stay at the University of Southern California in Los Angeles where he conducted award-winning work on prognostic and predictive biomarkers in colon cancer. In 2019, the University of Bern awarded him the *venia docendi*, and in 2021, he was appointed associate professor.



Christoph Gräni

Since February 1, 2023, Extraordinary Professor of Cardiac Imaging at the Department of Cardiology

Christoph Gräni completed his medical doctorate in 2010 at the University of Zurich. After acquiring specialist titles in Internal Medicine and in Cardiology, he specialized in Multimodal Cardiac Imaging at the University Hospital Zurich and a subsequent fellowship at Brigham and Women's Hospital, Harvard Medical School, Boston, USA, from 2016 to 2017. He completed a PhD at Maastricht University, Netherlands, habilitated at the University of Zurich, and transferred his habilitation to the University of Bern, where he was appointed Associate Professor in 2020. In 2022, he completed an Executive MBA at the University of St. Gallen.

One of Christoph Gräni's research interests is the improvement of diagnostics and risk stratification in inflammatory and storage diseases of the heart, such as myocarditis or cardiac amyloidosis, by non-invasive application of myocardial function analysis and fibrosis imaging in cardiac MRI. Christoph Gräni is Editor-in-Chief of the International Journal of Cardiovascular Imaging.



Annalisa Berzigotti

Since April 1, 2023, Ordinary Professor of Clinical Hepatology at the Department of Visceral Surgery and Medicine (UVCN)

Annalisa Berzigotti obtained her specialist title in Internal Medicine in 2004 and her medical doctorate in ultrasound medicine in 2009, both at the University of Bologna, Italy. In 2012, she completed a second doctorate in hepatology at the University of Barcelona, Spain, before moving to Bern to the University Hospital for Visceral Surgery and Medicine (UVCN) in 2014. Here, she first worked as a senior physician and, from September 2016, as chief physician. In the same year, her habilitation was transferred to Bern and Annalisa Berzigotti was appointed Associate Professor at the Faculty of Medicine. In 2021, she became Chief of Hepatology and, shortly afterwards, the interim Head of Hepatology at the UVCN.

In addition to her clinical work, Annalisa Berzigotti is heavily involved in research. Her scientific and clinical focus is on liver transplantation, liver cirrhosis, portal hypertension, hepatic hemodynamics, and non-invasive methods to assess liver disease.



Joerg C. Schefold

Since April 1, 2023, Ordinary Professor of Intensive Care Medicine at the Department of Intensive Care Medicine

Joerg C. Schefold completed his medical doctorate at the Humboldt University in Berlin, Germany, in 2004. In 2010, he habilitated on innovative therapeutic procedures for critically ill patients with severe infections. His broad clinical training path includes the specialist title in Internal Medicine and the focus titles in Nephrology, Intensive Care Medicine, Emergency Medicine and Rescue Medicine. Joerg C. Schefold began his professional career at the Charité Universitäts-mezizin, Berlin, before moving to Bern to the Department of Intensive Care Medicine as Senior Consultant in 2014. In 2018, he was simultaneously appointed Chief Physician and Assistant Professor with tenure track to the Chair of Intensive Care Medicine, succeeding Stephan Jakob.

Joerg C. Schefold's research focuses on clinical research in intensive care medicine, specifically on the therapeutic manipulation of the human organism's response to critical illness by means of innovative therapeutic procedures and on everyday problems in intensive care medicine.



Manuela Eugster

Since November 1, 2023, Assistant Professor with tenure track in Robotics and Micromechatronics at the ARTORG Center and the Department of Neurosurgery

Manuela Eugster studied Mechanical Engineering and carried out her PhD thesis at the Bio-Inspired Robots for Medicine-Lab (BIROMED-Lab), Department of Biomedical Engineering, University of Basel, where she focused on the development of a robotic system for bone-cutting. She used a laser beam in the submillimeter range together with a miniature robot in a minimally invasive setting for knee arthroplasty. As a postdoctoral researcher at the BIROMED-Lab she was the project management lead of an Innosuisse project where this technology was applied to dentistry.

Manuela Eugster's current research focus is on developing smart tools for neurosurgery, which not only improve safety and precision but also decrease the invasiveness of neurosurgical interventions. In her new position, she will collaborate closely with clinicians and researchers to identify and address unmet clinical needs and improve medical care by providing physicians with better instruments and novel surgical procedures.

Faculty Membership on the Basis of Academic Excellence



Katja Odening

Since August 1, 2023, Ordinary Professor of Translational Cardiology at the Department of Cardiology and the Institute of Physiology

After completing her medical doctorate at the University of Heidelberg, Germany, in 2004, Katja Odening specialized in Internal Medicine and Cardiology at the University Hospital of Freiburg, Germany, where she established her scientific focus in the field of cardiac electrophysiology. After a three-year post-doctorate at the Cardiovascular Research Center at Brown University, USA, she moved back to Freiburg. In 2012, she habilitated in Internal Medicine and was appointed head of the Genetic Rhythm Diseases Unit at the University Heart Center. In 2016, she was appointed Adjunct Professor and became head of the Translational Medicine section at the Institute of Experimental Cardiovascular Medicine. In 2020, she moved from Freiburg to Bern, where she was appointed Associate Professor of Translational Cardiology.

Katja Odening's research focus is on genetic arrhythmia, specifically on the molecular determinants of individual risk for sudden cardiac death.



PD Dr. Johannes Kaesmacher

Senior Physician at the University Institute of Diagnostic and Interventional Neuroradiology

To foster excellence in research and teaching, the Faculty of Medicine offers researchers and lecturers who excel in teaching and/or research the opportunity to join the Faculty Council. In 2023, the Faculty Council appointed PD Dr. phil. Dr. med. Johannes Kaesmacher as a new member with effect from August 1 on the basis of his academic excellence in research.

Johannes Kaesmacher is a radiologist. He habilitated at the Faculty of Medicine of the University of Bern in 2020 and received his PhD in Clinical Science from the Graduate School of Health Sciences at the University of Bern in 2022. Since 2023 he has been a Senior Physician at the University Institute of Diagnostic and Interventional Neuroradiology at the Inselspital, Bern University Hospital.

Johannes Kaesmacher's research focuses on endovascular stroke therapy. In the last three years, he has published 88 original papers, 27 of them as first or last author. In addition to his numerous publications of excellent quality and acquisition of third-party funding, the Faculty recognizes the early stage of his career, at which he has achieved international visibility.

In Memoriam: Prof. Dr. Andrea Huwiler

The Faculty of Medicine remembers Prof Andrea Huwiler, Director of the Institute of Pharmacology, who was unexpectedly taken from this life at the end of 2023. The Faculty expresses its sincere condolences to Andrea Huwiler's family.

Andrea Huwiler passed away unexpectedly on 18 December 2023 at the age of 57. The Faculty bids farewell to an exceptional scientist, pharmacologist, teacher, and personality.



Prof. Dr. Andrea Huwiler
22.9.1966 - 18.12.2023

After studying biochemistry at ETH Zurich, Andrea Huwiler completed her doctorate in pharmacy at the University of Basel in 1993 with a thesis on the regulatory functions of protein kinase C isoenzymes. She then continued her research as a postdoctoral fellow at the Biozentrum of the University of Basel and as a visiting scholar at the University of California San Diego, USA, and the Utrecht University, The Netherlands. In 1998 Andrea Huwiler took over as head of an independent research group at the Institute of General Pharmacology and Toxicology at the Goethe University in Frankfurt am Main. There she gained her habilitation in biochemical pharmacology in 1999, was appointed to a lectureship in the Department of Medicine in 2001, and to an adjunct professorship in 2005. In 2006, she became an extraordinaria at the University of Bern in the Institute of Pharmacology. From 2021, she was the Institute's director and made a significant contribution to its growth and success.

Andrea Huwiler was a gifted scientist. She worked concentratedly on lipids, and that at a time when lipids were not being focused on by the scientific community. She researched the mechanisms of action of ceramide and sphingosine-1-phosphate and saw work in this field return to the limelight of medical research as „lipid signaling.“ Her pioneering work established relevant pathophysiological functions for sphingosine kinases in kidney diseases and fibrotic diseases in general. She also translated these findings into the development of corresponding drug candidates. Andrea Huwiler received numerous awards, including the Emil Bürgi Prize of the University of Bern in 1994, the Novartis Pharmacology Prize for early career researchers in 1997, the Franz Volhard Prize of the German Society of Nephrology in 2004, and the British Pharmacological Society Award in 2019.

Andrea Huwiler was also an inspiring leader and dedicated academic teacher. Her commitment to teaching and to furthering young scientists has had a lasting effect in the Institute. She was able to enthuse the people around her with her ideas and had the ability to present complex issues in an understandable, comprehensible, and interesting way. Consequently, her teaching was highly appreciated.

The Faculty of Medicine regards Andrea Huwiler's life's work with admiration, is grateful for her achievements, and will keep Andrea Huwiler in fond memory. Our thoughts are especially with her family and all those close to her who have had to farewell her so suddenly.



Honorary Doctorate of the Faculty of Medicine for Professor Stefanie Dimmeler

At the 189th Dies academicus of the University of Bern on December 2, 2023, the Faculty of Medicine awarded Prof. Stefanie Dimmeler an honorary doctorate. She is a leading expert in the pathophysiology of cardiovascular diseases and was one of the first to identify non-coding RNAs as novel therapeutic targets. Professor Nadia Mercader, our Vice-Dean of Research and an expert herself on the physiology of the heart, conducted this interview with the laureate.

Stefanie, we have known each other for a long time, and I am fascinated by your scientific enthusiasm and energy. That is why I am curious to know when you first realized you wanted to become a scientist.

I think I have always been curious about how things happen, for example, how plants or frogs grow. But I never thought about becoming a scientist when I was a kid. I was not born with this idea. I got fascinated during my studies in biology about cellular mechanisms. When I worked with platelets in the lab, I loved this type of work, and I knew that this was what I wanted to do. So, I think it came during my master's studies, I would say.

You were among the very first scientists who studied microRNAs in mammals. How did you realize that the whole field of microRNAs was becoming so important?

I think there were two discoveries that raised my attention: When Craig Venter first sequenced the human genome, I thought it was a very surprising finding that more than 95 percent of the human genome was not encoding for mRNAs. I found this

discovery very exciting, and I wanted to find out what these non-coding mRNAs are doing. Around the same time, there were additional pioneering studies with the roundworm *C. elegans*, showing that there are tiny non-coding RNAs that have a tremendous impact and control many processes in this species. I thought that there must be a role for microRNAs in humans as well, but the field of non-coding RNAs was unexplored at the time. I had the impression that this new field could help us understand human diseases. All this drew my interest to explore the role of non-coding RNAs.

Now, you have shifted your research focus to vascular aging and heart regeneration. What are the big yet-to-be-answered research questions in this field?

I have been interested in aging for quite a while. My first articles on this topic appeared in the 1990's. But regarding your question: The big question in the field of heart regeneration is, in my view, how to achieve a re-population of functionally active cardiomyocytes in humans with heart failure.

Defining the big questions in aging research is more difficult. From a clinical point of view, one would like to delay the aging process. But biologically, I find it very difficult to understand the mechanisms of aging. It is not solely the damage response or the fact that mutations are accumulating over time. The question "Why and how do cardiovascular cells age?" is still unanswered for me. Also, if we look at the endothelial cells, the effects of redox stress or the acquired mutations cannot be the only reasons. So, I think it will be very interesting to find out the basic mechanisms of why cells age.

“As a young researcher, you need a good environment and local support.”

Prof. Stefanie Dimmeler

What breakthroughs do you expect in aging research in the next few years?

When I talk about aging research, I do not have in mind the goal of excessively prolonging our life span. What I find interesting about aging research – and probably more realistic to achieve – is delaying the aging process to some extent. In particular, keeping our bodies healthy until we have to die anyway. In the sense that we keep our organs healthy, reduce morbidity, and remain physically active. Heart failure, for example, reduces your quality of life because you can no longer be physically active. So, extending the healthy lifespan should be the aim and some steps have been taken towards this aim. But breakthroughs often come with a price tag. Rejuvenating tissue may increase the risk of tumor formation. Increasing cell plasticity may lead to other risks. So, there certainly are challenges, but nevertheless, we should try to understand how the aging processes are different from one organ to another. We first need to understand the underlying mechanisms and then we might be able to target them.



You are not only an outstanding scientist, but you have many positions as a leader, such as being the Director of the Institute for Cardiovascular Regeneration of the Goethe University Frankfurt. You also have hobbies, such as running marathons. How do you make time for all that?

There are a few points allowing you to have free time. For instance, it is great to have a good team. Today I have more administrative and more research support than at the time when I started my research group. At that time, I was obliged to do much more micromanagement. The administrative support I have today saves me a lot of time. A second point is that you need to be efficient. Try to get things done without getting distracted. My third point is prioritization, but this is sometimes very complicated if you have too many urgent tasks simultaneously. I think you need to feel good about what you do and about the priorities you set for yourself. People ask me sometimes why I work on the weekend. Then I explain that I tend to have my best ideas on Sunday morning. So, I spend two to three hours on research and, after that, I go running or biking. The rest of the day I spend with my family and friends. This is a fantastic day for me. I love days like that. Thus, it is important to figure out what the right balance is for you.

So, you often have a mix of work and leisure time?

Yes, absolutely. But it must also be said that science is a special kind of work. If you want to discover new things and change things, you need inspiration and creativity. It doesn't come on command, but it can come at any time. But your mind must be open. That is why I think you cannot be a successful scientist if you stick to strict working hours and spend the rest of your time thinking about something else.

What would be your advice for young academics wishing to become independent researchers in the field of medical sciences?

There are three important points: first, it is very important to find the right place. As a young researcher, you need a good environment and local support. Maybe also inspiration around you. My second advice would be to find the right people. The recruitment of the first people who work in your team will be critical for your career. These are the people you will grow with. Finally, you will have to find a good topic. This is very difficult. Because if you decide to do something completely new, it's very risky and you might not get any grants with the argument that this is overambitious. On the other hand, if you keep doing the same things you have documented expertise in, you may only make incremental advances. That is why I think you should combine the two strategies. Work on a high-risk project that involves something completely new. And at the same time work on a low-risk project where you know you have everything you need to make the project a success.

Laudatio

From the numerous achievements of Prof. Dimmeler, we would like to highlight the following:

- Her research has made important contributions to the understanding of the pathophysiology of cardiovascular disease.
- She has taken our understanding of the mechanisms of NO synthase activation in endothelial cells to a new level.
- She has done pioneering work on the role of non-coding RNA in endothelial cells and its effect on the heart.
- She discussed new therapeutic approaches to improve vascular and cardiac repair and regeneration after myocardial infarction.
- With her productivity, her motivation, and her personality, she has inspired people in her field of research.

Curriculum Vitae

- 1986 – 1993: M.S. in Biology and PhD at the Department of Biological Chemistry at the University of Konstanz
- 1997: Head of the Division “Molecular Cardiology” at the Goethe University Frankfurt
- 1998: Associate Professor and Habilitation in Experimental Medicine at the Goethe University Frankfurt
- 2001: Professorship for Molecular Cardiology III at the Goethe University Frankfurt
- Since 2008: Full Professorship (W3), Director of the Institute of Cardiovascular Regeneration, Center for Molecular Medicine, Goethe University Frankfurt
- Since 2019: Director of the Cardiopulmonary Institute (CPI) of the Goethe University Frankfurt
- Since 2017: member of the German National Academy of Sciences Leopoldina
- Chairwoman of the Board of the German Center for Cardiovascular Research (DZHK)



Precision mechanic Jürg Küffer, Prof. Müller, and the managing director of Protek, Marcel Madl, taking pictures for training documents, 1968

Historical Spotlight: The Birth and Transformation of the MedTech Industry

In the 1960s, a new industrial sector blossomed in Switzerland: medical technology. A key figure in this development was Maurice E. Müller, who revolutionized fracture care and was a central innovator in hip prosthetics. A new book looks behind the scenes of this story.

The book cover photo you see on the right represents a typical story of innovation: the innovator and his product. This emphasis on a single person is certainly justified in this case. It is for good reason that Maurice E. Müller (1918-2009), Professor and Clinic Director at the Inselspital, was nominated Orthopedic Surgeon of the Century by the International Society of Orthopaedic Surgery and Traumatology (SICOT). And yet the genius of a single person can only explain innovation and commercial success to a limited extent. In this book, contemporary witnesses and protagonists shed light on the development of artificial hip joints from various perspectives.

The practice of innovation

The precision mechanic Jürg Küffer, for example, explains that during operations, if a manipulation or instrument was not functioning perfectly, Müller would just turn round and look at him without saying anything. For Küffer, it was often immediately clear where the problem lay. Originally, Küffer produced a prototype, which Müller examined and adjusted as necessary. A new instrument was thus developed quickly and easily; it was then manufactured in collaboration with Mathys AG and distributed by Müller's company, Protek AG.

The development of prostheses also depended on experts in material science. This triangular cooperation between orthopedic surgeons, precision mechanics, and metallurgists resulted in the key innovations that made the insertion of an artificial hip joint an increasingly safe and widely used treatment method.



Prof. Müller with a hip joint prosthesis, around 1966

In those early days, new methods and materials were tested on patients in a way that would be unthinkable today. Patient expectations were completely different. Dora Kaufmann, a surgical nurse and clinical training operator at Protek, says that "people were usually in so much pain that the operation was a relief for them." They came to the hospital using a stick and left walking on two legs. Accordingly, they were grateful and did not seek legal action when reoperations were required due to material defects.

Müller's innovations turned the Inselspital into a hip center that attracted numerous international guests. For Reinhold Ganz, Müller's senior consultant at the time, it was not just the new methods that attracted people. They also came "because he was charismatic, also in the way he operated. He captivated people, and people came because of that: it was a spectacle." However, what the book shows above all is that even the development of a specific hip prosthesis and its surgical anchoring was perhaps not Müller's most important contribution. It was instead his realization that the successful and safe implementation of a new method requires biomechanical analysis, careful documentation and evaluation, and structured training. Müller thus contributed significantly to a change in thinking in orthopedics.



Operation at Lindenhof Hospital in front of international guests, 1970s

Growth and cultural change in the medtech industry

During the 1960s to 1980s, orthopedic surgeons turned joint replacement from an experimental procedure into a routine operation. This period also saw the rise of large multinational companies. At the beginning, Müller, as both an orthopedic surgeon and the main owner of Protek, determined the entire strategy. The company was the means to realize his ideas and finance further development and training. This worked well, and Protek occupied a third of the – albeit still relatively modest – global market for hip prosthetics until the mid-1980s. In addition, as metallurgist Manfred Semlitsch mentions, the company relied on the "two per cent rule." This intentional understatement meant that the sales price was determined by doubling the actual costs. Nevertheless, market expansion and profit maximization were never the goals. Giorgio Curradini, a former director of Protek, states that he never had a discussion with Müller about how much money the company was making.

The new market logics became established only gradually. This was reflected in the sale of Protek to Sulzer in 1989–91 and then in the takeover of the business by the American group Zimmer Biomet in 2003. With the consolidation of the medical technology industry, the initiative to develop new endoprostheses passed from orthopedic surgeons to companies. For the people who helped shape the early history and provide the information in the book, this more recent development is not conducive to innovation. But that is another story.

[N. Ingold, P.E. Ochsner, H. Steinke \(eds\), Maurice E. Müller und die Entwicklung künstlicher Hüftgelenke in der Schweiz. Zeitzeugenbefragung zur Geschichte einer Medizintechnik \(Bern: Bern Open Publishing, 2023\).](#)





Implementation of Strategy 2030 in the Year 2023

The Faculty Executive Board and the Faculty Council approved Strategy 2030 in the summer of 2021. In 2023, great efforts were made in various important fields, such as excellence in teaching, excellence in research, digital medicine, organizational development, networking and positioning, and fostering young researchers.

These milestones, only a few from a wide range of activities, were successfully implemented in 2023:

- The Dean of Education started successfully in this newly created faculty position.
- The Excellence in Teaching working group completed its work and handed pending tasks back to the Board of Education (Ausschuss Lehre). This resulted in the formulation of the short-term Faculty Teaching Strategy for 2024–2026, which includes six fields of action: vertical and horizontal integration in education, evaluation and performance-based allocation of teaching resources, the Planetary Health Curriculum, faculty development in education, interprofessional training, and the digitalization of medical education.
- Appropriate processes and organizational structures are needed to remain competitive and use resources efficiently. The current interactions between the Faculty, the two university hospitals, and the University of Bern do not meet these requirements. For this reason, the Executive Board of the Faculty, with the support of the University, the university hospitals, and representatives of the Bernese government, has conducted a structural analysis with the aim of strengthening the Faculty's position. The analysis report is now nearing completion, and the Faculty will derive and implement initial measures from it in 2024.

- Development has begun of a digital research platform supported jointly by the Faculty, the University of Bern, and the Insel Group. The aim is to provide our researchers with an interoperable, flexible, and data-protection-compliant platform for processing patient data. The concept phase is currently underway. The first version of the platform is due to be launched by the end of 2024.
- The new comprehensive process for successions has been expanded and improved.
- The newly created positions of Communications Officer and National and International Relations Coordinator have been successfully filled.
- The Faculty's new Talent4Bern funding program supports researchers with applications for SNSF Starting Grants. In the first Talent4Bern call, five researchers from our Faculty were successful. Their SNSF Starting Grants will allow them to establish their own independent research groups. Additionally, three newly endowed professorships have been created. All sponsored professorships now have seats on the Faculty Council, and the professors can help shape the Faculty's future.
- Three newly established professorships in the field of digital medicine have been appointed successfully.
- Many excellent applications have been received in the calls for the funding of Global Health Initiatives and International Networking Activities in Research. The first grants will be awarded in 2024.



New Hospital Building Called Anna-Seiler-Haus

On September 18, 2023, the new main building of the Inselspital, Bern University Hospital, the Anna-Seiler-Haus, began clinical operations. It is named after the founder of the Inselspital, Anna Seiler, and is one of the most modern and attractive hospital buildings in Switzerland.

After ten years of planning and construction and the successful relocation of patients on the weekend of September 16 and 17, the new main building was opened on September 18 and will enhance the provision of healthcare in the Bern area. As the new centerpiece of the hospital complex, it stands as an example of both architectural and medical innovation. This facility has been meticulously designed to prioritize patient comfort and healing, featuring quiet, patient-friendly areas, and private rooms that make a positive contribution to the stay in hospital.

Patients and staff benefit

There are many benefits for patients: speedy access to top-of-the-range medical services, a peaceful environment conducive to recovery, and the integration of the latest in healthcare technology, ensuring the highest standards of treatment and care.

Staff members are equally advantaged, working in a state-of-the-art environment that promotes efficiency, fosters interdisciplinary collaboration, and supports mental well-being through careful design and ergonomic workspaces.

A lighthouse project

The new Anna-Seiler-Haus is a lighthouse project for sustainable construction in healthcare facilities, reducing the carbon footprint and setting new benchmarks for environmental responsibility. This demonstrates the Inselspital's dedication to the advancement of health care, to enhancing patient and staff satisfaction, and to providing innovative leadership.



From left to right: Prof. Urs P. Mosimann, Medical Director, Dr. Paula Adomeit, Director of Nursing, Prof. Bernhard Pulver, Chairman of the Board of Directors, Government Councillor Pierre Alain Schnegg, Head of the Health, Social Affairs and Integration Directorate (GSI), Dr. h.c. Uwe E. Jocham, President of the Executive Board, and Abel Müller-Hübenthal, Director Real Estate and Operations, at the inauguration ceremony.

Institutional Overview

Uni Mittelstrasse

Institute for Medical Education (IML), Mittelstrasse 43
 Institute of Primary Health Care (BIHAM), Mittelstrasse 43
 Institute of Social and Preventive Medicine (ISPM), Mittelstrasse 43
 Department of Clinical Research (DCR), Mittelstrasse 43 and sitem-insel

Hallerstrasse 6

Multidisciplinary Center for Infectious Diseases (MCID)

Uni Muesmatt

Institute of Anatomy, Baltzerstrasse 2
 Institute of Biochemistry and Molecular Medicine, Bühlstrasse 28
 Institute for the History of Medicine, Bühlstrasse 26
 Institute of Physiology, Bühlplatz 5
 Library Medicine, Baltzerstrasse 4
 Microscopy Imaging Center (MIC), Freiestrasse 1
 Theodor Kocher Institute (TKI), Freiestrasse 1

von Roll Area

Institute of Complementary and Integrative Medicine (IKIM), Freiburgstrasse 46 & Fabrikstrasse 8

Insel Area

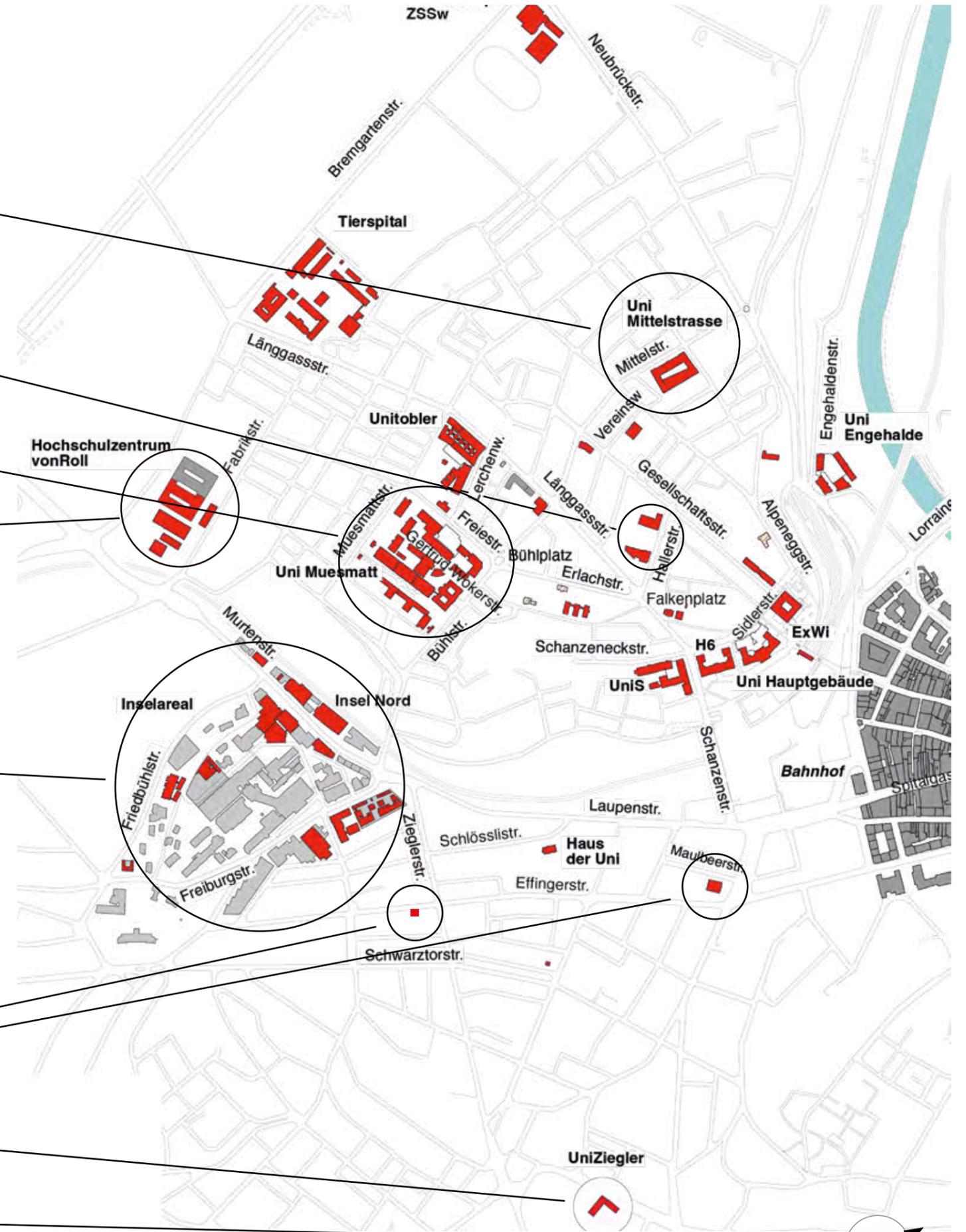
Clinics and Institutes at the Inselspital, Bern University Hospital
 ARTORG Center for Biomedical Engineering Research, Murtenstrasse 50
 Bern Center for Precision Medicine (BCPM), Murtenstrasse 40
 Center for Artificial Intelligence in Medicine (CAIM), Murtenstrasse 50
 Dean's Office, Dean's Office of Student Affairs, Murtenstrasse 11
 Department for BioMedical Research (DBMR), Murtenstrasse 35
 Department of Clinical Research (DCR), sitem-insel and Mittelstrasse 43
 Experimental Animal Center (EAC), Murtenstrasse 31
 Institute of Complementary and Integrative Medicine (IKIM), Freiburgstrasse 46 & Fabrikstrasse 8
 Institute for Infectious Diseases (IFIK), Friedbühlstrasse 51
 Institute of Forensic Medicine, Murtenstrasse 26
 Institute of Tissue Medicine and Pathology (IGMP), Murtenstrasse 31
 Institute of Pharmacology, Inselspital, INO-F
 Learning Center, Murtenstrasse 17
 Neurotec, sitem-insel
 Institute of Dental Medicine zmk, Freiburgstrasse 7
 Swiss Institute for Translational and Entrepreneurial Medicine (sitem), sitem-insel
 Translational Imaging Center (TIC), sitem-insel
 University Cancer Center(UCI), Freiburgstrasse 10
 University Neurocenter, sitem-insel
 PBL-Tutorial Rooms, Effingerhaus 55

Teaching Facilities

Effingerhaus 55
 UniAlhambra
 UniZiegler

UPD

Universitäre Psychiatrische Dienste, Bolligenstrasse 111



Dean's Office



Prof. Claudio L. A. Bassetti
Dean



Dr. Lukas Stalder
Head of the Dean's Office

Dean's Office Administration Teaching and Research



Dr. Marcel Wullschleger
Head of the Dean's Office
Administration Teaching
and Research



Dr. Peter Frey
Project Management
Teaching Capacities



Pia Jäggi
Finances



Mirjeta Murina
Assistant to the Head
of the Dean's Office /
Administration



Marc Oboussier
IT Service Manager



Nicole Peter
Quality Manager



Nadine Probst
Course Evaluation,
Teaching Capacities



Dr. Valentina Rossetti
Coordinator Research /
Young Investigators



Kapilraj Sivalingam
IT-Support & Webmaster

General Secretariat



Dr. Eliza Isabaeva
Head of the General
Secretariat



Emilie Ballestraz
National and International
Relations Coordinator



Carmen Betschart
Assistant to the General
Secretariat



Romano Hönger
Assistant to the Dean



Dr. Roger Konrad
Communications Officer



Svea Lehmann
Gender Equality Coordinator



Rita Meyer
Appointments, habilitations



Isabelle Salzmänn
Dissertations, confirmations



José Schranz
Annual Report Officer



Franziska Studer
Dissertations, graduation
documents, graduation
ceremony

Successions Professorships



Tina Schubert
Head of Successions
Professorships



Gabriela Brügger
Successions



Sanche Schwab
Successions, IT assistance

Dean's Office of Student Affairs



Claudia Buser, M.Sc.
Head of Student Affairs



**Dr. med.
Gwendolyn Graf**
Study Coordinator 3rd –
6th Year, Deputy Head of
Student Affairs



Beatrice Ducret
1st Year Administration,
enrollment inquiries, top-
class sports & studies



Karin Erb
EKP administration,
Master Theses



Isabel Fahrni
Administration of 3rd year
lectures and seminars



Sarah Habegger
Student's Office,
Elective Year



Franziska Kolb
Administration 2nd Year,
SK1 and block courses



Alexandra Lehmann
Administration of elective
course SJ1/SJ2,
Master's lectures



Barbara Rechsteiner
1st Year Study Coordinator,
Administration of the
Master in Pharmacy



Anja Rügsegger
Assistant to the Dean of
Education and to the Head
of Student Affairs



**Franziska
Schmidhauser**
Administration PBL-Tutors



Dr. Sandra Trchsel
2nd Year Study Coordinator



Regula Walther
Clinical Skills Training and
3rd Year Courses



Daniela Wullemin
Administration Clerkships,
Courses 6th Year SK2

Education

In 2023, there was once again a lot of teaching and learning in our Faculty. I would particularly like to highlight the latest of our 6 Master's degree programs: For the first time, three students completed our Master's in Artificial Intelligence in Medicine this year. However, AI has an impact on our teaching as a whole and therefore on all our degree programs. This has been the subject of much discussion this year: Let us use our expertise in this field to face the upcoming changes in a positive and proactive way.

I was very pleased that almost at the same time as I took up my own new position as Dean of Education in the Faculty, the Inselspital Hospital's Department of Teaching and Research also established a Head of Teaching in the person of PD Dr. Yara Banz. The professionalization of these roles is a compelling sign of the importance of teaching. It is now up to us to justify the trust placed in us by the Faculty and the Hospital with concrete results. I would argue that a discreet fresh breeze is already blowing through the teaching committees of our Faculty, and hopefully many good developmental teaching projects will blossom in its wake.



PD Dr. Roman Hari
Dean of Education

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Medical Students Association of Bern
School of Human Medicine
School of Dental Medicine
Master of Science in Artificial Intelligence in Medicine
Master of Science in Biomedical Sciences
Master of Science in Biomedical Engineering
Bachelor and Master of Science Program in Pharmacy
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Prof. Dimitrios José Fotiadis

“...he delivers the full package.”
Student’s comment

Teacher of the Year Award - Bachelor Program

Structured, logical and comprehensible lectures, as well as his humorous, student-oriented and enthusiastic manner have led to Prof. Fotiadis winning the Teacher of the Year Award 2023 (Bachelor). This Prize is awarded annually by the Bachelor of Medicine students in Bern to honour excellent teaching.

Membrane proteins are his great passion. And this didn't remain hidden from his students for very long. They agreed on one thing: Regardless of whether they share his passion for GPCR's [G protein-coupled receptors] or not, Prof. Fotiadis manages to impart to them his logical, structured way of thinking. And they appreciate his well-designed, compact slides which are easy to understand and learn from. According to students' comments, he always makes an effort to interact with them during the lectures, welcoming questions and addressing the salient ones during the weekly recap lesson. He revealed that, although giving similar lectures every year, each year's cohort of students "positively astonish" him with fresh feedback and interesting questions he had not thought of before. He then goes through the literature to find answers. This dedication to knowledge and his students is recognized and highly valued in his lectures and courses. According to him, teaching should first and foremost be fun. Ideally, lectures are structured, pragmatic, to the point, logical and - most importantly - always tailored to his target audience. Learning requirements should be realistic and there ought to be sufficient time in the curriculum for self-study. Optimally, a lecture is a team effort between the teacher and the students, with both sides exchanging information with one another. As an example: during the pandemic, he introduced a discussion panel with a virologist where students could address important

issues and deepen their knowledge about virology in an interactive educational event. The students appreciate his well-prepared lectures, at the start of which he always makes sure that the microphone settings as well as the lighting in the room are optimal, and at the end of which there are no urgent questions left open.

Early on, Prof. Fotiadis was fascinated by microscopy. He has always been a very logical and structure-loving person. That's probably why he studied molecular biology at the University of Basel, where he completed a PhD in biochemistry and then a habilitation in biophysics at the Biozentrum. In his early career, he did research in Seattle (USA), where he met one of his mentors: Krzysztof Palczewski, known for his research on Rhodopsin. He then came to Bern to take up a tenure-track professorship in membrane transport proteins. All in all, Prof. Fotiadis is a knowledge-seeking person. After some years of research in one area, he generally likes to turn to new topics. As of now, he is excited about the new electron microscope in Bern. In his office, there are numerous 3D prints and molecule models on the shelves giving a hint about his current research projects. He plans to conduct research in structure-based drug design as well as virology, in collaboration with Vetsuisse. Even in his spare time he is eager to learn. Currently, he likes to spend cozy Sundays reading about ancient cultures – especially in art history. He is described as a very active person who likes, or even needs, new challenges.

The students in Bern are glad to have committed teachers like him and congratulate him on winning the award.



Prof. Alessandro Lugli

“I use the art of storytelling to facilitate the memory process. Once emotions are evoked, memory is easier.”
Prof. Alessandro Lugli

Teacher of the Year Award - Master Program

Have you ever sat in a lecture and felt like you were following a plot in a movie? The fourth-year medical students in their EKP (clinical practice internship) semester did – not just once, but twice in a row. How and why this occurred is down to one person: Prof. Alessandro Lugli.

The successful chief pathologist, specializing in gastrointestinal pathology, had been giving these lectures for years as “just another normal lecture.” But last year was different. He wanted to upgrade and transform his lectures on tumors, polyps and inflammation of the lower gastrointestinal tract. He gave a lot of thought to how he could achieve this transformation before realizing that the solution was right in front of him. If there is one particular thing he is good at, besides pathology then it's storytelling and screenplay writing.

For eight years, Prof. Lugli has been developing this hobby. In his spare time, he practices writing scripts and reads a lot about films, their making and storytelling. His library even has books whose topics range from history - especially Napoleon - to screenplays. His practice involves watching films - anywhere from three to twelve a week. In pathology, you also learn by examining as many specimens as possible. He has applied this to his hobby as well. Following the motto: “one thing can help you do another thing better,” he used his hobby to turn his lectures into two narratives called “Through the Storm I and II,” featuring Kate and John Stur - two siblings with gastrointestinal symptoms and who are incredibly difficult to convince they should get them checked out. As he took the students through these two stories, he made sure the relevant slides were explained and available for download. His hope was to use the art

of storytelling to facilitate the memory process. Once emotions are evoked, memory is easier. He applied the basic rules of storytelling, so then, not much could go wrong. There had been some practice with an audience in his work breaks at the Institute of Tissue Medicine and Pathology. And then his big day came - and he delivered. After his lectures, many of the students nominated him for the Teacher of the Year Award, which has the Category “Master” for the first time. And he promptly won it.

Prof. Lugli completed his further education in a triangle: medical studies in Zurich, doctorate in Bern and habilitation in Basel. He is a very visual person - he thinks in images - and therefore knew, early on in his studies, which specialties he could imagine going into: Dermatology, Gastroenterology or Pathology. With gastrointestinal pathology, he combined two of his favorites. He describes the core part of his job as helping the patient with images, concentrating on the important aspects and transferring this information to the treating physician in order to optimize patient management and outcome. In recent years, to facilitate and improve the visual evaluation of histological specimens, he even developed the “Pathojet” I: an ergonomic chair with a cockpit-like computer station. All this shows that he is very innovative and engaged in his job as well as in teaching. For him, the essential part of a university is the students - without them, it wouldn't be one. For that reason, he wants to provide the best lectures possible for the university and the students. The aim is to let students take something positive away from his lectures as well as a good learning experience. A good teacher should prepare his students for their future everyday life by not losing sight of the wood for the trees. The effort he puts into his teaching is highly appreciated.

The Vice-Deans Pass the Baton to the Dean of Education

In February 2023, PD Dr. med. Roman Hari assumed his new role as Dean of Education. The creation of the new position of Dean of Education was a milestone for the Faculty. It combines the positions of Vice-Dean of Bachelor Studies with that of Vice-Dean of Master Studies and signals the move from a "militia" system to increasing professionalization of the Dean's Office. Due to the complex curricula in medicine and the numerous interfaces within the area of teaching, the roles of the two Vice-Deans, Prof. Dimitrios Fotiadis and Prof. Aristomenis Exadaktylos, were very demanding. To benefit from their wealth of experience and, not least, to pay tribute to their achievements, Roman Hari interviewed his two predecessors at the handover.



PD Dr. Roman Hari, MMD
Dean of Education

Hari: Reflecting on your terms as Vice-Dean of Bachelor Studies and Vice-Dean of Master Studies, what were the particular challenges during these periods, and how did you and the Faculty respond?

Fotiadis: When problems arise, it's a challenge. These situations are never black or white. That's why it's important to always strive for the best possible solution and to make compromises. Coordinating teaching and involving numerous committees and stakeholders has also been a challenge. That is why we are committed to reducing complexity and improving efficiency as part of Strategy 2030.

Exadaktylos: The pandemic-related restrictions that accelerated the digitalization of teaching were certainly a particular challenge. But the increase in the number of students in Bern was also a challenge. We are living in a time of great change in medical education. It was great to be able to actively support this.

Hari: What goals have you achieved that make you particularly proud?

Exadaktylos: I am very proud of our team, which has been able to maintain and even improve the high level of student education in the face of adversity. I am also proud that we have been able to recruit an excellent Dean of Education in you.

Fotiadis: I would even go one step further: that we were able to create the position of Dean of Education in the Faculty at all. I am also pleased that we were able to successfully address several specific student concerns.

Hari: What is most memorable about this position for you personally?

Fotiadis: The contact with my colleagues in the Dean's Office, the teaching committees and, of course, the students, including the members of the Local Student Association of Bernese Medical Students was enriching for me and will remain a very positive memory.

Exadaktylos: Almost 30 years after my own state exam, my time as Vice-Dean of Master Studies took me back to that wonderful and formative time. I'm very grateful for that.

Hari: The merger of the two Vice-Deans of Studies into the new position of Dean of Education is an important step for the Faculty. Why do you think this is the right thing to do?

Exadaktylos: It streamlines leadership and consolidates our strategic approach to education. This new structure allows for quicker decision-making and more cohesive planning, ensuring that our educational vision and execution are perfectly aligned to prepare our students for the medical challenges of the future.

Fotiadis: As I mentioned earlier, the Faculty is striving to reduce the complexity of the teaching activities and optimize efficiency. This is part of Strategy 2030. The introduction of the new position of Dean of Education moves us away from the "militia" system. Compared to us Vice-Deans, you can focus more on this field and spend more time optimizing it.

"The new position of Dean of Education will streamline leadership and consolidate our strategic approach to medical education."

Prof. Aristomenis Exadaktylos



Prof. Aristomenis Exadaktylos
Vice-Dean of Master Studies

Hari: Let's look at the present and the future: What challenges do you see facing medical education today? What opportunities should be seized?

Fotiadis: It will be a challenge to maintain the high quality of education while keeping pace with modern developments. New current topics such as digitalization and planetary health must be integrated into the curriculum.

Exadaktylos: I absolutely agree with that. The major challenge is keeping the curriculum dynamic and relevant in the face of rapid scientific advancement. Embracing interprofessional education and fostering a strong foundation in medical informatics are crucial opportunities for us. Adapting to the evolving landscape of medicine, including telemedicine and personalized healthcare can transform our students into future-ready physicians.

Hari: What would you like to give me along the way? Or to put it another way: What superpower would be most useful to me as Dean of Education?

Fotiadis: I think it is important to remain calm, listen to the students' concerns, and respond to them. Above all, communication should be maintained with the colleagues involved.

Exadaktylos: If I could give you a superpower, it would be the ability to foresee the future of healthcare. With it, you could tailor our education programs to preemptively meet the needs of healthcare systems and patient care. This foresight would be invaluable in continuously adapting our teaching strategies to the ever-changing field of medicine.



Prof. Dimitrios Fotiadis
Vice-Dean of Bachelor Studies

50 Years of the IML: Interview with Prof. Sissel Guttormsen



Fascinated by the variety of the subject of medicine and the practical skills that it imparts: Prof. Sissel Guttormsen, director of the IML since 2005. © zvg

The Institute for Medical Education (IML) at the University of Bern is over 50 years old, founded in 1971. As a national center of expertise, it carries out research on medical education and contributes to strengthen the quality of medical education internationally. An interview with its director, Sissel Guttormsen.

