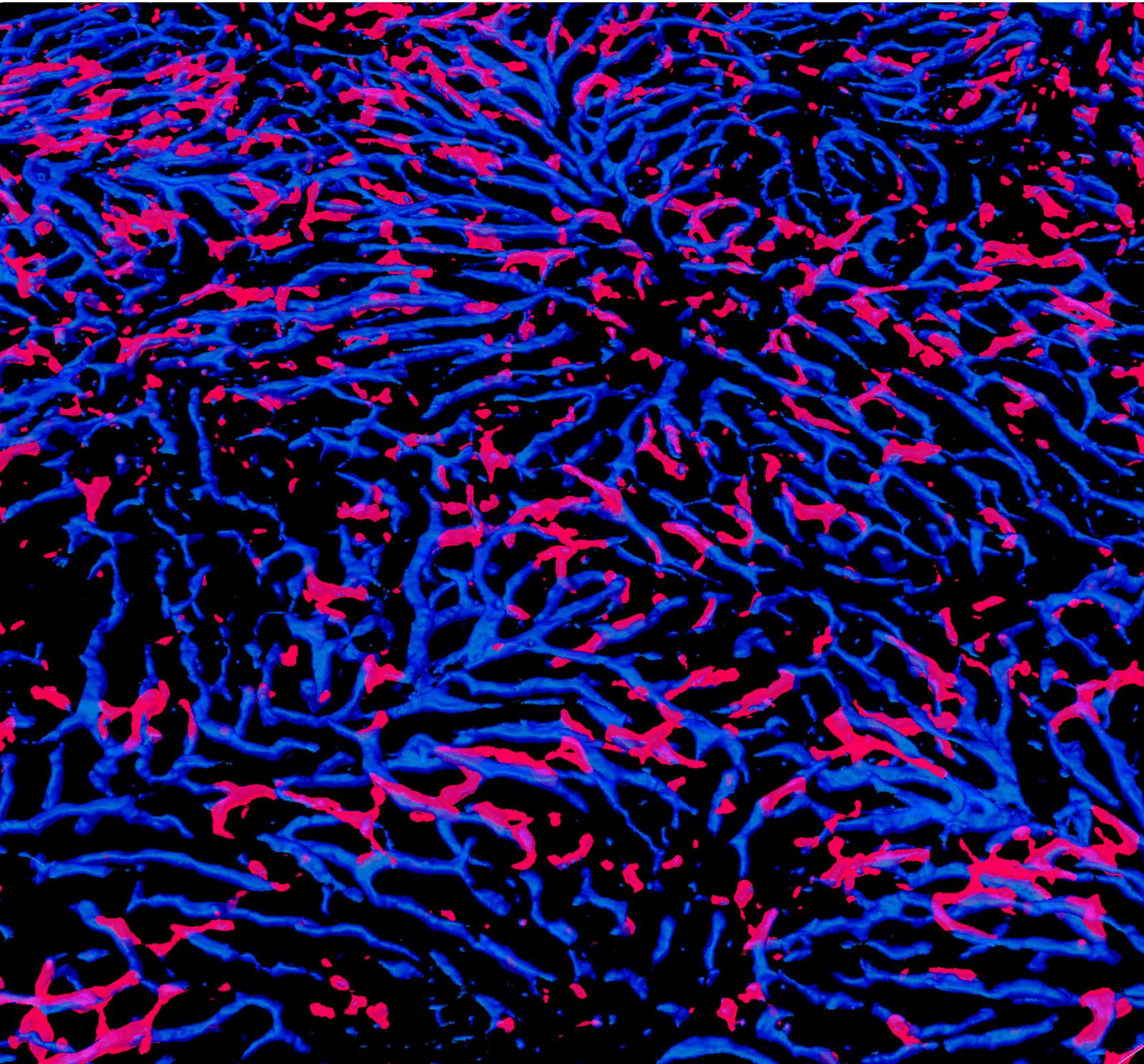


Annual Report 2022



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Foreword

Director's Report

Department for BioMedical Research (DBMR) Travel Awards

As a pathology resident, I remember giving my first oral presentation at the United States and Canadian Academy of Pathology. My project was on a topic that I had devoted two years of work, and the collection of tumors I was studying was, at the time, the most extensive collection to date. I hoped to make a large splash. I enjoyed a lot of positive feedback. However, the most valuable feedback was the critique I received from a world expert on this cancer type. I still needed to address another point in order to convince him. After the presentation, I had the opportunity to speak with him and quickly learned about a few more things that I needed to address. His parting words were "but otherwise looks like a good study." This personal experience motivated me to make changes and finalize the study for publication. As the director of the DBMR, I hope that all our students and postdocs will have similar experiences.

To this end, we established a new initiative to help trainees learn more and enhance their network ability. We have created a travel award. The goal of our award is to support trainees up to the postdoctoral level to attend meetings where they have been invited to speak, but do not have adequate funds. From my earliest days as a pathology trainee, I knew that attending meetings was often when I could meet leaders in the field and inquire about their work. This was an opportunity to present our work. Networking and feedback are critical to academic growth. I know that those have helped me understand the strengths and limitations of my projects before preparing the publications.

Now that COVID-19 is somewhat in the past, the opportunities to attend conferences also opens up opportunities for networking. This is important for the trainees. Hearing about what others are doing, being able to ask questions, and getting to know the people behind science is a great experience. Moreover, developing new collaborations and contacts helps in extending the capabilities of ones' work. Presenting one's work publicly through posters and verbal presentations allows for dynamic feedback from people coming across such work for the first time. What ideas are challenging to understand? How can the study design be improved? Who collaborates with you to take your work to the next level? These are exciting things that can occur during meetings.

Our trainees are the best ambassadors. Making researchers aware of our work in Bern is vital to our mission. We want to draw attention to things that come from Bern^[A1], problems that concern us, areas of excellence. At the DBMR, we support a broad range of research; therefore, ^[A2] it is difficult to concisely describe what we do. However, by providing examples through our trainees' presentations, I believe that students and researchers from and around Switzerland^[A3] can learn about us. I hope that this will attract the next generation of trainees.

I congratulate all trainees who received full or partial support to attend the meetings. We are looking forward to future [applications](#) by 2023.

List of the awardees who received in 2022 the DBMR Travel Award:

Manovriti Thakur	Postdoc	International Society on Thrombosis and Haemostasis ISTH 2022, UK
Chrysanthi Kouri	PhD	Annual Meeting of the European Society of Pediatric Endocrinology 2022, IT
Maria Natalia Rojas Velazquez	PhD	Annual Meeting of the European Society of Pediatric Endocrinology 2022, IT
Katyayani Sharma	PhD	22nd International Conference on Cytochrome P450, USA
Fabian Luther	PhD	51st European Society of Dermatological Research Annual Meeting (ESDR) 2022, NL
Cecilia Bazzini	Postdoc	51st European Society of Dermatological Research Annual Meeting (ESDR) 2022, NL
Jonathan Hamley	Postdoc	European Conference on Mathematical and Theoretical Biology, DE
Melek Firat Altay	Postdoc	NSAS (Neuroscience School of Advanced Studies), IT
Vera Tscherrig	PhD	Small New World, a joint meeting of ASEV and GSEV, AT
Erika Tarasco	Postdoc	64th ASH (American Society of Hematology) Annual Meeting exposition, USA
Prince Paja	Postdoc	64th American Society of Hematology Annual Meeting, USA
Katyayani Sharma	PhD	11th International Meeting of Pediatric Endocrinology (IMPE 2023), AR
Maria Natalia Rojas Velazquez	PhD	11th International Meeting of Pediatric Endocrinology (IMPE 2023), AR

Sincerely,
Prof. Mark A. Rubin, MD



The DBMR at Glance

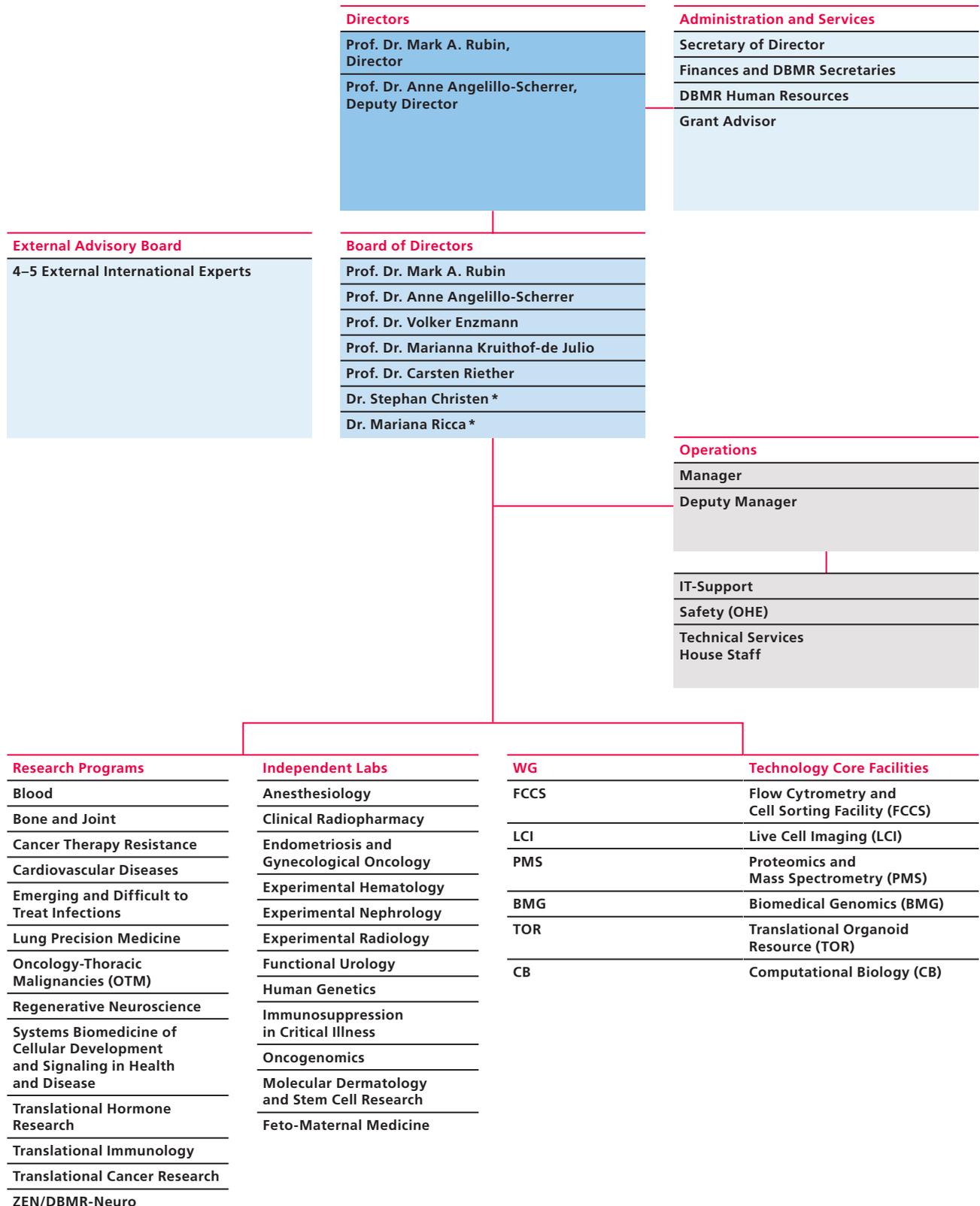
Established in 1994, the DBMR promotes an integrative perspective to clinical research with a strong emphasis on developing translational approaches. The more than 100 groups of the department are organized in 13 Research Programs and 12 Independent Research Labs and are supported by central services responsible for administration, informatics, technical support and bioinformatics. Additionally, the DBMR is also responsible for operating state-of-the-art technology core facilities that serve the broader research community of the University of Bern.



Organization

The role of DBMR is to provide optimal infrastructure and scientific support to its affiliated members comprising labs from clinics of the Inselspital, Bern University Hospital and internal DBMR groups. DBMR also operates six core technology facilities. The research groups are supported by central services responsible for administration, facility management, and technical support, as well as providing informatic and bioinformatic services.

Organigram



* without voting right

Key People

Leadership



Prof. Dr. Mark A. Rubin *
Director



Prof. Dr. Anne Angelillo-Scherrer *
Deputy Director

Board of Directors



Prof. Dr. Volker Enzmann
Member, Board of Directors and
Contact Insel-Uni-Support



Prof. Dr. Marianna Kruihof-de Julio
Member, Board of Directors and
Gender Equality Representative



Prof. Dr. Carsten Riether
Member, Board of Directors



Dr. Mariana Ricca **
Grant Advisor



Dr. Stephan Christen **
Operations Manager

* Board of Directors
** non-voting members

Management

Dr. Stephan Christen
Operations Manager

Dr. Raschid Setoud
Deputy Operations Manager

Secretary of Director

Franziska Fuchs
(since Sep.)