Prof. Guttormsen, the IML conducts research on medical education, cooperate in national and international research projects, and offers a range of services that support the quality of education. What was the background of the institute's formation at the beginning of the seventies?

Medicine had long been taught in Switzerland in the traditional classroom format. In the early sixties, however, a group of young doctors in Bern came to the conclusion that this approach no longer met modern requirements. They were inspired by the developments in the USA, such as 'block teaching' and bedside teaching – i.e. group teaching at the patient's sickbed. Their initiatives met considerable resistance among the older professors, who feared a loss of their academic freedom. Thanks to the tireless efforts of many individuals, a Bernese reform plan for the study of medicine was developed at the national level and was subsequently implemented. This led to the founding of the forerunner of the IML, the Institute for Education and Examination Research, or IAE, in 1971. As an institute with a professor specifically for research and development into innovative teaching methods as well as the analysis of exams, it was at the time a novelty throughout Europe. Today, similar institutes are commonplace.

What makes medical education so special that – unlike other scientific subjects – it needs to have its own university institute?

The education and training which is required in the field of medicine is unique in terms of its complexity. On the one hand, it has to impart an ever-increasing amount of basic and specialist medical knowledge. On the other hand, the subject matter differs greatly between the specialist fields – such as surgery and psychiatry, for instance. One of the things that I find particularly interesting is that medicine is also requires a lot of practical skills. It is a professional training with an exceptionally high quality assurance requirement. It may be the case that only the training of airline pilots is stricter. And you can certainly imagine what can go wrong in either of these fields if the professionals involved are not masters of their brief. That is why a lot more emphasis is now placed on different competencies, i.e. you need to not only master the theory, but also to practice it in its entirety.

Can you give an example?

In addition to the various manual and technical skills in the different patient settings, it also means excellent communication skills. Healthcare practitioners need to be able to talk with their patient in a patient-centred way: creating trust, implementing shared decisions, and informing them effectively and understandably, all this can be learned. Doctors used to 'call all the shots', but in today's world of medicine, we work in a more patient-centered way and decisions are made co-operatively with the patients. It is also about specific situations, such as delivering bad news or dealing with aggression. There are communication models now available which provide doctors with guidance for these situations.

To what extent has IML been a leading driver of innovations in the study of medicine?

It has set a national precedent in both "bedside teaching" and "problem-based learning," in which the students themselves develop solutions to specific problems rather than just absorbing information. We have also been pioneers in the now widespread digitalisation processes: In my time, that is, since 2005, the entire examinations cycle has been digitized. Step by step, we have been moving away from paper exams to the full execution of the written exams on tablets – and for the Swiss Federal Examination (EP), realized first time on tablets in 2022. The practical part of the EP has been supported digitally since 2015. I am proud of this innovation and the teamwork that we put in to achieve it.

In what other ways is medical education being influenced by the digitalisation process?

Students now learn almost paperless; today, very few textbooks are used. I find it fascinating that all the theoretical and practical knowledge for the study of medicine can be taught with support of digital learning media. It is not necessary to practice everything directly on patients from the very start – that would not be ethical either. It is, however, necessary to strengthen practical skills over time through the direct interactions with the patients. The IML has always offered its learning media at the cutting edge of technology, which originally started with audio-visual analogue systems. The tried-and-tested tools and learning media that we use are developed especially for teaching in Bern, but are also open to the public and used internationally.

Will everything therefore become easier thanks to the new technology?

No, because the challenges are always changing. The problem is that although the curriculum is full, new subjects continue to emerge and demand a place in the teaching, such as precision medicine and gender medicine – which, in the latter case, means the discipline which researches and teaches that, for instance, a heart attack can occur with completely different symptoms in women than it does in men. Needs are but forward to introduce such new subjects into the curriculum all the time, although it is proving very difficult to do.

How are you dealing with this?

It is not easy to rearrange a curriculum that has been developed over the course of several decades. However, we can make improvements to the education itself, such as by better supporting students with their self-directed-learning or by increasing their levels of information literacy: How should I choose the information that I actually need from the enormous amount of information which is available? How should I learn? At the moment, however, this is given too little room in the curriculum. This means that we need to constantly come up with new ideas to be able to respond to the new developments.

What are the characteristics of good teaching in the field of medicine?

A dynamic form of teaching that provides state-of-the-art expertise and at which faculties specifically promote expertise in teaching. In addition to the specialist expertise, the teaching skills of the lecturers are very important. This is supported by "Faculty Development Programs" for skills in teaching. We conduct research and develop concepts to support teachers in their everyday clinical work. We also participate in developing a "Teaching Curriculum" for them with various courses aiming at raising the quality of teaching. Not every doctor is born for "bedside teaching," and not every doctor knows how to lead group work. I would like to see this become a natural continuing education activity for medical teachers, as it is mandatory to attend courses for continuous professional development.

Is there anything that you would like to convey specifically?

While technology and efficiency are important to me, I also want to improve something else in the teaching: The sense of humanity in medicine. Healthcare professionals need to be encouraged to recognize their own limits, much in the same ways as they need to recognize their patients' personal needs, and learn how to manage both. In cooperation with clinicians, we carry out various projects, in the field of palliative care, "Compassion Training" and "Communicating about spirituality," for example. These projects address questions like "what is the point of life if I can't live it fully?" There should be room for emotions – and that means both for the patients and the healthcare professionals. This is another area in which we can achieve a great deal with good teaching and conscious role modeling.

What are your wishes for the future?

That we continue to monitor the divers needs and challenges in medical education, consistently providing good and sensible solutions, which are also applicable. To achieve this, we must stay in touch with our foundations and fulfill our quality aspirations. We also want to be a good employer and attract and retain new employees for our fascinating and important work.

This interview was conducted by Nathalie Matter from the University of Bern Communication and Marketing Office and was first published in the University's online magazine uniAKTUELL on July 20, 2023.



Association of the Lecturers of the Faculty of Medicine

The VDM (Verein der Dozierenden der Medizinischen Fakultät) represents the interests of the academic mid-level staff in the areas of teaching, research and service, and promotes contact and the exchange of information among its members. It is committed to fostering young academics and equal opportunities of women and men.

All lecturers and professors of the Faculty of Medicine of Bern who are not permanent members of the Faculty may become members of the VDM. The association is financed by the optional contributions of its members.

Members of the Board in 2023 were:

- Prof. Uyen Huynh-Do, President
- Prof. Jean-Marc Nuoffer, Vice-President
- Prof. Jan Kucera, Actuary
- Prof. Marcel Arnold
- Prof. Gabriela Bärlocher, until Nov 23
- Prof. Manuela Funke-Chambour
- Prof. Florian Schönhoff
- Prof. Mario Tschan

Members of the VDM are also permanent VDM representatives in important committees such as the Interfaculty Equal Opportunity Commission (Prof. Manuela Funke-Chambour), the Habilitation Commission (Prof. Z. Stanga) or the Strategy and Promotion Commission (Prof. M. Arnold).

The current VDM President, Prof. U. Huynh-Do, also serves in the following faculty working groups: Communication, Research, Professionalization of the Dean's Office, and New leadership models. The VDM Vice President, Prof. J.M. Nuoffer is permanent member of the Department of Finance of the Faculty.

In 2023, VDM representatives were delegated to 10 structural and succession commissions.

The yearly VDM general assembly took place on August 24, 2023, with Prof. Thomas Geiser, Director Teaching and Research as guest speaker.



USI - a New Collaboration across Switzerland Comes to Life

The first students from Ticino began their bachelor studies in the new USI-UniBE Track in Bern in the fall semester of 2023. The Faculty of Medicine is pleased to see this strategic milestone in national partnership in medical education become a reality.

The 2023 edition of the September event for new bachelor students in Human and Dental Medicine was a special one. The Faculty of Medicine welcomed the 15 students from the Università della Svizzera italiana USI. They were the first to start their studies in the framework of the new collaboration agreement between the USI Faculty of Biomedical Sciences and the Faculty of Medicine at the University of Bern, the so-called USI-UniBE Track. Prof. Andrea De Gottardi, gastroenterologist and full professor at USI, traveled to Bern to welcome these "pioneers" in Bern.

Medicine at the Università della Svizzera Italiana
The USI is one of the 12 certified public universities in Switzerland and is organized in six faculties. One is the Faculty of Biomedical Sciences located at the Lugano campus. Two affiliated institutions, the Institute for Research in Biomedicine and the Institute of Oncology Research, are in Bellinzona. The Faculty of Biomedical Sciences was established in 2014 with the goal of helping to increase the number of physicians trained in Switzerland. It offers a bachelor's degree program with limited admission in collaboration with the universities of Bern and Basel. Since 2020, it also offers a Master of Medicine.

The new USI-UniBE Track

The USI-UniBE Track is a cooperation agreement between the USI and the University of Bern for the education of USI students in the bachelor's degree program in Human Medicine. For this purpose, the

University of Bern provides 15 study places in Bern. However, the students remain enrolled at the USI. The USI guarantees students who successfully complete the bachelor's degree program at the University of Bern a place in the Master in Medicine program at the USI. However, students are not automatically guaranteed a place in a master's degree program at the University of Bern's Faculty of Medicine.



USI Prof. Andrea De Gottardi welcomes the new bachelor students in the Uni Alhambra auditorium.



fsmb Executive Board at the end of 2023

Medical Students Association of Bern

The fsmb (Fachschaft Medizin der Universität Bern)

- is created by students for students
- provides a link between the students and the faculty
- contributes to the optimization of studies
- has spokespersons in all study years, who are contact persons for the students and represent the academic year in the board of the student committee
- acts as a bundled voice for the interests of medical students in Bern: The EB takes up concerns and inputs from the students, reflects on possible solutions and approaches the responsible holders of office, open for dialogue and cooperation.
- represents the interests of medical students in Bern in various commissions of the medical faculty (representation and right of code-termination)
- offers several assistance services and events: Clinical language courses for French and Italian, ski and sports weekends, stethoscope sales, the "Medifest," a welcome aperitif for master students from Fribourg, fondue dinner, and further social events (see homepage)
- 's board is elected at the annual general meeting, interested students are welcome!

Statement on 2023

fsmb experienced a dynamic year in 2023. During the fall semester, the capacity for new medical student enrolment was once again expanded, resulting in the fsmb surpassing a milestone of 2000 members for the first time. This expansion underscores our established prominence as a significant player among student associations, both locally and nationally.

Alongside its membership growth, fsmb witnessed advancements in its operations. Existing services were refined, while new initiatives were pursued and enhancement in the overall professionalism of the Executive Board (EB) was achieved. This expansion in scope was made possible by additional volunteers, leading to an extended EB comprising 45 [sic!] members.

However, as with any growth, new challenges emerged. For instance, the expanded EB faced heightened demands for coordination and organization to maintain efficiency and effectiveness. Similarly, certain services encountered limitations in scalability; while acquiring more stethoscopes is straightforward, organizing social events for a sizable membership base proved to be a formidable task. The approach of the EB in addressing these challenges remains to be seen, but one thing is certain: 2024 promises to be equally dynamic and exciting.

Laurin Largiadèr, President



Paul Ehrlich Contest



Second participation in 2023

Bern sent a delegation to the Paul Ehrlich Contest (PEC) for the second time. The PEC is a competition among German-speaking medical faculties, respectively their students, organized annually by the Charité in Berlin.

To improve the results of the Bern delegation, the fsmb's PEC team implemented a new initiative that involves weekly open self-organized training sessions where various PEC disciplines are practiced.

New team for 2024

As a second measure, the fsmb's PEC team organized the contest in a small fun format here in Bern for the first time. The aim was to raise awareness of the contest, recruit new students for the PEC team 2024 and to give them the chance to gain experience.

Watch the video of this memorable event in November 2023:



Swiss Medical Students Convention 23

In 2023, Bern was once again chosen to host the Swiss Medical Students' Convention (SMSC), this time focusing on "Precision Medicine." The event was a resounding success, attributed in no small part to the collaboration with strong local partners in the field, who played a crucial role in creating workshops, lectures, and panel discussions. Over 500 medical students from across Switzerland were welcomed in Bern over a weekend, making it the largest Swiss Medical Students Convention ever held. The entire experience was complemented by an extensive accompanying program, culminating in a party on the Gurten.

A heartfelt thankyou to everyone involved. The event was organized by members of fsmb.



SMSC group photo

"Dini Depp Docs" Podcast

The fsmb is a proud supporter of the new project "Dini Depp Docs" by two medical students from Bern. In their podcast, they discuss mistakes made, the resulting learnings, and the general culture surrounding errors. Each episode also includes an in-depth exploration of specific content, featuring regular appearances by experts. In addition to the podcast, they organize meetings for students providing a platform to directly share and exchange experiences about mistakes. "Dini Depp Docs" is available on Apple Podcasts and Spotify.



Victor and Sophia with Andrea Leibold from the foundation for patient safety



School of Human Medicine

For over two centuries, the Faculty of Medicine in Bern has been a nurturing ground for future physicians and medical doctors. Presently, it proudly stands as the second-largest institution in Switzerland dedicated to the education of medical professionals.

Profile

- Emphasis on high practical relevance and patient-oriented training methodologies.
- In 2023, 15 students started their Bachelor's program at the Faculty of Medicine in Bern while officially enrolled at the Università della Svizzera Italiana (USI).
- The Bachelor's program provides students with a robust foundation in pre-clinical and clinical concepts, ensuring a comprehensive understanding.
- The Master's program offers subject-specific and practice-oriented study models, with a strong focus on bedside teaching in hospitals and general practices.
- Comprehensive training opportunities at the Inselspital, covering a wide array of disciplines.
- Learning objectives aligned with PROFILES, serving as the foundation for the Federal Licensing Examination.

Figures

Bachelor of Medicine: number of students 2023

Year 1 (human medicine and dentistry)	411
+ USI students	15
Year 2 (human medicine and dentistry)	380
Year 3 (human medicine only)	295

Master of Medicine: number of students 2023

Year 4	308
Year 5	330
Year 6	306

Federal Licensing Examination in 2023

Clinical Knowledge:	Clinical Skills:
235 candidates	235 candidates
235 passed	232 passed
0 failed	3 failed
100% pass rate	98.7% pass rate



School of Human Medicine
Murtenstrasse 11, 3007 Bern



School of Dental Medicine

The zmk bern School of Dental Medicine distinguishes itself from other dental schools by offering an integrated, interdisciplinary synoptic program rooted in problem-based learning and clinical case studies. The emphasis on evidence-based treatment concepts stands as a testament to the program's commitment to delivering top-tier education. Aligned with the Swiss national curriculum for dental medicine, both the Bachelor and Master programs underwent accreditation in December 2018 by the Rectors' Conference of Swiss Universities, following the endorsement of the Swiss Center of Accreditation and Quality Assurance in Higher Education, in accordance with the Bologna process.

The Bachelor's studies in dental medicine (B Dent Med) encompass the initial two years alongside Human Medicine studies, supplemented by a year at zmk bern focusing on dedicated dental propaedeutic courses culminating in a final examination. However, attainment of the B Dent Med degree does not confer eligibility for obtaining the Swiss dental license.

Within the framework of the Master program (M Dent Med), aspiring candidates undergo comprehensive evaluations assessing their capacity for proficiently executing interdisciplinary treatments on patients, along with demonstrating theoretical prowess and analytical acumen. The capstone of the program involves the Master thesis, which can take the form of an:

- Academic discourse on a dentistry-related topic
- Elaborate case study integrating systematic literature review
- Documentation of academic research (e.g., clinical trial protocol)
- Fully developed e-learning case.

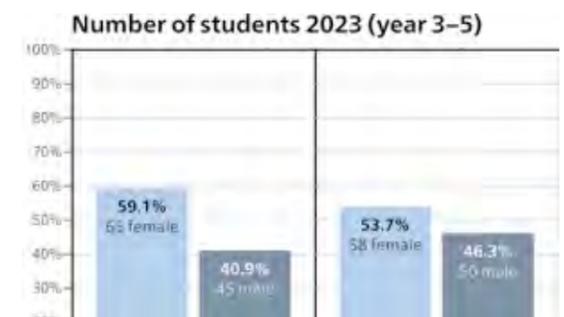
Swiss national examination in dental medicine

Upon achieving the M Dent Med degree, candidates are required to undertake the Swiss National Examination in dental medicine to qualify for attaining the Swiss dental license. Since 2011, this examination has been standardized and comprises a nationwide, simultaneous administration of a multiple-choice test conducted in German and French, the two primary languages.

Upon successful completion of both the M Dent Med degree and the Swiss National Examination in dental medicine, graduates become eligible to apply for a dental license within any of the Swiss cantons, allowing them to practice independently as dentists. Notably, the Swiss dental degree holds recognition as equivalent within the European Union. Moreover, it serves as a prerequisite for pursuing formal postgraduate training in one of the acknowledged federal dental specialties.

Graduates 2023 at the zmk bern

In 2023, 34 candidates (25 women, 9 men) successfully passed the Master exam. The numbers of undergraduate students at the zmk bern (both bachelor and master studies) as well as the gender ratios are listed in the figure.



School of Dental Medicine
Freiburgstrasse 7, 3010 Bern





Master of Science in Artificial Intelligence in Medicine

Master's program Artificial Intelligence in Medicine at a glance:

- Interdisciplinary two-year full-time program in English
- Admission with BSc in a variety of STEM subjects
- Compatible with up to 40% part-time work
- Rotations in university hospital clinics and centers to be instructed in medical specialities
- Fundamental and applied courses in artificial intelligence (AI)
- Master's thesis project (one semester)
- Strong ties to industry and hospitals

Within the frame of the program, students gain solid knowledge in AI and machine learning and get acquainted with basic concepts of biology and medicine. They regularly dive deeply into clinical procedures and routines.

The MSc thesis project is conducted in collaboration with distinguished physicians from Insel Gruppe (Bern University Hospital), internationally acknowledged AI researchers from the University of Bern and leading Swiss and international companies.

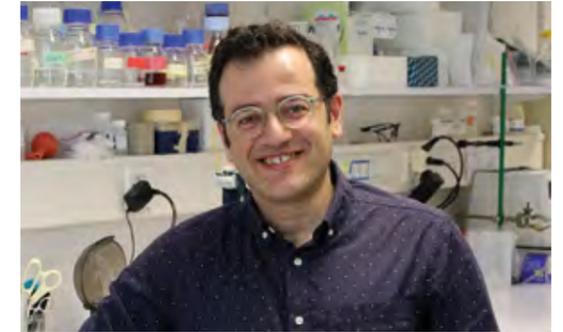
Connecting continents: a visual journey through the nationalities in our master's program

Our master's program in Artificial Intelligence in Medicine attracts students from various corners of the globe, offering a spectrum of perspectives, backgrounds, and expertise. In fact, a remarkable 52% of our students are international, it is this variety that enriches our program.



New Course: Omics for non-biologists

This course was developed in response to academia and industry's pressing demand for AI specialists proficient in Omics data analysis. This program is enriched by eight leading researchers in the field and four dedicated assistants who have constructed the practical and theoretical components of the course. Students gain hands-on skills for real-world applications in disease research, culminating in a project that integrates Omics and AI to address complex scientific questions. Graduates are well-prepared to bridge the gap between AI and Omics research, building pipelines and



PD Dr. Ali Hashemi Gheinani

Our 2023 freshers

This year, we welcomed 17 new students to our MSc AIM. They actively participated in a 5-day preparation course designed to refresh key concepts crucial for the successful development of their studies. To conclude this week, we organized an apéro, which was the perfect opportunity to meet the program directors and integrate with fellow classmates.

We wish all of our new master's students an exciting and fulfilling journey throughout their master's.

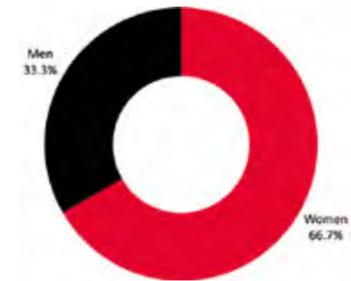


Our 2023 freshers

Interesting facts about our master's program

While we are confident that this won't come as a surprise in the future, we are pleased to share the high participation of women in this program, constituting 2/3 of all our students.

This is truly something to be proud of, and we encourage even more women to partake in this captivating field of knowledge.



Gender distribution in our program

Our first three graduates

We are proud to announce the graduation of our first three students from the master's program in Artificial Intelligence in Medicine (MSc AIM). They showed enthusiasm and commitment since the beginning of their studies, and this is reflected in the projects they have undertaken as part of their master's theses. They have applied deep learning, a prominent branch of AI, to various applications. These include the development of tools for viewing Whole Slide Images in Pathology, the detection of Diabetic Retinopathy in Infrared Fundus Images in Ophthalmology, and the denoising of Monte Carlo dose distributions for Radiation Therapy.

Let us congratulate them for this significant achievement!



Our first graduates, from left to right: Raphael Joost, Yanis Schärer and Chris Rüttiman

Master of Science in Artificial Intelligence in Medicine
Murtenstrasse 50, 3008 Bern





Master of Science in Biomedical Sciences

Swiss Academic Institutions and Biomedical Research Companies recruiting young biomedical scientists are faced with a considerable shortage of local candidates. With the goal to ease this situation, educational opportunities in the life sciences and biomedicine have multiplied in recent years.

Established in 2006, the harmonized curriculum remains unique in Switzerland. It is focused on exposing the students to a translational teaching environment involving natural, medical and pharmaceutical sciences as well as offering insights into clinical research. Students acquire a systematic knowledge of the pathophysiology of all organ systems with lectures given by basic research departments, the university hospital, and pharmaceutical companies. Theoretical knowledge is complemented by introduction to state-of-the-art techniques used in biomedical research with the Master Thesis project conducted in a laboratory of choice and optionally involving work with industry. Based on this curriculum design, graduates in biomedical sciences gain an exquisite and broad portfolio of skills at the interface between basic sciences and clinical research. This enables them to engage successfully in basic, translational and clinical research including emerging new research fields in human medicine such as artificial intelligence and precision medicine. Upon completion of their studies with us this year we again had several of our students going on to PhD projects across the Faculty of Medicine and positions in the biotech industry in Switzerland.

Profile

- Direct admission with a BSc in Biomedical Sciences of the University of Fribourg or a Bachelor in Human and Dental Medicine
- 1 1/2 year full time study program
- Human pathophysiology is lectured by basic researchers and clinicians
- Courses include practical work in research laboratories and training in modern experimental techniques
- Two laboratory internships (3 weeks each) in research fields chosen by the students allow for deeper insights into research areas of interest
- Elective studies offered include introductions to clinical studies, attendance of the Labortierkursekurs 1 (LTK1, completed with a diploma), and a course in career planning
- Opportunities for conducting the master thesis in the industry
- Broad portfolio of systematic knowledge and skills at the interface between basic sciences and clinical research
- Graduates are in high demand for doctoral positions in academia and for research positions in the industry

Figures

- Diplomas since 2011: 240
- Presently enrolled students: 21
- Gender (m/f): 1/20
- 10 biomedical sciences graduated in 2023

New Director of Studies Biomedical Sciences

Since the fall semester of 2023, Prof. Christian Soeller has taken over as Director of Studies from Prof. Stephan Rohr, the founder of the study program.



Prof. Christian Soeller

CSL Behring Prize 2023

The CSL Behring Prize 2023 for the best Master's Degrees were awarded to:

- 1st Place: Fuhrer Janine Andrea 5.8
- 2nd Place: Hörtensteiner Ladina 5.6
- 3rd Place: Fasel Nadia 5.58



CSL Behring



At the graduation ceremony 2023: Matilde Strozzi, Lisa Pedrotti, Nora Joseph, Ladina Hörtensteiner, Selina Hanselmann, Janine Fuhrer, Nadia Fasel, Rosemary Abdoul Ahad (from left to right)

Alumni Biomedical Science Prize 2023

The prize for the best Master Thesis 2023 sponsored by the Alumni Organization went to Nadia Fasel for her study on "Identification of microbiota-specific T cell receptors and their antigens for the study of gut-resident immunological memory."

The work was conducted from Dr. rer. nat. Jakob Zimmermann, Universitätsklinik für Viszerale Chirurgie und Medizin and Co-Supervisor: Prof. Dr. med. Andrew Macpherson



Nadia Fasel, Alumni Prize

Master Program in Biomedical Sciences
Bühlplatz 5, 3012 Bern





Biomedical Engineering graduates of 2023 at the graduation ceremony of the Faculty of Medicine

Master of Science in Biomedical Engineering

The master's program in biomedical engineering is a full-time study program offered in cooperation with the Bern University of Applied Sciences. It aims at training multi-disciplinary engineers to deliver scientifically-founded, sustainable and cost-effective solutions for biomedical problems in academia, medical care and industry.

Curriculum

The full-time study program takes 4 semesters, which corresponds to 120 ECTS. It can be extended to a maximum of 6 semesters. When a student decides to complete the studies in parallel to a part-time professional occupation, further extension is possible on request. To support regular part-time work, mandatory courses take place (with rare exceptions) on only 3 days per week. After the first semester with mostly mandatory courses, which lay the foundation for the specialized courses in the upcoming semesters, students select one of the focus areas ("Major Modules") Biomechanics, Electronic Implants, or Image-Guided Therapy. In the last semester, the program is completed by a master's thesis of 30 ECTS.

Profile

- Admission with a BSc (FH/HES/SUP/Uni/ETH)
- International program in English
- Affiliated to a leading university hospital (Inselspital)
- Two-year full-time program but compatible with a 40% quota of working hours
- Oriented towards clinical applications
- Attractive, central location
- Excellent career perspectives

Figures

- 157 students were enrolled in fall semester 2023
- 59 regular and 6 exchange or guest students joined in 2023
- 27% of new students are female
- 32 biomedical engineers graduated over the year 2023



Master of Science in Biomedical Engineering
Freiburgstrasse 3
3010 Bern

Biomedical Engineering Day

On May 12, 2023 the 14th Biomedical Engineering Day opened its doors to more than 350 interested visitors. This annual networking event is a platform where Swiss MedTech companies as well as the BME research groups from the ARTORG Center and the Bern University of Applied Sciences (BFH) present themselves to interested students, researchers, and medical doctors. One highlight of the day was the successful live surgery by Dr. Michael Blumer, Department of Maxillo-Facial Surgery, University Hospital Bern (Inselspital). Illustrative explanations in the auditorium were given by Prof. Benoît Schaller, from the same department.



BME Day 2023: Discussion at a company booth

RMS Award 2023

In 2023, the RMS Award went to Florian Kessler for his outstanding grade point average (GPA) of 5.63/6.0. Each year, the Robert Mathys Stiftung (RMS), an independent service laboratory and research institute located in Bettlach, offers it to the BME student with the highest GPA. This year, the prize was awarded during the graduation ceremony of the Faculty of Medicine. Congratulations!



Award winner Florian Kessler with Prof. Marc Bohner (left) and program director Prof. Philippe Zysset

First Semester Information Event 2023

At end of the first semester, our students are expected to select one of the three specializations "Biomechanics," "Electronic Implants," or "Image-Guided Therapy." Moreover, they have to make their choices from a vast number of elective courses. To facilitate this task, we invite our first semester students every year in November to an event where they receive extensive information on the advanced part of the study program. Traditionally, the afternoon is concluded by an informal get-together with food and drinks and vivid discussions.



The Biomedical Engineering class of 2023

Master's thesis awards 2023

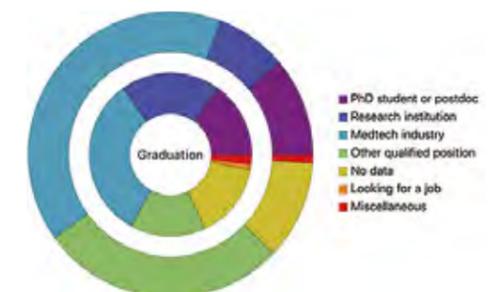
Every year at the BME Day, Swiss Engineering awards two prizes for the best master's theses in the fields of innovation and basic science, respectively. This year, Joël Fritschi received the innovation prize for his thesis entitled "Development and Optimization of a Time-of-Flight Mass Spectrometer for Non-Targeted Metabolomics." The basic science prize went to Cedric Rauber for his work on "Musculoskeletal Modeling of the Spine during Functional Activities in Patients with Adolescent Idiopathic Scoliosis." We congratulate the award winners!



Joël Fritschi (left) and Cedric Rauber received the 2023 BME master's thesis awards

Career paths of our Biomedical Engineering graduates

The inner and outer rings represent the activity shares after 1 and 5 years, respectively. Two thirds of the alumni work in biomedical engineering either in industry, research, or academia but the part in industry increases after 1 year. The share of PhD students or postdocs is approximately constant at 15-20%. After 5 years, about 25% of the alumni hold other qualified positions.



Profession after Graduation: Activity after 1 (inner circle) and 5 years (outer circle)



© Prof. Paola Luciani

Bachelor and Master of Science Program in Pharmacy

Profile

- Bifacultary study program with the Bachelor course in Pharmaceutical Sciences at the Natural Sciences Faculty and the Master course in Pharmacy at the Faculty of Medicine
- Bachelor years 1 and 2: Natural sciences (e.g. chemistry, physics, cell biology) and biomedical sciences (e.g. biochemistry, anatomy, physiology, microbiology, plant biology)
- Bachelor year 3: Pharmaceutical sciences (pharmaceutical technology, pharmaceutical chemistry, pharmaceutical biology, pharmacology, epidemiology, clinical chemistry, nutrition, biotechnology, quality management)
- Master year 1 (year 4): Diseases and pharmacotherapy, health promotion and disease prevention, the Swiss health system, scientific methodology; Master's thesis (6 months)
- Master year 2 (year 5): Clinical pharmacy and pharmaceutical care, clinical skills, triage and red flags, vaccination, prescription validation, communication training, business management, law, manufacturing of medicines in the public pharmacy, and other courses; Practical training in a public pharmacy (30 weeks)
- Upon completion of the Master of Science in Pharmacy, the Federal Exam in Pharmacy has to be passed to obtain the qualification to work as a pharmacist.
- In close collaboration between institutes of the Faculty of Medicine (most prominently the BIHAM), clinics of the Inselspital, and practicing pharmacists we aim at offering a high-quality, patient-oriented education of our future generations of pharmacists.

Successful Master's theses in Pharmacy

The year 4 pharmacy students performed their Master's theses during six months between January and August 2023. The Swiss Society of Industrial Pharmacists (GSIA) sponsored again a prize for an outstanding Master's thesis. The prize was presented by Dr. Hans Rudolf Keller, GSIA board member, to Jana Roth for her thesis "Characterization and development of a cellular assay to detect allergies" carried out at the Institute of Pharmacology and supervised by Prof. Thomas Kaufmann.



From left to right: Prof. Thomas Kaufmann, Jana Roth, Dr. Hans Rudolf Keller, Prof. Verena Schröder

Successful completion of the Master's degree and Federal Exams in Pharmacy

In summer 2023, all students successfully completed the second Master course in Pharmacy and received the degree Master of Science in Pharmacy. In September 2023, the second Federal Exams in Pharmacy took place in Bern, and 33 young pharmacists have achieved the federal diploma. Congratulations!

Prize from the Senior Citizen's University (Seniorenuniversität)

Master of Pharmacy Alumna Fabienne Dürr received a prestigious prize from the Senior Citizen's University Bern for her Master thesis entitled "Medication in the hospice setting." The prize was awarded at the Christmas celebration of the Senior Citizen's University in the presence of the rector Prof. Leumann.



First official diploma ceremony in March 2023

The official diploma ceremony of the entire Faculty of Medicine takes place every year in March. For the first time, Pharmacy was part of this celebration. The Rector Prof. Leumann acknowledged the first Pharmacy graduates who had successfully completed the Master in Pharmacy and Federal Exams in summer 2022.



New image video

In collaboration with the Medical Library, a video was compiled to advertise the Bachelor studies in Pharmaceutical Sciences and the Master studies in Pharmacy at the University of Bern. It highlights the exciting combination of natural and medical sciences, and year 5 students explain their passion for pharmacy. The video can be found here:



https://youtu.be/Zivoua0V9_c



PharmaBern

In September 2023, PharmaBern was launched. This initiative by Prof. Paola Luciani, Study Director for the Bachelor in Pharmaceutical Sciences, DCBP, provides a common platform for lecturers, researchers, and young academics involved in teaching and research in Pharmaceutical Sciences and Pharmacy, who are based at various institutes at the Faculties of Science and Medicine. PharmaBern aims at promoting scientific exchange, improving our visibility both internally and externally, and fostering young academics. The new PharmaBern colloquia series incl. apéro, that takes place once a month, is open to everyone and offers great networking opportunities.



Admin. Office Bachelor
Freiestrasse 3, 3012 Bern

Admin. Office Master
Murtenstrasse 11, 3008 Bern

Bachelor



Master





PhD Education

The GCB and GHS offer research-oriented curricula with a wide range of courses, including special workshops and practical courses tailored to the individual needs of PhD candidates. The emphasis is on high-quality training and support in research methods and study design to direct the candidates towards independent scientific work and enable them to assume scientific responsibility.

Profile of the Graduate School of Health Sciences GHS

The GHS offers a research-oriented-curricula on psychological and physiological factors that determine the health of individuals and groups in their social contexts and physical environments.

The requirement for the program is a master's degree in Psychology, Medicine, Biomedicine, Epidemiology, Sport Science, Social Sciences or other fields of research related to Health Sciences.

Depending on the field of research and on the amount of time invested in research, the candidates are assigned to one of the following expert committees (FKs):

- FK I: Individual Factors, Public Health and Methodologies for Health Sciences Research
- FK II: Neurosciences
- FK III: Clinical Sciences (50:50 model: patient-oriented research and clinical career).

Each candidate is supported by a thesis committee consisting of a thesis advisor (in some cases also a co-thesis advisor), co-referee and a member of an expert committee as mentor.

Graduates receive the following title:

- PhD in Health Sciences (specialist area e.g. Clinical Sciences).

Profile of the Graduate School of Cellular and Biomedical Sciences GCB

The GCB offers training in experimental research with state-of-the-art methods in molecular life sciences, biomedical sciences, and biomedical engineering. Research areas include Cell Biology, Biochemistry, Molecular Biology, Immunology, Genetics, Biomedical Sciences, Epidemiology, Tissue Engineering and Computer-Assisted Surgery.

There are currently six areas of specialization:

- Cutting-Edge Microscopy
- Stem Cell Research in Regenerative Medicine
- Cell Migration
- Tumor Biology
- Cardiovascular
- Neuroscience

The program requires a master's degree in Molecular Life Sciences, Biomedicine, Medicine, Biomedical Engineering, or a related field depending on the project.

There are five expert committees

- Biological Systems
- Biomedical Sciences
- Cell Biology
- Molecular Biology & Biochemistry
- Biomedical Engineering

Each candidate is supported by a thesis committee consisting of a supervisor, a co-advisor, and a member of an expert committee as a mentor. PhD in ... (specialist area according to Study rules).

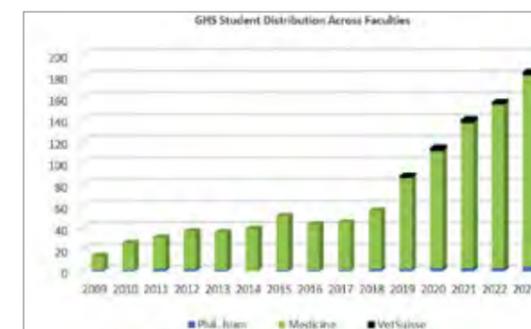
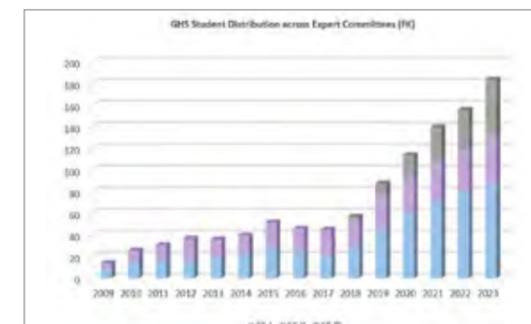
The curricula of the MD-PhD program for medical doctors focuses on basic sciences, but the PhD candidates can spend 20% of their time in the clinic.

Graduates receive one of the following titles from the University of Bern:

- MD, PhD (Doctor of Medicine and Philosophy)
- DDS, PhD (Doctor of Dentistry and Philosophy)

Highlights, important events at GHS

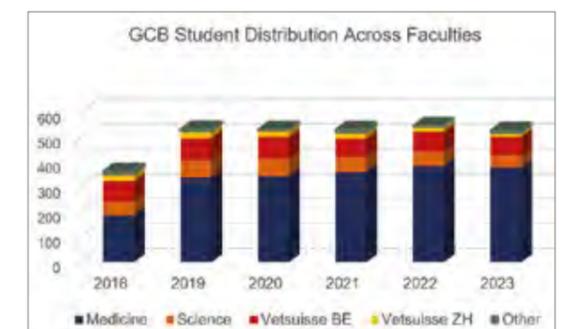
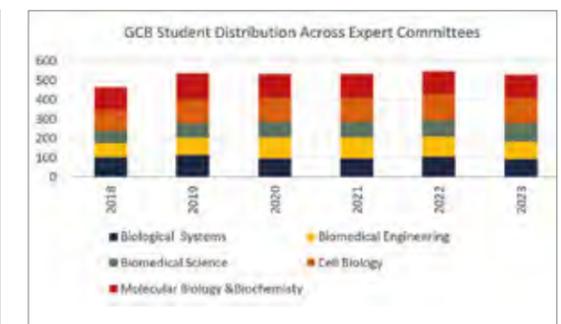
- Increased number of students from 156 to 184 (18% increase from 2022)
- From the end of 2018 – 2023 there was a growth of 223% in the number of students
- New GHS regulations into force on February 1st, 2023. With the new regulations the Vetsuisse faculty joins the GHS. Additionally, students with a master's degree from Universities of Applied Sciences will be able to enroll in the GHS
- Changes in the Steering Board Committee: Two representatives from the Vetsuisse Faculty joined the GHS: Prof. Salome Dürr and Prof. Adrian Steiner
- Welcomed six new Faculty of Medicine expert committee members and thanked three outgoing
- In 2023, the number of graduations reached a record number for GHS. We issued 32 diplomas - almost twice as many as in 2022!
- Two-days GHS Symposium at Studienzentrum Gerzensee was very successful (75 presentations of posters and talks)
- Publication of the fourth GHS Annual Report



GHS total number of students in 2023: 184 students (which includes 32 theses defended, 4 resignations and 50 new applications in 2023). 96 % of the GHS students are pursuing PhD degrees within the Faculty of Medicine.

Highlights, important events at GCB

- Admission Applications – there were 142 in 2023 compared to 157 in 2022.
- Prof. Dr. Rupert Bruckmaier, Vetsuisse Bern, handed over the presidency to Prof. Dr. Sebastian Leidel, Science Faculty during the GCB Symposium 2023.
- Fourteen new mentors joined the GCB expert committees, while two retired and three resigned
- The GCB Symposium 2023 was held in person for the first time since January 2020. The event was moved to a June date at the Uni von Roll, Fabrikstrasse 6 & 8, Bern. A record number of participants could be involved due to the additional space. There were 80 talks, 147 flash talks, and 165 posters.
- 48 MD, PhDs, four DDS, PhD and 37 DVM, PhD students were registered year end December 2023.
- The new GCB101 eLearning platform in ILIAS launched end of 2022. Over 600 members have used the platform since inception.



GCB total number of students in 2023: 547 registered, (which excludes 127 theses defended, accounts for discontinued and includes the 142 new applications in 2023)

Graduate Schools GCB & GHS
Mittelstrasse 43, 3012 Bern
www.gcb.unibe.ch & www.ghs.unibe.ch





sitem-insel School

Bringing Innovation to the Patient– by Connecting People

Operating under the umbrella of the Faculty of Medicine of the University of Bern, the sitem-insel School offers continuing education programs (MAS/DAS/CAS) and tailored courses to specialists in industry, hospitals, and academia in the fields of translational medicine, biomedical entrepreneurship, and regulatory affairs.

The sitem-insel School is located on the Insel Campus Bern and benefits from the close proximity to the University Hospital (Inselspital) and the University of Bern. Together with the sitem-insel Community, a wide variety of representatives from clinics, industry, and research interconnect at sitem-insel to innovate for the benefit of the patient. As a business, medical, and research platform, sitem-insel promotes innovation and collaboration among all partners and stakeholders.

We support individuals in their entrepreneurial and scientific endeavors, bridging the gap between clinical practice, research, and industry.

Members

- Dr. Christian Rosser, EMBA UZH, Director
- Prof. Dr. Rudolf Blankart, Professor of Regulatory Affairs
- Mark Illi, Managing Co-Director
- Dina Marti, Managing Co-Director
- Mei Wang, Program Administrator
- Monika Dvorakova, Program Administrator

Contact

school@unibe.ch

Our Study Programs

MAS / DAS / CAS in Translational Medicine and Biomedical Entrepreneurship

Translational medicine refers to innovation process from bench to bedside and back. In line with the principles of translational medicine, our study programs aim to professionalize the essential interaction between basic science researchers, clinicians, regulatory bodies, and investors and supports scientists and researchers in bringing their medical innovation into clinical practice.

MAS / DAS in Medical Device Regulatory Affairs and Quality Assurance

Regulatory specialists are integral to bringing novel medical devices to market. They require a breadth of managerial and interpersonal skills in addition to technical, clinical, and legal knowledge. This program equips participants with such skills and knowledge.

CAS in Artificial Intelligence in Medical Imaging

Understanding the principles and extensive potential of artificial intelligence is key to explore its possibilities in the daily clinical practice of Medical Imaging. The study program aims to further professionalize AI education and to highlight the possibilities AI opens up for medical doctors.

AI Symposium 2023

As in previous years, the sitem-insel School successfully hosted the annual AI Symposium “Bridging the Gap – Bringing Clinical AI into Practice” in October 2023. More than 100 participants onsite and online discussed a wide range of state-of-the-art topics, thereby contributing to bridging the gap between human expertise and artificial intelligence’s analytical capabilities.



Scholarship Program: being part of the Insel Campus Bern’s innovation cycle

The sitem-insel School contributes to the local innovation ecosystem and beyond. Thanks to the generous support of our industry and academic partners, the sitem-insel School offers scholarships for participation in the MAS TMBE program. Each year, promising entrepreneurial ideas are selected in a competitive process to receive a scholarship worth up to CHF 30’000. Once entrepreneurial ideas have grown into a startup, those newly founded companies may incubate at the Sitem StartUp Club on the Insel Campus Bern.

The application deadline for scholarships is May 31.



sitem-insel School
Freiburgstrasse 3, 3010 Bern





“ The Faculty of Medicine aims to increase its attractiveness for outstanding national and international young researchers at all levels and to promote talented individuals.”
 (Strategy 2030)

CAS, DAS and MAS Degree Programs

The Faculty of Medicine offers over 30 programs of advanced studies. All programs are held by teachers of the faculty who transmit practice-oriented and state-of-the-art knowledge. The programs are addressed to professionals with a tertiary education.

Advanced study programs of the Faculty of Medicine

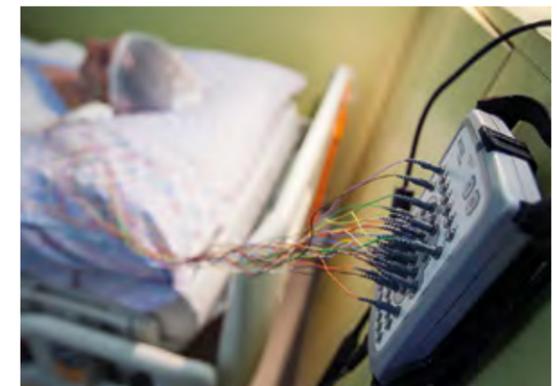
- CAS in Artificial Intelligence in Medical Imaging
- CAS in Artificial Intelligence Technologies in Healthcare
- CAS in Biomedical Entrepreneurship
- CAS in Clinical Nutrition
- CAS in Swiss Cardiovascular and Diabetes Therapy
- CAS in Medication Safety
- CAS in Managing Medicine in Health Care Organisations
- CAS in Leadership in Health Care Organisations
- CAS in Clinical Research in Health Care Organisations
- CAS in Specialist Palliative Care
- CAS in Spiritual Care
- CAS in Exercise and Sports Therapy for Mental Illness
- CAS in Exercise and Sports Therapy in Orthopedics, Rheumatology and Traumatology
- CAS in Sex and Gender Specific Medicine
- CAS of the Universities of Basel, Bern and Zurich in Epidemiology and Biostatistics
- CAS of the Universities of Basel, Bern and Zurich in Health Promotion and Prevention
- CAS of the Universities of Basel, Bern and Zurich in Health Systems
- CAS of the Universities of Basel, Bern and Zurich in Health Economics and Health Economic Evaluation
- CAS/DAS in Hepatology
- CAS/DAS in Translational Nephrology
- CAS/DAS in Swiss Exercise Therapy in Sports and Medicine
- CAS/DAS in Translational Medicine
- CAS/DAS in Translational Medicine and Biomedical Entrepreneurship
- DAS in Artificial Intelligence in Techniques for Diagnostic Medical Systems
- DAS/MAS in Public Health
- DAS/MAS in Leading Learning Health Care Organisations
- DAS/MAS in Medical Device Regulatory Affairs and Quality Assurance
- DAS/MAS in Artificial Intelligence in Diagnostic Medical Systems
- MAS in Implant Dentistry
- MAS in Cariology, Endodontology and Pediatric Dentistry
- MAS in Oral and Implant Surgery
- MAS in Orthodontics and Dentofacial Orthopedics
- MAS in Periodontology and Implant Dentistry
- MAS in Reconstructive and Implant Dentistry
- MAS in Stroke Medicine
- MAS in Sleep Medicine
- Master of Medical Education (MME Unibe)

New advanced study program International Master in Sleep Medicine

The Academy of Sleep and Consciousness ASC offers unique continuing education, which provides advanced medical and scientific insights into sleep physiology, chronobiology and sleep medicine.

The International Master in Sleep Medicine - in collaboration with the University of Bern and the Università della Svizzera italiana as well as 14 international partner Universities - is a postgraduate master on sleep-wake-circadian physiology, consciousness and related disorders.

An international team of specialist lecturers ensures that the course content is on the latest scientific knowledge. The program begins every two years with the next start in spring 2025.



International Master in Sleep Medicine



Research

With about 1,270 original publications as first or last authors, it is impossible to highlight all the exciting research output obtained during 2023 at the Faculty of Medicine. In this section, you will find a small snapshot of select scientific contributions. They include investigations of fundamental mechanisms of biological processes, technological innovations, improved strategies for medical care, studies of public health – and beyond. This year we especially highlight a selection of articles with immediate impact, revealing the influence of the research by members of our Faculty. Speaking of impact: We are proud that of the seven researchers at the University of Bern selected as highly cited researchers in 2023 by Clarivate, five were from the Faculty of Medicine.

The Faculty aims to strengthen both biomedical and clinical research to the same extent. I am therefore delighted that in 2023 we were able to celebrate the Day of Clinical Research for the first time, in addition to the long-standing Day of BioMedical Research. At the beginning of this section, you will find a brief recap of these two events from a research perspective.



Prof. Nadia Mercader
Vice-Dean of Research

Content

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Day of BioMedical Research

The Day of BioMedical Research of the Department for BioMedical Research has been a fixture in the Faculty's annual calendar for many years. The 2023 edition took place on July 5 and had many highlights.

Since 1996, the Department for BioMedical Research (DBMR) has held its annual Day of BioMedical Research – an established forum for researchers to present their work in a poster session and to get insights into the research projects of their colleagues. The event is open to the public and gives unique insight into biomedical research at the Faculty of Medicine and the University of Bern.

The core of the event was the poster exhibition, where young researchers from the Faculty presented their current projects and results. More than 120 posters were submitted. Out of this wealth of high-quality research, five outstanding posters were awarded a poster prize. Six other research prizes were also awarded on the same day. An overview of all prizes and winners can be found on page 22 of this annual report. Congratulations to all the awardees!

Two of the many highlights

The presentations given by two guests from outside the Faculty were also among the highlights of the 2023 Day of BioMedical Research: Molecular geneticist, cell biologist, and stem cell researcher Prof. Hans Clevers, Head of Pharma Research & Early

Development (pRED), Roche, Basel and Professor in Molecular Genetics, the University of Utrecht (NL) gave a keynote lecture on the use and the potential of patient organoids as a model of human diseases.



Prof. Hans Clevers

The case study, hosted by the University of Bern Innovation Office and Unitectra, was presented by Noemi Bachmeier-Zbären, a former Master's student of the University of Bern. She is a co-founder and the Managing Director of ATANIS Biotech, a spinoff of the University of Bern. The company intends to commercialize a novel diagnostic method for allergies which was developed at the DBMR and the Institute of Pharmacology at the University of Bern.



Video of the UniBE Foundation on the 2023 Day of BioMedical Research with DBMR Director Prof. Mark A. Rubin:



Day of Clinical Research and Week of Clinical Research

The Day of Clinical Research took place for the first time in December 2023 and is tagged to be the flagship for clinical research in the Bern region, complementing the activities, networking events, and programs being run by the Department of Clinical Research.

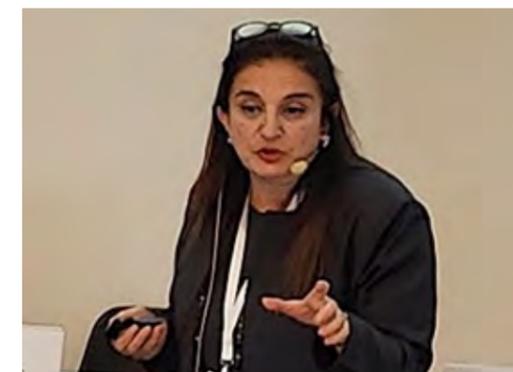
The Department of Clinical Research (DCR), founded in 2019 and Bern's academic center for knowledge transfer and services related to clinical research, organized its first Day of Clinical Research on December 7, 2023. The event provided a wealth of great opportunities to listen, discuss, and support clinical research.

But that was not all: The entire week was dedicated to clinical research. Three additional days were devoted to seminars that explored selected aspects of clinical research and provided ample networking opportunities, especially for early-career researchers. Seminars with Pecha Kucha presentations of junior researchers or lively discussions on strategies to foster multidisciplinary research projects were just two of the many highlights of the Week of Clinical Research.

International guests

The program included engaging lectures from two international guests. Prof. Dr. Marwan Sabbagh, Professor of Neurology, Alzheimer's and Memory Disorders Division, Barrow Neurological Institute, AZ, gave an overview of the most recent advances that have been made in Alzheimer's through randomized clinical trials.

Prof. Dr. Roxana Mehran, Director of Interventional Cardiovascular Research and Clinical Trials, Mount Sinai School of Medicine, NY, and co-founder of the "Women as One" initiative gave an inspiring and eye-opening presentation on the current state of women's leadership in clinical trials. She clearly outlined the barriers and the untapped potential.



Prof. Roxana Mehran

Excellent clinical research "Made in Bern"

Most of the stage at the event, however, was reserved for the presentations of local clinical research. The "Bern Highlights" session featured some of the best clinical research by senior clinicians. During the "Best of Junior Research" session, the best junior researchers gave exciting Pecha Kucha presentations. Also, the poster sessions were a highlight, showcasing the innovative work of early-career researchers. Their dedication and enthusiasm are the driving forces behind the future of clinical research on the Bern Medical Campus.

Thanks to sponsorship, the DCR was able to reward prizes in various categories to young researchers. An overview of all prizes and winners can be found on page 23 of this annual report. Congratulations to all the awardees!



Outstanding Publications

Top publications of 2023

The researchers at the Faculty of Medicine published about 1,270 original papers as first or last authors in 2023. This major research output cannot be adequately reflected here. However, in the sense of a pars pro toto approach, we present a small and by no means exhaustive selection of particularly outstanding publications. Selection is based on the journal's impact factor.

Top 5 publications in clinical medical sciences

Dhayat NA et al., Hydrochlorothiazide and Prevention of Kidney-Stone Recurrence. *N Engl J Med* 2023 Mar 2;388(9):781-791. DOI: [10.1056/NEJMoa2209275](https://doi.org/10.1056/NEJMoa2209275).

Fischer U et al., Early versus Later Anticoagulation for Stroke with Atrial Fibrillation, *N Engl J Med* 2023; 388:2411-2421. DOI: [10.1056/NEJMoa2303048](https://doi.org/10.1056/NEJMoa2303048).

Iglesias JF et al., Long-term outcomes with biodegradable polymer sirolimus-eluting stents versus durable polymer everolimus-eluting stents in ST-segment elevation myocardial infarction: 5-year follow-up of the BIOSTEMI randomised superiority trial. *Lancet* 2023 Nov 25;402(10416):1979-1990. DOI: [10.1016/S0140-6736\(23\)02197-9](https://doi.org/10.1016/S0140-6736(23)02197-9).

Majoie CB et al., Value of intravenous thrombolysis in endovascular treatment for large-vessel anterior circulation stroke: individual participant data meta-analysis of six randomised trials. *Lancet*. 2023 Sep 16;402(10406):965-974. DOI: [10.1016/S0140-6736\(23\)01142-X](https://doi.org/10.1016/S0140-6736(23)01142-X).

Leucht S et al., Long-term efficacy of antipsychotic drugs in initially acutely ill adults with schizophrenia: systematic review and network meta-analysis. *World Psychiatry* 2023 Jun;22(2):315-324. DOI: [10.1002/wps.21089](https://doi.org/10.1002/wps.21089).

Top 5 publications in basic medical sciences

Wozny MR et al., In situ architecture of the ER-mitochondria encounter structure. *Nature* 2023 Jun;618(7963):188-192. DOI: [10.1038/s41586-023-06050-3](https://doi.org/10.1038/s41586-023-06050-3).

Gander-Bui HTT et al., Targeted removal of macrophage-secreted interleukin-1 receptor antagonist protects against lethal *Candida albicans* sepsis. *Immunity* 2023 Aug 8;56(8):1743-1760. DOI: [10.1016/j.immuni.2023.06.023](https://doi.org/10.1016/j.immuni.2023.06.023).

Augspach A et al., Minor intron splicing is critical for survival of lethal prostate cancer. *Mol Cell* 2023 Jun 15;83(12):1983-2002. DOI: [10.1016/j.molcel.2023.05.017](https://doi.org/10.1016/j.molcel.2023.05.017).

Pilotto F et al., Early molecular layer interneuron hyperactivity triggers Purkinje neuron degeneration in SCA1. *Neuron* 2023 Aug 16;111(16):2523-2543. DOI: [10.1016/j.neuron.2023.05.016](https://doi.org/10.1016/j.neuron.2023.05.016).

Minoli et al., Bladder cancer organoids as a functional system to model different disease stages and therapy response. *Nat Commun* 2023, 14, 2214. DOI: [10.1038/s41467-023-37696-2](https://doi.org/10.1038/s41467-023-37696-2).

Top 5 publications with female authorship (first and/or last author)

Wozny MR et al., In situ architecture of the ER-mitochondria encounter structure. *Nature* 2023 Jun;618(7963):188-192. DOI: [10.1038/s41586-023-06050-3](https://doi.org/10.1038/s41586-023-06050-3).

Leucht S et al., Long-term efficacy of antipsychotic drugs in initially acutely ill adults with schizophrenia: systematic review and network meta-analysis. *World Psychiatry* 2023 Jun;22(2):315-324. DOI: [10.1002/wps.21089](https://doi.org/10.1002/wps.21089).

Jungo KT et al., Optimising prescribing in older adults with multimorbidity and polypharmacy in primary care (OPTICA): cluster randomised clinical trial. *BMJ* 2023 May 24;381:e074054. DOI: [10.1136/bmj-2022-074054](https://doi.org/10.1136/bmj-2022-074054).

Karamitopoulou E et al., Spatially restricted tumour-associated and host-associated immune drivers correlate with the recurrence sites of pancreatic cancer. *Gut* 2023 Feb 15;72:1523-1533. DOI: [10.1136/gutjnl-2022-329371](https://doi.org/10.1136/gutjnl-2022-329371).

Schnegg-Kaufmann AS et al., Contribution of mutant HSC clones to immature and mature cells in MDS and CMML, and variations with AZA therapy. *Blood* 2023 Mar 16;141(11):1316-1321. DOI: [10.1182/blood.2022018602](https://doi.org/10.1182/blood.2022018602).

Most cited publications of the last three years

The scientific influence of a given research article can be assessed by the extent to which the article is cited in its field. The Relative Citation Ratio RCR is used to quantify this level of influence. Based on this metric, we present the five most influential publications by our researchers from 2020 to 2022. Only original papers with the first or last author affiliated with our Faculty were included in the analysis.

2022

Fischer U et al., Thrombectomy alone versus intravenous alteplase plus thrombectomy in patients with stroke: an open-label, blinded-outcome, randomised non-inferiority trial. *The Lancet* 2022, 400 (10346), pp. 104-115. DOI: [10.1016/S0140-6736\(22\)00537-2](https://doi.org/10.1016/S0140-6736(22)00537-2). RCR = 29.04

Räber L et al., Effect of Alirocumab Added to High-Intensity Statin Therapy on Coronary Atherosclerosis in Patients with Acute Myocardial Infarction: The PACMAN-AMI Randomized Clinical Trial. *JAMA* 2022, 327 (18), pp. 1771-1781. DOI: [10.1001/jama.2022.5218](https://doi.org/10.1001/jama.2022.5218). RCR = 28.77

Prenosil GA et al., Performance Characteristics of the Biograph Vision Quadra PET/CT System with a Long Axial Field of View Using the NEMA NU 2-2018 Standard. *J. Nucl. Med.* 2022, 63 (3), pp. 476-484. DOI: [10.2967/jnu-med.121.261972](https://doi.org/10.2967/jnu-med.121.261972). RCR = 27.36

Di Fiore A et al., Comparison of the flexural and surface properties of milled, 3D-printed, and heat polymerized PMMA resins for denture bases: An in vitro study. *JPR* 2022, 66 (3), pp. 502-508. DOI: [10.2186/jpr.JPR_D_21_00116](https://doi.org/10.2186/jpr.JPR_D_21_00116). RCR = 24.46

Salanti G et al., The Impact of the COVID-19 Pandemic and Associated Control Measures on the Mental Health of the General Population. *Ann. Intern. Med.* 2022, 175 (11), pp. 1560-1571. DOI: [10.7326/M22-1507](https://doi.org/10.7326/M22-1507). RCR = 19.2

2021

Skrivankova VW et al., Strengthening the Reporting of Observational Studies in Epidemiology Using Mendelian Randomization: The STROBE-MR Statement. *JAMA* 2021, 326 (16), pp. 1614-1621. DOI: [10.1001/jama.2021.18236](https://doi.org/10.1001/jama.2021.18236). RCR = 66.17

Gómez-Ochoa SA et al., COVID-19 in Health-Care Workers: A Living Systematic Review and Meta-Analysis of Prevalence, Risk Factors, Clinical Characteristics, and Outcomes. *AJE* 2021, 190 (1), pp. 161-175. DOI: [10.1093/aje/kwaa191](https://doi.org/10.1093/aje/kwaa191). RCR = 58.62

Skrivankova VW et al., Strengthening the reporting of observational studies in epidemiology using mendelian randomisation (STROBE-MR): Explanation and elaboration. *BMJ* 2021, 375, 2233. DOI: [10.1136/bmj.n2233](https://doi.org/10.1136/bmj.n2233). RCR = 30.68

Vicedo-Cabrera AM et al., The burden of heat-related mortality attributable to recent human-induced climate change. *Nat. Clim. Change* 2021, 11 (6), pp. 492-500. DOI: [10.1038/s41558-021-01058-x](https://doi.org/10.1038/s41558-021-01058-x). RCR = 24.68

Hodcroft EB et al., Spread of a SARS-CoV-2 variant through Europe in the summer of 2020. *Nature* 2021, 595 (7869), pp. 707-712. DOI: [10.1038/s41586-021-03677-y](https://doi.org/10.1038/s41586-021-03677-y). RCR = 24.33

2020

Nikolakopoulou A., CINeMA: An approach for assessing confidence in the results of a network meta-analysis. *PLoS Med.* 2020, 17 (4), e1003082. DOI: [10.1371/journal.pmed.1003082](https://doi.org/10.1371/journal.pmed.1003082). RCR = 54.42

Riou J et al., Pattern of early human-to-human transmission of Wuhan 2019 novel coronavirus (2019-nCoV), December 2019 to January 2020. *Eurosurveill.* 2020, 25 (4), 2000058. DOI: [10.2807/1560-7917.ES.2020.25.4.2000058](https://doi.org/10.2807/1560-7917.ES.2020.25.4.2000058). RCR = 53.28

Buitrago-Garcia D et al., Occurrence and transmission potential of asymptomatic and presymptomatic SARS-CoV-2 infections: A living systematic review and meta-analysis. *PLoS Med.* 2020, 17 (9), e1003346. DOI: [10.1371/journal.pmed.1003346](https://doi.org/10.1371/journal.pmed.1003346). RCR = 42.24

Dangas GD et al., A controlled trial of rivaroxaban after transcatheter aortic-valve replacement. *NEJM* 2020, 382 (2), pp. 120-129. DOI: [10.1056/NEJMoa1911425](https://doi.org/10.1056/NEJMoa1911425). RCR = 23.91

Muka T et al., A 24-step guide on how to design, conduct, and successfully publish a systematic review and meta-analysis in medical research. *Eur. J. Epidemiol.* 2020, 35 (1), pp. 49-60. DOI: [10.1007/s10654-019-00576-5](https://doi.org/10.1007/s10654-019-00576-5). RCR = 21.72



Highly Cited Researchers

The Faculty of Medicine congratulates its researchers. In the field of medicine, our researchers are once again among the most cited in the world.

Of the world's scientists and social scientists, Highly Cited Researchers truly are one in 1,000. These pioneers in their fields represent the most influential researchers who have produced multiple highly-cited papers that rank in the top 1% by citations for field and year in the Web of Science.



Prof. Matthias Egger
Institute of Social and Preventive Medicine, University of Bern



Prof. Georgia Salanti
Institute of Social and Preventive Medicine, University of Bern



Prof. Stephan Windecker
Department for BioMedical Research, University of Bern and Department of Cardiology, Inselspital



Dr. Cinzia Del Giovane
Institute of Primary Health Care, University of Bern



Prof. Andrew Macpherson
Department for BioMedical Research, University of Bern and Department for Visceral Surgery and Medicine, Inselspital



SF Board Project Grants

The Strategic Fund (SF) Board is responsible for strategic research funding from the Inselspital's teaching and research budget. To this aim, the SF Board launches calls for research projects that contribute to the implementation of Strategy 2030 in patient-oriented and translational research. The SF Board decides on the allocation of funds to the submitted project proposals. Six projects submitted as part of the 2023 call were approved as worthy of support.

Project applications can be submitted by university units of the Inselspital. University units of the Faculty of Medicine outside the Inselspital can participate through collaboration with university units of the Inselspital. If successful, the applicants receive financial support for three years, with a possible prolongation. The maximum amount granted is CHF 750,000 over three years.



Prof. Lia Bally

Prof. Dr. Lia Bally, Department of Diabetes, Endocrinology, Nutritional Medicine and Metabolism

Towards a FemTech Digital Twin approach to improve Women's Health (FemTech Digital Twin)

Women are less likely than men to be diagnosed appropriately, receive preventive care, or be treated aggressively for cardiometabolic diseases. However, recent technological advances and the growing availability of wearable and digital devices show great promise in addressing this problem. Computational models and artificial intelligence could power tools for individualized risk predictions to deploy digital therapeutics along existing and novel clinical care pathways. The "Digital Twin" represents such a digital therapy approach. By leveraging multimodal data virtual representations of patients' current and future health are manifested to the patient and the treating physician.

In a multidisciplinary effort, Prof. Lia Bally and her co-applicants will work towards the development of a FemTech Digital Twin for predictive, personalized, preventive, and participatory care addressing the unique needs of women across their life course.



Prof. Daniel Fuster

Prof. Dr. Daniel Fuster, Department of Nephrology and Hypertension
Indapamide and Chlorthalidone to Reduce Urine Supersaturation for Secondary Prevention of Kidney Stones: a Randomized, Double-blind, Crossover Trial (INDAPACHLOR Trial)

Prof. Daniel Fuster and his co-applicants will conduct a single-center, prospective, randomized, double-blind, crossover trial to assess if indapamide and chlorthalidone are superior to hydrochlorothiazide in reducing urine supersaturations of calcium oxalate and calcium phosphate, the two best-validated indicators of kidney stone recurrence risk.

Kidney stones are highly recurrent. They are associated with increased mortality, significant patient morbidity and reduced quality of life, and result in enormous healthcare expenditures. Hence, effective preventive measures are an undisputed medical need. The INDAPACHLOR Trial will show whether the long-acting and guideline-recommended thiazide-like diuretics indapamide and chlorthalidone could effectively prevent kidney stone recurrence.



[More about the SF Board Project Call](#)



PD Dr. Kerstin Klein

PD Dr. Kerstin Klein, Department of Rheumatology and Immunology, Department of BioMedical Research

Functional impact of environmental factors on Sjögren's syndrome and primary biliary cholangitis

Sjögren's syndrome (SjS) is an autoimmune disease characterized by the loss of secretory epithelial cells which leads to severe dryness of mucosal surfaces. Primary biliary cholangitis (PBC) is a chronic inflammatory liver disease characterized by the immune-mediated destruction of the epithelial cells lining the bile ducts. Both diseases are rare but often occur concomitantly. Striking similarities of SjS and PBC suggest shared common etiopathogenic mechanisms underlying the diseases. Dr. Kerstin Klein and her co-applicants hypothesize that environmental risk factors, such as cigarette smoking and Epstein-Barr virus (EBV) reactivation, contribute to the local cell activation in SjS and PBC. They aim to provide a functional link of environmental risk factors, cell-type specific cell activation and disease phenotype, and to identify common factors in the etiopathogenesis in SjS and PBC.



Prof. Andreina Schöberlein

Prof. Dr. Andreina Schöberlein, Department of Obstetrics and Gynecology
Harnessing extracellular vesicles for cell-based therapies (EV platform)

By implementing four proposed projects, Prof. Andreina Schöberlein and her co-applicants aim to make the medical site of the University of Bern and the Inselspital a center of excellence for new cell-based therapies and diagnostics and to bring this technology into clinical application. They will not only establish standard operating procedures for the isolation, purification, characterization, and analysis of extracellular vesicles (EVs) from various sources for diagnostic and therapeutic purposes but will also create an EV Core Facility.

EVs are sub-micron cellular structures with significant involvement in the development and diagnosis of diseases across multiple disciplines. They are capable of transferring proteins, lipids and various RNAs. That is why their functional role in regulating cellular signaling and metabolism can be harnessed and used for cell-based therapies.



Dr. Marc Wehrli

Dr. med. Dr. phil. Marc Wehrli, Department of Medical Oncology

PD Dr. med. Michael Daskalakis, Department of Hematology
Immune cellular therapy (ICT) platform for liquid and solid cancer types and systemic autoimmune diseases

Immune cellular therapies (ICT) such as chimeric antigen receptor (CAR) T cells have revolutionized the treatment of hematological malignancies. The positive results of these therapies have fueled interest in extending the use of CAR T cells to solid tumors and autoimmune diseases. However, high costs and tremendous challenges in logistics limit the availability of this novel treatment option. Until now, the Inselspital has not been able to generate and synthesize its own cellular products independently.

Dr. Wehrli, PD Dr. Daskalakis and their co-applicants plan to establish an independent platform for ICT for liquid and solid cancer types as well as refractory systemic autoimmune diseases. A local center of excellence for ICT will allow the building of alliances between bench and bedside consisting of basic/translational research, the establishment of a local GMP CAR T facility, and clinical research.



PD Dr. Michael Daskalakis



Prof. Matthias Wilhelm

Prof. Dr. Matthias Wilhelm, Center for Rehabilitation and Sports Medicine
Co-creation and evaluation of a sensor-based closed-loop telecare program for multimorbid patients after inpatient rehabilitation (COPAIN)

Telemedicine and digital tools have the potential to fill existing gaps in follow-up care after inpatient rehabilitation and thus, to prevent disease progression and re-hospitalization. However, it is crucial that new digital health interventions are developed in close collaboration with patients and relatives, health professionals, and technology experts with accompanying implementation research.

This is why Prof. Matthias Wilhelm and his co-applicants will 1) establish a close collaboration and exchange of knowledge and experience between patients, clinicians and biomedical engineers, 2) create and install a physical laboratory where patients, clinicians and engineers can meet and develop assistive technology together and 3) to co-create and evaluate an eHealth-based solution to further patients' health literacy and self-management skills and to monitor patient's health status.

Digitalization

The term "digitalization" is very general and everyone subsumes and understands something different by it. I therefore prefer to use the term "digital medicine." The implementation of digital medicine will permanently change many medical disciplines in the near future and we are currently in a transitional period in which this transformation is taking place. For the future generation of young doctors, the use of AI-based approaches and technologies in their daily professional practice will be a matter of course, so that digital medicine will become an integral part of medical services and, of course, biomedical and clinical research. The implementation of Epic at the Inselspital is an important step in this direction and will have a major impact on the provision of data for clinical and biomedical research. With the implementation of the project "Development of a Shared Digital Medical Research Platform in Bern," there will be an improved intra- and interfaculty data exchange with Inselspital that has long been called for by researchers. Addressing the issue of "synthetic data" in the Faculty of Medicine and Inselspital is another forward-looking step that needs to be implemented in concrete projects in order to be recognized nationally and internationally in the field of "digital medicine."



Prof. Marcel Egger
Vice-Dean of Digitalization

Content

Development of a Shared Digital Medical Research Platform in Bern



Development of a Shared Digital Medical Research Platform in Bern

The University of Bern, the Faculty of Medicine, and the Insel Gruppe AG have successfully joined forces to develop a shared digital medical research platform that meets the specific security needs of health data. This ambitious project aligns with the institutions' digitalization strategies and is being advanced under the "Digital Medicine" program.

The primary goal is to support medical research at the University of Bern and the Inselspital with a modern digital infrastructure. To achieve this, we will provide our researchers with an interoperable, flexible, and privacy-compliant research platform for processing patient data. This innovative environment facilitates seamless and secure collaboration among researchers at the medical site in Bern, the University of Bern, as well as national and international partners.

Our Vision

By promoting cutting-edge research and applying innovative technologies, we aim to intensify collaboration among researchers and medical professionals at the local, national, and international levels. Our vision is to make Bern a center for cutting-edge medical research. We aspire to create a platform that helps efficiently implement and apply groundbreaking research ideas while complying with all legal requirements. The project enables a significantly more productive and closer collaboration among research institutions, clinics, and other partners compared to the current situation. Ultimately, the patients will benefit from this collaboration.



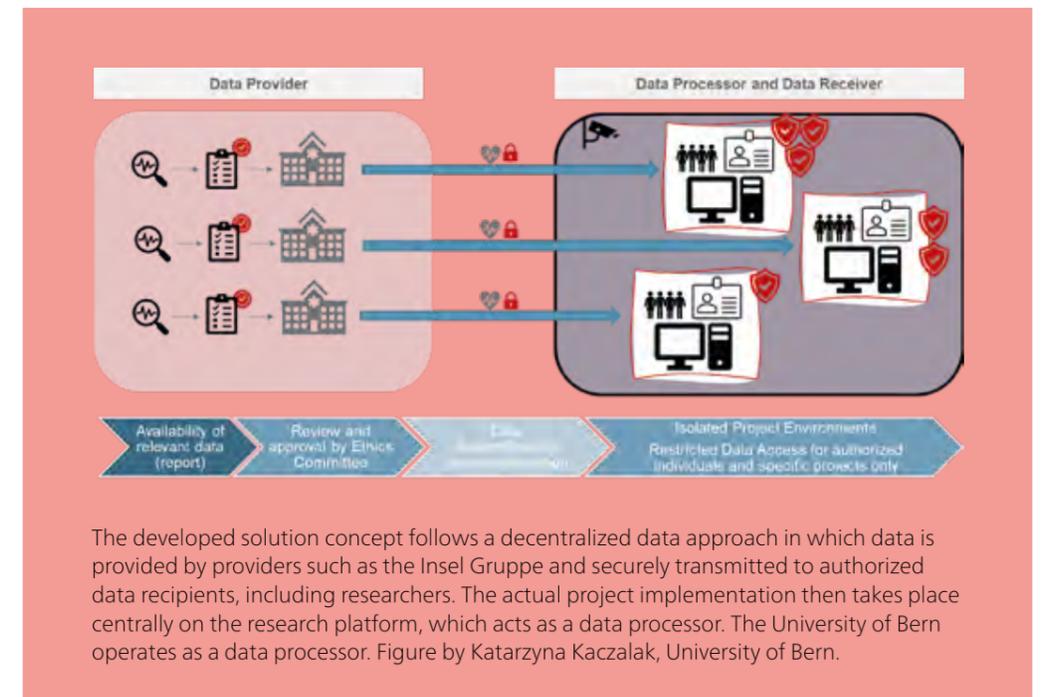
"The Faculty of Medicine grants central importance to digitalization in medicine."
(Strategy 2030)

Collaboration with SWITCH

We are pleased to have found a strong strategic partner for project implementation in the SWITCH Foundation. The planned solution involves jointly building the research platform based on the SWITCH Cloud. As a foundation of Swiss universities, SWITCH has more than 35 years of experience in collaborating with universities and university-affiliated organizations such as university hospitals.

Current Project Status

The project initiation phase has been successfully completed in 2023. Since November 8, 2023, we have entered the conceptual phase, which is expected to last until April 2024. Upon completion of this phase, decisions will be made regarding the realization and implementation of the project "Development of the Research Platform in Bern." It is planned to have the first version of the platform operational by the end of 2024.



For further information on the project:
Cornelia Scherrer
Project Leader
University of Bern
cornelia.scherrer@unibe.ch

The Faculty's digitalization strategy



Internationalization

Internationalization has been identified as one of the six long-term strategic goals of Strategy 2030. International networking increases the visibility, reputation, and outreach of our Faculty. In addition, it provides added value to education and research within and beyond our institution by initiating novel collaborations and identifying synergies. The year 2023 marked the launch of several key internationalization activities, as well as the creation of a new position for their coordination within the Dean's Office, illustrating the Faculty's commitment to advance its international positioning.



Prof. Stephan Windecker
Vice-Dean of Internationalization

Content

Strategic Partnerships
Internationalization Grants
Supporting Researchers and Students from Ukraine
International Networks



Strategic Partnerships

One of the pillars of the Faculty's internationalization efforts is the creation and strengthening of sustainable institutional partnerships and research collaborations. In 2023, our focus was on Asia.

International collaboration may take place in various ways: through individual networking amongst scientists, research-specific collaborations at the departmental level or overarching strategic and institutionalized partnerships with leading international universities worldwide. With more than 50 formal international agreements in effect across the Faculty, our international profile is undoubtedly rich and promising.

At the Faculty level, the current approach is to explore sustainable cooperation opportunities with carefully selected institutions showing a strong research record, similar strategic interests, and a high reputation.

Seeking prospects in Taiwan and Singapore

At the end of March 2023, the Dean, Prof. Claudio Bassetti, and the Vice-Dean of Internationalization, Prof. Stephan Windecker, visited Taiwan and Singapore to explore and promote opportunities for collaboration.

In Taiwan, the Dean signed two agreements with the National Taiwan University College of Medicine (NTUCM): a Memorandum of Understanding stating the mutual will to strengthen collaboration in education and research, and a Student Exchange Agreement, which foresees short-term stays for elective students at the master's level.

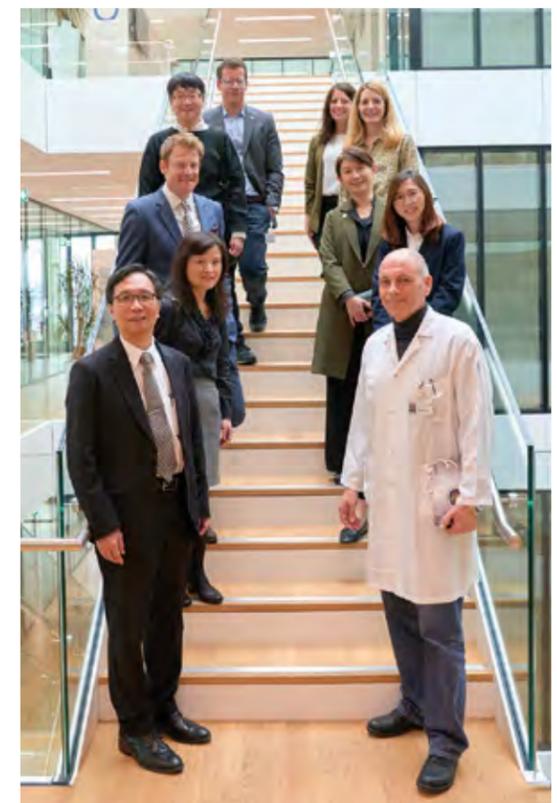
The NTUCM, based in Taiwan's capital Taipei, is a leading medical school in Asia. Its international ranking compares to that of our Faculty. With a tradition of over 100 years, it educates around 3,000 students and carries out excellent research in various common areas of interest, for example, in genomic and precision medicine, gastrointestinal medicine, social and preventive medicine, telemedicine, and digital health.

In Singapore, first contacts with the leadership of the prestigious Yong Loo Lin School of Medicine of the National University of Singapore (NUS) were established. The NUS ranks amongst the top 20 in the world and shares several similarities with us. These initial exchanges in Singapore laid the ground to organize a visit from a NUS delegation to Bern, scheduled for early 2024.

The most concrete outcome of this exchange will benefit the students of both institutions. With the Student Exchange Agreement signed with the NTUCM, up to two students from Bern can spend four to eight weeks in Taiwan each year – and vice versa. Given the differing national curricula, the limited study places, and the language barriers, this corresponds to a standard format for international student exchange in medicine. During the past year, the internal procedures for this type of undergraduate student exchange at the Faculty level have been developed, in collaboration with the International Office of the University of Bern and the Inselspital.



Our Dean, Prof. Claudio Bassetti, with the Dean of the Yong Loo Lin School of Medicine, Prof. Chong Yap Seng, at the National University of Singapore on March 31, 2023



The NTUCM delegation during the visit of sitem-insel in May 2023



The two delegations from the NTU College of Medicine and our Faculty at the signing ceremony in Taipei on March 27, 2023

The Taiwan-Bern Forum

An NTUCM delegation led by Dean Prof. Yen-Hsuan Ni visited Bern in May 2023 to further discuss potential areas of collaboration. Various members of our Faculty had the opportunity for exchange with the five visitors, with a focus on specialties with a strong mutual interest.

As part of the discussions on biomedical technologies, the delegation visited several key facilities and centers, including the ARTORG Center for Biomedical Engineering Research, the NeuroTec Loft, and the Clinical Anatomy Training and Research Unit CATR at sitem-insel. A scientific workshop on telemedicine in cardiology and emergency medicine was organized, with the attendance of the Minister of Health of Taiwan.



Internationalization Grants

The call for two Internationalization Grants under the lead of the Commission for National and International Relations was an important networking measure adopted by the Faculty in 2023. Through this new funding instrument, the Faculty seeks to promote international networking at the institutional level by supporting the creation of sustainable new partnerships.

Funding of International Networking Activities in Research

This grant program supports networking activities in research that aim to build or enhance a sustainable academic cooperation with an international research institution. The Faculty has earmarked a budget of CHF 150,000 per year over a period of up to five years. The partner is expected to provide equivalent matching funds over the same period.

Funding of Global Health Initiatives

This grant program supports global health initiatives aiming to build and strengthen academic links with research institutions located in a country in need of medical development and with a Human Development Index ≤ 0.611 . The Faculty has earmarked a budget of CHF 300,000 per year over a period of up to five years. No matching funds are expected.

Governance and Evaluation

Throughout 2023, governance procedures including selection modalities and criteria were defined, and submissions were carefully evaluated. Both calls were aimed at senior researchers of the Faculty of Medicine and international partners. In June 2023, the Commission received five letters of intent for the International Networking Activities in Research call and 13 for the Global Health Initiatives call. Based on pre-defined scientific and strategic criteria, five pre-selected applicants were invited to submit a full proposal by November 2023. Submissions were then reviewed by external experts, with particular attention given to alignment with the goals of Strategy 2030, innovation, sustainability, and the potential to scale up the impact beyond individual research groups. The selection process was still ongoing at the end of 2023.



Supporting Researchers and Students from Ukraine

Together with the University of Bern, the Faculty of Medicine stands in solidarity with Ukraine, its universities, scholars, researchers, and students. In addition to the support put in place by the University, the Faculty defined additional measures and recommendations.

For Ukrainian researchers

The Faculty of Medicine encourages and supports clinics and institutes to include Ukrainian researchers in existing research groups.

1. **Grant for Visiting Scholars from Ukraine**
In July 2022, the Faculty of Medicine developed a new grant for Ukrainian researchers with an academic degree who wish to teach and/or perform research at the Faculty of Medicine. The grant enables 5-10 visiting professors and postdoctoral researchers to spend a maximum of 5 months (with support of max. CHF 2'000 per month) at our Faculty. To benefit from this grant, one must be affiliated with a Ukrainian academic research institution.

2. **SNSF and Scholars at Risk Grant**
In 2022, the Swiss National Science Foundation (SNSF), in collaboration with the organization Scholars at Risk (SAR), supported researchers who had to flee Ukraine with 9 million Swiss Francs. The grants awarded to each of the mainly female researchers from Ukraine have enabled them to do research at a Swiss university for about one year. The Faculty of Medicine contributed to this initiative by welcoming beneficiaries of this grant.

3. **The Ukrainian-Swiss Joint Research Programme**
The information about the Ukrainian-Swiss Joint Research Programme launched by the Swiss National Fund (SNSF) and the National Research Foundation of Ukraine (NRFU) was shared with all Faculty members and published on the Faculty's website. The program will enable researchers in Switzerland to carry out joint projects with research partners in Ukraine.

For Ukrainian students

Ukrainian students with protection status S can join the Faculty of Medicine:

- By enrolling as visiting students in the subjects of human/dental medicine and pharmacy (ECTS credits can be acquired)
- Participate without restriction as regular students in the Master's programs in Biomedical Sciences and Biomedical Engineering



International Networks

Scientific opportunities in medicine and health do not stop at geographical borders. Since Switzerland has been excluded temporarily from Horizon Europe and Erasmus+, research interactions with European partner universities have been more challenging to sustain. In the next decade, university alliances will reshape the educational landscape in Europe. Being part of institutional networks may help ensure shared access to knowledge and infrastructure. Our Faculty wants to be actively involved in the current changes and help define them.



New collaborations with Africa through The Guild

Since 2017, the Faculty of Medicine has actively supported the membership of the University of Bern in The Guild of European Research-Intensive Universities. The 22 members of this organization collaborate to influence European research and education policies in Brussels. 2023 was marked by a new initiative between the African Research Universities Alliance (ARUA) and The Guild which aims to strengthen research and innovation ties between Africa and Europe. ARUA and The Guild jointly launched twenty Clusters of Research Excellence (CoRE) to pioneer equitable North-South scientific collaboration. The Africa-Europe CoREs are extensive and long-term research programs focusing on common challenges. They bring together renowned researchers from universities and research institutes on both continents.

Three CoREs involving the University of Bern focus on medicine:

- The CoRE Genomics for Health in Africa is spearheaded by the Multidisciplinary Centre for Infectious Diseases (MCID), Stellenbosch University in South Africa and the University of Tübingen in Germany. It aims to harness the potential of genomics to revolutionize healthcare for both infectious and rare non-communicable diseases in Africa.
- The University of Bern, with the engagement of the Department of Cardiology, is also a Core Partner in a CoRE on Non-Communicable Diseases and Multimorbidity. The aim is to develop innovative and context-specific solutions for the study and prevention of non-communicable diseases. This CoRE is led by four ARUA universities (based in Kenya, Senegal, Nigeria and South Africa) and three university members of The Guild (based in Scotland, France and Poland).
- Finally, the University of Bern, represented through the MCID, is a Core Partner in the CoRE on Advanced Infectious Diseases Research and Training led by the Universities of Ghana, Glasgow, and Tübingen.

The University's participation in this common effort is a significant step forward in its commitment to transforming research collaboration. The inclusion of Africa in global science is crucial for addressing the UN Sustainable Development Goals and reaching a more equitable and multidisciplinary approach to societal change.



More opportunities through ENLIGHT

The University of Bern joined the European University alliance ENLIGHT in December 2022. Throughout 2023, the University reached out to the Faculty of Medicine to provide more information about the alliance and discuss potential ways for the Faculty to actively participate in the ENLIGHT activities. ENLIGHT membership is an opportunity to remain part of a rapidly changing European higher education landscape despite the particular status of Switzerland. In 2023, several members of the Faculty have participated in activities or expressed their interest in joining thematic networking with other ENLIGHT universities. 2023 was the beginning of a long and promising journey.

ENLIGHT is a European University alliance of ten research-intensive universities, with approximately 325,000 students, 65,000 employees, and over one million alumni. The Network is composed of the universities of Ghent (Belgium), Tartu (Estonia), Bordeaux (France), Göttingen (Germany), Galway (Ireland), Groningen (Netherlands), Uppsala (Sweden), Bratislava (Slovakia), and Basque Country (Spain). It envisions fostering international student, researcher, and staff exchanges by creating an interconnected campus. More broadly, it works towards making education fit for the next generation.



Prof. Virginia Richter, Vice Rector International and Academic Careers at the University of Bern, at the ENLIGHT Kick-off event on November 20, 2023 @ Annette Boutellier

Equality, Diversity and Inclusion

Equality, diversity, and inclusion (EDI) are fundamental to the ethos of the Faculty of Medicine and are pivotal in shaping the future of healthcare. In medicine, embracing EDI ensures that all students, irrespective of their background, have equal opportunities to learn, contribute, and excel within our Faculty. This commitment enriches our medical, teaching, and scientific community, bringing a wide range of perspectives and experiences that enhance learning and reflect the diverse society we serve.

In undergraduate studies, fostering an environment where every student feels valued and supported is crucial. It allows for the development of culturally competent physicians who are better equipped to address the varied needs of their patients. Moreover, promoting diversity in our student body helps to tackle the disparities in healthcare representation and accessibility, ultimately leading to more equitable health outcomes.

The importance of equality extends into postgraduate medicine, where it influences the development of medical specialists and researchers.

Ensuring equal opportunities in postgraduate education helps us cultivate a diverse range of professionals who are prepared to lead and innovate in their fields, driving forward scientific discovery and medical advancements.

As we present this annual report, we reiterate our dedication to nurturing an inclusive academic culture that not only respects but also celebrates diversity. This commitment is not just about compliance; it is about preparing a new generation of medical professionals who will lead with empathy, understanding, and fairness, ensuring better health for all.