Cornita Rohda
(until Jul.)

Jasmine Stiefel

DBMR Human Resources

Daniela Scherer-Jendly
(since Sep.)

Sigrid Zimmermann
(until Aug.)

Grant Advisor

Dr. Mariana Ricca
Trân Vu

Finances and DBMR Secretaries

Lutz Hempel
Accountant (since Mar.)

Roselle Lumanog Bieri
Secretary (Aug. – Dec.)

Marla Rittiner
Secretary

Beatrix Stalder
Secretary (until Aug.)

Trân Vu
Secretary

Occupational Safety, Health Protection and Environmental Safety (OHE)

François Achermann

IT-Support

Michael Ackermann
Head of IT

Ilker Romann
Informatician

Luca Sulmoni
Informatician

Technical Services

Patrick Furer
Head Technical Services

Lucille Wotzkow
Polymechanic

Nivetha Ravindran
Polymechanics Trainee (until Jul.)

Heads of Core Facilities

PD Dr. phil. nat. Fabian Blank
Live Cell Imaging (LCI)

Ass. Prof. Dr. phil. nat. Manfred Heller
Proteomics and Mass Spectrometry (PMS)

Dr. phil. nat. Stefan Müller
Flow Cytometry and Cell Sorting (FCCS)

Prof. Dr. Marianna Kruthof-de Julio
Translational Organoid Resource (TOR)

Prof. Dr. phil. nat. Ursula Amstutz
Biomedical Genomics (BMG)

Dr. Charlotte Kiu Yan Ng
Computational Biology (CB)

DBMR Research / Programs / Independent Research Labs

Research Programs

Blood

Allam Lab
 Angelillo-Scherrer Lab
 Bacher Lab
 Bonadies Lab
 Daskalakis Lab
 Kremer Hovinga Lab
 Meyer Lab
 Oppliger Leibundgut Lab
 Rovó Lab
 Schaller Tschan Lab
 Schroeder Lab

Bone & Joint

Gantenbein & Hofstetter Lab
 Saulacic Lab

Cancer Therapy Resistance

Kruithof-de Julio Lab
 Rottenberg Lab
 Rubin Lab

Cardiovascular Diseases

Döring Lab
 Heller Lab
 Longnus Lab
 Mercader Lab
 Odening Lab
 Osterwalder Lab
 Rexhaj Lab
 Rieben Lab
 Zuppinger Lab

Emerging and Difficult to Treat Infections

Furrer Lab
 Leib Lab
 Que Lab
 Schefold Lab

Lung Precision Medicine

Blank Lab
 Funke-Chambour Lab
 Gazdhar Lab
 Geiser Lab
 Kopp Lab
 Latzin Lab
 Maurer Lab

Oncology-Thoracic Malignancies

Marti Lab
 Peng Lab

Regenerative Neuroscience

Enzmann Lab
 Leib Lab
 Marbacher Lab
 Schoeberlein & Surbek Lab

Systems Biomedicine of Cellular Development and Signaling in Health and Disease

Al Nabhani Lab
 Beldi Lab
 Berzigotti Lab
 Candinas Lab
 Ganal-Vonarburg Lab
 Keogh-Stroka Lab
 Macpherson Lab
 Misselwitz Lab
 Wiest Lab
 Yilmaz Lab

Translational Hormone Research

Bally Lab
 Escher Lab
 Flück Lab
 Hediger Lab
 Pandey Lab
 Stettler Lab
 Vögel Lab
 Vogt Lab

Translational Immunology

Bachmann & Vogel Lab
 Eggel Lab

Translational Cancer Research

Aebersold Lab
 Berger Lab
 Bernasconi & Rössler Lab
 Häfliger Lab
 Medová Lab
 Novak Lab
 Ochsenbein Lab
 Seipel & Pabst Lab
 Riether Lab
 Zimmer Lab

ZEN/DBMR-Neuro

Adamantidis Lab
 Baud Lab
 Chan Lab
 Gutierrez Herrera Lab
 Pernet Lab
 Salmen Lab
 Schmidt Lab
 Tinkhauser Lab
 Tzovara Lab

Independent Research Labs

Anesthesiology

Stueber & Hedinger Lab

Clinical Radiopharmacy

Rominger Lab

Endometriosis & Gynecological Oncology

Mueller & Andrieu Lab

Experimental Hematology

Baerlocher Lab

Experimental Nephrology

Faller Lab
 Fuster Lab
 Huynh-Do Lab
 Mohaupt Lab
 Sidler Lab

Experimental Radiology

Tengg-Kobligk Lab

Functional Urology

Monastyrskaya Lab

Human Genetics

Schaller Lab
 Zweier Lab

Immunosuppression in Critical Illness

Schefold Lab

Molecular Dermatology & Stem Cell Research

Müller E. Lab

Oncogenomics

Ng Lab

Feto-Maternal Medicine

Surbek & Schoeberlein Lab



Oncology-Thoracic Malignancies (OTM)

Participating Labs

- **Peng Lab**
Molecular and translational research in lung cancer and mesothelioma
- **Marti Lab**
Investigating nucleotide/lactate metabolism to target cancer therapy resistance and metastasis

Program Contact

- PD Dr. Thomas Michael Marti**
- thomas.marti@insel.ch
- OTM program**
- www.dbmr.unibe.ch → Research → Programs

Selected Collaborators

- Lipp J** Boehringer Ingelheim, Rcv GmbH & Co Kg, Vienna (AT)
- Hegedüs B** Department of Thoracic Surgery, University Medicine Essen – Ruhrlandklinik, University Duisburg-Essen, Essen (DE)
- Liang SQ** University of Massachusetts Medical School Worcester (USA)
- Yang H** Department of Thoracic Surgery, Shanghai Chest Hospital, Shanghai Jiao Tong University, Shanghai (China)
- Zamboni N** ETH Zurich (CH)

Thoracic cancers include lung cancer, lung carcinoma, thymic malignancy, tracheal tumors, and mesotheliomas. Thoracic cancer is the most common cause of cancer-related death. The 5-year survival rate is approximately 30 % for lung cancer and 5–10 % for mesothelioma. This is mainly due to the difficulty in early detection and lack of effective treatments; therefore, more effective treatment options are urgently needed. Tumorigenesis, chemotherapy resistance, and metastasis are postulated to be mediated by cancer stem cells. Cancer stem cells have been identified in both lung cancers and mesothelioma.

The overall goal of the OTM research program is to comprehensively expand our knowledge of cancer stem cells and the related molecular mechanisms underlying tumorigenesis, therapy resistance, and metastasis of malignant tumors in the chest, thereby making an important contribution to our long-term goal of developing better treatment strategies for patients with cancer.

Research Highlights 2022 / Outlook 2023

Consistent with the goal of the OTM research program, we have published a number of studies that have comprehensively expanded our knowledge of cancer stem cells and the related molecular mechanisms underlying tumorigenesis, therapy resistance, and metastasis of malignant tumors of the chest.

For example, we demonstrated that nucleolar protein 5A (NOP56), a core component of small nucleolar ribonucleoprotein complexes (snoRNPs), plays an essential role in ribosome biogenesis and confers metabolic dependency by regulating ROS homeostasis in KRAS-mutant lung cancer cells, and that NOP56 depletion causes synthetic lethal susceptibility to the inhibition of mTOR. Mechanistically, NOP56 deletion induces ROS production and renders cancer cells reliant on mTOR signaling to balance oxidative stress. Furthermore, we demonstrated that unfolded protein response (UPR) regulates this process by activating mTOR through p38 MAPK. Consequently, co-targeting NOP56 and mTOR profoundly enhanced KRAS-mutant tumor cell death *in vitro* and *in vivo*. Our results reveal a previously unrecognized mechanism by which NOP56 and mTOR cooperate in the response to oxidative stress, and suggest a new rationale for the treatment of KRAS-mutant cancers (Yang et al. J Exp Clin Cancer Res. 2022; 41(1): 25).

In another study, we demonstrated, for the first time, that Lactate Dehydrogenase B (LDHB) is essential for the maintenance of mitochondria, especially nucleotide metabolism. This demonstrates that LDHB is critical for the survival and proliferation of non-small cell lung cancer (NSCLC) cells and tumorigenesis (Deng et al., Cellular and Molecular Life Sciences 2022, Vol. 79 Issue 8).

In a subsequent study, optimization of the treatment schedule by pretreatment with pemetrexed increased the efficacy of pemetrexed-cisplatin combination therapy for MPM.

We showed that the observed benefits are related to the persistence of treatment-related DNA damage (Karatkevich et al., International Journal of Molecular Sciences 2022 Vol. 23 Issue 19 Pages 11949).

Recently, several projects have been approved for funding by various funding agencies, including the Swiss Cancer League and Swiss National Science Foundation.

Selected Publications

Yang Z, Liang SQ, Zhao L, Yang H, Marti TM, Hegedüs B, Gao Y, Zheng B, Chen C, Wang W, Dorn P, Kocher GJ, Schmid RA, Peng RW. Metabolic synthetic lethality by targeting NOP56 and mTOR in KRAS-mutant lung cancer. *J Exp Clin Cancer Res.* 2022 Jan 17;41(1):25. PMID: [35039048](#).

Xu D, Liu S, Wu X, Marti TM, Dorn P, Schmid RA, Peng RW, Shu Y. Dissecting the immunological profiles in NSD3-amplified LUSC through integrative multi-scale analyses. *Cancers (Basel).* 2022 Oct 12;14(20):4997. PMID: [36291782](#).

Karatkevich D, Deng H, Gao Y, Flint E, Peng RW, Schmid RA, Dorn P, Marti TM. Schedule-dependent treatment increases chemotherapy efficacy in malignant pleural mesothelioma. *Int J Mol Sci.* 2022 Oct 8;23(19):11949. PMID: [36233258](#).

Deng H, Gao Y, Trappetti V, Hertig D, Karatkevich D, Losmanova T, Urzi C, Ge H, Geest GA, Bruggmann R, Djonov V, Nuoffer JM, Vermathen P, Zamboni N, Riether C, Ochsenbein A, Peng RW, Kocher GJ, Schmid RA, Dorn P, Marti TM. Targeting lactate dehydrogenase B-dependent mitochondrial metabolism affects tumor initiating cells and inhibits tumorigenesis of non-small cell lung cancer by inducing mtDNA damage. *Cell Mol Life Sci.* 2022 Jul 25;79(8):445. PMID: [35877003](#).

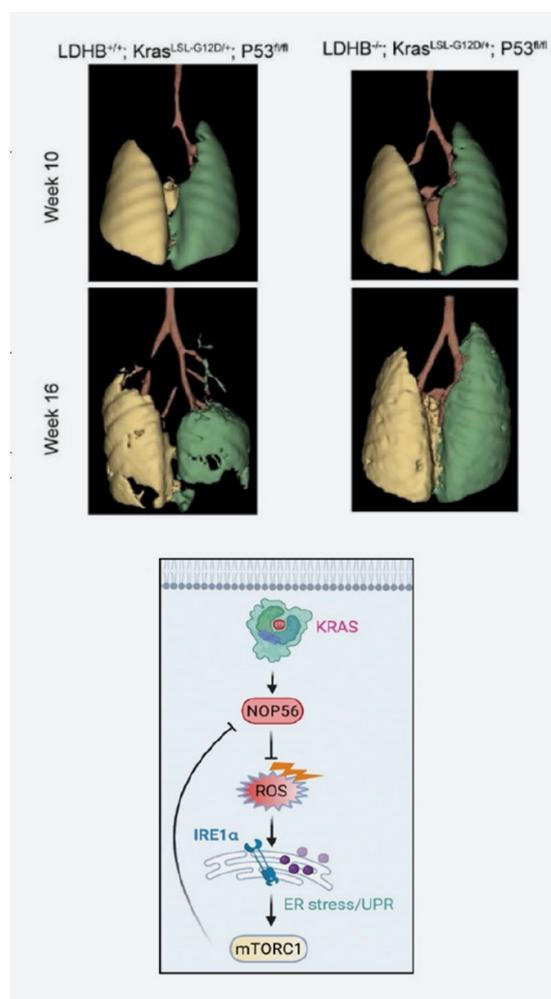


Fig. 1. Deletion of LDHB reduces tumor growth in an inducible lung cancer model. Depicted are 3D renderings of the remaining lung volume at the indicated time points. Fig.2: A working model showing the function of NOP56 in KRAS-mutant cancers.