Prof. Aris Exadakylos
Vice-Dean of Equality, Diversity
and Inclusion

Content

Commission for Equality

Women in Academia

CLASH - Against sexism, harassment and violence in the study of medicine



Commission for Equality

The Faculty of Medicine Commission for Equality (Innerfakultäre Kommission für die Gleichstellung, IFKG) supports the Faculty of Medicine in implementing measures to ensure effective equality and diversity throughout the whole faculty. Together with the decision-makers of the institutes and clinics, the IFKG's aims include improving conditions that facilitate a woman's decision to pursue an academic career.

The immediate aim of the Commission for Equality is to increase the number of women in leadership positions at the Faculty of Medicine and to increase diversity. Among other measures, the IFKG aims to highlight career options that improve working conditions such that they allow both women and men to combine raising families with their academic career pathways.

Profile

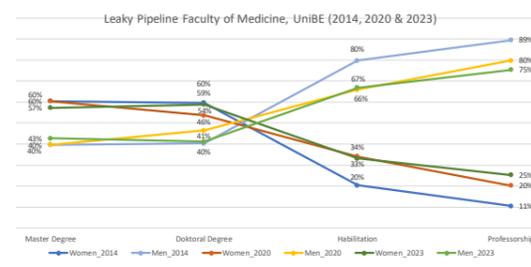
- Career planning lecture in the third semester
- Sexual harassment – educational lecture and prevention
- Mentoring4Women program: empowering women in clinical and academic careers
- Female Empowerment in Life Sciences (FELS): an interdisciplinary association of clinical and pre-clinical female researchers of the Faculty of Medicine
- Ensuring implementation of equal opportunities in search committees and in the work environment of the Faculty of Medicine
- Contact point for all equal opportunity and diversity topics and for cases of discrimination



Commission for Equality
of the Faculty of Medicine
Murtenstrasse 11
3008 Bern

- External partners: Coordinator of the Office for Equality of all Swiss universities and contact point for the CLASH team
- Close interaction with HR Insel and the Office for Equality of the University Bern

Figures



Closing the gap between female and male professors in leadership positions (oP and aoP) has remained the greatest challenge in recent years. The graph shows the progress made at assistant professor level but underscores the substantial imbalance between women and men at professorial level.

Achieving gender equality in academia is an urgent imperative that cannot be ignored, nor can it be expected to happen naturally over time.



Joyce et al., *Closing the scissor-shaped curve*.
Cell Press, 2024. (pdf)

A cultural change is needed at the leadership level of our institutions towards an improved inclusive environment. This is what the Commission for Equality stands and works for.

January: Networking Event of the female full professors of the Faculty of Medicine

The year 2023 began with an exciting and inspiring event at the TKI. All female full professors came together, exchanged their insights and experiences in female leadership, and talked about the challenges faced by female leaders in our Faculty. The meeting also allowed them to get to know each other in an informal setting and to connect female leaders from different generations in our Faculty.

We mourn the sudden and unexpected passing of our colleague Andrea Huwiler on December 18th, 2023. With Andrea we lose an innovative researcher dedicated to exploring the role of lipid signaling during health and disease and a wonderful and humble colleague and friend.



Prof. Anne Angelillo-Scherrer, Prof. Eva Segelov, Prof. Nadia Mercader Huber, Prof. Katja Odening, Prof. Christiane Zweier, Prof. Sissel Guttormsen, Prof. Britta Engelhardt, Prof. Christine Peinelt, Prof. Ursula Wolf, Prof. Wanda Kukulski, Prof. Vivianne Chappuis, Prof. Andrea Huwiler, and Prof. Christa Flück

Day of Biomedical Research

In the summer, we had a booth at the Day of Biomedical Research. This allowed us to inform all attendees about our activities, including the Mentoring4Women program (M4W) and the FELS network. The presence of our representatives and FELS's during the entire day motivated attendees to join the programs and upcoming workshops.



Introduction of the lecture for the campaign against sexual harassment

Another highlight is the introduction of a lecture about sexual harassment presented by the Commission for Equality in cooperation with CLASH (*Collectif de lutte contre les attitudes sexistes en milieu hospitalier*). Through this and other measures, the Faculty of Medicine in Bern is setting a leading example for Switzerland.



Habilitation Guideline

In collaboration with the Commission for Appointments and Habilitation, we have developed a guideline paper to facilitate the process of habilitation for both applicants and specialist representatives. The guidelines help these teams to establish aims, milestones, and feasible timelines for very individual career pathways during the habilitation process. This step is progressive and makes the Faculty of Medicine a role model for other faculties at the University of Bern and even for Switzerland.



Faculty of Medicine:
Habilitation and Habilitation Transfer



Female Empowerment in Life Sciences (FELS) Network

The FELS network is dedicated to actively promoting the academic careers of female scientists at all hierarchical levels. In 2023, FELS organized a series of exciting events, including workshops on gender-inclusive leadership and language and on funding opportunities for female scientists. At a retreat in Appenberg, the researchers had a discussion and a grant writing workshop with K. Bivens, PhD. Additionally, FELS has launched joint events with the ATORG Center and the DCR to promote networking for female scientists.



Retreat of the FELS network at Appenberg in December 23: lively discussion with role models Prof. M. Funke-Chambour and PD Dr. T. Birrenbach



Women in Academia

Women in Academia

As part of its "Women in Academia" video series, the Faculty of Medicine produced 14 portraits of female researchers. These videos, featuring encouraging role models, were released between November 2022 and December 2023, and have been well received.

In the "Women in Academia" video series, members of the Faculty answer five personal questions. They share insights into their careers, their drive, and their strategies for success. We would like to thank these women for their commitment and openness and would be happy if their different personalities inspired those who watch the portraits.

Role models are an inspiration. Learning from successful female researchers and lecturers what motivates them, what their values are, and how they have overcome obstacles can be helpful. Not only - but especially - for women at the beginning of their academic careers.

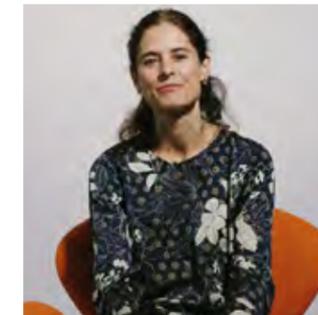
All videos are still available on our website:



[women_in_academia](https://www.women_in_academia)



Prof. Uyen Huynh-Do



Prof. Nadia Mercader



Prof. Annika Frahsa



Prof. Carmen Andrea Pfortmüller



PD Dr. Carolina Gutierrez Herrera



Prof. Ana M. Vicedo Cabrera



PD Dr. Vanessa Banz



Prof. Katja Odening



Prof. Britta Engelhardt



Prof. Vivianne Chappuis



Prof. Annalisa Berzigotti



Prof. Inti Zlobec



Prof. Katharina Stegmayer



Prof. Marianna Kruihof-de Julio



CLASH - Against Sexism, Harassment and Violence in the Study of Medicine

This year, the University of Bern's Equal Opportunities Prize, Prix Lux, goes to a collective of medical students: CLASH Bern is making a stand against sexism and sexual harassment in everyday hospital and university life.

uniAKTUELL: You and your fellow students are actively engaged through CLASH, the Collectif de Lutte contre les Attitudes Sexistes en milieu Hospitalier, against sexism and sexual harassment in everyday hospital and university life. What drives you to devote time and energy to this at the same time as your intensive medical studies?

Fabienne Steinauer: It all started with experiences I had myself. At first you often feel ashamed and ask yourself if it was really all that bad or whether you'd taken something the wrong way. Then, when talking to other students, I realized that almost all my fellow students had also experienced or observed sexism or sexual harassment. That's what gives me the energy to try to do something about these abuses: in future, medical students should no longer have to expect to be sexually harassed.

Can you give a few examples?

Steinauer: A male patient once asked a female student during her shift as a patient care assistant: "Wouldn't you like to come into bed with me"? And it happened to a female student during her patient care assistant shift that a male patient began to masturbate in front of her while looking her straight in the eyes.

Is it only patients who sexually harass or behave in a sexist manner?

Elisabeth Bamberg: No. We also know of many examples of superiors behaving like that. A male surgeon, for example, said to a female student during an operation: "If you're after a sugar daddy, just come and see me." And a junior doctor said: "The weekend's going to be rainy, perfect weather for making love." The spectrum goes from lewd remarks or the promise of advantages if you engage in sexual acts, all the way up to sexualized violence. And it is important for us to emphasize: All genders can suffer sexual harassment.

Is studying medicine a particularly susceptible area for such cases of crossing the line?

Bamberg: We don't have statistics for answering that with certainty, but we assume that's the case. There are many facets of the study of medicine which work in favor of sexual harassment and sexualized violence: There is often physical contact when examining patients. And the fact that we students sometimes work in a different hospital every month means that it is hard to build a relationship of trust within the team. This makes us easier to exploit. And the deep-seated hierarchical structures in hospitals work in favor of sexual assault.

In what way is CLASH Bern trying to make a difference in this sensitive area?

Steinauer: We want to inform, raise awareness, increase visibility and call for solidarity and civil courage. So we are planning to set up a reporting platform where people can come forward

anonymously, as well as talks and poster campaigns. An important message from us in all this is: if a sexist remark is made in a group of people at the expense of someone else, for example during a ward round in a hospital, then show some civil courage, don't join in the general merriment, and, if you are game, say something! We have also been working for some time on creating an anonymous reporting platform. It is due to go online at the end of the year.

How will this reporting platform operate?

Steinauer: People should be able to come forward safely and anonymously if they themselves have experienced sexism, sexual harassment or sexualized violence or have witnessed it themselves. The aim is to obtain data in order to have a more precise and well-founded picture of how often and in which situations particular incidents occur. The data gathered should help us to make the problem visible.

Bamberg: The platform is intended to offer a non-threatening opportunity to report an incident without having to reveal one's identity. If you have to go somewhere in person, it is more inhibiting.

How will the data be used exactly?

Steinauer: When the data has been analyzed, we will make it available to the Bern Institute of Primary Health Care, the Interfaculty Committee for Gender Equality and the Faculty of Medicine, and possibly publish it as part of a Master's thesis. Ultimately, the data should serve as a basis for conversations and working relationships with the institutions concerned.

What advice do you give to affected students who are actually looking for help?

Bamberg: On the one hand, we refer people to specialized contact points, such as that of the Faculty of Medicine, or to the Universities of Bern Counselling Centre. On the other hand, we want to offer them conversations with their peers. Sometimes it helps to be able to talk about an incident with other students who have already experienced similar situations.

The Lux Prize

The Prix Lux of the University of Bern honors commitment to equal opportunities. Groups, smaller or larger units that work towards equality in the area of "gender and diversity" at the University of Bern, can be nominated for the prize. The procedures they apply should stimulate discussion on issues of gender equality and equal opportunities, be innovative, original and sustainable and also have transfer potential.

What does the Lux Prize mean to you?

Bamberg: Receiving this award is really cool and important. It means that the University acknowledges the value of our awareness-raising work and recognizes that something needs to be done about sexual harassment and sexual abuse. The award also helps us to make our work more visible. We hope that it will enable us to reach more people with our message. There are currently seven of us and we would be delighted to have more people campaigning with us. Steinauer: And the prize money of CHF 2,000 is a very welcome boost for our future projects. It gives us more independence and, for example, the ability to invite a specialist to give a lecture.

CLASH also exists in Geneva, Lausanne, Zurich, Fribourg and Lugano. How close is your collaboration?

Bamberg: Pretty close. We meet twice a year, exchange ideas about our projects and are in the process of establishing CLASH Switzerland.

Steinauer: CLASH Lausanne has been in existence since 2018 and is of course an inspiration. Its members now maintain a long-standing exchange of ideas with the university hospital there.

You are working at grass-roots level - what do you expect from the leadership level?

Steinauer: First and foremost, we expect the various institutions - the University, the Faculty of Medicine and superiors in hospitals - to recognize that sexism, sexual harassment and sexualized violence do not stop at the doors of the medical school and that they represent a problem. We expect them to enter into a dialog with us. In this way, we can work together to address the concerns and fears of all those involved and try to find solutions.

This interview was conducted by Barbara Spycher, a longtime freelance journalist and was first published in the University's online magazine uniAKTUELL on November 14, 2023.

CLASH Bern

CLASH stands for "COLLECTIF DE LUTTE CONTRE LES ATTITUDES SEXISTES EN MILIEU HOSPITALIER" (Collective against sexist attitudes in the hospital environment). The first collective was established in Lausanne in 2018, and there are now CLASH groups in Zurich, Fribourg, Geneva and Lugano. CLASH Bern was established by medical students at the beginning of 2023, currently has seven members, and campaigns against the sexism, sexual harassment and sexualized violence directed at medical students in everyday university and hospital life.

info@clashbern.ch

Instagram: @clash_bern

Contact points in case of sexual harassment



Faculty of
Medicine:
Equal Oppor-
tunities



Psychological
support at the
Universities of Bern
Counselling Centre



Legal advice
VSAO Bern



Several listed
by the Equal
Opportunities
Department

Young Academics

The next generation of medical scientists is an essential pillar of our Faculty. We continue our efforts to motivate medical students to pursue academic careers. We provide mentoring opportunities as well as financial support to enable them to combine clinical work with research and teaching. This year, we congratulate four recipients of Protected Research Time grants. We also congratulate the five awardees of the 2023 SNSF Starting Grants call and look forward to continuing to support them through the Talent4Bern program.

As of January 2023, not only tenure-track assistant professors but also non-tenure-track assistant professors will be invited to join the Faculty as full members. This initiative gives them a better overview and provides them new opportunities to enlarge their intra-Faculty network and to contribute to academic self-governance.



Prof. Nadia Mercader
Vice-Dean of Young Academics

Content

Talent4Bern
Grants for Protected Research Time



Talent4Bern

The Talent4Bern funding program supports researchers who wish to apply for an SNSF Starting Grant to establish their own independent research group at the Faculty of Medicine. The candidates selected in the program receive support in preparing their grant proposal and, if successful with their application, benefit from additional funding and mentoring opportunities during the project's lifetime.

The Faculty of medicine is very pleased that five of its researchers are among the 67 applicants to receive a 2023 Starting Grant from the Swiss National Science Foundation SNSF. All five grantees are participating in the Faculty's Talent4Bern program, which was established in advance of the 2022 SNSF Starting Grants call. The Faculty is proud of the first successes of the program, congratulates the grantees, and wishes them much success in leading their own independent research projects and teams.

Faculty membership for externally funded assistant professors

At the end of 2022, the Faculty Executive Board decided to grant a seat on the Faculty Council to holders of an SNSF Starting Grant or another externally funded assistant professorship. The assistant professors will have the right to vote at Faculty Council meetings, the opportunity to participate in Faculty committees, and to use the platform for networking. The highly qualified young researchers are invited to take advantage of this opportunity to help shape the future of the Faculty.



[More about the Talent4Bern program](#)

The five 2023 SNSF Starting Grant awardees



Dr. Juliane Kämmer

Dr. Juliane Kämmer is a Senior Researcher at the Department of Emergency Medicine and co-leader of the Diagnostic Quality Lab. She investigates how teams make better decisions under pressure and uncertainty, for example by providing better diagnoses. Unfortunately, incorrect medical diagnoses do happen – sometimes with serious consequences. Juliane Kämmer's project "Co-Mind – improving diagnoses by understanding the collaborative and cognitive processes of medical teams" will provide a clearer understanding of how decision-making in medical diagnostics and other high-risk areas can be improved.



Prof. Jessica Peter

Jessica Peter is Associate Professor, Head of Research, and Group Leader at the University Hospital of Old Age Psychiatry and Psychotherapy at the University of Bern. She explores the fundamentals of human memory and develops non-pharmacological interventions to improve cognition. In her project "Exploring the role of the prefrontal cortex in remembering and forgetting," Jessica Peter will investigate whether non-invasive brain stimulation can enhance positive memories and reduce negative memories in patients with depression. This may be useful to complement existing cognitive therapies in depression.



Prof. Camilla Schinner

Camilla Schinner is an Assistant Professor at the Hannover Medical School and a specialist in Molecular Cardiology. She is particularly interested in Arrhythmogenic Cardiomyopathy (ACM), which is a genetic disorder and one of the major causes of sudden cardiac death in young adults. To date, the underlying mechanisms of ACM are not fully understood. In her project "ACTT – Arrhythmogenic Cardiomyopathy: Investigation of new mechanisms and therapeutic targets," Camilla Schinner will investigate the early molecular and cellular processes that contribute to the phenotype of ACM. Her findings could lead to targeted treatments for the disease.



Dr. Jakob Zimmermann

Dr. Jakob Zimmermann is a Postdoctoral Researcher at the Department of Visceral Surgery and Medicine and the Department for BioMedical Research. He investigates how harmless intestinal bacteria interact with the immune system and what consequences this has for the host organism and its susceptibility to diseases. The T cell memory of our immune system protects us from infections caused by pathogens. The role of this memory in connection with harmless intestinal bacteria, however, is still unclear. In his project "Engineered symbionts elucidate gut T cell memory and its (dys)regulation," Jakob Zimmermann will examine whether and how the human immune system builds up a lasting memory for the community of intestinal bacteria.



Prof. Joel Zindel

Joel Zindel is an Assistant Professor and Senior Physician at the Department of Visceral Surgery and Medicine and the Department for BioMedical Research. His research focuses on the cellular and molecular basis of wound healing and scar formation after surgical interventions in the abdominal cavity. His project "MACScar - Macrophage Aggregation Control against Scarring" focuses on GATA6 macrophages. These giant immune cells not only fight bacteria but also play an important role in the repair of tissue damage, for example after surgical interventions in the abdominal cavity. In response to injury, the macrophages aggregate into thrombus-like structures. This initial step of the repair process, however, can exceed and lead to problematic intra-abdominal scar tissue. Joel Zindel will investigate macrophage aggregation in detail and hopefully identify new therapeutic approaches against the growth of intra-abdominal scar tissue.



Grants for Protected Research Time

With the announcement of grants for Protected Research Time, the Faculty of Medicine supports the possibility of creating clinical research time for young academics in the medical service sector. Four promising new research projects were funded in 2023.

The Dean's Office of the Faculty of Medicine and the Department of Teaching and Research of the Insel Gruppe jointly offer Young Investigator Grants. These are aimed at young assistant and senior physicians who pursue ambitions in research in addition to their clinical activities, as well as PhD students of the Graduate School for Health Sciences (GHS) in the Clinical

Sciences Program. The grants for Protected Research Time (PRT) provide the opportunity to create clinical research time for junior academic staff in the medical services sector. The amount granted comprises 20% of the salary for two years for clinicians at the Inselspital or 50% of the salary for two years for PhD students at the GHS.



[More about the PRT grants](#)

The Faculty congratulates the four 2023 grantees and wishes them much success in their clinical research projects.



Dr. Dilara Akhoundova
Senior Physician at the Department of Medical Oncology

Preclinical validation of drug vulnerabilities in FANCA-deficient cancers



Dr. Helly Hammer
Senior Physician at the Department of Neurology

Vocal biomarkers for diagnosing Multiple Sclerosis in people with first symptoms indicative for CNS disease



Dr. José Antonio Rodríguez Calero
Senior Physician at the Institute of Tissue Medicine and Pathology

Definition of tumor microenvironment in homologous recombination repair altered prostate cancer brain metastases



Dr. Esin Rothenfluh
Senior Physician at the Department of Plastic and Hand Surgery

The biomechanical relationship between scaphoid fracture nonunion and osteoarthritic changes in the wrist - a finite element analysis

Department for BioMedical Research



Prof. Mark A. Rubin
Director DBMR

Prof. Anne Angelillo-Scherrer
Deputy Director DBMR

Prof. Marianna Kruithof-de Julio
DBMR Board of Directors

Prof. Carsten Riether
DBMR Board of Directors

Prof. Volker Enzmann
DBMR Board of Directors



The DBMR is the Faculty's research department in biomedicine. To bridge laboratory-based and biomedical patient-oriented clinical research, the DBMR promotes an integrative perspective to clinical research with a strong emphasis on developing translational approaches.

TOR-DBMR Symposium

The recently established Translational Organoid Resource (TOR) Core Facility organized its first symposium in May 2023 with Prof. Matthias Lütolf, Scientific Director of the Roche Institute for Translational Bioengineering, Basel, and Prof. Helmut Gehart, Department of Biology, ETH Zurich, as keynote speakers. Other highlights included the announcement of the three winners of the TOR-DBMR Best Organoid Picture Awards – Arnal Fahmi and Isabel Schultze-Pernice (Institute of Virology and Immunology), Dr. Martin Sadowski (Experimental Pathology), and Jan Schulte (ARTORG Center).



Day of BioMedical Research 2023

The event was held in July 2023. More than 120 posters were submitted, from which five were selected for the DBMR Poster Prizes, Alumni MedBern Research Prize and Best Cell Stem Poster Prize. Other highlights included the lecture of the keynote speaker Prof. Hans Clevers, Head of pharma Research & Early Development (pRED), Roche, and the announcement of the Best DBMR Publication 2022 and of Dr. Mattia Aime as the winner of the Johanna Dürmüller-Bol DBMR Research Award 2023 for his project on investigating the impacts of REM sleep and emotions on life quality. Additionally, the DBMR Best Innovative Research Idea Prize was for the first time presented.



Prof. Mark A. Rubin and the winners: (from left to right) Dr. Federico La Manna, Inês de Paula Costa Monteiro, Dr. Jakob Zimmermann, Dr. Christa König, Prof. Mark A. Rubin, Dr. Jana Remlinger, Nick Kirschke, Fabian Luther, Nic Krummenacher, and Dr. Matteo Bargagli.

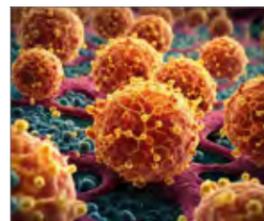
DBMR Prize for Best Innovative Research Idea

The DBMR Prize for Best Innovative Research Idea was established in 2023 and awarded to the best three proposals that were submitted for the Johanna Dürmüller-Bol Research Award 2023 – Dr. Christa König, Dr. Federico La Manna, and Dr. Mattia Aime were the winners of the Prize 2023.



A potential milestone against cancer

The study led by Prof. Mark A. Rubin and Dr. Anke Augspach in collaboration with the University of Connecticut (USA) was published in the journal Molecular Cell. The study identified a previously unknown weak point of prostate cancer cells which has the potential to the development of new cancer therapy approaches.



[Augspach et al., Mol Cell, 2023.](#)

Department of Clinical Research



Prof. Eva Segelov
Director

PD Dr. Sven Trelle
Deputy Director

Dr. Ueli Reber
Head Business Operations

Carmen Jörg Fetscherin
Head CIU

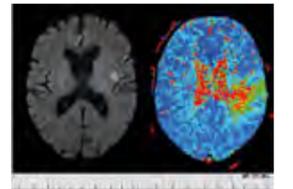


The Department provides the central organization for expertise, innovation, leadership, contemporary pedagogy, and centralized facilities for supporting clinical researchers. It works across multiple collaborations at the Faculty of Medicine and the university hospitals of Bern.

Major completed and published projects

Several major clinical trials were completed with diverse clinical collaborators in 2023. Two are explicitly mentioned here as they are large trials with major impact: The NOSTONE trial showed that hydrochlorothiazide (a diuretic) given daily at various dosages does not substantially reduce the risk of recurrence in patients who suffer from recurrent calcium-containing kidney stones. This finding is practice changing as it contradicts current guidelines which are based on weak evidence from old, low quality trials. PI: Daniel Fuster

The ELAN trial enrolled more than 2,000 patients with atrial fibrillation who had an acute ischemic stroke. Patients were randomized to early or late initiation of anticoagulation therapy. The trial found that the incidence of recurrent ischemic stroke, systemic embolism, major extra-cranial bleeding, symptomatic intracranial hemorrhage, or vascular death at 30 days was low and comparable across the two strategies. This finding provides high-quality evidence, that an early start of anticoagulation is safe in these patients. PI: Urs Fischer



ELAN: Acute embolic stroke due to M3-occlusion with diffusion-perfusion mismatch on MRI due to newly detected atrial fibrillation on ECG in a 63-year-old-patient.

DCR Day of Clinical Research and Week of Clinical Research seminars

This inaugural annual event took place in December 2023 and is tagged to be the flagship for clinical research in the Bern region, complementing the activities, networking events and programs being run by DCR. The program included engaging lectures from two international guests: Prof. Dr. Marwan Sabbagh and Prof. Dr. Roxana Mehran, as well as the President of the Swiss Academy of Science, Prof. Dr. Henry Bounameaux. There was a lively panel discussion, a poster walk and presentations from selected outstanding senior and junior researchers at the University of Bern and the University hospitals. Throughout the week DCR also hosted >10 seminars covering a wide range of topics. Prizes of total value CHF 9000 were awarded to Junior Researchers.



Awards Day of Clinical Research 2023

Patient and Public Involvement (PPI)

DCR's PPI program offers advice to investigators of all types of clinical research regarding implementing PPI processes, from design to conduct to translation into clinical practice. The DCR standing PPI panel has > 30 trained members and assisted with > 10 research projects, providing patient and researcher training, support for PPI sections in grants, amongst others.



Patient Panel

Medical grant writing program for clinicians

Designed for clinicians who want to enhance their skills writing applications for grant funding, the inaugural DCR Medical Grant Writing Program for Clinicians commenced in June 2023. The intensive small group program focused on planning, writing, developing, and revising scientific grant application materials written in English, in a design facilitating involvement of busy clinicians. Due to the excellent feedback, dates for a further two workshops in 2024 were set.



Institute of Anatomy



Prof. Valentin Djonov
Director

Prof. Nadia Mercader Huber
Co-Director

Prof. Benoît Zuber
Co-Director

Prof. Johannes Schittny
Group Leader

PD Dr. Edik Babychuk
Group Leader

PD Dr. Elisabeth Eppler

PD Dr. Ruslan Hlushchuk
Group Leader



PD Dr. Asparouh Iliev
Group Leader

PD Dr. Stefan Tschanz, Central Services Leader



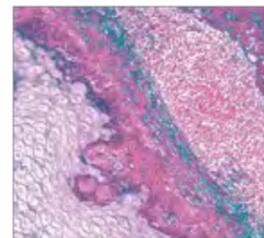
The Institute's scope of duties comprises preclinical teaching in human, dental, and veterinary medical curricula, as well as in many other paramedical fields. The research focus is on the skeleton and smooth muscles, the lung and its development, particle interactions in the lung, and stereology.

Advancements in digital teaching resources

Supported by the Faculty of Medicine, the Institute of Anatomy has digitized its collection of histology and microscopic anatomy specimens. These 3D scans have been carefully annotated in collaboration with the Institute of Medical Teaching and integrated in the medical education curriculum. Both students and the public can freely access these resources at our e-learning platform.



elearning.medizin.unibe.ch/morphomed



New PhD training network on organ regeneration

The group of Nadia Mercader forms part of the REGENERATE-IT PhD training network by the European Union and is part of the Marie Skłodowska-Curie Actions – Doctoral Networks (MSCA-DN) program. This program started in April 2023 and brings together scientists working on the mechanisms of natural tissue and organ regeneration occurring in animal species such as flatworms, zebrafish, salamanders or the spiny mouse.



[Research – REGENERATE-IT](https://www.regenerate-it.eu)



International collaboration sheds light on synaptic mechanics

A significant study led by Benoît Zuber has been published in EMBO Reports. It focuses on the dynamics of synaptic vesicle exocytosis, a key aspect of neural communication. The research team, including experts from the University of Copenhagen, the Diamond Light Source in Oxford, the Max Planck Institute in Martinsried, and the University of Basel, used advanced cryo-electron tomography to reveal intricate changes in synaptic vesicles and plasma membrane during nerve transmission.



[Radecke et al., EMBO Rep, 2023.](https://doi.org/10.1038/s41586-023-03000-0)



Institute of Biochemistry and Molecular Medicine



Prof. Dimitrios Fotiadis
Managing Director

Prof. Jürg Gertsch
Deputy Director

Prof. Wanda Kukulski
Co-Director

Prof. Christine Peinelt
Co-Director

Prof. Hugues Abriel
Vice-Rector for Research

Prof. Christiane Albrecht

Prof. Thomas Lemmin

PD Dr. Martin Lochner
Lecturer



Research at the Institute focuses on the structure, function, and pharmacology of membrane proteins such as transporters, ion channels, and membrane receptors. A strong emphasis is put on the roles of these membrane proteins in human diseases such as cancer, cardiac disorders, preeclampsia, and neuropsychiatric disorders.

Sinergia grant to study how food affects health in primates

Prof. Jürg Gertsch (responsible applicant) and his colleagues Prof. Erica Van de Waal (Geneva), Assistant Prof. Claire Bertelli (Lausanne) and Prof. Yossi Tam (Jerusalem, Israel) obtained the Sinergia grant "The Food-Medicine Continuum in Vervet Monkeys: Investigations on the Interplay between Diet Quality, Stress Coping, and the Endocannabinoid System" to study the impact of food on social stress in wild and urbanized vervet monkeys (*Chlorocebus pygerythrus*) in South Africa." This 4-year interdisciplinary study aims to identify molecular components in food that impact metabolism and stress through the gut-brain endocannabinoid system. This project not only will shed light on primate ecology, but also provide a basis for novel nutraceutical interventions in humans.



Legacy of the NCCR TransCure

The NCCR TransCure, which involved almost all IBMM research groups, concluded in 2022 after a 12-year period. A significant outcome of this network was the establishment of the Ion Channels and Membrane Transporters LS2 section, now comprising over 100 scientists from various Swiss institutions. A highlight for the section was the co-organisation of a joint scientific meeting in Sept. 2023 with the LS2 Physiology section. This meeting, hosted at the University of Bern, was chaired by Prof. Christine Peinelt and Prof. Hugues Abriel, who are the current presidents of the respective sections.



Structure and supramolecular organization of the canine distemper virus attachment glycoprotein

Canine distemper virus (CDV) is an enveloped RNA morbillivirus related to the human pathogen measles virus, which induces severe outbreaks in animals. A key component of the morbilliviral cell entry machinery is the receptor-binding H-protein. The Fotiadis laboratory revealed the cryo-EM structure of the tetrameric CDV H-protein ectodomain (Figure). This structure not only shed light on the morbilliviral cell entry system, but also lays the groundwork for developing novel antivirals.



[Kalbermatter et al., Proc Natl Acad Sci U S A, 2023.](https://doi.org/10.1073/pnas.2211111120)

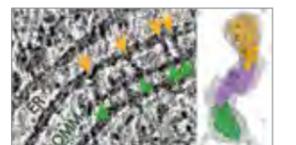


Lipid transfer between ER and mitochondria

Organelles exchange lipid molecules at contact sites, but how specific proteins arrange to facilitate the transfer of lipids has been unclear. The Kukulski laboratory now revealed the architecture of an ER-mitochondria lipid transfer protein complex in situ, suggesting a direct pathway for lipids between two different membranes. This work was done together with researchers from the MRC-LMB in Cambridge and the University of Fribourg.



[Wozny et al., Nature, 2023.](https://doi.org/10.1038/s41586-023-03000-0)



Institute of Complementary and Integrative Medicine



Prof. Ursula Wolf
Director

Prof. Stephan Baumgartner
(Prof. Univ. W/H, DE) Deputy Director

Jana Ertl
Co-head patient care



The Institute combines conventional and complementary medicine in the sense of integrative medicine. In both research and clinical activities, it works on an interdisciplinary and interprofessional basis. By combining research, teaching, and clinical work it contributes to advances in medical knowledge and therapeutic options.

Bridge Discovery Project ProTex to prevent pressure injuries carried out successfully

Pressure injuries are dangerous tissue lesions that heal slowly and pose a high risk of serious infections and discomfort for persons affected. They are an oxygenation problem and thus prevention is key. We (PI U. Wolf), in collaboration with Empa St. Gallen and OST Buchs, have developed, built and tested in vivo a textile-based soft and comfortable sensor to measure the tissues oxygen saturation. The sensor uses optical fibers and is completely non-invasive. This SNF/Innosuisse funded project not only resulted in a ready to use prototype but also in building our start-up Sensawear



www.sensawear.ch

Excellent representation of our research at the 2nd World Congress of Integrative Medicine and Health

Members of the group U. Wolf presented their research with three oral and two poster presentations at this world congress in Rome, Italy.

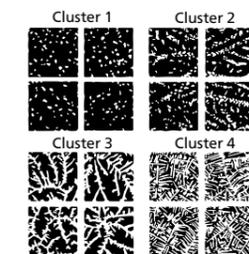


Characterizing fractality in dried drop patterns of *Viscum album* preparations by deep learning

We presented a novel unsupervised deep learning methodology for the analysis of self-assembled structures formed in evaporating droplets. This approach was used to characterize different mixing procedures to produce *Viscum album Quercus* dilutions. Our study showed clear differences between turbulent and laminar mixing procedures based on their fractal characteristics.



[Acuña et al., Fractal Fract., 2023.](#)



Four examples of 13 clusters defined by deep learning in different *Viscum album* extracts

A scoping review of genus *Viscum*: biological and chemical aspects of alcoholic extracts

The genus *Viscum* comprises a large number of semi-parasitic shrubs popularly known as Mistletoe. Many studies of aqueous extracts of *Viscum* are known, not much information is available on alcoholic extracts, however. We therefore conducted a review on preclinical and clinical studies of alcoholic extracts from *Viscum* species. These extracts demonstrated amongst others hypotensive, anticancer, antimicrobial, analgesic and anti-inflammatory properties.



[Melo et al., Plants \(Basel\), 2023.](#)



Distribution of the chemical classes found in ethanolic extracts in genus *Viscum*

Institute of Forensic Medicine



Prof. Christian Jackowski
Director

Prof. Wolfgang Weinmann
Deputy Director, Forensic Toxicology and Chemistry

PD Dr. Sandra Lösch
Physical Anthropology

Dr. Matthias Pfäffli
Traffic Medicine

PD Dr. Antoine Roggo
Medical Law

Prof. Christian Schyma
Forensic Medicine and Imaging (F&E)

Dr. Silvia Utz
Forensic Molecular Biology (DL)



PD Dr. Wolf-Dieter Zech
Forensic Medicine and Imaging (DL)

Dr. Martin Zieger
Forensic Molecular Biology (F&L)



The Institute performs most of its investigative work on behalf of the public prosecutor's office. The findings it makes help facilitate the administration of justice and maintain public safety. Certain services may also be used by other authorities, hospitals, physicians, or even private individuals in exceptional cases.

Human DNA sampling from large areas

DNA profiling has been one of the most widely used forensic techniques worldwide for decades. Great progress has been made in terms of sensitivity, robustness and efficiency of the methods employed in forensic genetics. However, until today, it has not been possible to efficiently collect and analyze the DNA from the floor of an entire room in order to subsequently make a statement about who was present at a particular crime scene. In our lab at the Institute of Forensic Medicine, we developed such a method, based on a very simple and easily accessible approach, using a vacuum cleaner and a forensic filter unit, followed by a fragmentation of the filter membrane prior to DNA extraction. The method proved to be very efficient in detecting DNA from individuals who were present on the various test surfaces and can be readily transferred to forensic casework. The further development of the method is supported by an extramural grant of 140'000 CHF.



Assembled hoover device for Total Human DNA sampling



[Neves et al., Forensic Sci Int Genet., 2023.](#)

Drive study

Drunk driving is one of the most significant causes of traffic accidents. Alcohol consumption impairs neurocognitive and psychomotor function and has been shown to be associated with an increased risk of driving accidents. To further reduce the number of alcohol-related traffic accidents, we aim to develop a drunk driving detection system ("DRIVE" algorithm) that reliably detects drunk driving on the basis of in-vehicle data obtained from steering wheel/brake/gas movements and from eye behavior monitored by on-board cameras in real-time while driving. Such a system might be used as the basis to warn the driver or stop the vehicle. We performed a placebo-controlled in-vehicle study on a designated test circuit of the military base at Thun with 56 volunteers after controlled alcohol administration. The study serves to gather the data that is necessary to develop such a real-time drunk driving detection system.



Cockpit with test devices



Capillary blood sampling for alcohol marker detection

Institute for the History of Medicine



Prof. Hubert Steinke
Director

Dr. Pascal Germann
Senior Assistant

Stefan Hächler
Head of Archive

Dr. Manuel Kaiser, Head of Collection

Bruno Müller
Head of Library

Dr. Magaly Tornay
Ethics Project



The Institute is an academic teaching and research institution that houses major collections. Teaching aims to contribute to the critical reflection and understanding of contemporary medicine from a historical perspective. Research focuses on the practice and theory of medicine in the 18th to 20th centuries.

Digital editions and structural data

In 2023, a 6-year project financed by the SNSF has been completed with the edition of 10,000 book reviews and 5,000 letters in full text. hallerNet, a platform on Albrecht von Haller and the scientific community of the 18th century, now contains 31,000 persons, 20,000 letters, 44,000 publications, 7,500 locations and 4,000 plants. While edition platforms usually have little data and data platforms usually have little full text, hallerNet's strength lies in linking texts with structural data. This allows for new inquiries into the structure and functioning of research before the emergence of modern biomedicine.



hallerNet.org

History of the artificial hip joint

In 1961, Maurice E. Müller replaced a complete hip joint with metal and plastic components for the first time in mainland Europe. Müller, for many years Director of the Orthopaedic Clinic at Inselspital, was one of the protagonists of a new form of joint replacement medicine. The interview volume tells the fascinating story of a new medical technology evolving into an economic sector worth billions.



[Bern Open Publishing Books](http://BernOpenPublishingBooks)

Pandemic objects

The Institute manages the medical collections of the University and of the Inselspital. This year, it opened a special digital exhibition. Unexpected objects as well as personal testimonials show how the COVID-19 pandemic shaped the day-to-day work of hospital staff.



medizinsammlung.ch/sonderausstellung/

History of the cerebellar vermis

The middle part of the cerebellum was called 'vermis', or worm, by Galen around 200 AD and was given a mechanical function. However, since the 14th century, this worm was identified with the choroid plexus, which retained this valve function. KF Steinsiepe has published an anatomical and philological analysis of the history of the vermis cerebelli and written a PhD thesis on Leonardo da Vinci's anatomy and physiology of the soul.



[Steinsiepe et al., J Hist Neurosci, 2023.](https://doi.org/10.1007/s12245-023-01000-0)

Institute for Infectious Diseases



Prof. Stephen Leib
Director

PD Dr. Franziska Suter-Riniker
Deputy Director

Prof. Siegfried Hapfelmeier-Balmer, Deputy Head Research

Dr. sc. nat. Denis Grandgirard

Dr. Katharina Summermatter
Head Biosafety Center

PD Dr. Ronald Dijkman

Prof. Andrea Endimiani

Prof. Bruno Gottstein



Dr. Alexander Oberli

Prof. Carmen Faso

PD Dr. Lucy Hathaway

PD Dr. Markus Hilty

Prof. Andreas Kronenberg
Head anresis.ch

PD Dr. Christoph Niederhauser

PD Dr. Alban Ramette

Prof. Parham Sendi



The Institute integrates research, education and diagnostic services over the full spectrum of microbiology, including virology, bacteriology, mycology, parasitology, molecular diagnostics, and infection serology.

IFIK-IPS spin-off startup Enzoxa wins first prize in Stage Up Business Competition 2023

Enzoxa has emerged from the UniBe Interfaculty Research Cooperation "One Health" to develop a novel plant-based therapy against the stomach pathogen *Helicobacter pylori*.



entrepreneurship-bern.ch



©Entrepreneurship Center University Bern

IFIK Biosafety Centre designated as WHO Collaborating Centre for Biosafety and Biosecurity

The World Health Organization (WHO) designates IFIK as the worldwide first university-based "Collaborating Centre for Biosafety and Biosecurity" supporting WHO's biosafety and biosecurity efforts.



[WHO Collaborating Centres](http://WHO.CollaboratingCentres)



Implementation of fully automated clinical bacteriological testing

The new system integrates automated sample processing, microbial culturing, and digital imaging. This innovation will streamline IFIK bacteriology diagnostic services while further increasing sample capacity.



Fully automated bacteriology

New IFIK-Cape Town collaboration for Pneumococcal Biology Research

IFIK researcher Dr. Lucy Hathaway has been awarded with a grant from the Swiss-South African Lead Agency to investigate commensal-pneumococcal interactions that may protect against bacterial pneumonia.



[Hathaway, SNF Grants](https://doi.org/10.1007/s12245-023-01000-0)



IFIK researcher Linus Rechsteiner, co-worker in the new pneumococcal research consortium

Institute for Medical Education



Prof. Sissel Guttormsen, Director IML (in the centre), Dr. Philippe Zimmermann, Department Head ASCII, Dr. Kai Schnabel, Department Head AUM, Prof. Sören Huwendiek, Department Head AAE; Dr. Sandra Trachsel, Department Head MME (from left to right)



The Institute is a competence center for medical education at the Faculty of Medicine of the University of Bern. It combines expertise and research in teaching, evaluation, and development under one roof. The Institute's interdisciplinary teams provide comprehensive support to the clients and partners.

IML has joined the IMEX Program

The International Medical Educators eXchange program IMEX aims to facilitate international exchanges and collaborations among medical educators.



[More about the program and why we are participating](#)



Symposium 50 years of the IML

Half a century of the Institute for Medical Education (IML): We have recently analysed how it was founded, what the most important events and who the key figures were. A symposium with around 120 invited guests on 7 July 2023 marked the conclusion of the activities. See also the interview with IML Director Sissel Guttormsen on page 48, published by the University of Bern on the occasion of the fiftieth anniversary.



[More about our Anniversary Symposium](#)



[Interview Prof. Sissel Guttormsen, Director IML since 2005 \(in German\)](#)



Spotlights by Steffen Eychmüller (UZP/Inselspital), Lenja Flütsch (Student), Henri Bounameaux (SAMS/SAMW) (from left to right)

Digital practical exams and evaluations with Examic Valuatic

About 12 years after the first digitally supported OSCE exam with the Examic EOSCE software, the successor software is now available: Examic Valuatic. Why a new development was necessary, what advantages Valuatic offers and what the future of the Valuatic system looks like is described in the following article.



iml.unibe.ch



Institute of Pharmacology



Prof. Andrea Huwiler
Director a.i.



Prof. Hans-Uwe Simon
Deputy Director



Prof. Thomas Kaufmann



PD Dr. Georgia Konstantinidou



Prof. Stephan von Gunten



Prof. Shida Yousefi



The Institute is involved in university teaching in pharmacology and immunology. It conducts interdisciplinary research on the pathophysiological processes that contribute to inflammation and cancer. It aims to find new therapeutic approaches and works closely with the clinics and research facilities of the Inselspital.

In memoriam: Prof. Dr. Andrea Huwiler 1966-2023

It is with great sadness that we remember Prof. Andrea Huwiler, a passionate pharmacologist, committed university lecturer and respected scientist.

Born in Norway in 1966, she joined the Institute of Pharmacology in 2006 and left a lasting impression. She has served as Director since 2021, making a significant contribution to our growth and success.

Prof. Andrea Huwiler was a dedicated researcher and an inspiring teacher. Her passion for pharmacology and her tireless efforts to advance the field were admirable. She paid particular attention to young scientists and students, whom she taught and supported with her expertise.

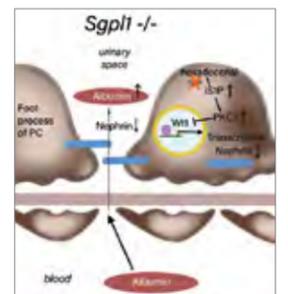
Mrs. Andrea Huwiler will be remembered as a warm-hearted, helpful, caring and highly inspiring person. We will miss her deeply.