Regenerative Neuroscience

Participating Labs

- **Enzmann Lab**
Experimental Ophthalmology
- **Leib Lab**
Neuroinfection Laboratory
- **Marbacher Lab**
Cerebrovascular Research
- **Schoeberlein / Surbek Lab**
Prenatal Medicine

Contact

Prof. Dr. Volker Enzmann

- volker.enzmann@insel.ch
- www.dbmr.unibe.ch → Research → Programs

Selected Collaborators

- Alves M** Vetsuisse, University of Bern, Bern (CH)
- Karl MO** Center for Regenerative Dresden (CRTD), Dresden (DE)
- Liddelow SA** Neuroscience Institute, NYU Langone, New York City (US)
- Zlobec I** Galvan J., Pathology, University of Bern, Bern (CH)

The aim of the regenerative neuroscience program is to understand the pathophysiology of neurodegenerative diseases and to modulate repair of the damaged structures to restore function. Our approaches include cell-free treatments, therapy with stem cell-derived exosomes, and delivery of stem cell-derived, pre-differentiated cells including human patient-derived neurons to the damaged site as well as the promotion of local cellular repair using endogenous stem cell mechanisms. The program has thereby developed an interdisciplinary collaboration between research groups in ophthalmology, prenatal medicine, neurosurgery and Infectiology since 2009. While the group labs are functioning independently, we are advancing multidisciplinary approaches as well as hosting seminars for scientific and technological exchange. Therewith, the regenerative neuroscience program provides the conceptual and practical framework for developing synergism. An important aspect of the program in addition to promote technological advances and networking leading to common publications is the opportunity of teaching and continuous education for young researchers.

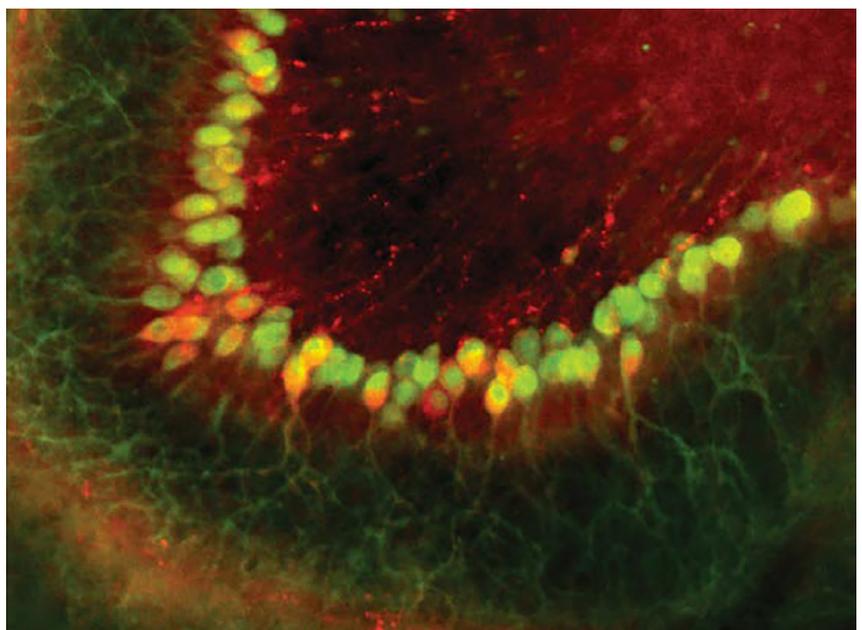
Research Highlights 2022 / Outlook 2023

The year 2022 saw a consolidation of the program, and we were able to also add new colleagues from Aarau, who now represent the Marbacher Lab-Cerebrovascular Research Neurosurgery. This was also a successful year, as seen in the Basic Research Animal Poster Award for Gabriele Chiffi (Neuroinfection Laboratory) at Clinical Neuroscience Bern (CNB) 2022 and Dr. med. Stefan Wanderer as a research fund of the European Association of Neurosurgery. Research highlights in the last year were the preservation of optomotor response and amelioration of the disease course after anti-FcRn treatment in an experimental model of MOGAD (Enzmann) and investigation of pathophysiologies driving neurological manifestation in tick-borne encephalitis in a combined *in vitro* and *in vivo* approach by documenting infection in the cell bodies and axons of Purkinje cells, while their dendrites and other cell types were less or not affected (Leib). Furthermore, the use of a rat aneurysm model to elucidate the processes of aneurysm healing demonstrated that an intraluminal thrombus is mainly caused by cells originating predominantly in the parent artery, which relies on cell migration from the aneurysm wall in coiled aneurysms. However, it receives greater contributions from the parent artery in stent-treated aneurysms (Marbacher), as well as the development of a mouse model for perinatal white matter injury (WMI) to demonstrate the pivotal role of reactive astrocytes, which drive myelination failure, a hallmark of perinatal WMI. Extracellular vesicles derived from mesenchymal stromal cells of the umbilical cord have been evaluated as a potential therapy for WMI in neonates (Schoeberlein). These scientific achievements were shared in common research meetings. Our methodological basis has been broadened by the acquisition of a new high-density MEA system (BioCam). With this

in place, we will be able to perform functional measurements on brain slices, organotypic retinal cultures, and organoids. Funding was received from Hans–Goldmann–Stiftung to establish the retinal organoid method.

Selected Publications

- Conedera FM, Enzmann V. Regenerative capacity of Müller cells and their modulation as a tool to treat retinal degenerations. *Neural Regen Res.* 2023 Jan;18(1):139-140. PMID: [↗ 35799533](#).
- Wanderer S, Grüter BE, Boillat G, Sivanrupan S, Rey J, Catalano K, vonGunten M, Widmer HR, Anderegg L, Marbacher S. Parent artery-initiated and stent-mediated neointima formation in a rat saccular side wall model. *J Neurointerv Surg.* 2022 Dec;14(12):1258-1263. PMID: [↗ 35110397](#).
- Renz P, Schoeberlein A, Haesler V, Maragkou T, Surbek D, Brosius Lutz A. A Novel Murine Multi-Hit Model of Perinatal Acute Diffuse White Matter Injury Recapitulates Major Features of Human Disease. *Biomedicines.* 2022 Nov 4;10(11):2810. PMID: [↗ 36359331](#).
- Chiffi, G., Grandgirard D., Stöckli S.; Valente LG, Adamantidis A., Leib, SL. Tick-borne encephalitis affects sleep-wake behavior and locomotion in infant rats. *Cell Biosci* 2022 Aug; 12(1):121. PMID: [↗ 35918949](#).



Cerebellar organotypic culture (OCs) of 11 d/o rats. The OCs were infected for 72h with Langkat virus (LGTV). Red: anti-flavivirus envelop protein antibody (4G2). Green: anti-calbindin antibody targeting Purkinje cells. The signals coming from the two antibodies overlaps in the cell bodies of Purkinje cells, indicating that LGTV is able to multiply in these cells. Scale bar = 75 μ m.

Systems Biomedicine of Cellular Development and Signalling in Health and Disease

Participating Labs

- **Al Nabhani group**
Role of early host-microbial mutualism on the development of immune-mediated diseases and neurodegenerative pathologies.
- **Berzigotti group**
How liver stiffness modulates the phenotype of cells by altering the nuclear morphology through cytoskeleton-derived mechanical forces and how stiffness-induces liver endothelial dysfunction.
- **Candinas/Beldi/Stroka group**
Underlying mechanisms of surgery associated infections, adhesion formation and liver disease (NASH, cholestasis and regeneration).
- **Ganal-Vonarburg group**
Influence of early life microbiota, diet and environment on intestinal homeostasis, energy metabolism and immune defense.
- **Macpherson group**
Development of functional secretory IgA responses against the intestinal microbiota and dynamics of consortium interactions that establish the microbiota during weaning.
- **Misselwitz group**
Using microbiota signatures to predict clinical responses of patients with ulcerative colitis.
- **Wiest group**
How splanchnic β -adrenergic hyperstimulation leads to pathological extravasation and microbial dysbiosis.
- **Yilmaz group**
Elucidating the roles of anti-glycan antibodies on the manipulation of the gut microbiota and local oxidative stress.

Contact

Prof. Dr. Andrew Macpherson

- andrew.macpherson@unibe.ch
- [Link to research program](#)

Selected Collaborators

- Halazonetis T** Molecular Biology/University of Geneva, Geneva (CH)
- Heussler V** Cell Biology/University of Bern, Bern (CH)
- Platt R** ETH Zurich, Zurich (CH)
- Sauer U** ETH Zurich, Zurich (CH)
- Roca-Cusachs Soulere P** Institute for Bioengineering of Catalonia, Barcelona (ES)

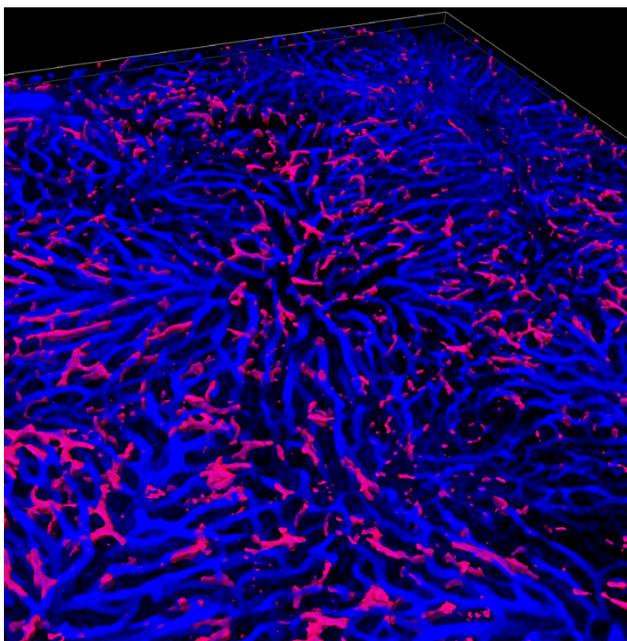
Our research program is built by collegiate interactions in basic and translational science activities in the University Clinic for Visceral Surgery and Medicine (UVCN). Our synergy profits from complementary approaches of systems biology to study health and disease of the intestinal tract, liver, pancreas and endocrine systems. We appreciate that host mechanisms cannot be meaningfully studied if uncoupled from understanding the metabolic load that the microbiota generates within the host, therefore microbial host interactions and their physiological and pathological consequences is a common underlying theme of our program. Among our major accomplishments are our success in supporting young scientists to advance their own independent research labs and in training junior medical doctors in scientific research. By providing cohesive tuition and protected research time to clinicians, refined translational studies which are closely related to our clinical disciplines are ever emerging. This report is a short summary of the work of our program which is the academic aim of the Inselspital Abdominal and Metabolism Department.

Research Highlights 2022 / Outlook 2023

The groups within Systems Biomedicine of Cellular Development and Signaling in Health and Disease constitute a comprehensive scholarly program with success in competitive funding to support its activities. Swiss National Science Foundation (SNSF/SNF) project grants were awarded to Prof. Andrew Macpherson to study the "development of functional secretory IgA responses against the intestinal microbiota" (1'100'00 CHF) and to Prof. Stephanie Ganal-Vonarburg to study "The impact of maternal microbiota and breast milk on host epigenetics and immune repertoire in the offspring" (862'839 CHF). Prof. Andrew Macpherson was also rewarded with an SNF Sinergia entitled "dynamic consortium interactions that establish the microbiota during weaning" (1'275'787 CHF); and an Multidisciplinary Center for Infectious Diseases (MCID) grant on the "interplay of infections and the microbiota on outcomes for host health" (480'000 CHF). The Novartis Foundation funded projects by Dr. Jacob Zimmerman and Prof. Ziad Al Nabhani to study "female reproductive health through the lens of vaginal microbiota-immune cell crosstalk" (77'500 CHF) and "how child intestinal bacteria can prevent colorectal cancer development" (80'000CHF). Prof. Ziad Al Nabhani also received funding from the EU Joint Program – SNSF (258'263 CHF) and the Alzheimer Association-USA (150'000 CHF) to study the role early life pathological imprinting of Alzheimer's disease via lifestyle. Prof. Al Nabhani and Dr. Bahtiyar Yilmaz received funding from the Swiss Cancer Research Foundation to study the "role of immune memory early in life on colon cancer development" (374'750 CHF). Dr. Jacqueline Wyss and Dr. Bahtiyar Yilmaz received the SAMW Young Talents in Clinical Research Grant to study the "impact of a low-carbohydrate diet on the small intestinal microbiota" (75'000 CHF). Dr. Bahtiyar Yilmaz was also

awarded a grant from the Bern Center for Precision Medicine to test if “Altered gut microbial profile supports the relative increase of D-lactate producing gut bacteria” (119'200 CHF). To launch his independent research program, Dr. Bahtiyar Yilmaz received an SNSF Starting Grant (1'800'000 CHF) to study the “coordination of host-microbe interactions by cross-talk with anti-glycan antibodies in inflammatory bowel disease”. With a focus on reducing infections, Prof. Guido Beldi led a network of PIs at the University of Bern Strategische Förderung (Strategic Funding) Board call to “reduce infection after healthcare-associated interventions.” In addition, he received funding as a Co-PI for the SPHN Demonstrator Project “INFRA: INFection RAdar” (1'000'000 CHF). Prof. Deborah Stroka and Prof. Daniel Candinas continued their study of mapping the origins of replication in regenerating livers in a project funded by the Aclon Foundation (350'000 CHF). Dr. Felix Baier received a Venture Fellowship from the University of Bern Innovation Office to develop a novel therapeutic agent for liver cholestasis (100'000 CHF). Prof. Annalisa Berzigotti's group will continue to conduct clinical and basic studies on liver fibrosis, with a particular focus on liver stiffness and stiffness-induced sinusoidal dysfunction.

The significance of our work was recognized and graciously awarded several prizes in 2022. Prof. Stephanie Ganal Vonarburg, Dr. Hai Li, and Dr. Julien Limenitakis were co-recipients of the ‘Pfizer Research Prize’. Dr. Joel Zindel and Dr. Yuly Mendoza were awarded the 2022 Paul Klee Thesis Award”



Intravital microscopy of a mouse liver using the Leica Stellaris 8 DIVE. Fluorescent labelled antibodies were injected against CD31 (blue) and F4/80 (magenta).

for their Ph.D. work on abdominal adhesions and liver cirrhosis, respectively. Dr. Joel Zindel's research on abdominal adhesions also received the University of Bern's 'Zwillenberg Prize' and the 'Swiss College of Surgeons Prize for promoting surgical research for scientific work. Additionally, for research on abdominal adhesions, Jonas Mittner received the 1st prize from the Medical Faculty of Bern for his MD dissertation.

Our program uses expertise to support core infrastructure, which benefits the scientific community at the University of Bern. These include the gnotobiotic facility, the imaging mass cytometry platform www.imc.unibe.ch, and recently we acquired the Leica Stellaris SP8 multi photon intravital microscope to image fast processes deep within the tissues, and an IonTorrentS5 sequencer to analyse microbiota consortial compositions.

Selected Publications

- Schmidt F*, Zimmermann J*, Tanna T*, Farouni R, Conway T, Macpherson AJ*, Platt RJ*. (* Equal contributions) Noninvasive assessment of gut function using transcriptional recording sentinel cells. *Science*. 2022 May 13;376(6594):eabm6038 PMID: [35549411](#).
- Yilmaz B, Fuhrer T, Morgenthaler D, Krupka N, Wang D, Spari D, Candinas D, Misselwitz B, Beldi G, Sauer U, Macpherson AJ. Plasticity of the adult human small intestinal stoma microbiota. *Cell Host Microbe*. 2022 Dec 14;30(12):1773-1787.e6. PMID: [36318918](#).
- Melin N, Yarahmadov T, Sanchez-Taltavull D, Birrer FE, Brodie TM, et al.. Candinas D, Stroka D. A new mouse model of radiation-induced liver disease reveals mitochondrial dysfunction as an underlying fibrotic stimulus. *JHEP Rep*. 2022 May 21;4(7):100508. PMID: [35712694](#).
- Yarahmadov T, Wang J, Sanchez-Taltavull D, Rojas CAA, Brodie T, Büchi I, Keogh A, Gottstein B, Stroka D, Beldi G. Primary Infection by *E. multilocularis* Induces Distinct Patterns of Cross Talk between Hepatic Natural Killer T Cells and Regulatory T Cells in Mice. *Infect Immun*. 2022 Aug 18;90(8):e0017422. Epub 2022 Jul 13. PMID: [35862712](#).
- Mossad O, Batut B, Yilmaz B, Dokalis N, Mezö C, Nent E, Nabavi LS, Mayer M, Maron FJM, Buescher JM, de Agüero MG, Szalay A, Lämmermann T, Macpherson AJ, Ganal-Vonarburg SC, Backofen R, Erny D, Prinz M, Blank T. Gut microbiota drives age-related oxidative stress and mitochondrial damage in microglia via the metabolite N6-carboxymethyllysine. *Nat Neurosci*. 2022 Mar;25(3):295-305. Epub 2022 Mar 3. PMID: [35241804](#).

Translational Hormone Research

Participating Labs

- **Bally Lab**
Glucose metabolism, Hypoglycaemia, Insulin physiology, Obesity, Diabetes
- **Escher Lab**
Oxysterols, Bile acids & Vitamin D metabolism, reverse cholesterol transport, animal models of atherosclerosis
- **Flück Lab**
Adrenal and gonadal steroidogenesis, adrenarche and PCOS, Rare monogenetic disorders, adrenal cortex zonation
- **Hediger Lab**
Membrane Transport Discovery Lab
- **Pandey Lab**
Steroidogenesis, Prostate Cancer, Pharmacogenomics, Computational Biology
- **Stettler Lab**
Diabetes Mellitus, hypoglycemia, Exercise-related Fuel Metabolism
- **Vögel Lab**
Steroid Profiling, Mass Spectrometry, Androgen Excess Disorders
- **Vogt Lab**
ZIP8 transporter in animal models, steroid metabolism

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- Pommier A** Immunopharmacology of Cancer, University of Geneva, Geneva (CH)
- Bochud M** Institut Universitaire de Médecine Sociale et Préventive, Lausanne (CH)
- Reinhardt J** Novartis Pharma AG, Basel (CH)
- Sviridov D** Baker IDI Heart and Diabetes Institute, Melbourne (AU)
- I-DSD community** Glasgow and worldwide
- Wróbel TM** Department of Synthesis and Chemical Technology of Pharmaceutical Substances, Medical University of Lublin, Lublin (PL)
- Seifritz E** Department of Psychiatry, Psychotherapy and Psychosomatics, Psychiatric Hospital, University of Zurich, Zurich (CH)

Hormones are critical regulators of physiology and behavior. They orchestrate a plethora of biological functions, such as the regulation of metabolism, cardiovascular functions, development, growth, and differentiation. The primary goal of this study was to explore the intricate network of hormonal regulation, metabolic responses, and transmembrane transport linked to diseases such as steroid disorders, nephropathy, diabetes, obesity, polycystic ovarian syndrome (PCOS), and prostate cancer. Based on the dual orientation of the program (basic and clinical research), our mission is to foster the translation from basic science to clinical application, and vice versa.

Current research questions include

- Regulatory mechanisms controlling human adrenal and gonadal function, androgen production, and novel androgen-producing pathways
- Role of steroid hormones in rare disorders of sex development, and common diseases such as premature adrenarche, PCOS, prostate cancer, regulation of blood pressure and electrolyte balance
- Effect of drugs and toxins on steroidogenesis, novel drugs against prostate cancer and PCOS
- Role of peptide hormones in substrate metabolism and energy homeostasis
- Regulation of hormone activity through transmembrane proteins such as ion channels and solute carrier proteins

Research Highlights 2022 / Outlook 2023

Translational hormone research group laboratories are involved in a range of basic and clinical research projects with a focus on patient-oriented translational research. In 2022, negative new projects were initiated, with funding from the Swiss National Science Foundation and Cancer Research in Switzerland.

We initiated an international collaborative project funded by Cancer Research Switzerland (KFS-5557-02-2022) involving computational drug design and synthetic organic chemistry groups in Poland, Spain, Italy, and Denmark for the design, synthesis, and testing of novel chemical leads targeting androgen production in prostate cancer. Multiple novel compounds were designed and tested in 2022 (Biomolecules; 12:165, PMID: 35204665). In another collaborative project with Denmark (SNF 204518), we are studying conformation changes in electron transfer proteins to regulate androgen production in health and disease with the concept of “Biased Metabolism” to regulate human metabolic processes by small molecules binding on redox proteins (Nature Communications, 12:2260).

The aim of our international project (SNF 197725) was to study the broad phenotype of individuals with variation in sex development, in which an *NR5A1/SF-1* variation was identified. Comprehensive phenotyping and genotyping were performed, and mechanistic experiments were conducted on patient fibroblast-derived reprogrammed steroidogenic cell lines (e.g., steroid profiling and RNA profiling) to elucidate

the gene network involved in steroidogenic factor 1 (SF-1). Basic studies on a mouse model were performed to gain further insight into adrenal cortex zonation and the corresponding steroidogenesis (E. Pignatti of the Flück lab, IF-CAH/ESPE, and University BE funding). In 2022, we described the role of LGR4-mediated WNT signaling in human adrenal development and subsequent steroid metabolism and sex development (J Clin Invest. PMID: 36538378).

Based on the results of GWAS on the variant A391T of the metal ion transporter ZIP8, we generated ZIP8 KI mice carrying this polymorphism. The ZIP8 KI mice exhibited striking changes in the tissues of cobalt, palladium, mercury, and platinum. The rats had reduced arterial blood pressure, exhibited remarkable insulin resistance, and were protected from hyperglycemia when challenged with dietary sucrose. Targeting of ZIP8 may lead to new strategies for the treatment of hypertension and diabetes. We developed small-molecule inhibitors for pharmaceutically important transporters, such as the metal transporters DMT1 (SLC11A1), ZIP8 (SLC39A8), and ZIP14 (SLC39A14), the amino acid transporter SLC38A2, and the calcium channels TRPV6 and ORAI, for testing *in vitro* and *in vivo*. For example, given that ZIP8 affects blood pressure, insulin resistance, and ZIP14 iron overload, we collaborated with Novartis Pharma AG in Basel to identify novel inhibitors to test suitable disease models.

To understand why patients with chronic kidney disease (CKD) are prone to cardiovascular events, we induced CKD using adenine in ApoE KO mice, which are prone to developing atherosclerosis. Adenine led to tubular damage illustrated by crystal deposition and reduced $\text{Urea}_{\text{Urine}}/\text{Urea}_{\text{Serum}}$ and $\text{Creatinine}_{\text{Urine}}/\text{Creatinine}_{\text{Serum}}$ ratios. Despite the similar levels of lipoproteins in the serum, mice fed adenine were protected against atherosclerosis because of enhanced cholesterol efflux and lipid elimination in the feces.

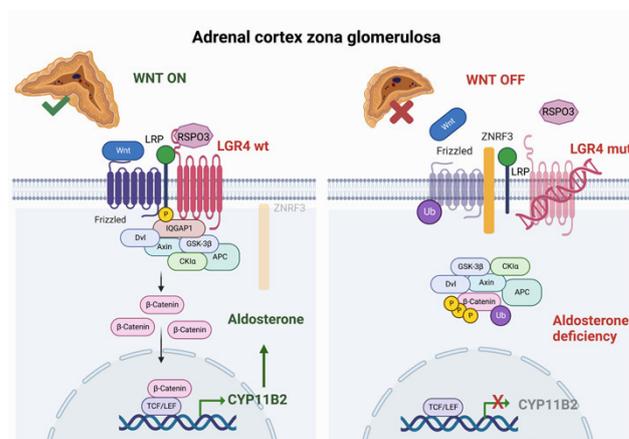
For all these studies, the Core Steroid Mass Spectrometry Lab (Vogt, Vogel, Escher) provided steroid measurements for approximately 3400 samples from research groups across Switzerland. Using a recently published liquid chromatography high-resolution mass spectrometry method, we quantified over 50 steroids in different biological matrices, contributing to clinical questions concerning endometriosis, congenital adrenal hyperplasia, and polycystic ovary syndrome as well as veterinary and psychological research.

The AdmiR3 study (SNF 207893) was recently used to identify early biomarkers of premature adrenarche, such as PCOS, to prevent later diseases.

Our research was funded by multiple SNF project grants (204518, 204972, 207893, 197725, 182272, 182482), SNF Eccellenza grant (186978), SNF Investigator-Initiated Clinical Trials (IICT) (193064), SNF Sinergia (183569, 180326), SNF NRP 78 COVID-19 2020 (198281), Cancer Research Switzerland (KFS-5557-02-2022, KFS-5534-02-2022), Swiss State Secretariat for Education, Research and Innovation (SERI), and third-party support from Novo Nordisk, SA, Merck SA, Eli Lilly, and others.