Loss of S1P Lyase (SPL) expression in human podocytes causes a reduction in nephrin expression that involves PKC δ activation explaining the nephrotic syndrome in vivo

Mutations in the human SPL gene (*Sgpl1*) lead to steroid-resistant nephrotic syndrome. We show that knock-down of SPL (*SPLkd*) in human podocytes causes a downregulation of nephrin, a key protein for the glomerular filtration barrier, and its transcription factor Wilms tumor suppressor gene 1 (*WT1*). This may explain the podocyte dysfunction leading to proteinuria in vivo. PKC δ phosphorylation was increased in the *SPLkd*, and the knock-down of PKC δ enhanced nephrin and *WT1* expressions. This suggests that PKC δ could be considered as a novel target for treatment of a nephrotic syndrome induced by SPL mutations.



[Imeri et al., Int J Mol Sci., 2023.](#)



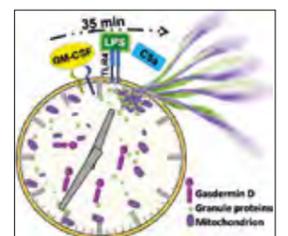
Mechanistic scheme coupling S1P lyase (*Sgpl1*) mutations to glomerular filtration barrier opening

NET formation is independent of gasdermin D (GSDMD) and pyroptotic cell death

Neutrophil extracellular traps (NETs) are extracellular structures formed by viable neutrophils following inflammasome activation. Notably, this process occurs independently of Gasdermin D (GSDMD), a key component in pyroptotic death. NET formation can be rapidly initiated within a short time frame (as early as 35 min) in response to various physiological stimuli, encompassing both canonical and non-canonical inflammasome pathways. Interestingly, during NET formation triggered by inflammatory mediators, GSDMD remained uncleaved in contrast to its cleavage observed in response to the activation of both canonical and non-canonical inflammasome signaling pathways. Importantly, GSDMD cleavage in wild-type neutrophils, resulting from inflammasome activation, did not lead to cell death. This study emphasizes the necessity of distinguishing the mechanisms underlying NET formation from pathways that culminate in cell death.



[Stojkov et al., Sci Signal, 2023.](#)



Proposed model for the NET formation triggered by inflammatory mediators, independent of gasdermin D

Institute of Physiology



Prof. Marcel Egger
Managing Director

Prof. Thomas Nevian
Co-Director

Prof. Walter Senn
Co-Director

Prof. Katja Odening
Co-Director

Prof. Christian Soeller
Co-Director

Prof. Jan Kucera

Ass. Prof. Stéphane Ciochi



Ass. Prof. Jean-Pascal Pfister

PD Dr. Shankar Sachidhanandam

Dr. Mihai Petrovici

Prof. em. Stephan Rohr
Emeritus

Prof. em Ernst Niggli
Emeritus



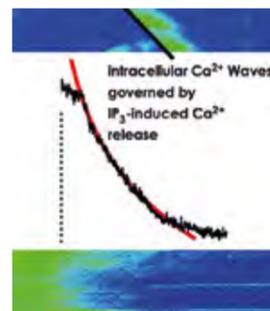
The Institute provides undergraduate and post-graduate education for students in medicine and life science. It carries out research mainly in the field of heart- and neurophysiology.

Dual mode of action of IP₃-dependent SR- Ca²⁺ release in ventricular cardiomyocytes

In this study we were able to provide evidence supporting a dual regulatory mechanism of IP₃-induced Ca²⁺ release as a new facet of intracellular Ca²⁺ homeostasis in the heart muscle that has not been described before. This mechanism helps protecting the myocardium from arrhythmogenic episodes.



Egger, C. et al. *J Mol Cell Cardiol*, 2023.

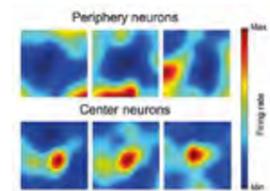


Fear extinction relies on ventral hippocampal safety codes shaped by the amygdala

Fear memory suppression during extinction is influenced by contextual information. During extinction when conditioned stimuli (CS) acquire safety properties, we found that CS-related activity in the ventral hippocampus (vH) reactivated during sleep, was strengthened upon memory retrieval and was facilitated when the extinction context exhibited precise coding of its affective zones. Thus, extinction memory relies on the formation of contextual and stimulus safety representations in the vH.



Nguyen et al., *Sci Adv*, 2023.

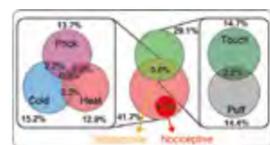


Principles of nociceptive coding in the anterior cingulate cortex

How pain is presented in the cortex remains elusive. Using in vivo miniscope imaging with cellular resolution in mice, we elucidated the principles of nociceptive and sensory coding in the anterior cingulate cortex, a region essential for pain processing. We found that chronic pain led to dysfunctional sensory processing and impairment of pattern separation and stimulus classification, which were restored by analgesic treatment.



Acuña et al., *Proc Natl Acad Sci U S A*, 2023.



Institute of Primary Health Care



Prof. Nicolas Rodondi
Director

Dr. Baris Gencer
Deputy Director

Prof. Alice Panchaud
Pharmacy Primary Care

Prof. Reto Auer
Substance Use

Prof. Sven Streit
Interprofessional Primary Care

Prof. Stéphanie Baggio
Statistics & Methodology

PD Dr. Patricia Chocano
Ageing



Dr. Moa Haller
Teaching

PD Dr. Orestis Efthimiou
Clinical Evidence & Guidelines

PD Dr. Elisavet Moutzouri
Career Development



The Institute is committed to training and promoting the next generation of family doctors, researchers and teachers in primary care. It generates the academic foundations and prerequisites for modern, integratively networked and patient-oriented primary care.

Optimising prescribing in older adults with multimorbidity and polypharmacy in primary care (OPTICA): cluster randomized clinical trial

The aim of the OPTICA study, conducted in Swiss primary care settings, was to study the effectiveness of a review intervention centered around an electronic clinical decision support system (eCDSS) on appropriateness of medication and the number of prescribing omissions in older adults with multimorbidity and polypharmacy compared with a discussion about medication in line with usual care. In 43 general practitioner clusters, 323 patients were recruited. On average, one prescribing recommendation to stop or start a medication was reported to be implemented per patient. The results were inconclusive as to whether the medication review intervention centered around the use of an eCDSS led to an improvement in appropriateness of medication (odds ratio 1.05, 95% confidence interval 0.59 to 1.87) or a reduction in prescribing omissions (0.90, 0.41 to 1.96) at 12 months compared with a discussion about medication in line with usual care.

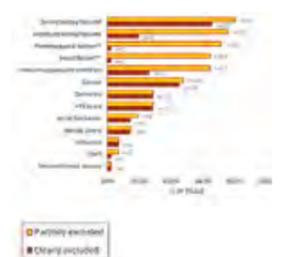


Jungo K et al., *BMJ*, 2023.

Lipid-lowering trials are not fully representative of patients managed in clinical practice: a systematic review and meta-analysis of exclusion criteria

We showed that a significant number of trials excluded patients with severe kidney problems, moderate heart failure, and certain other conditions. Many trials also excluded women, individuals with immune system issues, and people with cancer or dementia. Additionally, older adults were often left out of these studies. The findings suggest that future clinical trials should make an effort to include a more diverse group of participants to ensure that the results are relevant and applicable to a broader range of people.

% of RCTs excluding specific groups of interest



Aeschbacher-Germann et al., *J Am Heart Assoc.*, 2023.

Institute of Social and Preventive Medicine



Prof. Marcel Zwahlen, Director
 Prof. Claudia Kuehni, Deputy Director
 PD Dr. Christian Althaus
 Prof. Matthias Egger
 Prof. Annika Frahsa
 PD Dr. Marija Glisic
 PD Dr. Andreas Haas
 Prof. Nicola Low
 Dr. Mario Morger



Prof. Stephan Reichenbach
 PD Dr. Eliane Rohner
 Prof. Georgia Salanti
 Prof. David Schwappach
 Dr. Adrian Spoerri
 PD Dr. Ben Spycher
 Prof. Ana Maria Vicedo-Cabrera
 Prof. Sofia Zambrano



The Institute provides undergraduate and postgraduate education and carries out interdisciplinary research in the fields of social and behavioral health, clinical epidemiology and biostatistics, and international and environmental health.

SNF funded ACTUAL project

In June 2023, the ACTUAL project (“Advancing research on extreme humid heat and health”) commenced with the goal of enhancing our understanding of the effects of humid heat on human health. Led by Prof. Dr. Ana M. Vicedo-Cabrera, this 5-year project, funded by a 2022 SNF Starting Grant of CHF 1.7 million, employs new methodologies, data resources, and settings beyond existing current state-of-the-art approaches in climate epidemiology.



Inequalities in cervical cancer incidence rates

In a recent publication, PD Dr. Eliane Rohner and other colleagues showed that cervical precancer and cancer rates are about three times higher among South African women with HIV than those without HIV. Using medical insurance data from over half a million women, the study highlights significant disparities. PD Dr. Rohner also received the 2023 HEMMI-STIFTUNG prize during her October 2023 inaugural lecture focused on cervical cancer.



[Villalobos et al., Int J Cancer, 2023.](#)



Infectious diseases research

ISPM is engaged in various Multidisciplinary Center for Infectious Diseases (MCID) projects. To mention are N. Low’s leadership of the BReady cohort for pandemic preparedness, C. Althaus’s work on integrating diverse data sources for real-time SARS-CoV-2 monitoring, and A. Frahsa and N. Low’s exploration of political and societal polarization during the COVID-19 pandemic. Additionally, L. Fenner heads a project estimating Covid-19 and seasonal influenza transmission in school rooms, while B. Spycher contributes to the design of a personalized chronic and infectious disease management device for postmenopausal women.



Using routine health care data to improve child health

Collaborating with children’s clinics, Prof. Claudia Kuehni’s research group on child and adolescent health utilizes routine clinical data to enhance pediatric research and inform care. Funding from SPHN, SNF, and FOPH supports the development of national infrastructures like SwissPedHealth, Swiss Rare Disease Registry, and Childhood Cancer Registry. Projects contribute to assessing Swiss children’s growth, optimizing data flows, enhancing asthma diagnosis and treatment, minimizing late effects in cured cancer patients, and advancing research on rare diseases.



Institute of Tissue Medicine and Pathology



Prof. Aurel Perren, Director
 Prof. Alessandro Lugli, Deputy Director
 Prof. Inti Zlobec, Head of Digital Pathology
 Prof. Philippe Krebs, Head of Experimental Pathology



The Institute covers the entire width of the morphological and molecular diagnostics of tissue samples. The combination of service, teaching, and research under one roof allows for close interaction and mutual inspiration. Immune pathologies, inflammatory diseases, and tumor biology are the current research interests.

Tissue Medicine is the new Pathology

Pathologist Juna Brook is a fictive character and heroine of the animated short movie “Time-walker” which will be released by the Institute of Tissue Medicine and Pathology in 2024. After her presence at Napoleon’s autopsy on Saint Helena in 1821, Juna timewalks to 1890 and visits Theodor Langhans at the Institute of Pathology of the University of Bern. There, she learns the craft of histology which she will later apply in 2018 as Surgical Pathologist in Paris. Back to Bern, Juna experiences her highlight in 2023 at the Institute of Tissue Medicine and Pathology. Juna is on call at night and signs out a frozen section digitally in the medical cockpit “Pathojet.” The Institute of Tissue Medicine and Pathology has a leading role in the development of the own discipline boosted by creativity and innovation. The Institute’s vision “Tissue Medicine is the new Pathology” is implemented by its mission, namely, to apply modern methods and technologies in diagnostics, teaching and research. Together we make a difference in medicine.



Digital innovation in diagnostics and research

ITMP follows its strategic goal of digitisation both in diagnostics and research. This year saw of our first in-house developed computer-assisted diagnostic (CAD) algorithm to support clinical routine. Currently, a lymph node metastasis detection algorithm using deep learning is being employed by pathologists as quality control tool, to help identify potentially-missed metastatic lesions in colorectal cancers. An end-to-end digitisation and analysis pipeline is being run on University infrastructure and a graphical user interface has been developed by members of the digital pathology team, with which pathologists can directly interact. This AI-tool, called “Metassist” is now being expanded to progressively include additional cancer types, with the aim to establish a pan-cancer lymph node model.

On the discovery side, the ITMP is implementing a hyperplex spatial analysis platform (MACsima, from Miltenyi), which allows researchers to investigate dozens to hundreds of different proteins on the same tissue slide. By deeply phenotyping cells, as well as investigating the spatial organisation between cells, their potential interactions and their cellular neighbourhoods, the aim is to discover new intrinsic aspects of disease, which can then be translated into “spatial” biomarkers for potential future clinical use. Currently more than 26 immune cell markers form the backbone of a “Universal Immune Panel,” designed together by pathologists and researchers. This panel will be used as a starting block for spatial profiling, and the customization of additional panels.

Bern led international study will reduce overtherapy in appendiceal NET

Evidence leads to improved patient treatment! An international study led by endocrine surgery of the Inselspital and our Institute challenges a dogma: Contrary to the current concept seem microscopic lymph node metastases of appendiceal NET irrelevant for patients. Therefore there is no indication for right sided hemicolectomy.



[Nesti et al., Lancet Oncol, 2023.](#)

Theodor Kocher Institute



Prof. Britta Engelhardt
Director and Research Group Leader



Prof. Ruth Lyck
Research Group Leader



Dr. Urban Deutsch
Research Group Leader



Dr. Gaby Enzmann
Principal Investigator



Dr. Steven Proulx
Research Group Leader



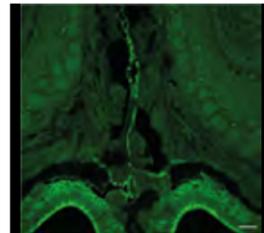
The Institute explores molecular mechanisms involved in inflammation, focusing on immune cell migration during immune surveillance and inflammation employing cutting-edge 3D live cell imaging. It teaches immunology, vascular cell biology, transgenic mouse technologies, cell migration, inflammation, and live cell imaging.

Visualizing the routes of cerebrospinal fluid clearance

In this study we elucidated the anatomical connections between the subarachnoid space and lymphatic vessels located near the cribriform plate in mice. This work builds upon previous work from the Proulx group that has indicated the importance of the lymphatic pathways for clearance of cerebrospinal fluid.



[Spera et al., EBioMedicine, 2023.](#)



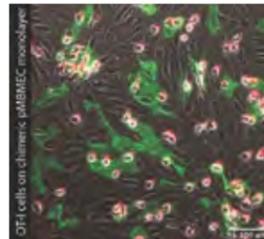
Lymphatics (green) positioned to drain CSF

Antigen recognition detains CD8 T cells at the blood-brain barrier and contributes to its breakdown

Antigen presentation at the blood-brain barrier (BBB) has been suggested to promote CD8 T cell entry into the CNS during multiple sclerosis. Our study rather shows that although brain endothelial cells can present antigens to CD8 T cells during neuroinflammation, this prevents CD8 T-cell migration across the BBB and rather triggers cell death of the endothelial cells.



[Aydin and Pareja et al., Nat Commun, 2023.](#)



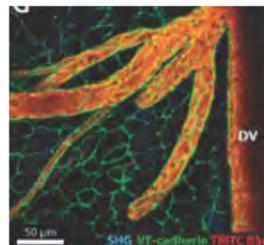
In vitro imaging showing CD8 T cells crawling on brain endothelial cells

VE-cadherin serves as a leptomeningeal landmark for imaging of CNS immune surveillance and inflammation

In this study, we describe VE-cadherin at intercellular junctions of arachnoid and pia mater cells that border the subarachnoid space (SAS) filled with cerebrospinal fluid. In vivo imaging of the spinal cord and brain in VE-cadherin-GFP reporter mice allows for direct observation of tracers and T cells in the SAS during health and neuroinflammation.



[Mapunda and Pareja et al., Nat Commun, 2023.](#)



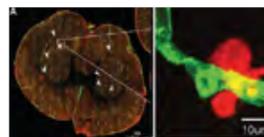
VE-cadherin-GFP allows for visualization of the cell-cell contacts of the pia mater

Blood-brain barrier integrity affects melanoma brain metastasis

Formation of melanoma brain metastasis depends on the successful extravasation of metastatic melanoma cells across the tight blood-brain barrier (BBB). This study emphasizes that preserving the integrity of the BBB is an important measure to limit the formation of melanoma brain metastasis.



[Saltarin et al., Cancers \(Basel\), 2023.](#)



Analysis of melanoma cell (red) extra- versus intravascular (green) localization

University Clinics Inselspital

Content

Department of Anaesthesiology and Pain Medicine
Department of Angiology
Department of Cardiac Surgery
Department of Cardiology
Department of Clinical Chemistry
Department of Cranio-Maxillofacial Surgery
Department of Dermatology
Department of Diabetes, Endocrinology, Nutritional Medicine and Metabolism
University Institute of Diagnostic and Interventional Neuroradiology
Department of Diagnostic, Interventional and Pediatric Radiology
Department of Ear, Nose and Throat Diseases, Head and Neck Surgery
Department of Emergency Medicine
Department of General Internal Medicine
Department of Hematology and Central Hematology Laboratory
Department of Human Genetics
Department of Infectious Diseases
Department of Intensive Care Medicine
Department of Medical Oncology
Department of Nephrology and Hypertension
Department of Neurology
Department of Neurosurgery
Department of Nuclear Medicine
Department of Obstetrics and Gynecology
Department of Ophthalmology
Department of Orthopedic Surgery and Traumatology
Department of Pediatrics
Department of Pediatric Surgery
Department for Plastic and Hand Surgery
Department of Pneumology and Allergology
Department of Radiation Oncology
Department of Rheumatology and Immunology
Department of Thoracic Surgery
Department of Urology
Department of Vascular Surgery
Department of Visceral Surgery and Medicine

Department of Anaesthesiology and Pain Medicine



Prof. Frank Stüber
Director and Chair

PD Dr. Lutz Lehmann
Vice Chair

Dr. Nadja Fislér
Head of HR

PD Dr. Martin Luginbühl
Chair Spital Tiefenau

Reto Thomann
Head of Nursing

Prof. Dominik Guensch
Head of Research



The Department of Anaesthesiology and Pain Medicine aims to define the best practices for personalized peri-operative patient care, with basic science as a foundation and translational medicine as the vision for the future.

Top 3 highlighted papers:

139 manuscripts were published in 2023 by our researchers. This is a curated pick of three of the most impactful publications:

Analgesic use and favourable patient-reported outcome measures after pediatric surgery: An analysis of registry data



[Bernhart K et al., Br J Anaesth, 2023.](#)

Impact of Intraoperative Fluid Balance and Norepinephrine on Postoperative Acute Kidney Injury after Cystectomy and Urinary Diversion over Two Decades: A Retrospective Observational Cohort Study



[Huber et al., J. Clin. Med, 2023.](#)

Direct versus videolaryngoscopy with standard blades for neonatal and infant tracheal intubation with supplemental oxygen: a multicentre non-inferiority, randomized controlled trial



[Riva et al., J. Clin. Med, 2023.](#)

Congress of the Swiss Society of Anaesthesiology and Perioperative Medicine (SSAPM) 2023

Scientists of the department received the awards for best oral abstract presentation and best poster presentation as well as the paper of the year 2022 award: Impact of analgesic techniques on early quality of recovery after prostatectomy: A 3-arm, randomized trial. Beilstein CM, Huber M, Furrer MA, Löffel LM, Wuethrich PY, Engel D. Eur J Pain. 2022 Oct;26(9):1990-2002



Dr. med. Christian Beilstein at the award ceremony

Case Report - Correspondence

In this preliminary data, Guensch et al. showed for the first time that blood gas changes during anaesthesia induction result in fluctuations in myocardial tissue oxygenation in a healthy patient. In a patient with coronary artery disease, anaesthesia induction lead to inducible myocardial ischaemia, despite normal haemodynamics. This is the first study to use cardiovascular magnetic resonance during anaesthesia induction. The study is supported by an SNF project grant of 0.5MCHF.



[Guensch et al., Br J Anaesth, 2023.](#)



Endotracheal intubation during anaesthesia induction in an MRI bore

Department of Angiology



Prof. Iris Baumgartner
Director until Aug. 2023

Prof. Drosos Kotelis, Chief Physician a.i.
since Aug. 2023

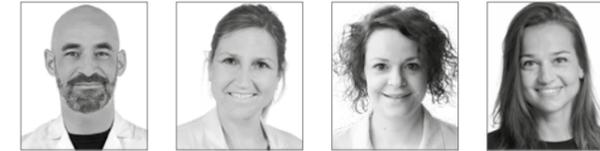
Prof. Yvonne Döring
Head of Research

PD Dr. Marc Schindewolf
Medical Director a.i.

Dr. Alexander Rosenov
Consultant

Dr. Rafael Kammer
Consultant

Dr. Benny Wohlfarth
Consultant



Dr. Mirco Kempter
Physician

Dr. Maria Schaumeier
Physician

Dr. Sarah Bernhard,
Physician

Györgyi Hamvas
Clinical Study Manager



The research activities focus on congenital vascular malformations, risk factors and their modulation in peripheral artery disease, atherosclerosis and atherothrombosis, integration of omics technologies in research of vascular malformations and atherosclerosis, drug therapy and endovascular management of venous thromboembolism.

Awards 2023

At this year's USGG Congress three members of our clinic were awarded:

- Dr. Manovriti Thakur "Best Free Communication"
- Bryce Evans "2nd Best Flash Poster Talk"
- Dr. Sarah Bernhard "2nd Best Free Communication"



At the CardioVascular Research Cluster Annual Meeting, Anais Yerly from the Tranlational Angiologie and the DBMR was awarded Best Poster Prize on her work "Examine the role of ACKR3 expression on B cells in atherosclerosis."

Prof. Yvonne Döring was awarded the Outstanding Achievement Award by the European Society of Cardiology on "Basic Cardiovascular Science."

Association of sex and cardiovascular risk factors with atherosclerosis distribution pattern in lower extremity peripheral artery disease

The underlying pathomechanisms of distinct atherosclerosis phenotypes in lower extremity peripheral artery disease (PAD) is poorly understood. We investigated the association of cardiovascular risk factors (CVRFs) and atherosclerosis distribution in a targeted approach analyzing symptomatic patients with isolated anatomic phenotypes of PAD.



[Baretella et al., Front Cardiovasc Med, 2023.](#)

NETs-induced thrombosis impacts on cardiovascular and chronic kidney disease

Inflammation and subsequent initiation of thrombotic events, termed immunothrombosis, also receive growing attention but are still incompletely understood. Nevertheless, the clinical relevance of aberrant immunothrombosis, referred to as thromboinflammation, is evident by an increased risk of thrombosis and cardiovascular events in patients with inflammatory or infectious diseases. Proinflammatory mediators released from platelets, complement activation, and the formation of NETs (neutrophil extracellular traps) initiate and foster immunothrombosis.



[Thakur et al., Circ Res, 2023.](#)

Department of Cardiac Surgery



Prof. Matthias Siepe
Director and Chief Physician

Prof. Alexander Kadner
Head Center for Congenital Heart Disease, Congenital Cardiac Surgery

Prof. Florian Schönhoff
Consultant Cardiac Surgeon, Aortic Surgery

PD Dr. David Reineke
Consultant Cardiac Surgeon, Heart Transplantation

Prof. Sarah Longnus
Leader Translational Research



The Department is the largest cardiac surgery center in Switzerland. It focuses on coronary artery bypass surgery, valve surgery with valve-preserving reconstruction procedures, treatment of the entire spectrum of congenital heart defects in children and adults, thoracic aortic surgery, rhythm surgery, and heart failure surgery.

First heart transplantations with donation after circulatory death

2023 has been a remarkable year for heart transplantation in Switzerland. Until recently, we were only able to accept hearts with donation after brain death (DBD) for transplantation; however, in a cooperative effort with colleagues from Lausanne and Zurich, we implemented donation after circulatory death (DCD) for heart transplantation in Switzerland in 2023. The development of ex-vivo heart perfusion technologies, and our experience with the Organ Care System Heart, were instrumental in the initiation of DCD heart transplantation. Importantly, DCD donation has contributed to substantially increasing the number of heart transplantations performed and decreasing waitlist durations.



swisstransplant.org: Key figures on organ donation 2023 (in German)



The Swiss Aortic Center and successes in Aortic Medicine

In December 2023, the Swiss Aortic Center was inaugurated with a successful symposium in aortic medicine. This year, we published several reports concerning aortic aneurysms and dissections in large, multicenter cohorts and special patient populations. Dr. S. Mosbahi won the "President's Choice Award" of the European Society of Cardio-Thoracic Surgery (EACTS) for a collaborative study (University of Pennsylvania) in young patients undergoing acute aortic dissection surgery. Dr. M. Nucera won the prestigious EACTS/STS award for work on endovascular repair in patients with heritable thoracic aortic disease, and Dr. M. Yildiz won the "Aortic Association" award for risk analysis of acute aortic dissection in patients with Marfan syndrome.



[Yildiz et al., Eur J Cardiothorac Surg, 2023.](#)

Advancing ex-vivo heart perfusion technologies to facilitate cardiac precision therapies by extending out-of-body times

With the advent of ex-vivo heart perfusion (EVHP) in clinical practice, we can now focus on its development to optimize evidence-based clinical protocols in transplantation and beyond. EVHP enables the application of precision therapies aimed to repair or recondition grafts as well as cardiac-targeted gene therapy/reprogramming, and/or the administration of pharmacological molecules, while avoiding undesirable systemic effects. In the context of our SF Board Grant, we designed an innovative perfusion system that permits an approximate 3-fold increase in out-of-body times – a key first step in the establishment of EVHP-enable cardiac precision therapies.



Ex-vivo heart perfusion system with extended perfusion and ventricular loading capabilities



[Inselspital: SF Board Grant announcement](#)

Department of Cardiology



Prof. Stephan Windecker

Prof. Catherine Gebhard

Prof. Christoph Gräni

Prof. Andreas Häberlin

Prof. Lukas Hunziker

Prof. Katja Odening

Prof. Thomas Pilgrim

Prof. Fabien Praz

Prof. Lorenz Räber

Prof. Tobias Reichlin

Prof. Laurent Roten

Dr. Fabienne Schwitz

Prof. Stefan Stortecky

Prof. Hildegard Tanner



The Department of Cardiology is a leading center for the diagnosis and treatment of cardiovascular diseases. In addition to the medical services, the Department is engaged in education, training, and research. From translational to clinical research, projects and studies are carried out across the entire spectrum of cardiology.

Long-term outcomes with biodegradable polymer sirolimus-eluting stents versus durable polymer everolimus-eluting stents in ST-segment elevation myocardial infarction

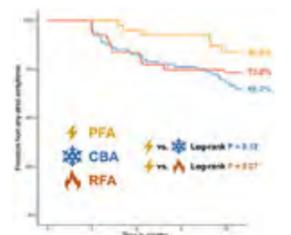
Between 2016 and 2018, 1300 patients undergoing primary percutaneous coronary intervention for STEMI were randomly allocated in a 1:1 ratio to treatment with biodegradable polymer sirolimus-eluting stents (b-SES) or durable polymer everolimus-eluting stents (d-EES). At 5 years of follow up, b-SES were superior to d-EES with respect to target lesion failure. The primary composite endpoint of target lesion failure occurred in 50 (8%) patients treated with b-SES and in 72 (11%) patients treated with d-EES. The difference was driven by a numerically lower risk for ischaemia-driven target lesion revascularisation.



[Iglesias et al., Lancet, 2023.](#)

Pulsed-field vs. cryoballoon vs. radiofrequency ablation: a propensity score matched comparison of one-year outcomes after pulmonary vein isolation in patients with paroxysmal atrial fibrillation

Pulsed-field ablation (PFA) has shown favorable data in terms of safety and procedural efficiency for pulmonary vein isolation (PVI). In a propensity-score matched analysis of 200 patients with paroxysmal atrial fibrillation, freedom from any atrial tachyarrhythmia 1 year after PVI using PFA was favorable and at least as good as for PVI with cryoballoon or radiofrequency ablation.



Recurrence of any atrial tachyarrhythmia between day 91 and 365 post ablation



[Maurhofer et al., J Interv Card Electrophysiol, 2023.](#)

Robotic-assisted percutaneous coronary intervention: experience in Switzerland

Percutaneous coronary intervention (PCI) exposes operators to ionizing radiation. Robotic-assisted PCI (RA-PCI) is a novel technology that enables interventional cardiologists to operate remotely from a radiation-shielded cockpit. We reported the experiences and outcomes of the first 21 patients undergoing RA-PCI in Switzerland. Clinical success was achieved in 100% and robotic success in 81% of the procedures (17/21, including 4 procedures requiring partial manual assistance). The manufacturer decided to withdraw the system due to the slow adoption of the technology.



CorPath GRX Roboter (Siemens-Healthineers)



[Häner et al., Front Cardiovasc Med, 2023.](#)

Department of Clinical Chemistry



Prof. Martin Fiedler
Director

Prof. Carlo Largiadèr
Deputy Director

Prof. Ursula Amstutz

Prof. Alexander Leichtle

PD Dr. Alexander Lämmle

Prof. Mojgan Masoodi

Prof. Michael Nagler

Prof. Jean-Marc Nuoffer



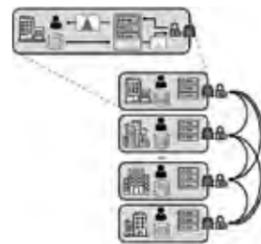
The Department of Clinical Chemistry provides clinical services within the Center for Laboratory Medicine, our laboratory specialists ensure a high professional quality of the analyses and effective workflows. A wide range of research services support local clinical research groups and international consortia.

The Bioref infrastructure

The BioRef federated analytics infrastructure: In our decentralized approach, data is de-identified on site by the individual data providers of the consortium (hospital A, hospital B, etc.) and uploaded to the on-premise TI4Health instance. Subsequently, data are analyzed via the federated confidential computing network without any raw data being revealed.



Blatter et al., *J Med Internet Res*, 2023.



Cell-free DNA methylome analysis in plasma and urine: impact of library preparation method

Similar overall CpG methylation rate between body fluids for single-stranded library preparation (ssLP; 80.2% for plasma, 79.4% for urine). Double-stranded library preparation (dsLP), on the other hand, resulted in a much lower global methylation for urine samples (56.0%) compared to plasma (75.8%). The incorporation of unmethylated cytosines at the 3' ends of the reverse strands during end repair in double-stranded library preparation leads to a lower average methylation, explaining the observed bias and indicating an increased occurrence of jagged ends in urinary cfDNA.



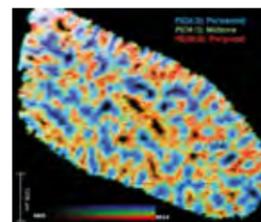
Kueng et al., *Diagnostics*, 2023.

Assessing spatial hepatic lipid metabolism using desorption electrospray ionization mass spectrometry imaging (DESI-MSI)

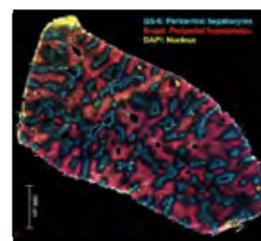
Lipid metabolism plays an important role in liver pathophysiology and development of metabolic dysfunction-associated steatotic liver disease. The liver lobule asymmetrically distributes oxygen and nutrition, resulting in heterogeneous metabolic functions. Periportal and pericentral hepatocytes have different metabolic functions, which lead to generating liver zonation. Using molecular imaging by DESI-MSI, we defined the zone-specific signature of hepatic lipid species across liver zonation. We identified that fatty acids were predominantly detected in the periportal region, whereas triacylglycerols were detected mainly in the pericentral region. Interestingly, while phospholipids were distributed in the periportal and pericentral zones, phosphatidylinositols, a phospholipid associated with cellular signaling and apoptosis, were located predominantly in the midzone. The De novo triacylglycerols biosynthesis was highlighted as the most influenced pathway across the three-zones. The ability to accurately assess zone-specific hepatic lipid metabolism in the liver may lead to a better understanding of lipid homeostasis during liver disease progression.



Seubnooch et al., *JHEP Rep*, 2023.



Red, green and blue overlay ion image from DESI-MSI



Immunofluorescence-stained liver section

Department of Cranio-Maxillofacial Surgery



Prof. Benoît Schaller
Director and Chief Physician

Prof. Nikola Saulacic
Head of Research Group

Prof. Willy Hofstetter
Scientific Associate

Dr. John-Patrik Burkhard
Scientific Associate

Dr. Sherin Khalil
Resident

Dr. Daniel Toneatti
Scientific Associate

Prof. Tateyuki Iizuka
Senior Consultant

Dr. Nur Shazwani Farah
Scientific Associate



Inga Grigaitiene
Laboratory Bone Biology



Thuy-Tran Nguyen
Laboratory Bone Biology



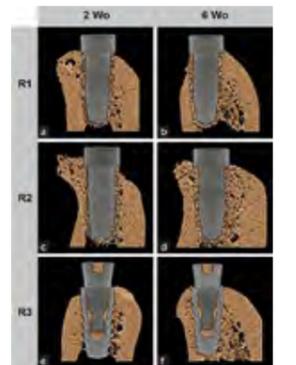
The Department offers the entire spectrum of oral and maxillofacial surgery. This includes detecting and treating diseases, injuries, malformations, and deformities of the face, oral cavity, teeth, and jaw. The Department's research has a strong translational character and focuses on the regeneration of the facial skull bone.

Osseointegration of an implant system based on 3D printing

This study assessed the sequence of osseointegration in 3D-printed titanium implants with a trabecular structure without (R1) or with (R2) an acid-pickled surface compared to commercially available titanium implants (R3). The analysis of the total implant surface area disclosed a value that was approximately double as high for the test compared to the control implants. Micro-CT analysis revealed increasing osseous volume and bone-to-implant contact (BIC) from 2 to 6 weeks, with a significantly higher BIC for the two test implants compared with controls. Histomorphometrically, the BIC percentage of new mineralized bone was greater for the control implants after 2 and 6 weeks.



Lang et al., *Clin Oral Implants Res*, 2023.



Evaluation of a biodegradable osteosynthesis system in large-animal cranio-maxillofacial defect models

Supported by an SNSF Sinergia grant (No. 180367/1), the Swiss Federal Institute of Technology in Zurich, the University of Zurich and our research group continue the evaluation of biodegradable osteosynthesis plates and screws manufactured out of crystalline magnesium alloys. The preliminary results of a midface fracture model in sheep confirmed our previous experience with the degradation behaviour of the material and suggested sufficient stability for fracture consolidation. In 2024, the system will be further studied in a mandibular fracture model.



Retention of teeth in the fracture gaps

This study aimed to assess the survival rate of teeth located within the mandibular fracture line and evaluate related follow-up treatments. 184 patients with 189 teeth in the fracture line were analyzed. Postoperative tooth-related complications were seen in 14 teeth. A correlation was found between complications and trauma-related tooth luxation as well as prior teeth connected to retainers or orthodontic appliances. Thus, tooth-related complications in the mandibular fracture line seem extremely rare when the teeth are undamaged, properly preserved, and closely monitored. Therefore, unless there is an intraoperative indication for extraction, preserving the teeth in the fracture line is recommended.



Walker et al., *Clin Oral Investig*, 2023.

Department of Dermatology



Prof. Luca Borradori
Chairman

Prof. Laurence Feldmeyer

Prof. Robert Hunger

Prof. Eliane Müller

Prof. Dagmar Simon

Prof. Christoph Schlapbach

Prof. Nikhil Yawalkar
Deputy Chairman



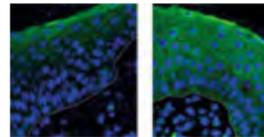
The Department covers the entire spectrum of dermatological diseases. In addition to clinical services and teaching, it conducts high-quality clinical and translational research focusing on the underlying immunological mechanisms of inflammatory and autoimmune skin diseases and the regulation of cytoarchitecture and cell integrity.

Dupilumab normalizes correlates of lysosomal function in atopic dermatitis (AD)

Autophagy, which is important for the epidermal differentiation, is dysregulated in lesional atopic dermatitis (AD). A restoration of dysregulated key players of autophagy is observed upon dupilumab therapy.



[Bürgler et al., J Eur Acad Dermatol Venereol, 2023.](#)



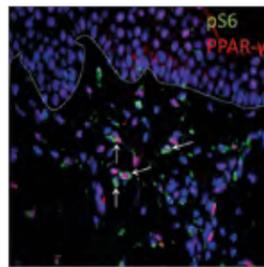
Inflammation in atopic dermatitis skin affects the expression and activation of proteases, resulting in an inhibition of cathepsin activity in autophagosomes (left). Dupilumab therapy restores autophagy (right).

PPAR- γ regulates the effector function of human T helper 9 cells by promoting glycolysis

We have investigated the metabolic processes of skin-resident Th9 cells, a subtype of cutaneous immune cells that play a crucial role in the development of atopic dermatitis and allergic contact dermatitis. Our results reveal that PPAR- γ promotes glycolysis, thereby regulating the expression of the cytokine IL-9. Additionally, IL-9 is capable of promoting metabolic adjustments in Th9 cells, providing them a growth advantage in high glucose conditions. This is particularly relevant as local glucose levels are significantly increased in inflamed skin tissue, as we demonstrate for the first time.



[Bertschi et al., Nature Communications, 2023.](#)

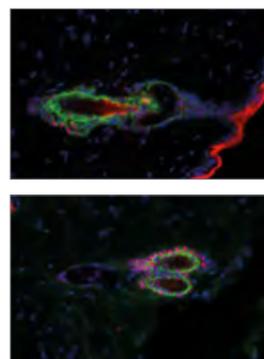


News from stem cell regeneration: an unprecedented role of a desmosomal adhesion-molecule

Protective and regenerative mechanisms preventing human stem cell reservoirs from disease- and age-related decline is of highest medical interest. An international Consortium investigating desmosomal cadherin signaling in pemphigus vulgaris has uncovered an entirely novel function of the adhesion molecule Dsg3: as a gate-keeper of stem cell quiescence and as an injury-related driver of regeneration of stem cell reservoir multipotency. These findings open the door for novel desmosomal adhesion-based regenerative and therapeutic approaches.



[Hariton et al., iScience, 2023.](#)



Pemphigus vulgaris (PV) autoantibody-mediated uncoupling of Dsg3 transadhesion activates multipotent stem cells in the hair follicle, which become Sox9-negative to enter a self-organized regenerative program.

Department of Diabetes, Endocrinology, Nutritional Medicine and Metabolism



Prof. Lia Bally

Prof. Maria Balmer

Prof. Regula Everts

Prof. José García

PD Dr. Michel Hochuli

Prof. Markus Laimer

Prof. Zeno Stanga

Prof. Christoph Stettler



PD Dr. Roman Trepp

Prof. Lilian Witthauer



The Department is a university service provider in the fields of classic hormonal and metabolic diseases, in particular all forms of diabetes mellitus, thyroid diseases, obesity, and nutritional medicine. It makes an important contribution to the training of medical students and is involved in clinical and biomedical research.

Cerebral white matter and cognitive performance in Phenylketonuria (PKU)

This study assessed white matter characteristics in adults with PKU, and found widespread white matter alterations most prominent in the posterior white matter, closely related to cognitive performance. Brain and blood phenylalanine levels were unassociated with diffusion metrics. Diffusion tensor imaging adds to the understanding of the interplay between cognition and white matter microstructure in adults with PKU.



[Muri et al., Brain Commun, 2023.](#)

RT volatile metabolomics analysis of dendritic cells

The metabolism of immune cells is tightly interlinked with their function and therefore an attractive target for the development of immunomodulatory strategies. We present a novel set-up coupled to a secondary electro-spray ionization-high resolution mass spectrometric (SESI-HRMS) platform allowing real-time headspace analysis of immature and activated DCs.



Experimental set-up for DC headspace measurement by SESI-HRMS



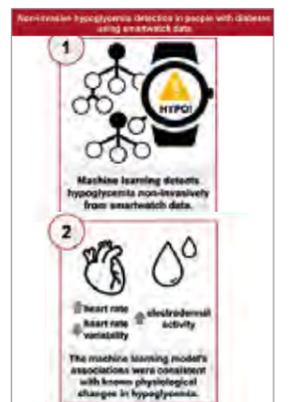
[Arnold et al., Anal Chem, 2023.](#)

Noninvasive hypoglycemia detection in diabetes using smartwatch

Using smartwatch data, we developed a machine learning approach to detect hypoglycemia noninvasively in people with diabetes, solely based on wearable data. Detection performance was high, suggesting that wearable-based and noninvasive technology may complement existing methods for hypoglycemia warning.



[Lehmann et al., Diabetes Care, 2023.](#)



Hypoglycemia detection based on smartwatch data using machine learning

University Institute of Diagnostic and Interventional Neuroradiology



Prof. Jan Gralla
Chairman and Physician in Chief

Prof. Roland Wiest
Deputy Chairman

PD Dr. Eike Piechowiak
Lecturer & Attending Physician

Dr. Ruben Encinas
Attending Physician

Michela Mordasini
Head of Medical Technical Neuroradiology



The Institute covers the entire diagnostic and interventional neuroradiology spectrum using state-of-the-art equipment. Its research priorities are aligned with the other neuro-oriented research groups of the University and the Inselspital. They can be divided into clinical projects (neurovascular research) and basic research.

A meta-analysis on intravenous thrombolysis and endovascular stroke therapy

A meta-analysis published in The Lancet 2023, co-led by Jan Gralla, Neuroradiology, and Urs Fischer, Neurology, provided important insights into the combination of intravenous thrombolysis and endovascular treatment for ischemic stroke. The Improving Reperfusion Strategies in Acute Ischemic Stroke (IRIS) collaboration performed a meta-analysis of six randomised trials. Among 2,313 patients we found minimal differences in outcomes between those who received endovascular treatment alone and those who received a combination of intravenous thrombolysis and endovascular treatment. The findings of this study offer valuable insights into the optimization of acute ischemic stroke treatment. Future treatment guidelines should incorporate more personalized decisions regarding intravenous thrombolysis before endovascular treatment.



Majoie et al., Lancet, 2023.

DL& DiReCT /Cortex Morph: development and clinical validation of a novel Deep Learning based framework for clinical decision support in chronic brain disorders

In 2022, we have introduced a new method to quantify subtle gray matter atrophy caused by neurodegenerative disorders in the micro range. The proposed framework introduces a pipeline for diagnostic decision support in neurodegenerative disorders, epilepsy and neuroimmunology. In 2023, the method was extended towards processing of contrast-enhanced T1w MRI which enabled the analysis of clinical image datasets that do not routinely encompass unenhanced 3-D T1w images (1). The framework enabled the analysis of regional volume decreases in MS patients after SARS-CoV2 infections along the entrance pathways of the virus into the human brain (2). In epilepsy, automated hippocampal radiomic analysis demonstrated a significant improvement of the reader's diagnostic accuracy and diagnostic confidence (3). Further, we were able to demonstrate that thalamocortical perfusion abnormalities segregate patient with nonconvulsive status epilepticus of clusters of seizures from postictal patients with a single seizure (4).



1) Rebsamen et al., Hum Brain Mapp., 2023.



2) Rebsamen et al., CNS Neurosci Ther., 2023.



3) Rebsamen et al., Clin Neuroradiol., 2023.



4) Köstner et al., Brain Communications, 2023.

CSF Hypo- und Hypertension Syndromes

The Neurocenter at Inselspital has established a multidisciplinary cooperation between the Departments of Neuroradiology, Neurosurgery and Neurology for patients with CSF disorders. The close and fruitful collaboration is reflected in numerous publications in high-ranking journals. Among others, a brain-MRI based SIH score, referred to as the Bern Score, has been devised by our team, and found its way into everyday clinical routine around the globe.



Piechowiak et al., Clin Neuroradiol., 2023.

Department of Diagnostic, Interventional and Pediatric Radiology



Prof. Johannes Heverhagen
Director

Prof. Jessica Bastiaansen

Dr. Michael Brönnimann
Senior Physician

Prof. Andreas Christe
Chief Physician

Dr. Keivan Daneshvar
Senior Consultant

Prof. Lukas Ebner, Senior Consultant

PD Dr. Rainer Josef Egli
Senior Physician

Prof. Adrian Huber
Senior Consultant



Dr. Till Lerch
Senior Resident Physician

PD Dr. Verena Obmann
Senior Consultant

Dr. Alan Peters
Senior Physician

Prof. Alexander Pöllinger
Senior Consultant

PD Dr. Thomas Ruder
Senior Consultant

Dr. Nico Ruprecht
Project leader DBMR Lab

Dr. Florian Schmaranzer
Senior Resident Physician

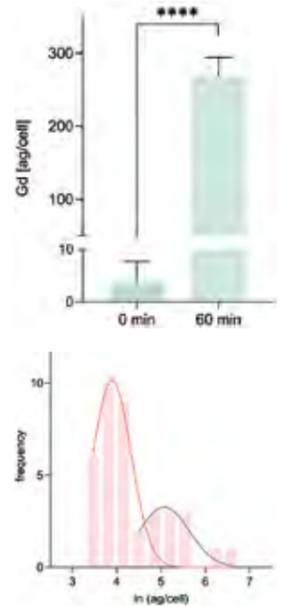
Prof. Hendrik v. Tengg-Kobligk
Deputy Director



The Department fulfills the tasks of a university institution in patient care, teaching and research, and also provides outpatient care services. These include individual cutting-edge medical services, namely in interventional radiology.

Gadolinium-based contrast agent uptake in blood cells during MRI

The study aimed to determine the uptake of GBCAs in blood cells of patients undergoing contrast-enhanced MRI (ce-MRI) examination. It found detectable uptake of GBCAs into white blood cells (WBCs) ex vivo, with substantial Gd uptake in WBCs of patients who underwent ce-MRI examination. However, the observed Gd uptake in WBCs does not follow a log-normal distribution commonly observed in the fields of environmental studies, biology, and medicine. The implications of the observed Gd uptake in WBCs and its potential link to Gd deposition in organs remain unclear, highlighting the need for further research into the interaction between GBCAs and human cells.



Ruprecht et al., Invest Radiol., 2023.

A multiclass radiomics method-based WHO severity scale for improving COVID-19 patient assessment and disease characterization from CT scans

With the help of artificial intelligence, the authors developed a new method, AssessNet-19, to assess the severity of COVID-19 disease on computed tomography (CT) scans. For the study, CT exams of COVID-19 patients with acute lung disease were retrospectively collected in a multicentric study setting. The algorithm was trained to recognize lesion patterns predictive of severity with radiologists data annotations while severity was assessed based on the World Health Organization (WHO) scoring. The method proved superior to traditional models and radiologists' evaluations in predicting disease severity and constitutes therefore a valid automated severity classification tool for COVID assessment compliant with WHO guidelines.



Henao et al. Invest Radiol., 2023.

Department of Ear, Nose and Throat Diseases, Head and Neck Surgery



Prof. Marco Caversaccio
Chairman

Prof. Roland Giger

Prof. Georgios Mantokoudis

Prof. Martin Kompis

Prof. Eberhard Seifert

Prof. Stefan Weder

Prof. Lukas Anschutz



PD Dr. Urs Borner

PD Dr. Wilhelm Wimmer

Dr. Philipp Aebischer



The Department comprises several highly specialized units. It focuses on diagnosing and treating diseases in its field and is intensively involved in research projects that allow these diseases to be better understood and treated. Experts in audiology, medicine, physics, and engineering conduct practice-oriented research.

Automated real-time monitoring of cochlear implantation

An increasing number of patients with residual hearing undergo cochlear surgery. However, 50% of individuals lose their residual acoustic hearing during surgery. Electrocochleography (ECoChG) is used to anticipate and prevent surgical trauma. Currently, these signals are analyzed visually by an expert, which is slow and unreliable. To assist the scientific community and improve the interpretability, we provide access to our data and algorithms to the research community. In our own efforts to overcome these limitations, we developed algorithms to automatically analyse intraoperative ECoChG signals in real-time. Tests in simulations and in real patient data have shown that our algorithms improve the diagnostic value of intraoperative ECoChG compared to the current methods.



[Schuerch et al., Sci Data, 2023.](#)



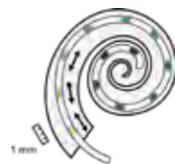
[Andonie et al., IEEE Transactions in Biomedical Engineering, 2023.](#)

Radiation-free assessment of cochlear implant electrode positions

Determining the positioning of electrode contacts following cochlear implantation relies on radiography and incurs supplementary costs and harmful radiation. We are evaluating a cost-effective and radiation-free alternative method that can greatly benefit the clinical community.



[Schraivogel et al., Ear and hearing, 2023.](#)



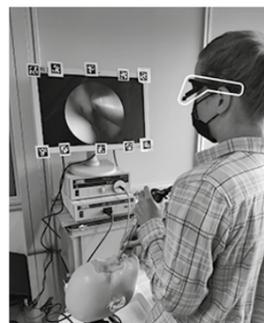
Visualization of cochlear implant electrode insertion depth estimation providing sub-millimeter accuracy

Training and proficiency level in endoscopic sinus surgery change residents' eye movements

Functional endoscopic surgery of the paranasal sinuses (FESS) is challenging and needs lots of training. Eye tracking can provide an objective assessment to measure residents' learning curve. We assessed residents' fixation durations and other dependent variables during FESS training. Eye movements and cognitive load differed between residents of different skill levels and were able to predict the proficiency of the trainee. Eye tracking might therefore be a useful measurement tool for surgical expertise.



[Niederhauser et al., Sci Rep, 2023.](#)



Department of Emergency Medicine



Prof. Aristomenis Exadaktylos
FRCEM MSc
Director and
Chief Physician

Dr. Beat Lehmann
Deputy Chief
Physician

Prof. Wolf Hautz
MME, Head
of Research,
Diagnostic Error
and Patient
Safety

Prof. Thomas Sauter
MME
Tele-emergency
medicine and
e-health



The Department is highly involved in research and teaching at the University of Bern. It currently has five interdisciplinary working groups dedicated to key topics in emergency medicine, usually in collaboration with international partners. The focus is on the practical application and clinical relevance.

SNSF Starting Grant on collaborative diagnoses

Incorrect medical diagnoses are common and some have serious consequences for patients. However, there is a limited understanding of the circumstances under which such errors occur and of how effective collaboration within the diagnostic team can help prevent them. The Co-Mind project will provide a clearer understanding of how decision-making in medical diagnostics and other high-risk areas can be improved to help enhance diagnoses in the long term.

Dr. rer. nat. Juliane Kämmer, Dipl.-Psych., is a Senior Researcher at the Department of Emergency Medicine at Inselspital Bern and co-leader of the Diagnostic Quality Lab. In 2013, she completed her PhD in Psychology at the Humboldt University in Berlin and the Max Planck Institute for Human Development. She then researched and taught at various German universities and most recently transitionally held the Chair of Social and Communication Psychology at the University of Göttingen. She has already conducted research as a Marie Skłodowska-Curie Fellow at the University of Bern from 2020 to 2022. In her research on team decisions under uncertainty and diagnostic quality, she combines theories and methods from psychology, cognitive science and medical education research. Her research provides insights that aim to lead to better team decisions, such as in the form of better medical diagnoses.



Dr. rer. nat. Juliane Kämmer

Extended reality in emergency medicine

Emergency medicine is characterized by a number of rare but life saving procedures – so called HALO procedures, for high acuity, low occurrence. Internationally, training for such procedures consists of various formats, but a critical component – supervision – is often lacking due to the nature of the procedure.

At the Department of Emergency Medicine, we have augmented our existing training for such procedures with a HALO-Assist concept. The concept requires the frontline clinician to put on a set of glasses that allow for an audio-visual connection over the internet to a person not currently at the site of care. The assisting remote person can augment the treating physicians reality by adding flow-charts or pointers to their visual field and by talking them through the procedure. This enables a 24/7 assistance and supervision in HALO procedures – a concept that was awarded the annual innovation prize by the German Society of Emergency Medicine DGINA in 2023.



HALO Assist in action

Department of General Internal Medicine



Prof. Drahomir Aujesky Director
 Prof. Nicolas Rodondi Chief Physician
 Dr. Martin Perrig Chief Physician
 Prof. Manuel Haschke Chief Physician
 Prof. Maria Wertli
 PD Dr. Christine Baumgartner
 PD Dr. Tobias Tritschler



PD Dr. Manuel Blum
 PD Dr. Carole Aubert
 PD Dr. Evangelia Liakoni
 PD Dr. Felix Hammann
 PD Dr. Stefan Weiler



The Department focuses on caring for patients with multiple diseases (multimorbidity) and complex conditions requiring targeted diagnostics and multidisciplinary therapy. It contributes to the development of the medicine of the future through research and a broad, practice-oriented educational program.

Inappropriate prescribing

Reducing polypharmacy and inappropriate prescribing among older multimorbid adults is a crucial objective of our department and a main research focus. Proton pump inhibitors (PPI) are important contributors to this problem. In an analysis of the OPERAM (OPTimizing ThERapy to prevent Avoidable hospital admissions in Multimorbid older adults) trial, which included multimorbid adults over 70 years with at least 5 chronic medications, over half of patients had a PPI at admission, among which almost half with a potentially inappropriate indication. PPI use was associated with 30-day readmission. These results underscore the importance of reviewing medication and stopping potentially inappropriate medications.



Aubert et al., CMAJ Open, 2023.

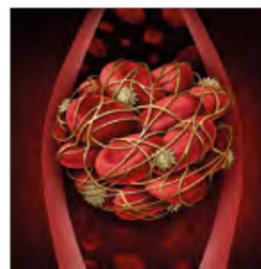


Venous thromboembolism

Venous thromboembolism has been a focus of our department's research for several years. In a retrospective analysis of our prospective multicenter cohort of in- and outpatients aged 65 years or older (SWITCO65+ for SWISS venous Thromboembolism Cohort study 65+), active cancer and low physical activity were associated with major bleeding, and high risk of falls with clinically relevant non-major bleeding. These data cohort are highly relevant for clinical practice given that about one third of the participants would have been excluded from landmark trials on venous thromboembolism.



Ferrazzini et al., Blood Advances, 2023.



Lipid-lowering trials

Lipid-lowering medication is another main focus of our department's research. In a systematic review and meta-analysis, we found that the majority of lipid-lowering therapy trials that are used to produce guidelines excluded patients with common diseases, such as moderate-to-severe kidney disease or heart failure, and that older and female persons were underrepresented. Future trials should promote diversity and limit exclusion criteria. We are currently partly addressing this issue with the STREAM (Statin discontinuation as pRevention among the Elderly And Multimorbid) trial.



Aeschbacher-Germann et al., J Am Heart Assoc, 2023.



Department of Hematology and Central Hematology Laboratory



Prof. Anne Angelillo-Scherrer Director
 Prof. Alicia Rovó Deputy Director
 Prof. Sara Meyer Head of Hemato-Oncology
 Prof. Vera Ulrike Bacher Academic Head of Morphology & Hematological Immunophenotypisation
 Prof. Johanna A. Kremer Hovinga Head Reference Center Hemophilia & Academic Head Hemostasis & Cell Therapy Laboratory
 PD Dr. Michael Daskalakis Head of Transfusion Medicine, Apheresis & Cell Therapy Laboratory
 Prof. Nicolas Bonadies Head Clinical Study Management/Biobanking
 PD Dr. Monica Schaller Tschan Coordinator undergraduate teaching & Graduate School for Cellular and Biomedical Sciences



Prof. Sacha Zeerleder Group Leader
 PD Dr. Ramanjaneeyulu Allam Group Leader



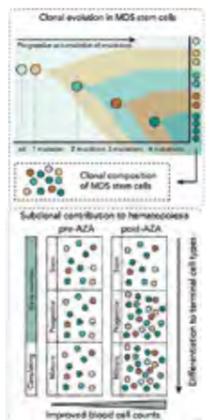
Hematology includes the diagnosis, treatment, and prevention of benign and malignant diseases of the hematopoietic and lymphatic system, blood coagulation, and thrombosis. The Department covers this entire field, offers comprehensive diagnostics and treatment at the highest level, and is also committed to teaching and research.

Hematopoietic stem cell mutations in MDS and CMML: impact on cell differentiation and AZA therapy effects

Mutant hematopoietic stem cells (HSCs) play a key role in myelodysplastic neoplasms (MDS) and chronic myelomonocytic leukemia (CMML), both characterized by acquired somatic mutations. Hypomethylating agents (HMAs) like AZA alter the course of these disorders. Clinical improvement in MDS/CMML with HMAs does not necessarily involve eliminating mutated cells but may result from enhanced differentiation capacity of mutated HSCs. The mutational burden in HSCs reflects across hematopoietic differentiation in these conditions. AZA therapy correlates with improved hematopoiesis, linked to heightened clonal output from mutant progenitors to mature cells.



Schnegg-Kauffman et al., Blood, 2023.

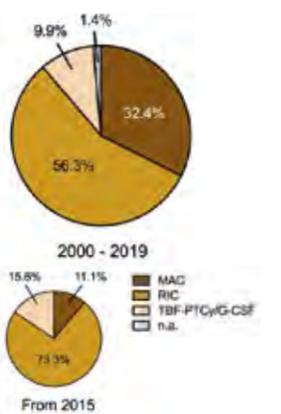


Characterization of engraftment dynamics in myelofibrosis after allogeneic hematopoietic cell transplantation including novel conditioning schemes

Myeloproliferative neoplasms (MPN) such as myelofibrosis (MF) are rare hematopoietic stem cell disorders progressing to bone marrow failure or blast phase. Allogeneic hematopoietic cell transplantation is a potentially curative therapy for some patients with MF, but engraftment in MF vs. AML is delayed promoting complications. As engraftment in MF is incompletely characterized, we studied engraftment dynamics in a large patient cohort. We demonstrated that later neutrophil and platelet engraftment in MF relates both to host and treatment-related factors and that novel conditioning schemes administered also to rare entities as MF, need detailed evaluation to assess long-term graft function and outcome.



Jungius et al., Front Oncol, 2023.



Department of Human Genetics



Prof. Christiane Zweier
Director and Chair

PD Dr. André Schaller

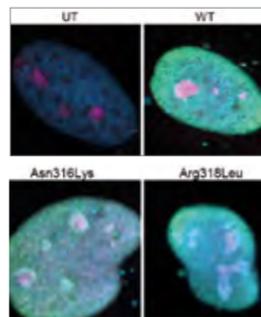
Dr. Anne Gregor



The subject of research in human genetics is the genetic basis of diseases. Research at the Department of Human Genetics focuses on elucidating and understanding the molecular basis of mainly monogenic diseases and the clinical characterization of disease patterns and genotype-phenotype correlations.

De novo variants in transcriptional regulator LHX2 cause a novel neurodevelopmental disorder

Through international collaboration, we identified mostly de novo missense and truncating variants in LHX2 in 19 individuals as causative for a novel neurodevelopmental disorder (NDD). The affected individuals presented with developmental and/or behavioural abnormalities, autism-spectrum disorder, variable intellectual disability, and microcephaly. For the truncating variants, a loss-of-function mechanism is likely. Through functional analysis, we could show that also missense variants are likely leading to a loss of LHX2 function through either impaired interaction with other proteins, altered subcellular localization or abrogated transactivation capabilities. In summary, our findings suggest that LHX2-associated NDD is, regardless of mutation type, likely caused by haploinsufficiency.



Several missense variants lead to accumulation of mutated LHX2 in the nucleolus, abrogating its original function.



Schmid et al., Genet Med, 2023.

Awards and grants

For their oral presentations on "LHX2 loss of function causes neurodevelopmental deficits in humans and flies": Anne Gregor was awarded with one of four selected presentations and subsequently with the presentation award at the annual meeting of the German Society of Human Genetics in Kassel in March.

Cosima Schmid was awarded with the young investigator award at the annual meeting of the Swiss Society of Medical Genetics (SGMG) in Basel in April.

Together with Katja Odening (Speaker), Nadia Mercader, Jean-Louis Reymond and Marco Osterwalder, Christiane Zweier obtained a BCPM lighthouse grant on "precision diagnosis and therapy in cardiac channelopathies (PACE)." Her subproject will focus on the identification of genetic modifiers in long-QT syndrome and their functional validation and characterization in Drosophila as a model system for genetic interactions. The project will start in January 2024.



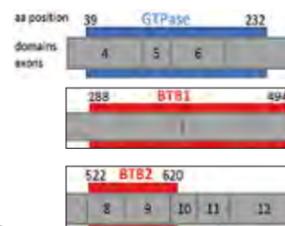
Anne Gregor in Kassel with Brunhilde Wirth and Ingo Kurth



Cosima Schmid in Basel with Sven Cichon

Genotype-phenotype correlations in RHOBTB2-associated neurodevelopmental disorders

De novo missense variants in the BTB domain region of RHOBTB2 cause a severe developmental and epileptic encephalopathy (DEE). We now found that de novo missense variants in the GTPase domain are associated with a milder and more variable neurodevelopmental disorder (NDD) and different molecular behavior, and that bi-allelic truncating variants are also associated with an NDD. This considerably expands the phenotypes associated with RHOBTB2 variants and indicates genotype-phenotype correlations regarding nature, localization and zygosity of variants.



Depending on their nature, localisation, and zygosity, pathogenic variants in RHOBTB2 are associated with variable clinical phenotypes.



Langhammer et al., Genet Med, 2023.

Department of Infectious Diseases



Prof. Hansjakob Furrer
Chairman and Head of Department

Prof. Andri Rauch
Deputy Head of Department, Head Outpatient Clinic

PD Dr. Christine Thurnheer
Head ID Consult Services Hospitalized Patients

Dr. Philipp Jent
Head of Infection Control



Scientific research is a high priority in the Department. The knowledge gained is implemented in everyday clinical practice. The active contribution to science makes it possible to treat patients optimally and according to the latest scientific knowledge.

Anna-Seiler-Haus

The Department of Infectious Diseases moved into the new Anna-Seiler-Haus.



Investigator-driven studies

- "Prospective Multicenter Swiss Cohort Study On Periprosthetic Joint Infections" by PD Dr. Ch Thurnheer and Dr. N. Renz together with orthopaedic surgeons
- SNF Prof. G. Wandeler, Prof A. Rauch and PD Dr. Bernard Surial lead the SNF funded Investigator Initiated Clinical Trials(IICT) "B-Free Trial" a multicentre randomized clinical trial investigating a new therapeutic regimen against HIV with fewer side effects.



MD PhD Program Clinical Sciences

Lukas Baumann started an MD/PhD Program Clinical Sciences of the Graduate School for Health Science within the SF Board Grant funded multidisciplinary study "Immune responses and inflammation following vaccination in immuno-suppressed persons" led by PD Dr. Ch. Thurnheer that brings together multiple disciplines (Oncology, Rheumatology, Neurology, Infectious Diseases).



We congratulate

- PD Dr. Bernard Surial for his habilitation
- Dr. Luisa Salazar-Vizcaya for obtaining an SNF Spark Grant
- Dr. C. Riebensahm for the defense of her MD PhD Thesis "Determinants and progression of liver steatosis among people with HIV"



Multidisciplinary Center for Infectious Diseases (MCID)

The Department of Infectious Diseases is as (Co-) Lead involved in several clusters/projects in MCID (www.mcid.unibe.ch), among others

- BReady project co-led by G. Wandeler starts to prepare for future pandemics by testing and investing households including pets.
- An integrative One Health network to monitor and characterize influenza A viruses circulating in the human and pig population, Prof. A. Rauch (Co-lead applicant)
- Schools and pandemic transmission: Multiple measure approach to estimate transmission and interventions for Covid-19 and seasonal influenza, Dr. P. Jent (Co-lead applicant)



Department of Intensive Care Medicine



Prof. Joerg C. Schefold
Director
Chief Physician

Franziska Tschannen
Head of IIMC
Nursing

Brigitte Hämmerli
Head of ICU
Nursing

Felix Zürcher
Head of
Management
Services

Prof. Carmen A. Pfortmueller
Head of
Research

Dr. Philipp Venetz
Head of Human
Resources



The Department is responsible for the intensive medical care of all temporarily life-threatening adult patients of the Inselspital as well as patients in need of intensive care in the region. Medical treatment is provided on an interprofessional basis by highly trained specialists using the latest technologies and procedures.

Effects of immersive virtual reality on sensory overload in a random sample of critically ill patients

Physiological data were collected as part of the participants' standard care, while environmental awareness and general acceptance were assessed using a questionnaire. The subjectively reported decrease in environmental awareness as well as the decrease in the heart rate and blood pressure over time highlights the ability of immersive virtual reality to help patients overcome sensory overload and sensory deprivation.



Naef et al., *Front Med (Lausanne)*, 2023.

The impact of religion on changes in end-of-life practices in European intensive care units: a comparative analysis over 16 years

Religious beliefs affect end-of-life (EOL) practices in ICUs. In a multinational European project, we observed that EOL practice changes observed over 16 years were unrelated to religious affiliations of ICU patients or treating physicians. Shorter time until decisions in the ICU and increased numbers of patient/ family discussions may indicate increased awareness of the importance of EOL decision-making in the ICU.



Schefold et al., *Intensive Care Medicine*, 2023.

Effects of M101 applied during cardiopulmonary resuscitation

We evaluated the effect of M101, an extracellular hemoglobin-based oxygen carrier derived from *Arenicola marina*, applied during cardiac arrest in a rodent model, on markers of brain inflammation, brain damage, and regional cerebral oxygen saturation. While M101 applied during cardiac arrest did not significantly change inflammation or brain oxygenation, the data suggest cerebral damage reduction due to hypoxic brain injury, measured by phospho-tau. Global burden of ischemia appeared reduced because acidosis was less severe.



Iten et al., *Shock*, 2023.

Dynamics of bacterial pathogens at the driveline exit site in patients with ventricular assist devices: A prospective, observational, single-center cohort study

In this prospective, observational, single-center cohort study, we combined systematic swabbing at the driveline exit site and genomic analyses to study the dynamics of bacterial pathogens. Bacterial colonization at the driveline exit site without manifestation of DLI was frequent (37.8%). 48.9% developed at least one DLI episode (DLIs incidence of 2.3 cases per 1000 LVAD days). The majority of the organisms were *Staphylococcus* species. In only a few cases, colonization preceded clinically relevant infections.



Pitton et al., *J Heart Lung Transplant*, 2023.

Department of Medical Oncology



Prof. Adrian Ochsenbein

Prof. Thomas Pabst

Prof. Jörg Beyer

Prof. Urban Novak

Prof. Martin Berger

Prof. Carsten Riether

PD Dr. Attila Kollár

PD Dr. Berna Özdemir



PD Dr. Sabine Schmid

Dr. Marc Wehrli

Dr. Ferdinando Cerciello

Dr. Julian Wampfler

Dr. Ruben Bill

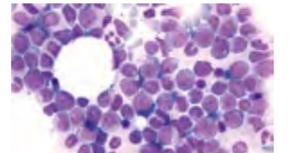
Dr. Dilara Akhoundova



The Department provides a wide range of therapies, clinical trials, and support services for cancer patients and their relatives. The Department's experts adapt these interventions to the patient's individual situation. The research focus is on translational medicine in the fields of immuno-oncology and hematooncology.

IL-33-ST2 signaling promotes stemness in subtypes of myeloid leukemia

Leukemic stem cells (LSCs) are resistant to various therapies and promote relapse. Naef et al. identified a mechanism on which LSCs were selectively dependent. Fusion proteins that drive leukemias, such as AML1-ETO and BCR-ABL, promoted LSC proliferation through a self-perpetuating loop involving Wnt signaling and ST2, a receptor for the cytokine IL-33. ST2 was not detected on normal HSCs, indicating a potentially cell-targeted approach for more durable treatment outcomes in patients.



Naef et al., *Sci Signal*, 2023.

Pharmacoscopy-guided treatment for acute myeloid leukemia (AML)

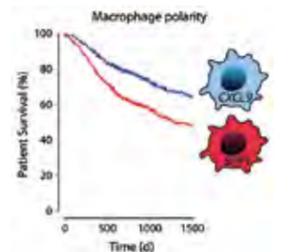
Recent studies have demonstrated the effectiveness of pharmacoscopy – an image-based ex vivo functional drug testing platform – to provide guidance when selecting therapies. We tested for the first time whether pharmacoscopy can be employed for therapy selection in AML patients that have exhausted registered treatment options and whether such treatment can effectively be provided in a timely manner.



Schmid et al., *Haematologica*, 2023.

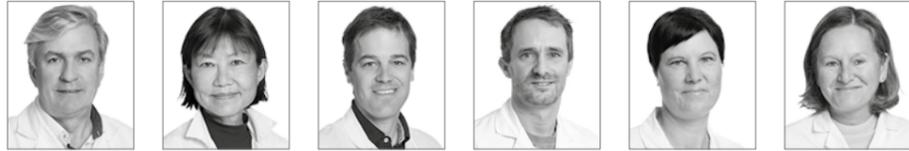
CXCL9:SPP1 macrophage polarity

We found that macrophage polarity defined by the two genes CXCL9 and SPP1 provides prognostic information in head and neck cancer and other tumor types, predicts response to immunotherapy and defines the composition of the tumor microenvironment. These findings pave the way for further developing macrophage polarity defined by CXCL9 and SPP1 as biomarker and for manipulating it with therapeutic interventions.



Bill, Wirapati et al., *Science* 2023.

Department of Nephrology and Hypertension



Prof. Bruno Vogt
Clinic Director

Prof. Uyen Huynh-Do
Consultant Physician

Prof. Daniel Fuster
Consultant Physician

Prof. Daniel Sidler
Consultant Physician

PD Dr. Fabienne Aregger
Consultant Physician

Prof. Geneviève Escher
Lab Head



The Department is the internal medicine center for patients with kidney disease and high blood pressure in the Canton of Berne. Its polyclinic has the largest dialysis unit in Switzerland. The Department covers the entire spectrum of nephrology and hypertension and offers comprehensive diagnostics and treatment at the top level.

NOSTONE trial

Kidney stones are the most common condition affecting the kidney. Thiazide diuretics are guideline recommended agents for the prevention of kidney-stone recurrence, but data regarding their efficacy and dose–response effects are limited. In this double-blind trial conducted at 12 sites throughout Switzerland, we randomly assigned patients with recurrent kidney stones to receive hydrochlorothiazide at a dose of 12.5 mg, 25 mg, or 50 mg or placebo once daily. The primary end point was a composite of symptomatic or radiologic recurrence of kidney stones. During a median follow-up of 2.9 years, the incidence of stone recurrence did not differ among the four groups. These results question the longheld practice to prescribe thiazide diuretics for the prevention of kidney-stone recurrence.



[Dhayat et al., N Engl J Med, 2023.](#)

HPV vaccination and dermatologic interventions in immunosuppressed patients

Skin cancer is a major cause of morbidity, especially in immunosuppressed patients, and is frequently associated with human papillomavirus (HPV) infections. In this retrospective study, we investigated the therapeutic potential of Gardasil-9®, a nonavalent HPV vaccine, for immunosuppressed patients with established skin cancer. Dermatologic interventions in both the pre- and post-vaccination periods were analyzed with zero-inflated Poisson regression and a proportional intensity model for repeated events. The hazard ratio was 0.27 (CI 0.14-0.51, $p < 0.001$) between pre- and post-Gardasil-9®. HPV vaccination may potentially cause a significant decrease in dermatologic interventions in immunosuppressed patients with high skin tumor burden.



[Bossart et al., Vaccines \(Basel\), 2023.](#)

CYP11B2 inhibitor Dexamfostat phosphate suppresses the aldosterone-to-renin ratio, an indicator of sodium retention, in healthy volunteers

High aldosterone is a key driver of hypertension. Dexamfostat phosphate (DP13), a novel aldosterone synthase (CYP11B2) inhibitor, was studied in a randomized, double-blind, placebo-controlled study in patients with primary hyperaldosteronism. In these patients with excess aldosterone and ensuing sodium retention driving hypertension, managing sodium balance is critical. A CYP11B2 inhibitor like DP13, whose effectiveness can be monitored by a reduction in aldosterone-to-renin ratio, may prove valuable in managing aldosterone-dependent hypertension and primary aldosteronism.



[Mulatero et al., Br J Clin Pharmacol, 2023.](#)

Department of Neurology



Prof. Claudio L.A. Bassetti
Clinic Director

Prof. Andrew Chan
Deputy Clinic Director

Prof. Antoine Adamantidis
Extraordinarius

Ass. Prof. Athina Tzovara (double affiliation with Phil Nat)

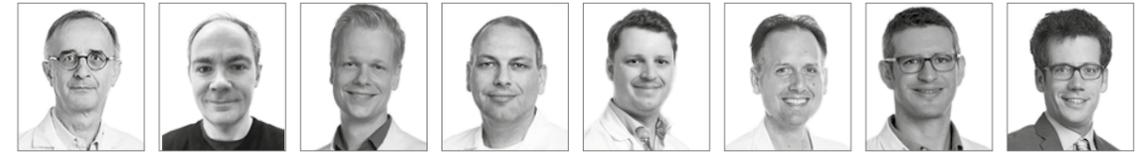
Prof. Marcel Arnold

Prof. Selma Aybek (SNSF Professorship)

Prof. Adrian Guggisberg

Prof. Mirjam Heldner

Prof. Simon Jung



Prof. Paul Krack

Prof. Vincent Pernet

Prof. Christoph Schankin

Prof. Kaspar Schindler

Prof. David Seiffge

Prof. Werner Z'Graggen

Prof. Maxime Baud, SNSF Professorship

Prof. Tobias Nef
Affiliated Professor



The Department offers an integrated range of medical services and is the largest neurological clinic in Switzerland. Its specialist teams diagnose and treat people with diseases of the central and peripheral nervous system, neuromuscular transmission, and muscular system.

Early versus later anticoagulation for stroke with atrial fibrillation

The ELAN trial estimated the safety and efficacy of early compared to later initiation of DOACs in 2013 participants. Anticoagulation can safely be started earlier than currently recommended by guidelines.



[Fischer et al., N Engl J Med, 2023.](#)

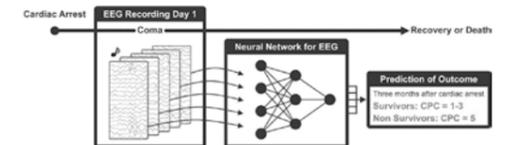


Deep learning and auditory stimulation predict coma outcome

We show systematic evidence that an interpretable deep learning framework can disentangle residual auditory processing in coma patients and can assist in prognosticating their chances to recover.



[Aellen et al., Brain, 2023.](#)



The thalamus coordinates sleep waves

We showed that hippocampal ripples are time-locked to slow waves and spindles in prefrontal cortex and additionally thalamic nucleus reuniens in unperturbed baseline sleep, rebound sleep and sleep after fear conditioning.



[Bozic et al., Eur J Neurosci, 2023.](#)

Spectral topography of the subthalamic nucleus to inform next-generation deep brain stimulation

This work shows that brain signals ranging from very low to high frequency oscillations are topographically distributed within the subthalamic nucleus, which can inform optimal deep brain stimulation in Parkinson's disease.



[Averna et al., Mov Disord, 2023.](#)

Department of Neurosurgery



Prof. Andreas Raabe Prof. Werner Z'Graggen Prof. Claudio Pollo Prof. Philippe Schucht Prof. Kathleen Seidel PD Dr. Ralph Schär PD Dr. David Bervini



The Department of Neurosurgery is an internationally renowned clinic for surgical treatment of brain and spine diseases. Its clinical research commitment is driven by the need to improve and refine neurosurgical operations and perioperative management.

Opportunities and challenges of supervised machine learning in intraoperative neurophysiology

With our proof-of-concept study, we demonstrate that classical machine learning (ML) algorithms are able to classify intraoperatively recorded Motor Evoked Potentials (MEPs) according to muscle groups with high accuracy. This study may serve as a prototype to assess opportunities and limitations of different ML paradigms in handling MEP data. Systematic and exhaustive feature engineering with and without the help of ML algorithms may help cope with the intrinsic difficulties of intraoperative neurophysiological data and may lead to intraoperative safety improvements in the future.



Wermelinger et al., *BMC Med Inform Decis Mak*, 2023.



VANCO Trial

In November 2019, the VANCO Trial, a multicenter randomized clinical trial on the safety and efficacy of intrawound vancomycin powder for prevention of surgical site infections in complex spine surgery, was initiated in Bern. The trial is well underway with 300 randomized patients across five participating centers in Switzerland. This year, four additional centers have agreed to participate. Preliminary data were published in 2021 and 2022 (Schär RT et al. *Neurosurgery* 2021, Schär RT, Zimmerli S. *World Neurosurgery* 2022). The final results of the VANCO Trial will hopefully be available by the end of 2024.



Improving treatment strategies for incidental MRI findings: the Meningeoma Database

Increased availability of medical imaging methods lead to frequent discovery of incidental brain lesions, such as benign meningiomas. Physicians are confronted with difficult management decision, balancing risks of intervention against the natural history of the disease. In order to elucidate the natural history of untreated intracranial meningiomas and to improve EBM based decision-making, we built a database comprising meningiomas undergoing observational management.

Computational fluid dynamics modelling (CFD) of wall shear stress (WSS) of internal carotid artery plaque to predict stroke

Atherosclerotic stenosis of the internal carotid artery (ICA) is an important cause of stroke. To date, evidence supporting the use of machine learning and Computational Fluid Dynamic (CFD) to identify patients with high-risk carotid stenosis is limited. Our translational research team (PD Dr. med. David Bervini, Dpt of Neurosurgery and Dr S. Zheng, ARTORG Center), aims to develop a tool using CFD modelling of ICA plaques to predict the risk of thrombo-embolism that results in stroke.

Automated DBS programming and targeting

After our last publication (Nowacki A et al, *Ann Neurol*, 2022) we are prospectively investigating sweet spot based DBS targeting in Essential Tremor in our center and plan a multicenter study for automatic DBS programming in these patients. In parallel, we have shown that deep learning based algorithms for automated DBS programming significantly improve the prediction of effective stimulation settings in affected patients compared to other methods. This approach warrants further testing through prospective multicenter studies initiated by our department.



Performance comparison of several approaches to automated DBS programming for Parkinson's Disease

Department of Nuclear Medicine



Prof. Axel Rominger Director Prof. Ali Afshar-Oromieh Deputy Director PD Dr. Federico Caobelli Prof. Paul Cumming PD Dr. Eleni Gourni PD Dr. Thomas Pyka PD Dr. Robert Seifert Prof. Kuangyu Shi



The Department is one of the largest and most advanced nuclear medicine departments in Switzerland. It offers the entire spectrum of modern nuclear medicine examination and treatment methods, with emphasis on diagnostics using state-of-the-art PET/CT and SPECT/CT hybrid scanners, as well as nuclear medicine therapy procedures.

First-time rest-stress dynamic whole-body ⁸²Rb-PET imaging using a long axial field-of-view PET/CT scanner

Recent evidence highlighted the interconnection between ischemic heart and other organs such as brain or kidney, consistent with the concept that CAD is linked to a systemic disease. This is the first whole-body rest/stress perfusion with ⁸²Rb-PET.



Caobelli et al., *EJNMMI*, 2023.

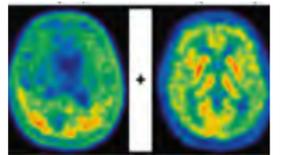


Individual regional associations between Aβ-, tau- and neurodegeneration (ATN) with microglial activation in patients with primary and secondary tauopathies

Tau pathology has strong regional associations with microglial activation in primary and secondary tauopathies. Tau and Aβ related microglial response indices may serve as a two-dimensional in vivo assessment of neuroinflammation in neurodegenerative diseases.



Finze et al., *Mol Psych*, 2023.



Uncovering distinct progression patterns of tau deposition in progressive supranuclear palsy using 18F-Florzolotau PET imaging and subtype/stage inference algorithm

We identified two distinct subtypes of PSP: Subtype1 and Subtype2. Subtype1 typically exhibits a sequential progression of the disease, starting from subcortical and gradually moving to cortical regions. Conversely, Subtype2 is characterized by an early, simultaneous onset in both regions.



Hong et al., *eBiomedicine*, 2023.



Long –axial field-of-view PET/CT for the assessment of inflammation in calcified coronary artery plaques with ⁶⁸Ga-DOTA-TOC

⁶⁸Ga-DOTA-TOC as a marker for the macrophage activity can reveal unknown cases of inflamed calcified coronary artery plaques using a LAFOV PET system.



Mingels et al., *EJNMMI*, 2023.



Department of Obstetrics and Gynecology



The Department is a leading, internationally recognized medical center for gynecology. In order to provide the best possible care, the Department is also at the forefront of research. Almost all of its physicians are involved in research projects. These range from basic to clinical research.

Division of Obstetrics and Feto-Maternal Medicine



Prof. Daniel Surbek, Director Research and Teaching	Prof. Luigi Raio Deputy Director Group Leader	PD Dr. Marc Baumann Group Leader Coordinator	Sofia Amylidi-Mohr, MD, Group Leader	Prof. Andreina Schoeberlein Co-Director Research Laboratory	Anda Petronela Radan, MD Group Leader	Jarmila Zdanowicz, MD Group Leader	Amanda Brosius Lutz, MD, PhD Group Leader
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MicroRNA cargo in Wharton's jelly MSC small extracellular vesicles: key functionality to in vitro prevention and treatment of premature white matter injury

Our study strongly indicates the key function of miRNAs in the therapeutic potential of Wharton's-sEV in white matter injury in preterm newborns.



[Tscherrig et al., Stem Cell Rev Rep, 2023.](#)



Maternal and perinatal outcomes following pre-Delta, Delta, and Omicron SARS-CoV-2 variants infection among unvaccinated pregnant women in France and Switzerland: a prospective cohort study using the COVI-PREG registry

Our novel data show that the Delta period was associated with a higher risk of severe maternal adverse outcome and the Omicron period with a lower risk of severe adverse outcome compared to pre-Delta era.



[Favre et al., Lancet Reg Health Eur, 2023.](#)



Clinical utility of sFlt-1 and PIGF in screening, prediction, diagnosis and monitoring of pre-eclampsia and fetal growth restriction

The biomarkers PIGF, sFlt-1 and the sFlt-1/PIGF ratio are useful for screening, diagnosing, predicting and monitoring placenta-related disorders in singleton and twin pregnancy. We propose that tests for these angiogenic factors are integrated more fully into clinical practice.



[Stepan et al., Ultrasound Obstet Gynecol, 2023.](#)

Artificial intelligence and machine learning in cardiotocography: a scoping review

Our literature research provides insight on several promising approaches in the area of the use of AI in CTG interpretation. Further refinement of the algorithms is needed to achieve a validated decision-support system.



[Aeberhard et al., Eur J Obstet Gynecol Reprod Biol, 2023.](#)

Division of Gynecology and Gynecological Oncology



Prof. Michael Mueller Director and Head Research	Prof. Annette Kuhn	PD Dr. Sara Imboden	PD Dr. Franziska Siegenthaler	Dr. Flavia Pagano	Dr. Brett McKinnon	Dr. Thomas Andrieu
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Diaphragmatic endometriosis (DE): a call for awareness and investigation

DE was diagnosed in 4.7% of patients with confirmed endometriosis. By comparing the patients with abdominal endometriosis with and without diaphragmatic involvement, we found that shoulder pain, infertility and/or endometriosis in the left pelvis are risk factors for DE. These signs should prompt specific pre-operative advice and, if necessary, appropriate surgical treatment.



[Pagano et al., J Minim Invasive Gynecol, 2023.](#)



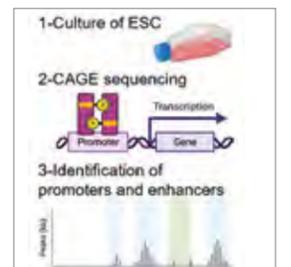
Diaphragmatic endometrial lesions

Endometrial gene transcription changes associated with endometriosis

Cap analysis of gene expression (CAGE) is an unbiased transcriptomic-wide method to map transcription start sites (TSS), measure their expression, and reflect promoter or enhancer activity. We built a genome-wide TSS map of endometrial stromal cells (ESC), compared these to other cells and determined differences related to endometriosis. We identified cell-specific TSS and differences in 210 consensus clusters, including IGFBP5, CALD1, OXTR. (by Dr. Brett McKinnon)



[Marla et al., Cells, 2023.](#)



Global Analysis of TSS and Enhancers in ESC

Prognostic value of lymphovascular space invasion according to the molecular subgroups in endometrial cancer



[Siegenthaler et al., Int J Gynecol Cancer, 2023.](#)

Complementary use of indocyanine green and technetium to enhance sentinel lymphadenectomy in vulvar cancer



[Mohr et al., Int J Gynecol Cancer, 2023.](#)

Change of Fagotti score is associated with outcome after neoadjuvant chemotherapy for ovarian cancer



[Saner et al., Int J Gynecol Cancer, 2023.](#)

Radiofrequency ablation for adenomyosis



[Dedes et al., J Clin Med, 2023.](#)

Department of Ophthalmology



Prof. Martin Zinkernagel
Director

Prof. Beatrice Früh
Anterior Segment

Prof. Jan Darius Unterlauff
Glaucoma

Prof. Volker Enzmann
Research Laboratories

Prof. Pascal Escher
Ophthalmogenetics



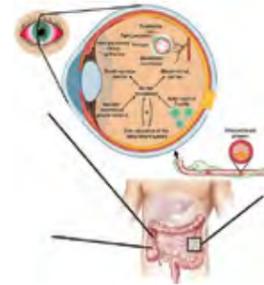
The Department was founded in 1834 and is today a reference center for the diagnosis, conservative treatment, and microsurgery of eye diseases and ophthalmological emergencies. It offers state-of-the-art examination techniques and therapeutic procedures and covers the entire conservative and surgical spectrum of ophthalmology.

The role of the gut microbiome in eye diseases

Interactions between the microbiome, specific microbial-derived metabolites and the immune system may be involved in the pathogenesis of age-related macular degeneration, retinal artery occlusion, central serous chorioretinopathy and uveitis and guide the development of new therapeutic approaches by microbiome-altering interventions for these diseases.



[Zysset-Burri et al., Prog Retin Eye Res, 2023.](#)



Endothelial Toll-like receptor 4 is required for microglia activation in the murine retina after systemic lipopolysaccharide exposure

This study provides new insights into the role of microglia-endothelial cell interaction in inflammatory retinal disease.



[Tsioti et al., J Neuroinflammation, 2023.](#)

Department of Orthopedic Surgery and Traumatology



Prof. Klaus A. Siebenrock
Chairman

Prof. Christoph E. Albers

PD Dr. Helen Anwänder

Dr. Marc Attinger

Prof. Johannes D. Bastian

PD Dr. Moritz C. Deml

Prof. Benjamin Gantenbein



Dr. Emanuel Liechti

Prof. Thomas Lustenberger

PD Dr. Michael Schär

PD Dr. Simon D. Steppacher



Through a tiered care model, the Department ensures that each patient receives optimal care and has access to the latest developments and methods. The aim of a university clinic is to combine research, teaching, and service. Scientific activity has a high priority and the knowledge gained is implemented in daily clinical practice.