Selected Publications

- Scherler L, Verouti SN, Ackermann D, Vogt B, Escher G. Adenine-Induced Nephropathy Reduces Atherosclerosis in ApoE Knockout Mice. *Biomolecules*. 2022 Aug 19;12(8):1147. doi: 10.3390/biom12081147. PMID: [↗ 36009040](#).
- Prado MJ, Ligabue-Braun R, Zaha A, Rossetti MLR, Pandey AV. Variant predictions in congenital adrenal hyperplasia caused by mutations in CYP21A2. *Front Pharmacol*. 2022 Oct 5;13:931089. PMID: [↗ 36278220](#).
- Flück CE, Kuiri-Hänninen T, Silvennoinen S, Sankilampi U, Groessl M. The Androgen Metabolome of Preterm Infants Reflects Fetal Adrenal Gland Involution. *J Clin Endocrinol Metab*. 2022 Nov 23;107(11):3111-3119. PMID: [↗ 35994776](#).
- Verouti SN, Pujol-Giménez J, Bermudez-Lekerika P, Scherler L, Bhardwaj R, Thomas A, Lenglet S, Siegrist M, Hofstetter W, Fuster DG, Hediger MA, Escher G, Vogt B. The Allelic Variant A391T of Metal Ion Transporter ZIP8 (SLC39A8) Leads to Hypotension and Enhanced Insulin Resistance. *Front Physiol*. 2022 Jun 15;13:912277. PMID: [↗ 35784893](#).
- Andrieu T, du Toit T, Vogt B, Mueller MD, Groessl M. Parallel targeted and non-targeted quantitative analysis of steroids in human serum and peritoneal fluid by liquid chromatography high-resolution mass spectrometry. *Anal Bioanal Chem*. 2022 Oct;414(25):7461-7472. Epub 2022 Jan 19. PMID: [↗ 35043262](#).



Human LGR4 mutations establish a direct link between LGR4 inactivation and decreased canonical WNT signaling, which results in abnormal adrenal differentiation and aldosterone deficiency.

Translational Immunology

Participating Labs

- **Bachmann & Vogel Lab**
Vaccines, Allergy, IgE, Type II Immunity, inflammatory diseases
- **Eggel Lab**
Immunology, Allergy and Aging

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Selected Collaborators

- Hill A** The Jenner Institute, University of Oxford, Oxford (UK)
- Zeltins A** Tars, K, Latvian Biomedical Research and Study Centre, Riga (LV)
- Jardetzky TS** Stanford University, Stanford (US)
- Wyss-Coray T** Stanford University, Stanford (US)
- Osterhaus A** TIHO Hannover, Hannover (DE)

Our studies focus on translational research to optimize antibody responses to prophylactic vaccines against infectious diseases and therapeutic vaccines against inflammatory diseases, type II diabetes, and Alzheimer's disease. Additionally, we aim to develop a platform to induce strong personalized T cell responses for the treatment of cancer. A third topic of interest in our research program, aimed at studying the biological mechanisms underlying both beneficial and pathogenic type 2 immune responses in the context of allergy and aging. Here, we intend to establish alternative treatment approaches that directly interfere with the allergic cascade and to come up with immune intervention strategies to prevent the development of age-related disorders. In our studies, we generally integrate molecular, cellular, and systemic approaches to identify important biological mechanisms involved in disease pathophysiology.

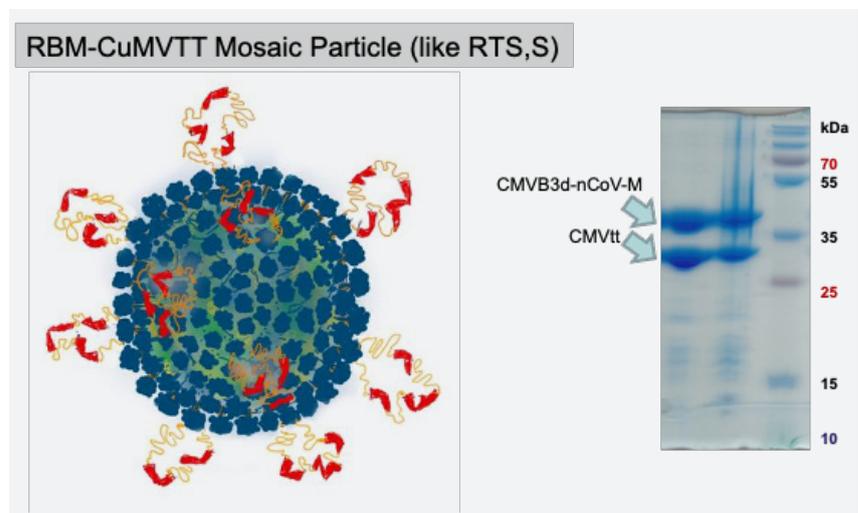
Research Highlights 2022 / Outlook 2023

The Translational Immunology research program focuses on the preclinical development of vaccine candidates against a number of infectious diseases (SARS-CoV-2, dengue, malaria, and African swine fever), as well as therapeutic vaccines against inflammatory diseases, Alzheimer's disease, type II diabetes, and cancer (personalized therapy). A second major focus involved studying the interactions of the SARS-CoV-2 spike protein of various mutants of concern with the cellular receptor ACE2 and their impact on the neutralization capacity of immune sera as well as the potential infectivity of the virus. Additionally, we were interested in the ability of anti-IgE IgG antibodies to specifically inhibit the activation of mast cells and basophils by IgE. Likewise, the impact of IgE glycosylation on serum clearance, interaction with FcεR type I and type II (CD23), and recognition of IgE by omalizumab were also parts of our study.

Although it is well established that immune responses against infections decline with age, it is unclear how vaccine-elicited immunity varies between the sex and age groups. Given the importance of understanding these biological parameters, which may directly affect the translatability of clinical research findings, we investigated immune responses against SARS-CoV-2 vaccine candidates in appropriate mouse models. Our data clearly demonstrated significant age- and sex-related differences in humoral immune responses following the different routes of application. Moreover, we identified important cellular changes in the T- and B-cell compartments of lymphoid organs, potentially representing a mechanistic basis for the observed age- and sex-specific differences in humoral immunity to different SARS-CoV-2 vaccine candidates. Our findings indicate that age and sex are important biological variables that should be considered in the preclinical development and evaluation of novel vaccine candidates.

Selected Publications

- Mohsen MO, Heath M, Kramer MF, Velazquez TC, Bullimore A, Skinner MA, Speiser DE, Bachmann MF. In situ delivery of nanoparticles formulated with micron-sized crystals protects from murine melanoma. *J Immunother Cancer*. 2022 Sep;10(9):e004643. PMID: [↗ 36100311](#).
- Mohsen MO, Balke I, Zinkhan S, Zeltina V, Liu X, Chang X, Krenger PS, Plattner K, Gharailoo Z, Vogt AS, Augusto G, Zwicker M, Roongta S, Rothen DA, Josi R, Costa JJD, Sobczak JM, Nonic A, Brand LA, Nuss K, Martina B, Speiser DE, Kündig T, Jennings GT, Walton SM, Vogel M, Zeltins A, Bachmann MF. A scalable and highly immunogenic virus-like particle-based vaccine against SARS-CoV-2. *Allergy*. 2022 Jan;77(1):243-257. PMID: [↗ 34496033](#).
- Brigger, D., Guntern, P., Jonsdottir, H. R., Pennington, L. F., Weber, B., Taddeo, A., Zimmer, G., Leborgne, N. G. F., Benarafa, C., Jardetzky, T. S., Eggel, A. Sex-specific differences in immune response to SARS-CoV-2 vaccination vanish with age. *Allergy* (2022). PMID: [↗ 36680391](#).
- Benito-Villalvilla, C., Rocha-Muñoz, A., López-Abente, J., Eggel, A., Bottoli, I., Severin, T., Woisetschläger, M., Palomares, O. Ligelizumab impairs IgE-binding to plasmacytoid dendritic cells more potently than omalizumab and restores IFN- α production and FOXP3⁺ Treg generation. *Allergy* (2022). PMID: [↗ 36315052](#).
- Vogel M, Augusto G, Chang X, Liu X, Speiser D, Mohsen MO, Bachmann MF. Molecular definition of severe acute respiratory syndrome coronavirus 2 receptor-binding domain mutations: Receptor affinity versus neutralization of receptor interaction. *Allergy*. 2022 Jan;77(1):143-149. PMID: [↗ 34240429](#).



Design of vaccine against SARS-CoV-2 based on the receptor binding motif (RBM) fused to virus-like particles (CuMVTT)

Translational Cancer Research

Participating Labs

- **Aebersold Lab**
Biomarkers and personalized therapies in head and neck squamous cell carcinoma
- **Berger Lab**
Predictive and prognostic biomarker in colorectal cancer
- **Bernasconi & Rössler Lab**
Nanomedicine and Cellular Therapies for Pediatric Tumors
- **Haefliger Lab**
Epigenetics & Noncoding RNA Research in Lung and Head & Neck Cancer
- **Medová Lab**
DNA damage response in targeted cancer treatment
- **Novak Lab**
Molecular analyses of malignant lymphomas
- **Ochsenbein Lab**
Tumor immunology, Interaction of immune cells and leukemia and cancer stem cells
- **Pabst/Seipel Lab**
Hematological malignancies- targeted therapies
- **Riether Lab**
Tumor immunology – Interaction of the tumor microenvironment with leukemia and cancer stem cells
- **Zimmer Lab**
Understanding the biological processes underlying and driving the onset and progression of Head and Neck Squamous Cell Carcinoma

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Johnson R University College Dublin, Dublin (IE)

Levitt P Children's Hospital Los Angeles, Los Angeles (US)

This research program is designed to take maximum advantage of the synergies between relevant disciplines involved in cancer research at the Department for BioMedical Research and the Bern University Hospital, Inselspital. The program brings together the research labs of Medical Oncology (Ochsenbein, Riether, Pabst, Seipel, Novak, Häfliger, Berger), Radiation Oncology (Aebersold, Medová, Zimmer) and Pediatric Hematology / Oncology (Bernasconi). It combines cutting-edge RNA and CRISPR research (Häfliger), with state-of-the-art cancer organoid culture, cancer modelling and immunotherapy (Ochsenbein, Riether, Pabst, Novak, Zimmer, Medová, Bernasconi), targeted Nanomedicine (Bernasconi) as well as studying of treatment responses (Pabst, Zimmer, Medová, Aebersold, Seipel, Berger, Novak). In this respect, particular emphasis resides in studies of resistance mechanisms associated with treatment modalities consisting of DNA-damaging agents and inhibitors targeting receptor tyrosine kinases and the DNA damage response machinery.

Research Highlights 2022 / Outlook 2023

A personalized multi-omics discovery and validation platform for recurrent head and neck squamous cell carcinoma (POLARES).

The research program Translational Cancer Research is currently setting up a center of competence for head and neck squamous cell carcinoma (HNSCC), which bridges the gap between genomic analysis and translation of the findings into clinical testing. Through the establishment of a multi-omics discovery and validation platform under the umbrella of the University Cancer Center Inselspital (UCI), this consortium aims to determine how alterations at the genomic and epigenetic levels regulate carcinogenesis, treatment response, and resistance in HPV-negative HNSCC, and thereby identify novel mechanisms to target tumor recurrence. This interdisciplinary discovery and validation approach leverages the expertise of scientists and clinicians from the fields of Head and Neck Surgery, Medical Oncology, Radiation Oncology and builds on a unique HNSCC Tissue Bank comprising material of recurrent HPV-negative HNSCCs cases stored along with complete clinical annotations, including treatment outcomes. A major tool used for the confirmation and preclinical testing of potential targets and signaling cascades identified in our multi-omics analysis will be an HNSCC validation platform built on the broad scientific expertise of the participating research laboratories. The consortium has established a battery of unique experimental models consisting of a collection of patient-matched primary and recurrent HNSCC cell lines, for which whole-exome sequencing (WES), transcriptomics, and metabolomics data have been previously obtained, as well as on patient-derived organoids and xenograft models from fresh tissues of patients with HNSCC that were molecularly characterized during the course of the project. Furthermore, genome-wide methylome, WGS, and spatial transcriptomic data of a separate cohort of patient-matched

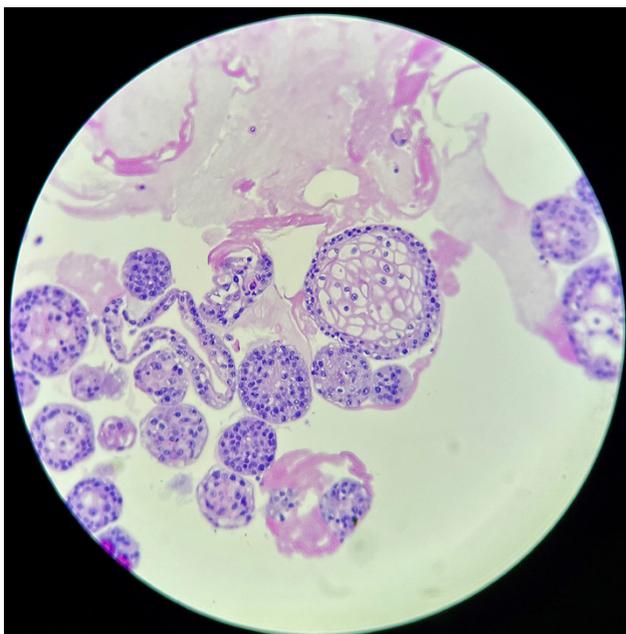
primary and recurrent tumor samples from 60 patients with HNSCC from the Inselspital Bern will be available and shared on this platform.