Inaugural unveiling of the dynamic imaging center at sitem-insel: transforming orthopedic imaging in clinical practice

On November 10, 2023 Europe's first Dynamic Imaging Center (DIC) was opened at sitem-insel. Prof. Klaus Siebenrock, alongside colleagues Prof. Johannes Heverhagen and Dr. Keivan Daneshvar from Inselspital, University Hospital Bern, in close collaboration with Prof. Ameet Aiyangar from Empa, Dübendorf, and sitem-insel, spearheaded the establishment of the Dynamic Imaging Center (DIC), operational within a clinical setting.

In the DIC lab, patients move on split-belt treadmill, while their movements are recorded simultaneously with high-speed motion capture cameras, force sensors, muscle electromyography (EMG) and a highly customized high-speed dynamic biplanar radiographic imaging (DBRI) system. This system allows for the precise measurement of movements down to submillimeter accuracy, detecting even the finest rolling and sliding movements in the joint.



Opening ceremony DIC, November 10th, 2023

Department of Pediatrics



Prof. Matthias Kopp
Director

Prof. Philipp Latzin

Prof. Christa Flück

Prof. Andrea Klein

Prof. Rhoikos Furtwängler

Prof. Christoph Aebi

Prof. Klaus Tenbrock

Prof. Regula Everts



As one of the leading Children's hospitals in Switzerland, the Department not only offers outstanding medical care, but also conducts internationally recognized, cutting-edge research. Research teams from a wide range of disciplines are committed to advancing pediatric medicine.

Lung MRI is a suitable tool to monitor CFTR-modulator treatment effects in patients with cystic fibrosis

In our study, we observed a significant improvement in lung function and MRI outcomes (ventilation and perfusion impairment, structural score), following the new triple-CFTR-modulator (ELX/TEZ/IVA) combination regimen in 24 children with CF. We show for the first time that functional and structural lung MRI is a suitable tool to monitor CFTR-modulator treatment response, which is easy to apply in children without exposure to ionizing radiation and the need for sedation, contrast agent, or breathing maneuvers.



[Streibel et al., Cyst Fibros, 2023.](#)



Patient example of functional MP-MRI image

Loss of LGR4/GPR48 causes severe neonatal salt wasting due to disrupted WNT signaling altering adrenal zonation

A first homozygous LGR4 variant (the R-SPONDIN receptor) was identified in a patient with neonatal salt wasting in the context of a syndrome with isolated aldosterone deficiency, short stature, and deafness. Conditional Lgr4 KO in mice led to aberrant adrenal cortex zonation and reduced aldosterone production informing on the central role of Wnt/ β -catenin signaling for adrenal cortex formation and function. Therefore patients with genetic alterations in WNT signaling should be monitored for adrenal function.



[Lucas et al., J Clin Invest, 2023.](#)



A surface view of the LGR4-RSPO3 complex. Exon 6-encoded residues are shown in red

Organ dysfunction in pediatric sepsis – how should we measure it?

We analyzed data from the population-based Swiss Pediatric Sepsis study to compare four organ dysfunction criteria in children with sepsis. Although partly using different items, all four organ dysfunction criteria performed similarly to predict mortality in children with sepsis. Neurologic, respiratory, and cardiovascular dysfunction were consistently most relevant to predict mortality. Identifying neurologic, respiratory, or cardiovascular dysfunction at the bedside may help identify children with sepsis who are at risk for poor outcome.



[Schlapbach et al., Pediatr Crit Care Med, 2023.](#)



Paediatric sepsis

Department of Pediatric Surgery



Prof. Steffen Berger

PD Dr. Elizaveta Fasler-Kan

PD Dr. Kai Ziebarth

PD Dr. Ulf Kessler



The Department of Pediatric Surgery participates in University teaching programs for students of medicine. Our research focuses on oncobiology, necrotizing enterocolitis of the newborn, pediatric fracture traumatology and hip orthopedics, and non-invasive pain reduction in outpatient procedures.

Partial remodeling after conservative treatment of trampoline fractures in children

Trampoline fractures (proximal tibia fracture with positive anterior tilt) are increasing. This study represents the first attempt to determine the extent of remodeling in these fractures after conservative treatment.

This Swiss prospective multicenter study included children aged 2 to 5 years with a trampoline fracture who were radiologically examined on the day of the accident and after one year. In addition, the anterior tilt angle was compared between the injured and unaffected tibia. Remodeling was defined as complete (final anterior tilt angle $\leq 0^\circ$), incomplete (smaller but still $>0^\circ$), or no remodeling.

Results: The mean extent of remodeling was -3.5° (95% CI: -4.29° , -2.66° , $p < 0.001$). Among the 89 children included in the study, 26 (29.2%) showed complete, 63 (70.8%) incomplete, and 17 patients (19.1%) no remodeling. Comparison of the anterior tilt angles between the fractured and healthy tibia showed that the anterior tilt angle on the fractured leg was, on average larger by 2.82° .

Although the anterior tilt angle decreased during the study period, the majority of patients showed incomplete remodeling. In contrast, children with radiological examinations >1 year after the trauma showed advanced remodeling, suggesting that one year is too short to observe complete remodeling.



[Zaccaria et al., Children \(Basel\), 2023.](#)

L-Kynurenine participates in cancer immune evasion by downregulating hypoxic signalling in T lymphocytes

Malignant tumors often escape anticancer immune surveillance by suppressing the cytotoxic functions of T lymphocytes. While many of these immune evasion networks include checkpoint proteins, small molecular weight compounds, such as the amino acid L-kynurenine (LKY), could also substantially contribute to the suppression of anti-cancer immunity. However, the biochemical mechanisms underlying the suppressive effects of LKY on T-cells remain unclear. Here, we report for the first time that LKY suppresses T cell function as an aryl hydrocarbon receptor (AhR) ligand. The presence of LKY in T cells is associated with AhR activation, which results in competition between AhR and hypoxia-inducible factor 1 alpha (HIF-1 α) for the AhR nuclear translocator, ARNT, leading to T cell exhaustion. The expression of indoleamine 2,3-dioxygenase 1 (IDO1, the enzyme that leads to LKY generation) is induced by the TGF- β Smad-3 pathway. We also show that IDO-negative cancers utilize an alternative route for LKY production via the endogenous inflammatory mediator, the high mobility group box 1 (HMGB-1)-interferon-gamma (IFN- γ) axis. In addition, other IDO-negative tumors (like T-cell lymphomas) trigger IDO1 activation in eosinophils present in the tumor microenvironment (TME). These mechanisms suppress cytotoxic T cell function, and thus support the tumor immune evasion machinery.



[Schlichtner et al., Oncoimmunology, 2023.](#)

Department for Plastic and Hand Surgery



Prof. Mihai Constantinescu Co-Director
 Prof. Esther Vögelin Co-Director
 PD Dr. Radu Olariu, Deputy Chief Physician
 PD Dr. Ioana Lese Senior Physician Plastic Surgery
 Dr. Dominique Nellie Merky Deputy Chief Physician
 Dr. Damian Sutter Senior Physician Hand Surgery
 Dr. Bernadette Tobler Senior researcher hand therapy



In its current structure, the Department covers the entire spectrum of plastic, reconstructive and aesthetic surgery, hand surgery, and peripheral nerve surgery. As a so-called tertiary treatment center, the Department receives complicated cases from other hospitals for further treatment.

Flap reconstruction outcome following surgical resection of soft tissue and bone sarcoma in the setting of (neo)adjuvant therapy: a sarcoma center experience

We present our experience with 90 free and pedicled tissue transfers in the reconstruction of sarcomas at a major sarcoma center over a 5-year period: diabetes, alcohol consumption and male gender were associated with increased wound healing problems, preoperative chemotherapy significantly increased the occurrence of early infection, while preoperative radiotherapy was associated with a higher incidence of lymphedema. Reconstructive surgery with either pedicled or free tissue transfer after sarcoma resection is reliable, but a higher complication rate is to be expected with neoadjuvant therapy and with certain comorbidities.



Lese et al., *Cancers (Basel)*, 2023.

Type of sarcoma	Bone	Soft tissue
	12 (13.3)	78 (86.7)
Sarcoma location	Head & Neck	8 (8.9)
	Trunk	27 (30)
	Upper extremity	17 (18.9)
	Lower extremity	38 (42.2)
Neoadjuvant therapy	Chemotherapy	30 (33.3)
	Radiotherapy	13 (14.4)
	Combined radio- and chemotherapy	1 (1.1)
Intraoperative radiotherapy	No	36 (40)
	Yes	54 (60)
Adjuvant therapy	Chemotherapy	43 (47.8)
	Radiotherapy	17 (18.9)
	Combined radio- and chemotherapy	2 (2.2)

Sonographically controlled minimally-invasive A1 pulley release using a new guide instrument – a case series of 106 procedures in 64 patients

With percutaneous and minimally-invasive pulley release becoming more popular, safety and reliability of such minimally-invasive procedures remain a concern. We present the results of the development and implementation of a novel guide instrument for use with a hook knife to treat trigger finger. We show that sonographically controlled, minimally-invasive A1 pulley release can be performed safely and effectively with appropriate surgical instruments and practice.



Sutter et al., *BMC Musculoskelet Disord*, 2023.



A Guide instrument, as of November 2019
 B guide instrument shown with inserted hook knife

Outcomes of 218 primary single-finger flexor tendon repairs up to 1 year after surgery: a multicentre cohort study

In this retrospective multicentre cohort study, we present the results of primary single-finger flexor tendon repairs in zones 1 to 3 between 2014 and 2021. Data from 218 patients were retrieved with their demographics, injury and surgery characteristics and therapy outcomes. A good to excellent return of motion was achieved by 77% (Tang classification) and 92% (ASSH classification) of patients at 1 year. The tendon rupture rate was 8.7%. Time had a significant impact on the recovery of finger motion and grip strength of up to 1 year, of patient satisfaction and upper extremity function up to 26 weeks, and of pain up to 13 weeks after surgery.



Tobler-Amman et al., *J Hand Surg Eur Vol*, 2023.



Reasons for dissatisfaction after flexor tendon repair surgery (in percentages)

Department of Pneumology and Allergology



Prof. Thomas Geiser
 Prof. Manuela Funke-Chambour
 PD Dr. Gunar Günther
 PD Dr. Anne-Kathrin Brill
 PD Dr. Lukas Jörg
 PD Dr. Sabina Guler
 PD Dr. Amiq Gazdhar



PD Dr. Fabian Blank
 Dr. Tiziana Cremona
 Dr. Sudip Das
 Prof. Olivier Guenat



The Department offers comprehensive clinical services for patients with lung diseases and respiratory disorders. It conducts experimental (primarily in cell and tissue cultures) and clinical research and strives to bridge the gap between these fields to bring new knowledge from experimental-translational research to the patients.

Prize for best oral presentation

PD Dr. S. Guler received the 1st prize for the best oral presentation at the Swiss Annual Meeting of the Swiss Respiratory Society SGP for the project "The Clinical Frailty Scale for prognostication in fibrotic interstitial lung disease – a multicenter cohort study."



Guler et al., *European Respiratory Journal*, 2023.

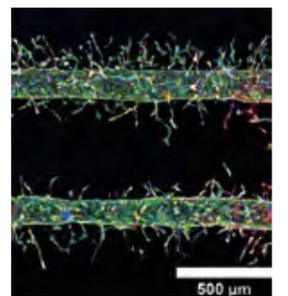


Microvasculature-on-chip: breathing movements affects the creation of new blood vessels

A complicated microvasculature-on-chip consisting of two parallel vessels and a self-assembled capillary network was created, allowing to study the individual or combined effects of biomechanical and biochemical stimuli (Group Prof. Guenat).



Ferrari et al., *iScience*, 2023.



Inflammation in systemic sclerosis-associated interstitial lung diseases

Inflammatory markers such as C-reactive protein may be of prognostic value and are predictive in the therapeutic efficacy of immune suppressants (Group PD Guler in collab. with Rheumatology).



Guler et al., *Thorax*, 2023.

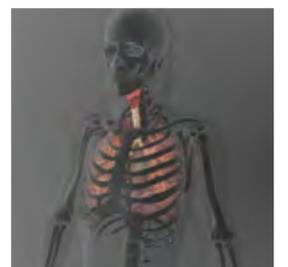


Inflammation persists after COVID-19 and correlates with lung functional impairment

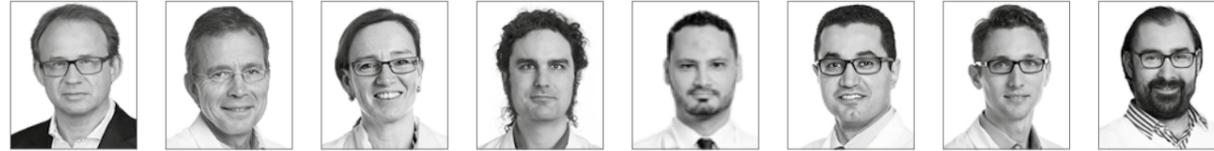
Calprotectin was elevated in post-ICU patients and shown to correlate with lung functional impairment (Group Prof. Funke-Chambour).



Abu Hussein et al., *BMC Infect Dis*, 2023.



Department of Radiation Oncology



Prof. Daniel M. Aebbersold Director
 Prof. Steffen Eychmüller
 PD Dr. Kristina Lössl
 PD Dr. Olgun Eliçin
 PD Dr. Mohamed Shelan
 Dr. Hossein Hemmatazad
 Dr. Emanuel Stutz
 Dr. Nikola Cihoric



Dr. Ekin Ermis
 Prof. Peter Manser
 Prof. Michael K. Fix
 Prof. Yitzhak Zimmer
 PD Dr. Michaela Medova
 PD Dr. Matúš Medo
 Prof. Mauricio Reyes

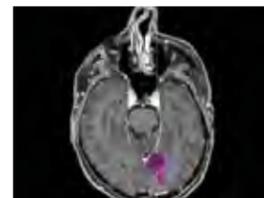


The Department is one of the leading providers of radiation therapy in Switzerland. The close cooperation between the various professional groups within the clinic enables optimal treatment. We conduct extensive research programs in the fields of clinical research, technology development, medical physics, and radiobiology.

PyRaDiSe – a python package for DICOM-RT-based auto-segmentation pipeline construction and DICOM-RT data conversion



Rüfenacht et al., *Comput Methods Programs Biomed.* 2023.

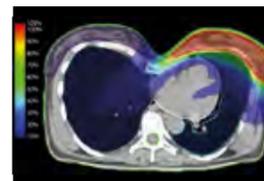


AI model for brain target segmentation deployed at the Varian Research Portal, as part of a multi-rater and multicenter clinical evaluation

Electron arcs in mixed photon-electron radiotherapy



Guyer et al., *Phys. Med. Biol.* 2023.

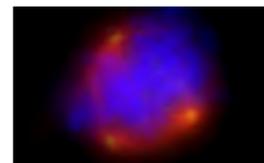


Example dose distribution for a mixed photon-electron treatment plan

A novel MET receptor phosphosite is directly linked to DNA damage response



Koch et al., *Oncogene*, 2023.



Abnormal mitosis

Concurrent Care (CoCa): structured advance care planning as part of the follow-up care of patients with cancer



Project "Concurrent Care (CoCa)," Gesundheitsförderung Schweiz



Department of Rheumatology and Immunology



Prof. Britta Maurer
 Prof. Martin Bachmann
 Prof. Monique Vogel
 Prof. Alexander Eggel
 PD Dr. Kerstin Klein
 PD Dr. Mona Mohsen
 Dr. Janine Gote-Schniering



The Department covers the entire field of rheumatology and immunology. This includes the diagnosis, treatment, and prevention of inflammatory and non-inflammatory diseases of the musculoskeletal system, systemic autoimmune diseases, autoinflammatory syndromes, unclear systemic inflammatory diseases, and immunodeficiencies.

Influence of antigen density and TLR ligands on preclinical efficacy of a VLP-based vaccine against peanut allergy

VLP Peanut is a new vaccine candidate for peanut allergy recently enrolled in a phase I clinical study. The vaccine is based on cucumber mosaic VLPs genetically fused with one of the major peanut allergens, Ara h 2 (CuMVT-Arah2). Here, we undertake studies to better understand the role of the encapsulated prokaryotic RNA for the vaccine's immunogenicity and efficacy by producing a batch with a reduced RNA content. TLR 7 was found to be crucial for generating high-avidity IgG and IgG2c subclass antibodies, while reduced RNA content led to decreased IgG responses and impaired allergen tolerance. Additionally, the density of Ara h 2 antigens on VLP Peanut was shown to correlate with the vaccine's efficacy. In summary, prokaryotic RNA and Ara h 2 antigen density play pivotal roles for VLP Peanut's immunogenicity and protective capacity.



Krenger et al., *Allergy*, 2023.

Vision transformer assisting rheumatologists in screening for capillaroscopy changes in systemic sclerosis: an artificial intelligence model

Herein, we addressed the implementation of a powerful 'off-the-shelf' deep learning algorithm based on the ViT architecture to identify characteristic features of microangiopathy in nailfold capillaroscopy (NFC) images. The ViT system achieved a fair to excellent performance in our evaluation set-up, with best performance and agreement observed in detecting giant capillaries and microhaemorrhages, followed by capillary loss and enlarged capillaries. The key finding of our study, based on a reliability set with ground-truth labels, is the interindividual variance of the human annotators and the comparable and robust ViT classification performance. Given this robust performance, our data warrant further exploration of the use of automated NFC assessment in clinical practice. Particularly, a deep learning-based NFC tool could serve as an assistive device supporting rheumatologists, independent of expertise, in assessing NFC images.



Garaiman et al., *Rheumatology*, 2023.

Perturbational single cell RNA-seq reveals multi-lineage cell circuit dynamics in human lung fibrogenesis

We used single-cell RNA-seq to analyze the cytokine- and drug-induced perturbation response of cells in human ex vivo precision-cut lung slices (hPCLS). We systematically compared the hPCLS perturbation data against in vivo data from pulmonary fibrosis patients, revealing the strengths and limitations of the ex vivo model. We demonstrated ex vivo induction of regenerative cell states with highly similar transcriptional profiles as their in vivo counterparts and validated the appearance of these states in early-stage disease. Finally, we analyzed anti-fibrotic drug effects on multi-lineage circuits of regenerative cell states, identifying drug-specific cell state changes and cellular communication patterns. Our work provides a framework for perturbational single cell genomics directly in human lung tissue that enables analysis of tissue homeostasis, regeneration and pathology and offers novel avenues for anti-fibrotic drug development and translation.



Lang et al., *Sci Transl Med*, 2023.

Department of Thoracic Surgery



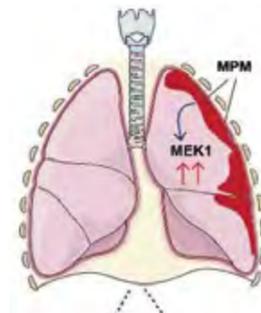
PD Dr. Patrick Dorn PD Dr. Oemer Senbaklavaci Dr. Michail Galanis Dr. Konstantinos Gioutsos Dr. Thanh-Long Nguyen PD Dr. Sergio Bruno Sesia Prof. Ren-Wang Peng PD Dr. Thomas M. Marti



With its expertise, technical and medical equipment, and rapid integration of the latest research and study results into medical practice, the Department operates at the highest level. Thoracic surgery treats diseases and injuries of the chest wall and all organs within the chest cavity except the heart and aorta.

MEK1 drives oncogenic signaling and interacts with PARP1 for genomic and metabolic homeostasis in malignant pleural mesothelioma

In this study, we showed that the mitogen-activated protein kinase (MAPK) pathway is hyperactivated and a molecular driver of a subset of Malignant pleural mesothelioma (MPM). Suppression of MAPK signaling by clinically approved MEK inhibitors (MEKi) elicits sensitivity to PARP inhibition in MPM cells.



[Yang et al. Cell Death Discov. 2023.](#)

Randomized controlled trial of thresholds for drain removal after anatomic lung resection

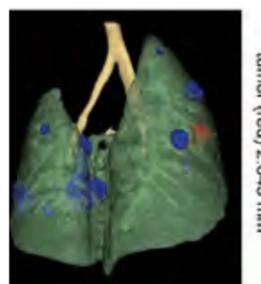
We examined the feasibility of a weight-adjusted fluid output threshold for chest drain removal in a single-center randomized controlled trial. No differences regarding the occurrence of pleural effusion and dyspnea at discharge and 30 days postoperatively. Time to chest drain removal was identical in both groups.



[Gioutsos et al., The Annals of thoracic surgery, 2023.](#)

An optimized protocol for the generation and monitoring of conditional orthotopic lung cancer in the KP mouse model using an adeno-associated virus vector compatible with biosafety level 1

Modifications to the anesthesia and instillation protocols increased the productivity of the original Cre-induced KP lung cancer mouse model under BSL-1 conditions, allowing to reduce the number of animals per experiment.



[Deng et al., Cancer Immunol Immunother, 2023.](#)

Clinical and oncological outcomes after uniportal anatomical segmentectomy for stage IA non-small cell lung cancer

The aim of this study was to evaluate the clinical and midterm oncological outcomes of patients who underwent uniportal video-assisted anatomical segmentectomy for pathological stage IA lung cancer. There were satisfactory short-term clinical outcomes with low 30-day morbidity and mortality and promising midterm oncological survival results.



[Gioutsos et al., Medicina \(Kaunas\), 2023.](#)

Department of Urology



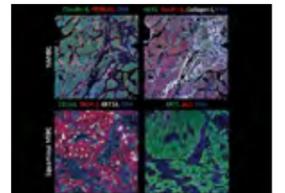
Prof. George N. Thalmann Prof. Fiona Burkard Prof. Bernhard Kiss Prof. Marianna Kruithof-de Julio Prof. Katia Monastyrskaya



The Department offers a wide range of diagnostic and therapeutic services for all urological diseases. Many complex examinations and special procedures are performed on a regular basis, such as tumor surgery on the bladder, prostate, and kidneys, minimally invasive prostate therapies, or minimally invasive endoscopic procedures.

Improved diagnoses, monitoring, and treatment of bladder cancer

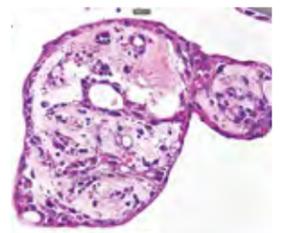
The core focus of our research revolves around the concept that acquiring a holistic comprehension of both the tumor itself and its surrounding microenvironment, often referred to as the ecosystem, is essential. To achieve this, we integrate various fields of study, including genomics, transcriptomics, epigenetics, and functional response analysis to therapy. By assimilating information from these diverse sources, we aim to obtain a more precise and comprehensive understanding of the disease in question.



BLCa IMC

Novel metabolically-instructed strategy towards personalized therapy selection for prostate cancer (PCa)

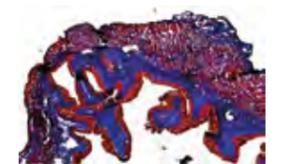
Our current efforts revolve around the development of techniques that enable the identification of metabolic states in PCa cells. Our efforts focus on developing techniques to identify metabolic states in PCa cells. Using this knowledge, we can select treatments that help transition to more favorable metabolic states. Our hypothesis suggests that applying these strategies to PDOs from radical prostatectomy can improve treatment selection. Integrating multi-omic characterization of tumor heterogeneity and metabolomics-driven treatment response, we aim to establish personalized therapy for clinical use.



PCa organoid

Molecular characterization of non-neurogenic and neurogenic lower urinary tract dysfunction (LUTD) in mouse models

Our study examined bladder function in mice with spinal cord injury (SCI) and compared it to a partially obstructed bladder model (pBOO). Both neurogenic and obstructive lower urinary tract dysfunction (LUTD) showed activation of Wnt and TGF-beta signaling. FGF2 was identified as a crucial up-regulated transcription factor during organ remodeling. These findings suggest that mice with SCI experience DSD, which disrupts neuronal signaling and muscle contractility and eventually leads to bladder fibrosis.



SCI bladder



[von Siebenthal et al., Int J Mol Sci, 2023.](#)

SpheroScan: a user-friendly deep learning tool for spheroid image analysis

We created a web-based tool called SpheroScan that automates image detection and segmentation using the deep learning framework Mask Regions with Convolutional Neural Networks (R-CNN). We trained the model using spheroid images and developed a Machine Learning Cumulative Performance Score (MLCps) to evaluate the model's overall performance. MLCps combines multiple evaluation metrics into a single score, allowing a comprehensive assessment of the trained model's strengths and weaknesses



SpheroScan image analysis pipeline



[Akshay et al., GigaScience, 2023.](#)

Department of Vascular Surgery



Prof. Drosos Kotelis
Director

Prof. Vladimir Makaloski
Endovascular Surgery, Lead Aortic Center

Dr. Michel Bosiers
Endovascular Surgery

Dr. Salome Weiss
Lead Clinical Research

Dr. Corinne Kohler
Lead Medical Education



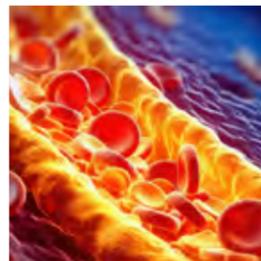
The Department is the largest vascular surgery center in Switzerland. Together with the Department of Cardiac Surgery, it founded the Swiss Aortic Center Berne, which treats the most patients with aortic pathology in Switzerland, with over 500 surgical procedures per year.

International randomized controlled trial on the treatment of patients with peripheral artery disease

The recently published 5-year results of the multicenter randomized controlled ZILVERPASS study showed equivalence of drug-eluting stents (DES) and prosthetic above-the-knee bypass surgery for the treatment of peripheral artery disease. Therefore, the investigated DES can be considered a valid alternative to bypass surgery.



Bosiers MJ et al., *Cardiovasc Intervent Radiol*, 2023.



Peripheral arterial occlusive disease

Aortic infection

Infective native aortic aneurysms are relatively rare and diagnostic criteria as well as reporting standards have been lacking. This recent Delphi consensus document aims to fill these gaps to facilitate research on the disease and improve treatment of affected patients.



Sörelius K et al., *Eur J Vasc Endovasc Surg*, 2023.



Infective native aortic aneurysm

Medical education and simulation-based training

With tutorships and workplace-based assessments using entrustable professional activities, we aim to establish a teaching and feedback culture in daily clinical practice. We also offer several courses and simulation-based training for trainees and medical students and are engaged in research on this topic.



Lawaetz J et al., *Eur J Vasc Endovasc Surg*, 2023.



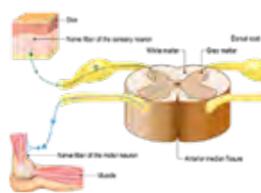
Simulation-based training in endovascular surgery

Cerebrospinal fluid drainage and neuromonitoring in open and endovascular thoracoabdominal aortic surgery

There is broad agreement on the importance of protecting the spinal cord during open thoracoabdominal aortic repair. In endovascular thoracoabdominal aortic surgery, cerebrospinal fluid drainage and neuromonitoring are less frequently used, but should be considered, especially in case of extensive aortic coverage.



Schachner T et al., *Eur J Cardiothorac Surg*, 2023.



Importance of spinal cord protection during thoracoabdominal aortic surgery

Department of Visceral Surgery and Medicine



Prof. Daniel Candinas
Managing Director and Chief of Surgery

Prof. Andrew Macpherson
Director and Chief Physician Gastroenterology

Prof. Annalisa Berzigotti
Director and Chief Physician Hepatology



The Department provides an interdisciplinary service in the field of visceral surgery and medicine. In the context of highly specialized medicine, it primarily treats patients with tumors and other complex abdominal diseases.

Contrast-enhanced ultrasound (CEUS) reported using the Liver Imaging Reporting and Data System (LI-RADS) shows a high specificity to diagnose hepatocellular carcinoma in patients at risk of this type of tumor

The use of CEUS has been proposed to quickly characterize liver lesions in patients at risk of hepatocellular carcinoma (HCC). The hepatology group at the Department of Visceral Surgery and Medicine was the only Swiss group participating in the first prospective, multicenter, international, NIH-funded clinical trial seeking validation of the LI-RADS criteria for CEUS in subjects at risk of HCC. In the large study population, the finding of LI-RADS 5 criteria on CEUS (wash-in in the arterial phase, and wash-out in the late phase) demonstrated 95.1% specificity and 97.3% positive predictive value to diagnose HCC. The findings strongly support the use of CEUS to rule-in HCC in patients at risk.



Lyshchik et al., *Hepatology*, 2023.



Hepatology group at the Department of Visceral Surgery and Medicine

Interactions between the microbiota and the immune system

Our main focus is on the interactions between the non-pathogenic intestinal microbiota and the body organ systems, especially immunity. The main questions are how the repertoires of B and T lymphocytes are shaped by intestinal colonization waves of different microbial taxa after birth and how these background repertoires (before an infection has occurred) determine the effectiveness of a response to a later infection or the predisposition to intestinal inflammatory disease or autoimmunity. Live engineered members of the microbiota can deliver information about the luminal intestinal environment and we are developing these for safe introduction into clinical practice.



Cecchini et al., *BMC Pediatr*, 2023.



Meier et al., *Nat Metab*, 2023.



Grant et al., *EMBO Mol Med*, 2023.

Successful promotion of talented academics

We specifically promote young academics in our clinic, resulting in a favorable number of nominations and awards in 2023. These achievements include:

- Appointment of Prof. Annalisa Berzigotti as Full Professor and Clinic Director for Hepatology, effective from April 1, 2023.
- Awarding the title of Assistant Professor of the University of Bern to Joel Zindel, MD, for the duration of the Cloëtta Medical Research position for five years from May 1, 2023.
- Cédric Nesti, MD, received a Swiss College of Surgeons award "for the promotion of surgical research for scientific studies in applied basic or clinical research" for our study on appendiceal NET 1-2cm.
- Sarah Peisl obtained the National MD-PhD Grant from the SAMS and the SNSF for her project "Role of biliary microbiota in biliary injury and the development of cholangiopathy."



Cloëtta Medical Research Position: Ass. Prof. Joel Zindel

University Hospital of Old Age Psychiatry and Psychotherapy



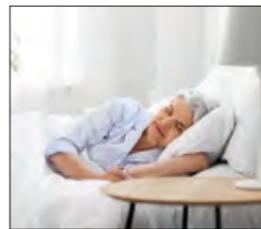
Prof. Stefan Klöppel Prof. Jessica Peter Prof. Michael Orth PD Dr. Anna-Katharine Brem PD Dr. Jacob Lahr PD Dr. Severin Pinilla Dr. Marc Züst



A large number of studies show that older people need adapted treatment. The University Hospital of Old Age Psychiatry and Psychotherapy is unique in German speaking Switzerland as it includes a full professorship specifically for old-age psychiatry and psychotherapy in the role of department head.

The hierarchy of coupled sleep oscillations reverses with aging in humans

Evidence accumulates that sleep disturbances and cognitive decline are bidirectionally and causally linked, forming a vicious cycle. Improving sleep quality could break this cycle. One marker for sleep quality is a clear hierarchical structure of sleep oscillations. Previous studies showed that sleep oscillations decouple in old age. Here, we show in a large sample (N=340) that, rather, the hierarchical structure gradually shifts across the human life span and reverses in old age, while coupling strength remains unchanged. This shift is associated with markers for astrocyte activation in old age. The shifting hierarchy resembles brain maturation, plateau, and wear processes. This study furthers our comprehension of this important neurophysiological process and its dynamic evolution across the human life span.



Züst et al., *The Journal of Neuroscience*, 2023.

Local synchronicity in dopamine-rich caudate nucleus influences Huntington's disease motor phenotype

Measures of functional activity and local synchronicity within cortical and subcortical regions remain normal in the pre-manifest phase of Huntington's disease, a neurodegenerative disease, despite clear evidence of brain atrophy. In manifest Huntington's disease, homeostasis of synchronicity was disrupted in subcortical hub regions such as caudate nucleus and putamen, but also in cortical hub regions, for instance the parietal lobe. Caudate nucleus synchronicity significantly improved models predicting the severity of the motor phenotype or predicting the classification into premanifest Huntington's disease or motor manifest Huntington's disease. Our data indicate that the functional integrity of the dopamine receptor rich caudate nucleus is key to maintain network function. The loss of caudate nucleus functional integrity affects network function to a degree that causes a clinical phenotype. These insights into what happens in Huntington's disease could serve as a model for what might be a more general relationship between brain structure and function in neurodegenerative diseases in which other brain regions are vulnerable.



Kasper et al., *Brain*, 2023.

University Hospital of Child and Adolescent Psychiatry and Psychotherapy



Prof. Michael Kaess PD Dr. Maria-luisa Cavelti Prof. Jochen Kindler Prof. Leila Tarokh PD Dr. Chantal Michel Prof. Annetrin Steinhoff



As a leading institution in Switzerland, the hospital provides outpatient, day-patient, and inpatient psychiatric care as well as emergency care for all children and adolescents in the area it serves. As a university hospital, it has an extended mandate in supra-regional specialized care as well as in education and research.

Sleep regularity associated with better sleep

In this study we show the importance of regular sleep timing for sleep health using six months of daily measurements of sleep. We find that youth who have more regular bed and wake times have indices of better sleep and mental health. This study points to the importance of sleep timing in health.



Castiglione-Fontanellaz et al., *J Sleep Res*, 2023.

Higher striatal glutamate in male youth with Internet Gaming Disorder

This study's aim was to investigate striatal glutamate and glutamine (Glx) in male youth with internet gaming disorders (IGD) compared to healthy controls (HC). Our findings showed higher Glx levels in IGD as compared to HC. The elevation of Glx in the striatum may indicate hyperactivation of the reward system in IGD and show that neurochemical alterations can be identified in early stages.



Klar et al., *Eur Arch Psychiatry Clin Neurosci*, 2023.

Differential outcomes of outpatient only versus combined inpatient/outpatient treatment in adolescent borderline personality disorder (BPD)

This study investigated the impact of treatment settings on outcomes for adolescents with BPD. A cohort of outpatient adolescents underwent assessments at baseline, 1-year, and 2-year follow-ups. Both "combined inpatient/outpatient group" and the "outpatient only group" exhibited a significant reduction in BPD features and improved psychosocial functioning at follow-up. These findings support the recommendation of outpatient psychotherapy as the first-line treatment for adolescents with BPD.



Cavelti et al., *Eur Child Adolesc Psychiatry*, 2023.

University Hospital of Psychiatry and Psychotherapy



Prof. Werner Strik Prof. Thomas Dierks Prof. Sebastian Walther Prof. Katharina Stegmayer Prof. Franz Moggi Prof. Daniela Hubl Prof. Leila Maria Soravia Prof. Tobias Bracht



Prof. Leila Tarokh Prof. Thomas König



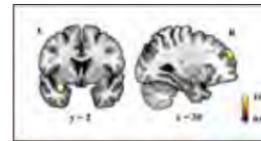
The University Hospital of Psychiatry and Psychotherapy provides primary psychiatric care and specialized treatment programs for adults. It is divided into specialized centers, each with outpatient, day-patient, and inpatient facilities.

Hearing constant threat: the key role of the amygdala

Auditory Verbal Hallucinations (AVH) with threatening content are highly prevalent in patients with schizophrenia leading to poor functional outcome. Here we show increased perfusion within the amygdala and the ventromedial and dorsomedial prefrontal cortex (vmPFC/dmPFC) in patients with threatening AVH. Hyperperfusion of the amygdala may trigger threatening AVH, while hyperperfusion of the vmPFC/dmPFC may indicate insufficient top-down amygdala regulation.



[Conring et al., Neuroimage Clin, 2023.](#)



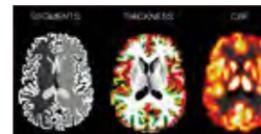
Amygdala and vmPFC/dmPFC hyperperfusion in patients with threatening auditory verbal hallucinations

Brain plasticity during electroconvulsive therapy and treatment as usual in depression

Electroconvulsive therapy (ECT) is highly efficient to treat depression. We compared brain plasticity of 20 ECT-patients, 20 responders to treatment as usual (TAU) and 20 healthy controls. There was an increase in volume and cerebral blood flow in temporal brain regions in the ECT-group. In both ECT-patients and in TAU-responders there was an increase in cortical thickness. This suggests distinct and shared patterns of response plasticity in depression.



[Bracht et al., Front Psychiatry, 2023.](#)



Increase in cortical thickness following ECT and TAU and cerebral blood flow following ECT

Pathobiology of psychomotor slowing in psychosis

The pathobiology of psychomotor slowing in psychosis is unknown. Double-pulse TMS and multimodal cerebral MRI were combined in patients with slowing, patients without slowing, and healthy controls. Slowing was linked to decreased cortical excitability and aberrant cortical inhibition, both related to altered cortico-cerebellar connectivity. Dysconnectivity in the motor system enhances neural noise in the motor cortex, driving psychomotor slowing in psychosis.



[Lefebvre et al., Brain, 2023.](#)



Double pulse TMS over the left motor cortex.

Institute of Dental Medicine



Prof. Vivianne Chappuis
Clinic of Oral Surgery and Stomatology

Prof. Christos Katsaros
Clinic of Orthodontics and Dentofacial Orthopaedics

Prof. Hendrik Meyer-Lückel
Exec. Director Clinic of Restorative, Preventive and Pediatric Dentistry

Prof. Martin Schimmel
Clinic of Reconstructive Dentistry and Gerodontology

Prof. Anton Sculean
Clinic of Periodontology

Prof. Ralf Schulze
Head of Division of Oral Diagnostic Science



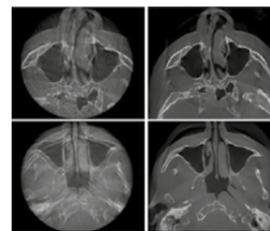
The Institute is internationally well-known for education, research, and treatments for patients. Besides its focus on patient satisfaction, clinically oriented research, training of young dentists, and further education of colleagues in private practice play an important role.

Best Paper Award (2023 Eurographics Workshop on Visual Computing for Biology and Medicine): neural deformable cone beam CT

A neural network is combined with a newly developed reconstruction algorithm for a CBCT to represent arbitrary motions and deformations, e.g., unwanted patient movements such as head rotations, swallowing, etc. The method can also deal with non-rigid motions (such as the beating heart or breathing lung).



Birklein et al., Eurographics Workshop on Visual Computing for Biology and Medicine, 2023



Vendor Ours

Early detection of tooth wear

Tooth wear is an increasing challenge for global oral health especially in children and adolescents. Nevertheless, early recognition of initial tooth wear is difficult. Comparing clinical examination with examination on digital models obtained by intraoral scanning, an international research team from Denmark, Switzerland (Department of Preventive, Restorative and Pediatric Dentistry, School of Dental Medicine, University of Bern) and Greece showed that early loss of tooth substance could be identified on the digital models, including in areas with challenging intraoral visual access.

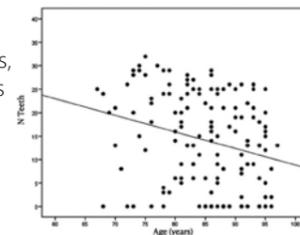


Reconstructive dentistry and gerodontology

This study assessed the correlation between oral health status in terms of present teeth, implants, removable prostheses, and polypharmacy and/or multimorbidity in three Swiss nursing homes with affiliated or integrated dental care. An association was found between the presence of poor oral health status and polypharmacy and multimorbidity status among the study population evaluated. In Switzerland, the collaboration of dentists and nursing staff is still improvable, but is urgently needed due to the demographic changes and raising treatment demand of the oldest portion of the population.



Anliker et al., Clin Oral Investig., 2023.



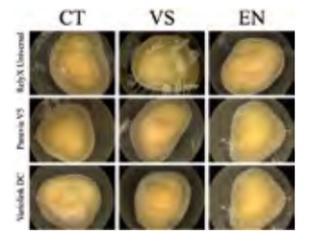
Number of teeth present decreasing with age of included patients. $r=-0.27$

Digital dental technologies laboratory

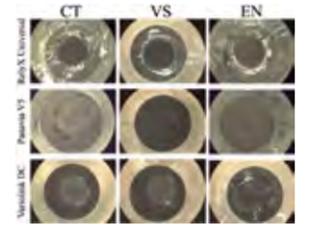
We perform research on dental materials including primarily but not limited to restorative, prosthetic and implant dentistry. The displayed images (Figure) highlight the bonding analysis of recently introduced printable resins intended for definitive fixed restorations like crowns, inlays, onlays, and short-span bridges, on dentin and titanium surface, simulating tooth- and implant-supported prostheses. Regardless of the substrate and the resin cement, the printed composite resins had lower bond strength than that of the subtractively manufactured polymer-infiltrated ceramic. This study was supported by a Swiss Society for Reconstructive Dentistry Research Grant.



Donmez et al., J Prosthet Dent, 2023.



Microscopic images (magnification $\times 12$) showing failures of each restorative material-resin cement pair bonded to dentin (above) and titanium (below).

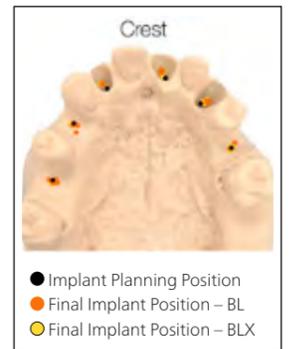


Influence of alveolar ridge on the accuracy of static computer-assisted implant surgery (sCAIS)

Seventy-two implants were placed using sCAIS in standardized maxillary models. The final implant positions were registered and superimposed on the initial treatment planning position to measure the deviations. The results showed that the accuracy of the final implant position with sCAIS is determined by the morphology of the alveolar ridge. Higher accuracy was observed in healed alveolar ridge morphologies compared to extraction sockets.



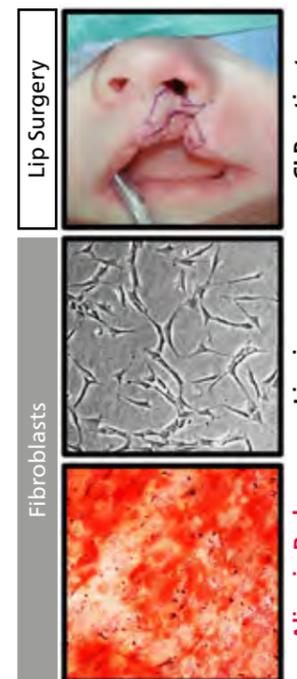
Dulla et al., Journal of Dentistry, 2023.



● Implant Planning Position
● Final Implant Position – BL
● Final Implant Position – BLX

Laboratory for oral molecular biology

The focus of our laboratory is to advance translational- and patient-oriented research on cleft lip/palate (CLP) involving the multidisciplinary expertise of clinicians, geneticists, and basic researchers. Our goal is to bridge scientific discovery into benefits for patients and society. For this we are using primary cleft lip/palate (CLP) lip-derived cells, which are isolated from discarded tissue along the cleft margins during cheiloplasty, to lower the burden of future patients as well as to gain a better understanding about the malformation. We have recently shown that CLP lip-derived fibroblasts possess an osteogenic potential that makes them intriguing cells for personalized treatment options of the alveolar cleft. As the lip is a mucocutaneous junction, where labial skin transitions into mucosa, and as the lip biopsy we receive cannot be standardized regarding the composition of skin and mucosa, we end up with cell cultures containing various proportions of skin and mucosal fibroblasts. We wondered whether labial skin and mucosa fibroblasts possess distinct osteogenic potentials, which could significantly influence the success of their use for regenerative purposes. Indeed, surgical separation of lip mucosa from lip skin tissue allowed us to discover that skin fibroblasts possess a superior osteogenic potential than the mucosal counterparts. Prompted by these observations, we assessed the osteogenic potential of CLP lip-derived fibroblasts isolated from ten randomly selected tissue donors. A significant variation in their efficiency to be differentiated into bone-forming cells could be detected. Using the ten corresponding keratinocyte outgrowth cultures and measuring their specific keratin expression patterns provided further evidence that osteogenic potential positively correlates with the amount of skin-derived cells in our cell populations. Our data suggest that CLP lip-derived skin fibroblasts display a more powerful osteogenic potential compared to mucosal cells, which makes them promising autologous sources for personalized regenerative medicine of clinical benefit for CLP patients.



Fibroblasts isolated from CLP lip biopsies and their osteogenic potential.

ARTORG Center for Biomedical Engineering Research



Prof. Raphael Sznitman, AIMI | Prof. Stefan Weber, IGT | Prof. Philippe Zysset, MSB | Prof. Tobias Nef, GER | Prof. Olivier Guenat, OOC | Prof. Dominik Obrist, CVE | Prof. Stavroula Mougiakakou, AIHN



Prof. Mauricio Reyes, MIA | Prof. Philippe Büchler, CBE | Prof. Manuela Eugster, RMM | Dr. Francesco Clavica, UGE | Dr. Philipp Aebischer, HRL



The Center creates innovative healthcare technology by bringing together the biomedical engineering and medicine departments of the University of Bern. Technical and clinical experts lead ARTORG's multidisciplinary research units, addressing the unmet needs of patients, doctors, and nurses at the interface of technology and medicine.

Better reaching cardiac microvascular obstruction

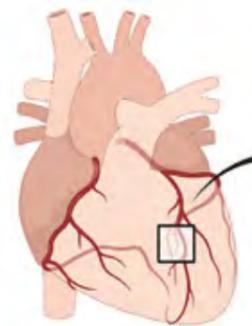
Treatment of acute myocardial infarction has long overlooked microvascular obstruction (MVO) further down the arterial tree after the original large, blocked vessel has been freed via thrombectomy. Due to its small scale, MVO is not treatable by conventional catheter-administered anticoagulants. In collaboration with clinicians and a startup, the ARTORG Cardiovascular Engineering lab is assessing a novel controlled flow infusion system able to diagnose and treat MVO immediately and thus improve long-term patient outcome.



Rösch et al., *Ann Biomed Eng.*, 2023.



New treatment for heart attacks (video)

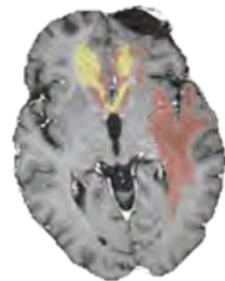


AI-assisted longitudinal brain tumor measurements

Automated tumor segmentation for glioblastoma is promising, yet little is known about longitudinal accuracy of automated measurements to assess treatment response. The Medical Image Analysis lab compared assessment consistency by two AI-based tumor segmentation tools against expert ratings over time on the Bern single-center retrospective dataset LUMIERE. As both tools failed at an accurate lesion count across time, expert supervision and manual corrections are still necessary.



Suter et al., *Front. Radiology*, 2023.

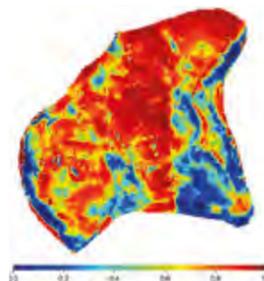


Polarimetry distinguishes cancerous tissue

In collaboration with the Center for Space and Habitability, the Department of Visceral Surgery of the Inselspital and the Institute of Tissue Medicine and Pathology, Uni Bern, the AI in Medical Imaging lab has investigated the usability of Müller Matrix polarimetry combined with machine-learning to distinguish healthy and abnormal cells in fresh pancreatic tissue samples. Follow-up studies will aim to differentiate within abnormal tissues, separating malignant tumor and desmoplastic reaction from fibrosis or chronic pancreatitis.



Sampaio et al., *Sci Rep.*, 2023.



Abnormal tissue probability

Center for Artificial Intelligence in Medicine



Prof. Raphael Sznitman, Director | Prof. Stavroula Mougiakakou, Digitalization & AI Education | Prof. Roland Wiest, Digitalization & AI Education | Prof. Mauricio Reyes, Network & Outreach | Prof. Alexander Leichtle, Computational Facilities | Prof. Kuangyu Shi, Research Project Fund | Prof. Inti Zlobec, Research Project Fund



Prof. Claus Beisbart, Ethics Lab | Prof. Martino Mona, Ethics Lab | Prof. Rouven Porz, Ethics Lab | Prof. Fritz Sager, Ethics Lab



The Center thinks AI from the perspective of healthcare providers and addresses real-world clinical needs for the benefit of patients. It was founded in 2021 by the University of Bern and Bern University Hospital to shape the digital healthcare future.

First Bern Interpretable AI Symposium

The first Bern Interpretable AI Symposium (BIAS) was hosted at CAIM in March 2023. BIAS aimed to network researchers in the medical image interpretable AI community with a hybrid symposium, featuring speakers from academia and industry as well as poster presentations by the Bern medical hub. The objective was to attempt to "open the black box," share insights into challenges and breakthroughs in the field and to foster research interaction.



BIAS 2023



The "BIAS 2023" audience

Encouraging diversity and entrepreneurship in AI

On Women's Day 2023, CAIM with its initiative "Diversity for AI in Medicine" organized the event "AI MedTech Founders" as part of the "Women who start up" series of the UniBE Innovation Office. The afternoon featured partners from be-advanced and Women Experts in AI Switzerland, included information on entrepreneurial support in the Bern ecosystem and offered insights by four MedTech founders.



AI MedTech Founders



Networking and insights sharing event on Women's Day 2023



Panel discussion with several MedTech entrepreneurs and networking experts on Women's Day 2023.

Can AI chatbots transform patient care?

Generative AI such as ChatGPT have a profound impact - also in healthcare. An overview by the CAIM Computational Infrastructure Responsible Alexander Leichtle and his team from the Computational Medicine Group, Inselspital Bern, illustrated the opportunities and risks of this fascinating technology. Authors concluded that AI chatbots will likely make an important contribution to the healthcare system (particularly in administrative areas, diagnostics and therapy), but that their implementation in clinical routines requires critical evaluation and the expertise by medical staff.

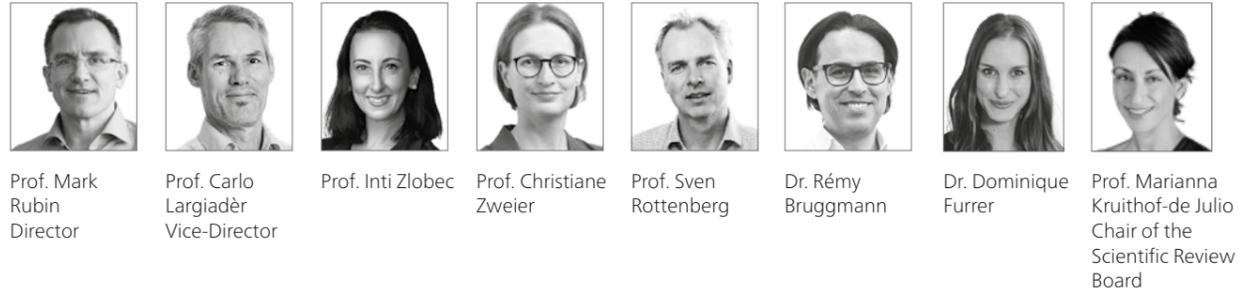


Interview Netzwoche, May 2023



Consulting with the AI instead of the colleague? (Pexels)

Bern Center for Precision Medicine



The Center is dedicated to advancing precision medicine approaches by fostering the research and development of medical treatments and therapy methods. It provides an interdisciplinary platform for researchers and clinicians from different departments and faculties. It is active in research, networking, and education.

BCPM Lighthouse project call

During an institutional review done by an expert group together with the Vice-Rectorate Quality of the University of Bern, the BCPM took the strategic decision to concentrate its research endeavors. As a result, a call for lighthouse projects was announced in December 2022. Out of the 30 letters of intent received, the BCPM scientific review committee invited six projects to submit a full proposal. Based on the assessment of the external reviewers, three were short-listed and invited to present on 30 June 2023. The project "Precision diagnosis and therapy in cardiac channelopathies (PACE)" focusing on sudden cardiac arrest, a key challenge in the field of precision medicine, was selected. The review committee considered the project PACE to be both innovative and interdisciplinary, as genetic pathways will be analyzed in Zebrafish, fruit flies, rabbits, and humans alike, and the project was considered to have a high potential for clinical translation.

PACE integrates various disciplines and faculties. It is led by the PIs Katja Odening, Marco Osterwalder, Nadia Mercader, Jean-Louis Reymond, and Christiane Zweier. The project will start in January 2024.



[Precision diagnosis and therapy in cardiac channelopathies \(PACE\)](#)



Project PIs: Katja Odening, Marco Osterwalder, Nadia Mercader, Jean-Louis Reymond, Christiane Zweier

Swiss Medical Students Convention

The Swiss Medical Students Convention (SMSC) is organized by the Swiss Medical Students' Association. It is one of the biggest medical congresses in Switzerland. The spring 2023 edition was organized together with the BCPM – as a result, it took place at the University of Bern and focused solely on the topic of Precision Medicine. It was a great success: More than 500 participants met in a 3-day event featuring lectures by various researchers, including Andrew MacPherson, Mark Rubin and Adrian Ochsenbein, 24 different workshop tracks, and several podium discussions. In addition to scientific topics, issues such as health data regulations and the future of Precision Medicine were also discussed. The medical students showed a great interest in the subject, and the feedback was very positive.



SMSC with BCPM in Bern, March 2023

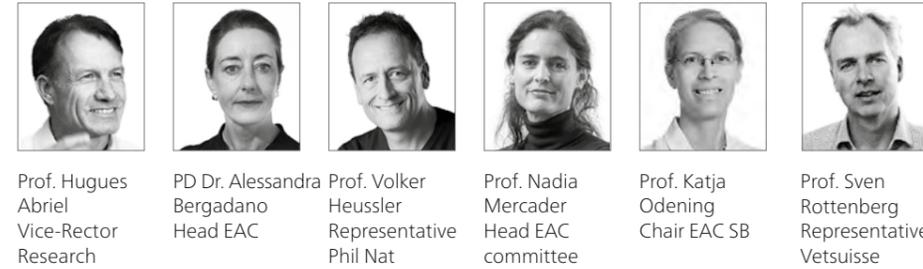
Bern Cancer Research Cluster retreat

The BCPM supported the 2023 annual retreat of the Bern Cancer Research Cluster (BCRC). As a result, the event could take place on the Gurten and was attended by more than 80 participants. Prof. Ian Mills from the Queen's University in Belfast and Prof. George Thalmann from the University Hospital in Bern were invited speakers. The program also included project presentations by the various BCRC research groups, poster prizes and informal research gatherings, which allowed for research networking and unique insights into personalized oncology.



BCRC meeting, June 2023

Experimental Animal Center



The Center is an interfaculty unit and the umbrella structure responsible for all in-vivo research of the University of Bern. It cares for the animals and the infrastructure for conducting animal experiments. Cornerstones of the EAC strategy are the 3Rs, the "Culture of Care" and compliance with guidelines and regulations.

Endorsing the Culture of Care

The implementation of the Culture of Care (CoC) is multimodal and targets animals, science, personnel, environment, teaching, resources (human, financial and structural), communication and compliance. It can be achieved with a genuine collaboration between all stakeholders and the Institution's leadership should facilitate this synergy through a learning and tolerant culture, through recognition and reinforcement, and zero tolerance for non-compliance. The University of Bern signed the Swiss CoC charter in September 2023 to clearly show its moral responsibility for its in-vivo research.



Laboratory Animal Caretaker EFZ Apprenticeship

We are exceptionally proud of our apprentices J Christen, E Merlach, A Rothen, (3y) and A Kuster (2y) and thank warmly Mrs E. Zwycart (head), R. Lüthi, A Fankhauser and M Hirschi who train with great competence, enthusiasm, dedication, respect, and empathy the animal caretakers of the future. The apprentices can gain knowledge with rodents, rabbits, fishes, and amphibians. A rotation is also planned at the local zoo. This educational program is a practical implementation of the CoC at the EAC.



We congratulate

- Dr. C. Detotto, for achieving the ECLAM Diploma
- Dr. MV. Nanni for achieving the specialisation in laboratory animal science, Univ. of Milano (I)
- Dr. C. Anibaldi for achieving her PhD, Univ. of Bologna (I)
- PD. Dr. A Bergadano is SGV Awardee 2023 for her contribution to CoC in laboratory animals science
- Mrs. E. Zwycart for being elected in the SVBT board
- Dr. S. Fuochi for being elected in the FELASA board

Selected publications

Usefulness and Reliability of the Bispectral Index during Balanced Anaesthesia for Neurovascular Surgery in New Zealand White Rabbits



[Petrucci et al., Brain Sci, 2023.](#)

Data repurposing from digital home cage monitoring enlightens new perspectives on mouse motor behaviour and reduction principle



[Fuochi et al., Sci Rep 13, 2023.](#)

Tranquilizers, sedatives, local anaesthetics and antimuscarinic agents (Chapter 5)



[Adami et al., Anesthesia and Analgesia in Laboratory Animals \(Third Edition\), 2023.](#)

Microscopy Imaging Center



Prof. Britta Engelhardt
Chair, MIC-Board
Representative of the Faculty of Medicine

Prof. Sabine Käsmeyer
MIC-Board
Representative of the Vetsuisse Faculty

Prof. Michael Raissig
MIC-Board
Representative of the Faculty of Science.

Prof. Ruth Lyck
MIC-Board
MIC coordinator

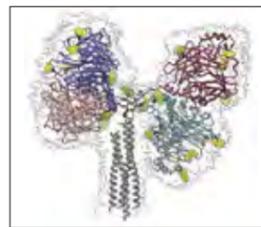
Dr. Yury Belyaev
Scientific Advisor
Light Microscopy



The Microscopy Imaging Center MIC disseminates expert knowledge and provides technical support in high-end microscopy. It implements new technologies, administers the MIC instrument portfolio, and ensures central access to equipment. It teaches at Master's and PhD levels and offers training for scientific staff at all levels.

Highlight Faculty of Medicine

Using cryo-electron microscopy (cryo-EM) and single-particle 3D reconstruction, Dimitrios Fotiadis and colleagues revealed the structure and organization of the tetrameric H-protein ectodomain of the canine distemper virus (CDV), which is a key component of the morbilliviral cell entry system. This cryo-EM structure lays the ground for developing novel antiviral drugs by structure-based drug design.



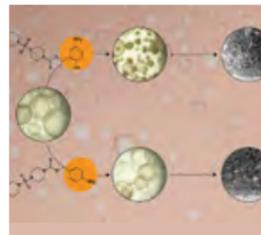
Cryo-EM unveils the structure and supramolecular organization of the CDV attachment glycoprotein



Kalbermatter et al., Proc Natl Acad Sci U S A, 2023.

Highlight Vetsuisse Faculty

At the Institute of Parasitology, Marc Kaethner, Andrew Hemphill, Britta Lundström-Stadelmann and colleagues have analyzed structure-activity relationships (SAR) of dithiocarbamate derivatives against *Echinococcus multilocularis* metacystode vesicles. Light microscopy, transmission electron microscopy and *in vitro* assays showed a 5-2-hydroxy-5-nitro benzyl residue to be crucial for anti-parasitic activity and structurally altered mitochondria.



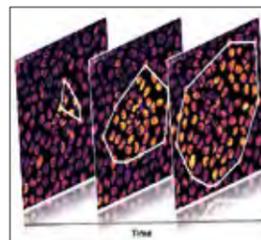
SAR of dithiocarbamate derivatives on *E. multilocularis* metacystodes vesicles



Kaethner et al., Trop Med Infect Dis., 2023.

Highlight Science Faculty

Paolo Gagliardi, Maciej Dobrzynski, Olivier Pertz and colleagues from the Institute of Cell Biology developed a computational method called ARCOS to describe mitogenic signaling patterns that propagate differently between cells with different oncogenic mutations, from isolated "fireworks" to large, migratory waves of activity. Using ARCOS, they have determined how cells communicate in epithelial tissue and how signaling propagates in 3D organoids. R and Python packages as well as a Napari plugin for graphical interaction with ARCOS round off this research in the field of bioimage analysis.



Collective Signalling in epithelial cells.



Gagliardi et al. J Cell Biol., 2023.

MIC Symposium 2023

On November 17, 2023, the traditional MIC Symposium took place under the motto "New Trends in Microscopy." The excellent selection of speakers attracted over 200 participants. The topics "Mesoscale Imaging," "Spatial Omics" and "Super Resolution and Expansion Microscopy" were discussed in three sessions. The lecture by Nobel Prize winner Stefan Hell and all the other inspiring speeches made the MIC Symposium 2023 a particularly impressive event.



Multidisciplinary Center for Infectious Diseases



Prof. Volker Thiel (Co-Chair 1)

Prof. Carmen Faso (Co-Chair 2)

Prof. Rudolf Blankart (Chair, Economics)

Prof. Nicola Low (Chair, Epidemiology)

Prof. Stephanie Ganal-Vonarburg (Chair, Immunity)

Prof. Manuela Funke-Chambour (Chair, Patient-Focused Research)

Prof. Volker Heussler (Chair, Neglected Diseases)



Prof. Stephen Leib (Chair, Microbiology)

Prof. Claus Beisbart (Chair, Society and Law)



The MCID is the strategic center of the University of Bern dedicated to the study and mitigation of risks from infectious diseases. It brings together high-impact academic researchers with the aim of determining the origins of infectious disease risks and preparing for and managing these risks.

Launch of Cluster of Research Excellence, Genomics for Health in Africa, co-lead by the MCID

The MCID, together with co-leads at Stellenbosch University and the University of Tübingen, will co-lead an ARUA-The Guild Cluster of Research Excellence (CoRE), "Genomics for Health in Africa," officially launched in June 2023. This CoRE, with a key aim of capacity building, will focus on genomics and structural biology as tools in infectious diseases, rare diseases and cancer research, in and for Africa, striving for continent-wide improvement in public health.



MCID launches The SPREAD

In early 2023, the MCID launched The SPREAD, a quarterly newsletter featuring articles on ongoing MCID-funded research, interviews with MCID Members and items on a wide-range of topics linked to infectious diseases. Do sign up via the MCID website to receive The SPREAD.



Receipt of third-party funding by MCID members

2023 has seen the securing of significant third-party funding by MCID Members. This includes the following:

- Funding awarded to MCID Ethics and Policy Lab (EPL) Managers, PD Dr. Caroline Schläufer and Dr. Caroline Brall by the SNSF (482,000 CHF) and FSVO (241,000 CHF) for expansion of EPL research activities.
- SNSF COST funding (360,000 CHF) awarded to Microbiology cluster members PD Dr. Ronald Dijkman and Dr. Jenna Kelly to expand research activities on Swine Influenza viruses



MCID launches colloquium on pandemic preparedness

Having received support from the Vice Rectorate Development's "Additional Courses in English (EngL)" program, the first MCID colloquium on pandemic preparedness was held in Autumn 2023. Fifteen Bachelor's and Master's students followed sessions led by each of the MCID's seven academic discipline clusters, covering both biomedical and societal aspects of pandemic preparedness. In a final examination session, students presented preparedness strategies to counter threats by different pathogens. The course was well received by students and lays a path for future MCID interdisciplinary teaching activities.



Swiss Institute for Translational and Entrepreneurial Medicine



Dr. Simon Rothen
CEO

Dr. Christian Rosser
COO and Director
sitem-insel
School

Dr. Julie Risse
CBO

Vivienne Rassaerts
CCO

Anita Newby
CFO and HR

Prof. Rudolf Blankart
Director sitem-
insel Regulation



sitem-insel is a National Center of Excellence for Translational Medicine that accelerates and streamlines research for the benefit of patients, society, and science. Located on the Insel Campus Bern, a wide variety of units from the hospital, industry, research, and education are networked under one roof.

Dynamic Imaging Center

An exciting example of how we enable the implementation of ideas from the daily clinical practice to a successful market launch: The Insel Hospital, University Hospital Bern and the Empa opened Europe's first Dynamic Imaging Center (DIC) in a clinical setting at sitem-insel. In this unique laboratory, X-ray images of a person in movement are recorded, which is a milestone in the investigation of diseases of the musculo-skeletal system.



Canopy against transmission of respiratory viruses in hospital rooms

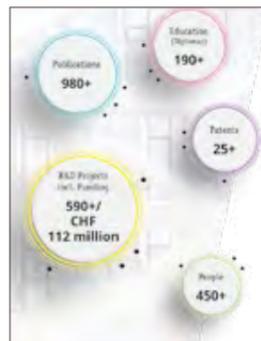
For this world's first prototype, sitem-insel has been pulling the strings in the background, bringing together relevant stakeholders and providing technical support. The canopy has been placed at the Insel Hospital, University Hospital Bern. A scientific study on the effectiveness and suitability for everyday use is underway. The system creates an area in existing rooms that is largely free of virus-containing air particles, including coronaviruses. We co-applied for funding from the Federal Office for the Environment together with NanoCleanAir GmbH, the University of Fribourg, the University Clinic for Infectiology at the Inselspital and the FHNW.



InnoMeter Report

sitem-insel launched the first InnoMeter Report highlighting the innovation contribution of the Community since 2019:

- We carried out more than 590 R&D projects with a total of CHF 112 million in funding.
- More than 980 publications were (co-)authored in top journals such as Nature and Lancet Neurology.
- We were able to award over 190 diplomas, file 28 patents and 450 employees worked in the building.



The report is the result of our contractual obligation with the Canton of Bern, and we will publish it annually in the future.

Various achievements

- Hosting of Philippe Müller's inauguration as the President of the Government Council of the Canton of Bern on June 22, 2023.
- Foundation of the Network Biological Risks by the Institute of Infectious Diseases, sitem-insel and other partners.
- sitem-insel expanded its reach as Center of Excellence by fostering relationships with political delegations from Austria, Vietnam, and the UK and with delegations from Universities in Serbia, Bulgaria and Luxembourg.
- To optimally promote collaboration on the Insel Campus Bern, CSEM has moved on the Campus with offices at the Sitem Startup Club (SSC).
- sitem-insel successfully conducted the Open House Event on December 2, 2023.



Hosting of Philippe Müller's inauguration

Research Platforms, Clusters and Networks

Cardiovascular Research Cluster
Clinical Neuroscience Bern
Decoding Sleep
NeuroTec
University Cancer Center
University Sleep-Wake-Epilepsy-Center
Stem Cell Research and Regenerative Medicine
Translational Imaging Center
University Neurocenter

Cardiovascular Research Cluster



Prof. Sarah Longnus
CVRC Coordinator

Prof. Katja Odening
CVRC Coordinator

Dr. Maria Arnold,
CVRC Scientific & Administrative Manager

Daniela Castillo Robles, CVRC Administrative Assistant



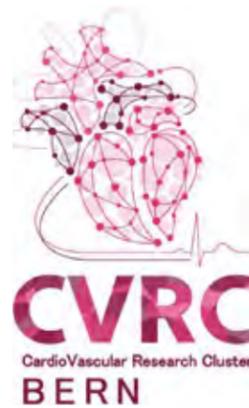
The Cardiovascular Research Cluster (CVRC) Bern is a local network of researchers at the University of Bern and the Inselspital with an interest in cardiovascular research. It aims to reinforce Bern's position as a leading center for cardiovascular research locally, nationally, and internationally.

CVRC Annual Meeting 2023

The Annual Meeting 2023 of the Cardiovascular Research Cluster Bern (CVRC) was held on January 18, 2023. With approximately 140 registrations and 47 abstracts submitted from the many different Bernese Institutes and Departments involved in cardiovascular research, the meeting was a great success. The meeting was divided into sessions covering diverse cardiovascular themes with research focuses in Bern. In addition to the six invited local speakers who opened the different sessions, special appreciation is addressed to the 19 early career investigators who presented their innovative results in flash presentations. The meeting was concluded with a stimulating poster session.



[Annual Meeting 2023](#)



Initiation of PhD Specialization Program in Cardiovascular Research

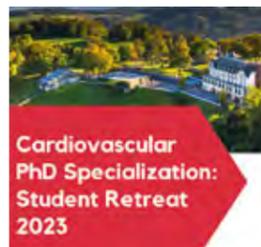
The CVRC has initiated a new PhD Specialization Program for Cardiovascular Research. The program is financially supported by the University of Bern (funding program "Doktoratsprogramme / Graduate Schools Universität Bern 2021-2024") and was successfully started in February 2023. The new Cardiovascular Research PhD Specialization Program is open to PhD and MD-PhD students who are enrolled in the Graduate School for Cellular and Biomedical Sciences (GCB) and are performing research in the cardiovascular field. By the end of 2023, nine students were already participating.



[PhD Program Cardiovascular Research](#)

First Cardiovascular Research Student Retreat

On November 17, 2023, the first student retreat of the new Cardiovascular Research PhD Specialization Program took place at Gurten Park in Bern. We are happy to announce that this Student Retreat 2023 exceeded our expectations with 18 participating students, including seven from our national/international partner programs. In the morning, students gave flash presentations of their research work. In the afternoon, there was an interactive workshop on practical aspects of statistics led by Dr. Frédéric Schütz, Head of the Biostatistics Platform, Swiss Institute of Bioinformatics / University of Lausanne.



[Cardiovascular Research PhD Student Retreat](#)

Clinical Neuroscience Bern



Prof. Sebastian Walther
President

Prof. Mirjam Heldner
Vice President

Prof. Tobias Nef
Executive Committee Member

Prof. Antoine Adamantidis
Executive Committee Member

Prof. Thomas König
Executive Committee Member

Prof. Daniela Schweizer
Executive Committee Member

PD Dr. Maria Stein
Executive Committee Member

Prof. Philippe Schucht
Executive Committee Member



Prof. Roland Wiest
Executive Committee Member

Prof. Benoît Zuber
Executive Committee Member



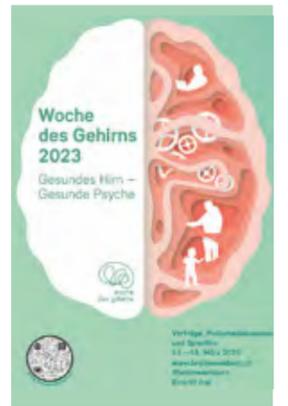
Clinical Neuroscience Bern (CNB) is an interdisciplinary consortium of research groups from different fields. The main purpose is to connect neuroscientific researchers, promote research quality, increase the clinical impact at Bern, and facilitate junior scientists.

Brain Week Bern, March 13-16, 2023

The Brain Awareness Week (BAW) is the global campaign to increase public awareness of the progress and benefits of brain research. During the Brain Week 2023, we hosted an audience of up to 224 people per evening. The focus of this year's Brain Week was on brain health and mental health as central components of well-being. Lectures informed the public on how to maintain brain health and mental health. Monday's and Tuesday's lectures were followed by lively discussions. On Wednesday, a movie presentation at the Cinema REX was dedicated to fascinating brain states. The final event of the week included a panel discussion on the myths and truths around popular conceptions of the brain.



[Brainweek Bern](#)



18th CNB Annual Meeting on September 9, 2023

This year's Annual Meeting was held at the Inselspital in the Auditorium Ettore Rossi, with the first keynote speaker Prof. Daphne Bavelier, who discussed brain plasticity and learning through gaming. Young researchers also presented their work, followed by the second keynote by Prof. Adrian Guggisberg on modulating network interactions. The afternoon consisted of a poster session, lunch, and three parallel symposia to exchange ideas and discuss current research.



More information about CNB, activities, and events on our website or in the CNB newsletters:



[Clinical Neuroscience Bern](#)



Save the date for the upcoming events:

- Brain Week 2024: 11th - 14th March 2024
- Researchers' Night: 13th March 2024
- 19th CNB Annual Meeting: 6th September 2024

Decoding Sleep



Prof. Claudio Bassetti, PI Dept. of Neurology
 Prof. Fred Mast, Co-PI, Dept. of Psychology
 Prof. Athina Tzovara, Co-PI Dept. of Neurology, Inst. of Computer Sciences
 Prof. Antoine Adamantidis Dept. of Neurology
 Prof. Thomas Nevian, Dept. of Physiology
 PD Dr. Carolina Gutierrez Herrera, Dept. of Neurology
 Prof. Katharina Henke, Dept. of Psychology
 Prof. Leila Tarokh, University Hospital of Child and Adolescent Psychiatry and Psychotherapy



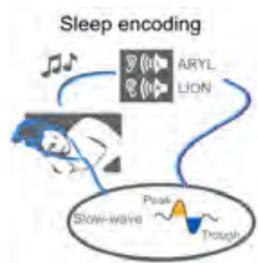
Prof. René Müri, Dept. of Neurology
 Prof. Stephen Leib, Inst. for Infectious Diseases
 Prof. Christoph Nissen, University Hospital of Psychiatry
 Prof. Thomas König, University Hospital of Psychiatry
 Prof. Paolo Favaro, Inst. of Computer Science
 Prof. Walter Senn, Dept. of Physiology
 Dr. Markus Schmidt Research Group Leader



The Interfaculty Research Cooperation "Decoding Sleep" bridges Medicine, Psychology, Psychiatry, and Computer Science. It aims to gain a better understanding of the function and regulation of sleep-wake-rhythms and to develop strategies for early and personalized therapies for sleep-related disorders.

Representative publication: episodic long-term memory formation during slow-wave sleep

We are unresponsive during deep sleep but continue monitoring external events to wake up in case of upcoming danger. Here, we hypothesized that if events are non-threatening, our brain can store them for later, such that it influences our decision-making. To this aim we let people listen to foreign words and their translations during specific phases of slow-wave to investigate whether they can be encoded during sleep and retrieved during wakefulness. Vocabulary retrieval tests conducted 12 and 36 hours after sleep stimulation demonstrated that sleep-played vocabulary can be retrieved hours after sleep-learning (particularly when we targeted the word onset at troughs of sleep slow-waves). Characteristic sleep oscillations, such as increased theta power and fast-spindle power supported vocabulary learning. These findings challenge existing memory and sleep theories by suggesting that episodic memory formation may proceed during deep sleep without conscious awareness of the learning material.



[Schmidig et al., Elife, 2024.](#)

Future direction: improving screening of drugs for insomnia

Although the IRC project has finished, sleep research in Bern is far from over. A new SNF BRIDGE Discovery Grant worth CHF 2.5 millions will be developing over the next 4 years translational predictive tools to improve drug screening for insomnia. This project aims to close the gap between the brain mechanisms at the micro level (cells) and mesoscale (networks, EEG) of preclinical drug screening and to develop the first software that predicts the effect of new sleeping pills on EEG biomarkers of sleep.

The principal investigators (Ass. Prof. Dr. Athina Tzovara, PD Dr. Carolina Gutierrez Herrera, Prof. Dr. Antoine Adamantidis and PD Dr. med. Markus Schmidt) were all actively involved in the IRC project.



NeuroTec



Prof. Claudio Bassetti Chairman Strategic Board
 Prof. Kaspar Schindler Director
 Prof. Tobias Nef Vice-Director
 Prof. Athina Tzovara Research Group Leader, Assistant Professor
 SNF Prof. Maxime Baud Research Group Leader, SNF Professorship
 Dr. Markus Schmidt Research Group Leader



At the research and development platform NeuroTec, physicians, engineers, and data scientists test new devices and methods that allow the recording of digital biomarkers in the everyday out-of-hospital life of patients with neurological disorders – for personalized diagnostics and therapies.

iSPHYNCS study

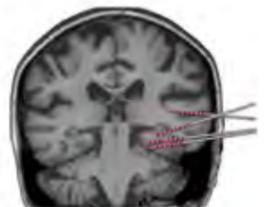
The Swiss Primary Hypersomnolence and Narcolepsy Cohort Study (SPHYNCS) is a prospective, multicenter cohort study for the systematic evaluation of the clinical presentation and course of narcolepsy type 1 and other central disorders of hypersomnolence. A major new Swiss National Science Foundation grant will support the addition of new international sites from Germany, Holland, and Italy to create the iSPHYNCS project. With its multi-omics approach, iSPHYNCS is designed to identify novel biomarkers to improve and accelerate diagnosis of these rare diseases. The multimodal design combines classical clinical data with new methods, including long-term monitoring with wearable technologies (activity tracker such as FitbitTM), which has led to the identification of the first potential biomarkers in the interim analyses. At the leading study site in Bern, patients and healthy control subjects are recruited at the Sleep-Wake-Epilepsy-Center of the Inselspital and assessed at NeuroTec. A new Sitem-Insel Support Funds (SISF) grant will allow the recruitment of healthy controls to be recorded using polysomnography at the Neurotec.



The Swiss Primary Hypersomnolence and Narcolepsy Cohort Study (SPHYNCS) has now grown to include international partners to form the iSPHYNCS study group.

Studying auditory processing with invasive recordings

Studying the brain's response to sounds can provide valuable insights into human cognition and brain dysfunction. In our study, we aimed at characterizing neural responses in the extended auditory network and their links to spontaneous neural activity. We recorded intracranial electroencephalography (iEEG) in patients with drug-resistant epilepsy who have implanted iEEG electrodes for presurgical monitoring. We found that neural signals in the extended auditory network unfold over characteristic timescales, which are organized in a hierarchical manner, even before a sound is presented. These timescales at rest can explain the timing of neural responses to sounds across brain regions. Our results suggest that the human auditory network exhibits a repertoire of intrinsic neural dynamics, which manifest with millimeter resolution and may provide a variety of temporal windows to support auditory processing.



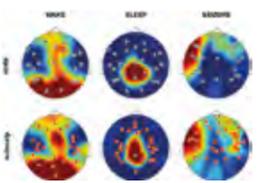
Electrical activity is recorded with intracranial EEG during auditory processing.



[Cusinato et al., J Neurosci, 2023.](#)

Epios - an implantable subscalp EEG system

In June 2023, we concluded the proof-of-concept Epios trial of a novel implantable subscalp EEG electrode. The clinical outcomes in eight participants showed that the device could be safely inserted and maintained under the scalp for up to nine days. The device, tested against current standard of scalp EEG, showed efficacy in recording brain oscillations related to the sleep-wake cycles, as well as epileptic brain discharges, such as seizures. A larger and longer trial will be necessary to bring this innovation to the market for patients benefit.



EEG recordings during wake, sleep and a left temporal seizure

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Twelve organ-specific cancer centers constitute the core of the University Cancer Center UCI – supported by interdisciplinary services and expert groups focusing on special aspects of cancer care. The UCI is embedded in the structure of the Faculty of Medicine and the Inselspital Bern.

Cancer survivorship

2023 - Coordinating support for the Cancer Survivorship expert group, which is led by the division of paediatric haematology and oncology and the department of general internal medicine, Inselspital Bern.



Melanoma prevention and treatment options

May 2023 – Support for a patient information evening, organized by the skin cancer center.



Race for Life

September 2023 – UCI is the main sponsor and an active participant of the annual charity bicycle marathon on the Bundesplatz in Bern.



Staying alive. An oncologist fights his cancer

October 2023 – Author reading, organized in collaboration with the Krebsliga Bern.



Cancer Research goes public

October 2023 – Kick-off for communication initiative “Cancer Research Network Bern (CRNB)”: The platform will publicize the cancer-related basic and translational research activities of the University of Bern and the Inselspital.



University Sleep-Wake-Epilepsy-Center



The mission of the interfaculty and interdisciplinary University Sleep-Wake-Epilepsy Center (SWEC) is 1) to provide comprehensive care for patients with sleep/wake disorders and/or epilepsy, 2) to advance basic, translational, and clinical research, and 3) to teach at pre- and postgraduate level.

27th Bernese Sleep-Wake-Epilepsy Days

Our traditional multidisciplinary congress took place from November 2-3, 2023. The two-day event brought again together national and international experts from clinics and basic science. In addition to the Sleep-Wake-Epilepsy Symposium, the first day included workshops on Non-CPAP therapies of sleep apnea and the use of wearables to assess sleep physiology. On the second day, the symposium organized by the Center for Experimental Neurology (ZEN), presented fascinating talks from circadian rhythms to state-of-the-art computational modeling in epilepsy.



Alexander Borbély (with C. Bassetti) and Marco de Curtis (with K. Schindler)

As important highlights, this year's Bernese Sleep Award went to Prof. Alexander Borbély, and the Bernese Epilepsy Award to Dr. Marco de Curtis.

Cardiovascular parameters predicting future cerebro-cardiovascular events

In this study, we comprehensively describe cardiovascular parameters at acute stroke and explore their ability to predict recurrent cerebro-cardiovascular events (CCVE) over 3 years. We found that high BPV, high nocturnal HRV and low reactive hyperemia are associated with increased risk of future CCVE in acute stroke patients.



High blood pressure variability, high nocturnal HRV and endothelial function contribute to the risk for future CCVE after stroke



Filchenko et al., *Front Cardiovasc Med*, 2023.

Data driven phenotyping for patients with sleep-wake disorders

Diagnosing sleep-wake disorders represents a challenge because of very few accurate biomarkers and frequent comorbidities. Here, we studied a cohort of more than 6'900 patients from the Bernese Sleep Registry; we assessed the potential of data-driven approaches for identifying sleep-wake disorders. We used unsupervised machine learning to cluster the clinical markers of these patients and group patients with similar phenotypes together. Our results confirm the existence of clear clusters for narcolepsy type 1 and sleep apnea syndromes, and mainly intermixed groups in the remaining spectrum of sleep wake disorders. These results call for new biomarkers and possible redefinition of diagnostic criteria for sleep wake disorders.



Aellen et al., *Eur J Neurol*, 2023.

Dr Mattia Aime finalist of the 2023 Science Eppendorf Prize

Mattia Aime received his undergraduate degree in Neurobiology from the University of Pavia and a PhD in Neuroscience at the University of Bordeaux. He is currently completing his postdoctoral fellowship at the University of Bern, in the group headed by Prof. Adamantidis. His ongoing research is centered on exploring the mechanisms behind emotional memory consolidation during sleep, with the goal of identifying potential new therapeutic targets for treating maladaptive processing of emotional memories and their early sleep-dependent consolidation.



Aime, *Science*, 2023

Stem Cell Research and Regenerative Medicine



 The Stem Cell Research and Regenerative Medicine (SCRM) Platform is an inter-faculty and inter-institutional research cluster of the University of Bern and the Inselspital. It comprises 35 member groups from the Faculty of Medicine, the Faculty of Science, and the Vetsuisse Faculty.

SCRM Annual Meeting

The SCRM Annual Meeting presents current research topics in the field of Stem Cell and Regenerative Medicine Research at the University of Bern. It brings stem cell researchers from the Faculty of Medicine, the Faculty of Science and the Vetsuisse Faculty as well as clinicians from the Inselspital, University Hospital Bern together for a joint exchange. The 2023 Annual Meeting focused on Aging and Regenerative Research.



SCRM PhD Students Retreat

The SCRM PhD Students Retreat is a tradition that began in 2014. This annual retreat is organized by and for PhD Students of the SCRM platform and for PhD Students with interests in stem cell research. Students are encouraged to present their projects not only to motivate scientific discussion between peers and two invited mentors but also to explore career plans. In 2023, the 10th edition of this event welcomed academic mentor, Prof Andreina Schoeberlein, Research Laboratory of Prenatal Medicine, Inselspital and University of Bern and industry mentor Dr Lorenzo Leoni, Managing Partner at TiVentures.

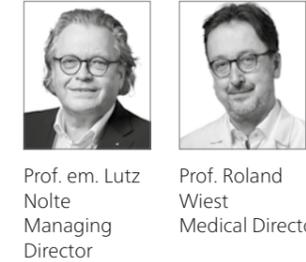


SCRM Lunch Seminar

The monthly SCRM Lunch Seminar takes place every second Tuesday of the month and provides a regular platform for young PhD students and researchers who want to present their work to their colleagues and excel in professional presentation. A variety of lectures from PhD Students, PhDs, Postdocs and group leaders of the SCRM Platform or partner groups is offered to strengthen the network and favor discussions.



Translational Imaging Center



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The Center is part of the Insel Gruppe and is supported by sitem-insel, the University of Bern, and Siemens Healthineers. It enables translational imaging research ranging from molecular chemistry and physics to applied human-oriented research and employs advanced magnetic resonance imaging.

Electroconvulsive therapy induces remodeling of hippocampal co-activation with the default mode network in patients with depression

Electroconvulsive therapy (ECT) is amongst the most efficient treatments for patients with depression. We compared 20 ECT-patients with 20 healthy controls to investigate hippocampal networks. Results indicate ECT-induced remodeling of the parahippocampal cingulum and altered functional co-activation between the hippocampus and the default mode network (DMN). The findings suggest ECT-induced structural and functional remodeling of a hippocampal-default mode network.



[Denier et al., Neuroimage Clin, 2023.](#)

α -D-Glucose as a non-radioactive MRS tracer for metabolic studies of the brain

Changes in brain glucose metabolism can be detected in chronic neurological disorders as well as during aging. Most studies on the uptake of glucose in the brain use positron emission tomography, which requires injection of a radioactive tracer. In a recent study we demonstrated that ultra-high-field 1H-MRS can be used to measure α -d-glucose in vivo. Further, α -d-glucose can be used as a radiation-free tracer in the human brain. The new method enables long-term longitudinal observational studies over the entire lifespan with no risk of radiation exposure.



[Weng et al., Sci Rep, 2023.](#)

University Neurocenter



The largest neurocenter in Switzerland represents the departments of Neurology and Neurosurgery, the Department of Pediatrics with the specialty of neuro-pediatrics, the University Institute of Diagnostic and Interventional Neuroradiology, and the University Hospital of Psychiatry UPD Bern.

Intravenous thrombolysis in patients with ischemic stroke and recent ingestion of direct oral anticoagulants

This international, multicenter cohort study of 33,207 patients found no excess risk of brain hemorrhage in patients with recent intake of direct oral anticoagulants undergoing off-label intravenous thrombolysis. The findings challenge current guidelines and are the starting point of prospective, randomized studies on this topic led by the Stroke Research Center Bern.



[Meinel et al., JAMA Neurol, 2023.](#)

Cerebral perfusion and its association to functional outcome in childhood cancer survivors

To define predictors for functional long-term recovery after childhood cancer, we investigated cerebral perfusion and its relationship to cognitive and motor performance in survivors of childhood cancer and controls.



[Schuerch et al., Dev Neuropsychol, 2023.](#)

Improvement of intraoperative neurophysiological warning criteria

As part of an international consortium and the international society of intraoperative neurophysiology, we work on guidelines for intraoperative warning criteria. With the help of supervised and unsupervised machine learning algorithms, we try to identify characteristics of the signal, which may alarm before classical alarm criteria occur.



[Wermelinger et al., BMC Med Inform Decis Mak, 2023.](#)



[Lutz et al., Cancers \(Basel\), 2023.](#)

Value of intravenous thrombolysis in endovascular treatment for large-vessel anterior circulation stroke

A meta-analysis published in The Lancet 2023, co-led by Jan Gralla, Neuroradiology, and Urs Fischer, Neurology, provided important insights into the combination of intravenous thrombolysis and endovascular treatment for ischemic stroke.



[Majoie CB et al., Lancet, 2023.](#)

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For the annual report in
pdf-format:



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