Ongoing projects were financially supported by the institution's funding. In a common effort and employing a pre-defined subset of recurrent patient samples, three interconnected sub-projects will 1) determine the genomic landscapes of recurrent HPV-negative HNSCC and their association with chemo-radiotherapy resistance and DNA repair deficiencies (Medová lab), 2) identify epigenetic mechanisms in the regulation of recurrent HPV-negative HNSCC (Haefliger lab), and 3) investigate the molecular immune signature of recurrent HPV-negative HNSCC tumors to define targets for immunotherapy (Riether lab). Prof. Yitzhak Zimmer, Dr. Olgun Elicin, Dr. D. Schanne (Department of Radiation Oncology), and Prof. Roland Giger (Department of ENT, Head and Neck Surgery) completed the POLARES consortium.

Together, these unique lines of research should identify cellular/molecular events that promote tumor recurrence and/or treatment resistance to develop viable personalized strategies for the treatment of patients with HNSCC.

Selected Publications

- Farag S, Bacher U, Jeker B, Legros M, Rhyner G, Lüthi JM, Schardt J, Zander T, Daskalakis M, Mansouri B, Manz C, Pabst T. Adding bendamustine to melphalan before ASCT improves CR rate in myeloma vs. melphalan alone: A randomized phase-2 trial. *Bone Marrow Transplant.* 2022 Jun;57(6):990-997. Epub 2022 Apr 20. PMID: [35444232](#).
- Orlando E, Medo M, Bensimon A, et al. An oncogene addiction phosphorylation signature and its derived scores inform tumor responsiveness to targeted therapies [published correction appears in *Cell Mol Life Sci.* 2023 Mar 10;80(4):85]. *Cell Mol Life Sci.* 2022;80(1):6. Published 2022 Dec 10. PMID: [36494469](#).
- Bührer ED, Amrein MA, Forster S, Isringhausen S, Schürch CM, Bhate SS, Brodie T, Zindel J, Stroka D, Sayed MA, Nombela-Arrieta C, Radpour R, Riether C, Ochsenbein AF. Splenic red pulp macrophages provide a niche for CML stem cells and induce therapy resistance. *Leukemia.* 2022 Nov;36(11):2634-2646. Epub 2022 Sep 26. PMID: [36163264](#).
- Dzhumashev D, Timpanaro A, Ali S, De Micheli AJ, Mamchaoui K, Cascone I, Rössler J, Bernasconi M. Quantum Dot-Based Screening Identifies F3 Peptide and Reveals Cell Surface Nucleolin as a Therapeutic Target for Rhabdomyosarcoma. *Cancers (Basel).* 2022 Oct 14;14(20):5048. PMID: [36291832](#).



H&E staining of human head and neck cancer organoids

Zen/DBMR-Neuro

Participating Labs

- **Adamantidis Lab**
Brain mechanisms of sleep and sleep functions
- **Baud Lab**
Mechanisms of epilepsy
- **Chan Lab**
Neuroimmunology / Multiple sclerosis
- **Gutierrez Lab**
Sleep and brain plasticity
- **Pernet Lab**
Neurodegeneration / neuronal repair / axonal regeneration
- **Salmen Lab**
Neuroimmunology / Multiple sclerosis
- **Schmidt Lab**
REM sleep, Thermoregulation, and Narcolepsy
- **Tinkhauser Lab**
Neurophysiology and Adaptive Neuromodulation
- **Tzovara Lab**
Cognitive Computational Neuroscience

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- De Martino B** University College London, London (UK)
- Luppi P-H** Université Claude Bernard Lyon 1, Lyon (FRA)
- Fellin T** Italian Institute of Technology, Genoa (IT)
- Nissen C** UNIGE, Geneva (CH)

The Zentrum für Experimentelle Neurologie (ZEN) offers a creative and interactive environment based on synergies and cross-disciplinary approaches between theoretical, experimental and clinical neurosciences. The ZEN benefits from its unique location on the INSEL Campus and the partnership with the Hospital, NeuroTec at SITEM-INSEL, Neuro-engineering labs (*ARTORG*), and start-ups in Switzerland.

The ZEN/DBMR Neuro research program has a solid expertise in Neurophysiology, Neurodegeneration, Neuroimmunology and Computational Neurosciences (modelling). Our strength in translation is essential in bridging cross-species experimental approach to offer a comprehensive view on brain functioning in health and diseases.

Research Highlights 2022 / Outlook 2023

Ongoing projects

Dissection of neural circuits underlying sleep circuits and functions—We are investigating the contribution of the hypothalamic and thalamocortical circuits in controlling sleep states, sleep oscillations, and brain plasticity associated with sleep, particularly REM sleep (dreaming) in mice. To achieve this, we used a combination of electrophysiological, imaging, and computational techniques.

Auditory processing and predictions in sleep, coma, and wakefulness—We are currently investigating the neural substrates that support the processing of auditory information during wakefulness and when consciousness is diminished in coma or during sleep. To this end, we used scalp and intracranial EEG recordings in humans in combination with modeling and deep learning algorithms.

Disentangling the complex landscape of sleep–wake disorders with data-driven phenotyping—The diagnosis of sleep–wake disorders (SWDs) is challenging because of the existence of only a few accurate biomarkers and the frequent co-existence of multiple SWDs and/or comorbidities. In our study, we applied unsupervised machine learning to a large cohort of clinical variables of well-characterized patients with SWDs, obtained over 16 years at Inselspital, Bern, to assist in data-driven characterization of SWDs.

The central nervous system (CNS) delivery of therapeutic antibodies to the CNS promotes neuronal recovery in various diseases—The blood–brain barrier (BBB) is a major obstacle in the delivery of neuronal repair-promoting antibodies to the CNS. To bypass the BBB and thus improve neurological recovery in CNS diseases, the Pernet/Chan laboratory aimed to transfer antibodies to the CNS via the intranasal route of administration and by engineering BBB-crossing antibodies. These new strategies have been tested in animal models of multiple sclerosis and Alzheimer's disease.

Chronobiology of epilepsy—We characterized the circadian mechanisms underlying seizure timing in a mouse model of temporal lobe epilepsy. To this end, we performed long recordings over weeks in mice exposed to different light-dark environments.

In 2023, we look forward to the following recently approved projects.

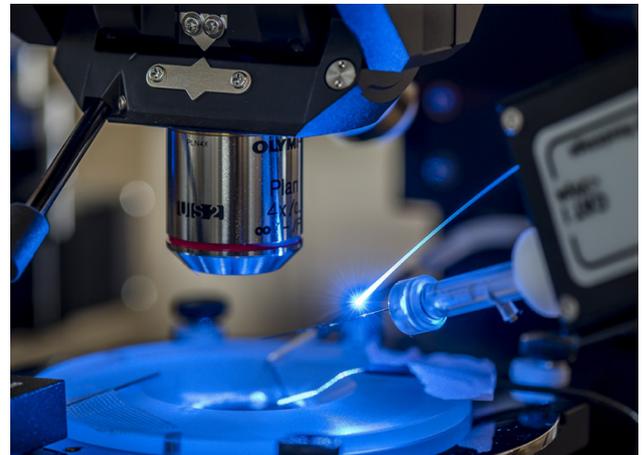
SNSF SINERGIA grant: “Exploring the Cellular Impact of Neural Oscillations”. 2M CHF over four years. (A. Adamantidis / S. Brown / C. Robles)

UniBE ID grant: “Closed-loop control of sleep waves in the epileptic brain”. 145'920 CHF over one year. (M. Baud / A. Tzovara)

NVIDIA, Grant for academic hardware: “Improving the diagnosis of sleep disorders from brain signals using deep learning”. (A. Tzovara)

CURE Epilepsy Foundation: “Forecasting cycles of seizure in people with epilepsy”. 248'000 USD over two years.

Joint SNSF-ANR Grant (M) Schmidt, and PH Luppi, Université Claude Bernard Lyon 1, Lyon, France).



Optogenetic manipulation

Selected Publications

Remlinger J, Madarasz A, Guse K, Hoepner R, Bagnoud M, Meli I, Feil M, Abegg M, Lington C, Shock A, Boroojerdi B, Kiessling P, Smith B, Enzmann V, Chan A, Salmen A. Anti-neonatal Fc Receptor Antibody Treatment Ameliorates MOG-IgG-Associated Experimental Autoimmune Encephalomyelitis. *Neurology Neuroimmunol Neuroinflamm* 2022;9:e1134. PMID: [↗ 35027475](#).

Aime M, Calcini N, Borsa M, Campelo T, Rusterholz T, Sattin A, Fellin T, Adamantidis A. Paradoxical somatodendritic decoupling supports cortical plasticity during REM sleep. *Science*. 2022 May 13;376(6594):724-730. Epub 2022 May 12. PMID: [↗ 35549430](#).

Czekus C, Steullet P, Orero López A, Bozic I, Rusterholz T, Bandarabadi M, Do KQ, Gutierrez Herrera C. Alterations in TRN-anterodorsal thalamocortical circuits affect sleep architecture and homeostatic processes in oxidative stress vulnerable *Gclm*^{-/-} mice. *Mol Psychiatry*. 2022 Nov;27(11):4394-4406. Epub 2022 Jul 28. PMID: [↗ 35902628](#).

Leguia MG, Rao VR, Tchong TK, Duun-Henriksen J, Kjaer TW, Proix T, Baud MO. Learning to generalize seizure forecasts. *Epilepsia*. 2022 Sep 8. Epub ahead of print. PMID: [↗ 36073237](#).

Joly S, Mdzomba JB, Rodriguez L, Morin F, Vallières L, Pernet V. B cell-dependent EAE induces visual deficits in the mouse with similarities to human autoimmune demyelinating diseases. *J Neuroinflammation*. 2022 Feb 23;19(1):54. PMID: [↗ 35197067](#).

Endometriosis & Gynecological Oncology

Composed of 12 clinicians, 2 study nurses, and 4 laboratory staff, our laboratory integrates clinical and research activities focusing on gynecological diseases such as endometriosis, adenomyosis, and gynecological cancers. Our approach is to combine a thorough characterization of the pathophysiology with relevant experimental approaches to identify the molecular mechanisms that initiate the disease, promote its progression, or trigger its symptoms. Efforts have also been devoted to the search for biomarkers to improve diagnostic performance. The strength of our study lies in the large number of samples, such as the endometrial tissue (eutopic and ectopic) or body fluids (blood and peritoneal fluid), obtained with the great involvement of doctors in the Department of Obstetrics and Gynecology and the generous consent of patients. In the long term, the ambition is to bring, among other scientific benefits, an improvement in diagnosis and a reduction in symptoms for the greatest benefit to the quality of life of patients.

Research Highlights 2022 / Outlook 2023

In 2022, great effort was made to identify altered pathways in women with endometriosis using single-cell and single nuclei sequencing methods. By analyzing endometrial biopsies and performing differential gene expression analysis, we discovered a panel of genes that offer non-invasive diagnostic potential (Innosuisse grant; Scailyte). Subsequently, we and our international collaborator have identified a subset of mesenchymal cells with altered maturation and growth profiles that could facilitate lesion establishment. Finally, by analyzing the embedded endometriotic lesions, we are on the path to deciphering the mechanism of hormonal resistance observed in women with endometriosis treated with progestin (Precision Medicine Grant). Overall, the present study provides an extremely valuable cellular atlas that is essential for understanding the biological basis of endometriosis.

From 2023, we will be beginning an exciting project to analyze the cellular and molecular components of menstrual fluid in healthy women and those with endometriosis. To date, menstrual fluid has rarely been analyzed in the context of endometriosis, although retrograde menstruation, a process in which viable endometrial cells reflux into the peritoneal cavity, has been suspected to cause endometriosis for decades. We believe that this study will open new avenues for future research.

Selected Publications

Siegenthaler F, Johann S, Imboden S, Samartzis N, Ledermann-Liu H, Sarlos D, Eberhard M, Mueller MD. Prospective Multicenter Trial Assessing the Impact of Positive Peritoneal Cytology Conversion on Oncological Outcome in Patients with Endometrial Cancer Undergoing Minimally Invasive Surgery with the use of an Intrauterine Manipulator: Positive Peritoneal Cytology Conversion and Its Association with Oncological Outcome in Endometrial Cancer.

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Andrieu T, Chicca A, Pellegata D, Bersinger NA, Imboden S, Nirgianakis K, Gertsch J, Mueller MD. Association of endocannabinoids with pain in endometriosis. Pain. 2022 Jan 1;163(1):193-203. PMID: [34001768](#).

Ma L, Andrieu T, McKinnon B, Duempelmann L, Peng RW, Wotzkow C, Müller C, Mueller MD. Epithelial-to-mesenchymal transition contributes to the downregulation of progesterone receptor expression in endometriosis lesions. J Steroid Biochem Mol Biol. 2021 Sep;212:105943. Epub 2021 Jun 16. PMID: [34144151](#).



Single-cell atlas of endometrium from endometriosis patients

Participating Labs

Mueller & Andrieu Lab

Program Contact

Prof. Dr. med. Thomas Andrieu, PhD

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[✉ Link to Research Program](#)

Selected Collaborators

Hund M Roche Diagnostics International Ltd., Rotkreuz (CH)

McKinnon B Dept. of Obstetrics & Gynaecology, Inst. for Molecular Biosciences, Brisbane (AU)

Nestorov P Scailyte AG, Basel (CH)

Vögel B Steroid Lab, University Hospital for Nephrology and Hypertension, Bern (CH)

Experimental Hematology

The main focus of our research was to study the regenerative capacity of stem and immune cells related to telomere biology as well as their involvement in molecular mechanisms.

Our aims are to elucidate whether patients with cytopenia, bone marrow failure, and lung or liver fibrosis suffer from short telomere length syndrome (STS) and establish whether this is because of a deficiency in telomerase activity, telomerase recruitment to telomeres, or deficiency in maintaining the telomere structure. STS can be caused by mutations in the genes associated with telomeres or telomerases. Our group investigated the phenotypic and genotypic correlations, elucidated the pathophysiologies of telomere maintenance, and searched for pathways to treat patients with STS. The identification of STS is important because management and treatment approaches for such individuals and patients need to be specifically tailored. Furthermore, we investigated the modulation of telomerase activity (activators and inhibitors) in cellular therapies, regenerative medicine, and malignant diseases (CML and ALL), and elucidated new diagnostic, prognostic, pathophysiologic, and pathogenetic mechanisms.

Research Highlights 2022 / Outlook 2023

In collaboration with the University Hospital of Vaud (CHUV) and University of Lausanne, we are investigating the role of telomere biology in patients with liver diseases and have published a review on STS, including our longstanding research experience in the field of telomere biology. This study aimed to make general practitioners aware of the clinical, laboratory, and research findings of patients with STS. Furthermore, we successfully started the translational part of a study on telomere biology in patients with chronic myeloid leukemia (CML), and presented our findings on the expansion of immune cells modulating telomerase at the annual meeting of the Swiss Society of Oncology and Hematology. In addition, we celebrated the achievements of our master's student, who had completed her thesis and doctoral diploma at the University of Bern.

An absolute highlight and great outlook for 2023 was the award granted to Dr. Monika Haubitz, a research assistant, with the goal of optimizing techniques that would allow rapid identification of patients with STS and their hematopoietic stem cell donors.

Selected Publications

Coukos A, Daccord C, Lazor R, Blum S, Naveiras O, Unger S, Vionnet J, Gaide O, Koutsokera A, Moschouri E, Sempoux C, Good JM, Moradpour D, Baerlocher GM, Fraga M. Short telomere syndrome in adults: a rare entity that should be evoked. *Rev Med Suisse*. 2022 Aug 31;18(793):1606-1613. PMID: [↗ 36047552](#).

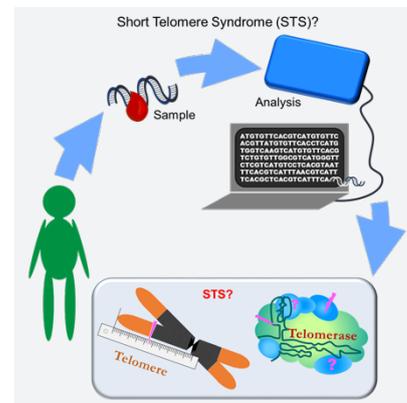
Haas Q, Markov N, Muerner L, Rubino V, Benjak A, Haubitz M, Baerlocher GM, Ng CKY, Münz C, Riether C, Ochsenbein AF, Simon HU, von Gunten S. Siglec-7 represents a glyco-immune checkpoint for non-exhausted effector

memory CD8+ T cells with high functional and metabolic capacities. *Front Immunol*. 2022 Sep 23;13: 996746. PMID: [↗ 36211376](#).

Oppliger Leibundgut E, Haubitz M, Burington B, Ottmann OG, Spitzer G, Odenike O, McDevitt MA, Röth A, Snyder DS, Baerlocher GM. Dynamics of mutations in patients with essential thrombocythemia treated with imetelstat. *Haematologica* 2021 Sep 1; 106(9): 2397–2404. PMID: [↗ 32732354](#).

Daskalakis M, Feller A, Noetzli J, Bonadies N, Arndt V, Baerlocher GM, The Nicer Working Group. Potential to Improve Therapy of Chronic Myeloid Leukemia (CML), Especially for Patients with Older Age: Incidence, Mortality, and Survival Rates of Patients with CML in Switzerland from 1995 to 2017. *Cancers (Basel)*. 2021 Dec 14;13(24):6269. PMID: [↗ 34944892](#).

Karow A, Haubitz M, Oppliger Leibundgut E, Helsen I, Preisig N, Steiner D, Dantonello TM, Ammann RA, Roessler J, Kartal-Kaess M, Röth A, Baerlocher GM. Targeting Telomere Biology in Acute Lymphoblastic Leukemia. *Int J Mol Sci*. 2021 Jun 22;22(13):6653. PMID: [↗ 34206297](#).



Participating Labs

Baerlocher Lab

Program Contact

Prof. Dr. Gabriela Baerlocher, EMBA

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[↗ Link to Research Program](#)

Selected Collaborators

Fraga M Lausanne University Hospital, Lausanne (CH)

Nicolini F Centre Léon Bérard & INSERM U1052, Lyon (FRA)

Riether C and Ochsenbein A University of Bern, Bern (CH)

Röth A University of Essen, Essen (DE)

von Gunten S University of Bern, Bern (CH)

Technology Core Facilities



Live Cell Imaging (LCI CF)



Achievements 2022

In the course of 2022, a new live cell analysis system, Incucyte SX5 (Sartorius), was installed in the LCI with financial support provided by the Faculty of Medicine. This new system, designed for long-term time-lapse imaging, can operate with five different fluorescence channels and functions with integrated software for the characterization of wound healing, viability, spheroids, and organoids, among other functions.

On September 10th, the LCI participated at the “Nacht der Forschung” of the University of Bern, presenting the Facility at the DBMR to interested visitors, who could also experiment using the light microscopes.

Since its launch in 2012, the LCI Core Facility has been supported by the Microscopy Imaging Center (MIC), an inter-faculty platform that coordinates, prioritizes, and supports funding applications in high-end microscopy and organizing access to microscopy equipment for all members of the University of Bern.

Performance report 2022

The total number of booked hours for using LCI equipment raised to 8475 in 2022 (4752 in 2021). They do not include systems that must be booked on a daily basis, such as the Incucyte microscope. In 2022, LCI staff spent 131 hours on introduction training on LCI microscopes (117 hours in 2021). The working hours spent collaborating with other research groups in the DBMR increased to 307 (257 hours in 2021). During this period, LCI supported students from 22 individual research groups. The hours spent on technical assistance increased to 262 (2021:182). Every year, the facility contributes to advanced microscopy lectures and practical modules organized by the MIC. More than 20 students were trained in practical modules with the involvement of LCI in 2022.

Finances 2022

Revenues have increased considerably by 2022 owing to the addition of new systems, such as the 3DHISTECH Panoramic scanner or two new cryostats. As in previous years, most of the increase in expenses consisted of costs for repair and maintenance contracts. Like all other Core Facilities at DBMR, LCI faces the challenge of increasing maintenance, repair, and quality control costs. The MIC kindly supported LCI with CHF 2'000 for general maintenance and repair.

Outlook 2023

In 2023, the LCI will focus on the improvement of its digital capabilities, such as network-based data storage, and improved services, such as a digital archive for common protocols for imaging and histology. Furthermore, the LCI will expand its collaboration network beyond DBMR groups and plan projects with research groups from other departments and institutes.

Selected Publications

McKInnon BD, Nirgianakis K, Ma L, et al. Computer-Aided Histopathological Characterisation of Endometriosis Lesions. *J Pers Med.* 2022;12(9):1519. Published 2022 Sep 16. PMID: [↗ 36143304](#).

Head of LCI Core Facility

PD. Dr. phil. nat. Fabian Blank

↗ fabian.blank@unibe.ch

↗ [Link to Core Facility](#)

Core Facility Members

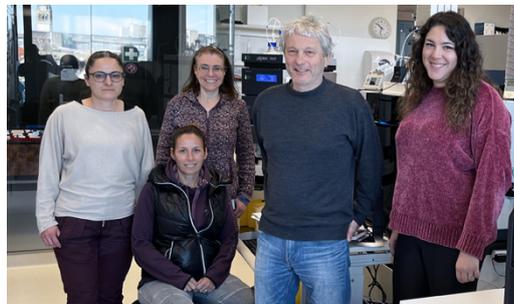
Carlos Wotzkow

Lab Technician

Selina Steiner

Lab Technician

Proteomics & Mass Spectrometry (PMS CF)



Achievements 2022

The high demand for our services also continued during this year. It was possible to secure the position of the computational scientist with University personal points, freeing some financial resources to hire a PhD student tackling a project in the area of personalized cancer therapy in collaboration with NCCR RNA & Disease and Hematology Clinic at the Inselspital. Furthermore, we could install a liquid handling robot and purchase a new mass spectrometry system which replaces the old QExactive. Finally, we published the results on an earlier study, where we looked into the effect of transport on the blood plasma vesicle proteome.

Performance report 2022

We processed 1906 samples submitted by laboratories from the Faculty of Medicine (72.5 %), Faculty of Science (18.3 %), Vetsuisse Faculty (7.4 %), and external institutions (1.8 %), resulting in 479 more LC-MS/MS runs for the generation of publishable data than in 2021. This number of 4149 is supplemented by 76 runs for development, 862 standards and 5066 blanks for quality assurance. Compared with 2021 the average up-time of instruments was the same (460 days).

Finances 2022

Our financial situation remained sound, despite the purchase of new equipment.

Outlook 2023

Next to the installation of a new timsTOF HT instrument in February, we plan to develop workflows for single cell proteomics and immune peptidomics in 2023.

Head of PMS Core Facility

Ass. Prof. Dr. phil. nat. Manfred Heller

✉ manfred.heller@unibe.ch

✉ [Link to Core Facility](#)

Core Facility Members

Anne-Christine Uldry

PhD, Computational Scientist

Sophie Braga Lagache

MSc, Senior Assistant

Natasha Buchs

Laboratory Assistant

Alexandra Emanuela Burger

MSc, PhD student (started in Nov. 2022)

Flow Cytometry and Cell Sorting (FCCS CF)



Achievements 2022

The new spectral flow cytometer Cytek Aurora has become increasingly popular among users, despite the fact that it is slightly more demanding than the traditional instruments.

Lorenzo Raeli took over the lead and administration of the FACS course from former lab member Claudio Vallan and had already led five FACS courses, each with 10–12 participants.

BD FACS ARIA III is now our second cell sorter in a biosafety type II cabinet, which allows for greater flexibility in biosafety level 2 cell sorts.

The FCCS CF hosted the first Swiss FlowJo User-group meeting. This meeting was initially planned for the spring of 2020, but was postponed because of COVID-19 restrictions.

Performance report 2022

At +13 %, the increase in the self-operated measurements is even more pronounced in 2022 than that in 2021. In contrast, the massive increase of >31.8 % in cell sorting requests that we experienced in 2021 was followed by a decline of 16.5 % in 2022. This was mainly because of the coincidence of several projects with a lot of cell sorting, which ended by the end of 2021/beginning of 2022.

Self-operated measurements were performed by 70.4 % of researchers from Inselspital clinics and 26.4 % from Institutes from the University of Bern. Measurements by external parties made for 3.2 %. Of the cell sorts, 84.9 % were performed at institutional clinics and 13.9 % at institutes of the University of Bern, whereas 1.2 % were performed by external parties. In total, 70.3 % of the measurements and 86.4 % of the cell types were performed for the DBMR groups.

Thirty-six students, postdocs, and lab technicians were successfully included in the new round of our FACS course and attended the kick-off seminar and training offered by FlowJo analysis software company.

Finances 2022

Income: CHF 267'688.–
Expenses*: CHF 313'451.–

*FlowJo licences costs of around CHF 37'000.– were basically paid twice in 2022, due to the payment system change from post- to prepaid. Salary costs were higher compared to 2021.

Outlook 2023

Completion of the current round of 2 ECTS points worth FACS course with 36 participants and the start of a new round in summer with at least one group of up to 12 participants.

Application to the University Investment Fund to support the purchase of an innovative imaging cell sorter with spectral enhancement.

Collaboration with the PMS CF to establish a single cell multi-omics approach for sorted cells.

Establishment of fluorescence *in situ* hybridization in flow (Flow FISH) with chromosomal enumeration probes (CEP) for the ImageStream^X MkII imaging flow cytometer

Selected Publications

Lipp JJ, Wang L, Yang H, Yao F, Harrer N, Müller S, Berezowska S, Dorn P, Marti TM, Schmid RA, Hegedüs B, Souabni A, Carotta S, Pearson MA, Sommergruber W, Kocher GJ, Hall SRR. Functional and molecular characterization of PD1+ tumor-infiltrating lymphocytes from lung cancer patients. *Oncoimmunology*. 2022 Feb 9;11(1):2019466. PMID: [↗ 35154905](https://pubmed.ncbi.nlm.nih.gov/35154905/).

Head of FCCS Core Facility

Dr. phil. nat. Stefan Müller, PhD

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↗ [Link to Core Facility](#)

Core Facility Members

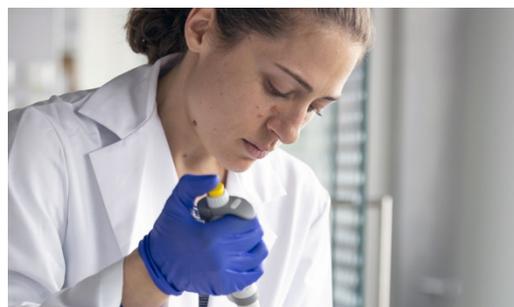
Dr. Thomas Schaffer PhD

Dr. Lorenzo Raeli PhD

Dr. Fiona Appiah PhD

Bernadette Nyfeler Lab Technician (until Jul.)

Biomedical Genomics (BMG CF)



Achievements 2022

With the opening of a new research building on Murtenstrasse 24, the Biomedical Genomics Core Facility was established on the 4th floor. During 2022, the laboratories were equipped with basic laboratory equipment, and some genomic equipment from Murtenstrasse 35 was centralized in the BMG laboratories. Additionally, a new QuantStudio 6 Flex qPCR instrument was installed and operated. Prof. Britta Maurer's research group kindly agreed to move their Chromium Controller from 10X Genomics to prepare libraries for single-cell sequencing to the BMG, so that all groups had access to it.

Performance report 2022

In 2022, the total number of booked hours using qPCR instruments (ViiA7 and QuantStudio 6) was 1033. The ddPCR system and Bioanalyzer were booked for approximately 150 hours. The BMG staff provided 31 introductions to the PCR instruments and the Bioanalyzer. In addition, qPCR training for the new QuantStudio by Thermo Fisher was organized, in which a group of people from different laboratories participated. In the second half of 2022, we started providing expertise and technical support for next-generation sequencing (NGS) projects, such as DNA extraction, library preparation, and sequencing for a whole exome sequencing project as well as library preparation and QC for targeted DNA sequencing with a custom primer panel.

Outlook 2023

We are looking forward to providing more introductory training for instruments and expertise as well as technical support for NGS experiments.

Selected Publications

Rodriguez-Calero A, Gallon J, Akhoundova D, Maletti S, Ferguson A, Cyrta J, Amstutz U, Garofoli A, Paradiso V, Tomlins S, Hewer E, Genitsch V, Fleischmann A, Vassella E, Rushing E, Grobholz R, Fischer I, Jochum W, Cathomas G, Osunkoya A, Bubendorf L, Moch H, Thalmann G, Ng C, Gillissen S, Piscuoglio S, Rubin MA. Alterations in Homologous Recombination Repair Genes in Prostate Cancer Brain Metastases. *Nature Communications*. 2022 May 3; 13(1):2400. PMID: [↗ 35504881](#).

Head of BMG Core Facility

Prof. Dr. phil. nat. Ursula Amstutz

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↗ [Link to Core Facility](#)

Core Facility Members

Sina Maletti Lab Manager



Johanna Dürmüller-Bol

DBMR Research Award



Bio-sketch

Dr. Emma Britt Hodcroft

BSc at Texas Christian University (2008). MSc in Quantitative Genetics and Genome Analysis at University of Edinburgh (2010). PhD in Estimating the Heritability of Viral Load in HIV at University of Edinburgh (2015). Post-doc in using Nextstrain to analyze Tuberculosis, Campylobacter, Enterovirus at University of Basel (2017-2020). Post-doc analyzing SARS-CoV-2 variants at University of Bern and University of Geneva (2020–2023).

Project summary and outlook 2023

The COVID-19 pandemic has highlighted that our ability to understand, anticipate, and respond to new viral threats is informed by knowledge gained from other viruses, yet our understanding of many viruses is still limited. The pandemic has also presented a unique opportunity to study the re-emergence of endemic viruses. Restrictions that comprised our pandemic response reduced transmission of other respiratory viruses as well as SARS-CoV-2, leading to unique evolutionary pressures for viruses and decreased exposures for humans. Pre-pandemic, Enterovirus D68 (EV-D68) circulated in even-year biennial outbreaks in Europe and North America, with a predicted but never-realized 2020 outbreak. Antibodies to EV-D68 are ubiquitous in adults, and titers can be seen increasing throughout childhood, where most cases are diagnosed. An ‘immunity gap’ in children from low EV-D68 circulation during the pandemic could have led to a larger-than-usual post-pandemic wave. Outbreaks in autumn 2022 were varied across Europe and America, with larger waves reported in some areas of the US and northern Europe, but not seen elsewhere, which may imply difference in pandemic exposure or previous international transmission routes not yet being fully re-connected post-pandemic. Sequences from EV-D68 during this time, collected from Switzerland and Europe, will allow us to begin investigating hypotheses like these.

Selected Publications

Hodcroft EB, Dyrdak R, Andrés C, Egli A, Reist J, García Martínez de Artola D, Alcoba-Flórez J, Niesters HGM, Antón A, Poelman R, Reynders M, Wollants E, Neher RA, Albert J. Evolution, geographic spreading, and demographic distribution of Enterovirus D68. *PLoS Pathog.* 2022 May 31;18(5):e1010515. doi: 10.1371/journal.ppat.1010515. PMID: [↗ 35639811](#).

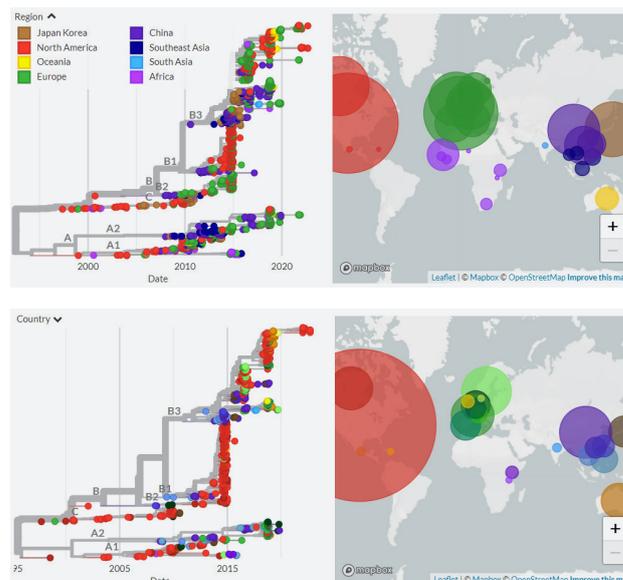
Reichmuth ML, Hodcroft EB, Riou J, Neher RA, Hens N, Althaus CL. Impact of cross-border-associated cases on the SARS-CoV-2 epidemic in Switzerland during summer 2020 and 2021. *Epidemics.* 2022 Dec;41:100654. Epub 2022 Nov 17. PMID: [↗ 36444785](#).

Hodcroft EB, Zuber M, Nadeau S, Vaughan TG, Crawford KHD, Althaus CL, Reichmuth ML, Bowen JE, Walls AC, Corti D, Bloom JD, Velesler D, Mateo D, Hernando A, Comas I, González-Candelas F; SeqCOVID-SPAIN consor-

tium; Stadler T, Neher RA. Spread of a SARS-CoV-2 variant through Europe in the summer of 2020. *Nature.* 2021 Jul;595(7869):707-712. Epub 2021 Jun 7. PMID: [↗ 34098568](#).

BBenschop KSM, Broberg EK, Hodcroft E, et al. Molecular Epidemiology and Evolutionary Trajectory of Emerging Echovirus 30, Europe. *Emerg Infect Dis.* 2021;27(6):1616-1626. PMID: [↗ 34013874](#).

Benschop, K. S. M., Broberg, E. K., Hodcroft, E., Schmitz, D., Albert, J., Baicus, A., Bailly, J. L., Baldvinsdottir, G., Berginc, N., Blomqvist, S., Böttcher, S., Brytting, M., Bujaki, E., Cabrerizo, M., Celma, C., Cinek, O., Claas, E. C. J., Cremer, J., Dean, J., Dembinski, J. L., ... Simmonds, P. (2021). Molecular Epidemiology and Evolutionary Trajectory of Emerging Echovirus 30, Europe. *Emerging infectious diseases*, 27(6), 1616–1626.



Contact

Emma Britt Hodcroft, PhD

- ↗ emma.hodcroft@unibe.ch
- ↗ INPUT – Interfaculty Platform for Data & Computational Science
- ↗ Supervisor: Dr. Christian Althaus

Selected Collaborators

- Ramette A** University of Bern, Bern (CH)
- Egli A** University of Zurich, Zurich (CH)

Former Winners of the Johanna Dürmüller-Bol DBMR Research Award

2017

Prof. Dr. Manuela Funke – Chambour



Awarded Project's Title: "Autophagy – a New Therapeutical Target for Idiopathic Pulmonary Fibrosis"

Current position: Chief Physician, Deputy Director Department of Pulmonary Medicine and Allergology, Research Group Leader DBMR

Research interest: Pulmonary inflammation and fibrosis. The project has been completed and papers related to this project have been published.

Impact of the project and award on your research career

This award helped to conduct research experiments that were not funded. Investigating the proposed topic helped me to further develop and test the hypotheses, which resulted in new research questions. In a related laboratory project, I have developed an interventional clinical drug trial that has been recently published.

Other fundings to prolong the research

I used preliminary data generated with funds from this award to apply for SNF funding, which was unfortunately unsuccessful for this project. Nevertheless, the related projects have been successfully funded. This award allowed me to develop my research ideas and contributed to consolidating my research expertise and establishing a foundation for developing my research group.

Publications/output related to that project

Krempaska K, Barnowski S, Gavini J, Hobi N, Ebener S, Simillion C, Stokes A, Schliep R, Knudsen L, Geiser TK, Funke-Chambour M. Azithromycin has enhanced effects on lung fibroblasts from idiopathic pulmonary fibrosis (IPF) patients compared to controls [corrected]. *Respir Res.* 2020 Jan 15;21(1):25. Erratum in: *Respir Res.* 2020 Jan 28;21(1):29. PMID: [↗ 31941499](#).
Guler SA, Clarenbach C, Brutsche M, Hostettler K, Brill AK, Schertel A, Geiser TK, Funke-Chambour M. Azithromycin for the Treatment of Chronic Cough in Idiopathic Pulmonary Fibrosis: A Randomized Controlled Crossover Trial. *Ann Am Thorac Soc.* 2021 Dec;18(12):2018-2026. PMID: [↗ 34015241](#).

2018

Prof. Dr. Stephanie Ganal – Vonarburg



Awarded Project's Title: "The role of maternal microbiota in durably shaping intestinal immunity and gene expression in the offspring through epigenetic mechanisms"

Current position: Group leader in Gastroenterology/Mucosal Immunology at DBMR, Assistant Professor of Peter Hans Hofschneider Endowed Professor for Molecular Medicine.

Research interest: Host-microbiota-diet interactions in early life, gnotobiology, immunology

Impact of the project and award on your research career

The Johanna Dürmüller-Bol DBMR Research Award gave me the opportunity to independently conduct experiments on a research question that was different from that of my postdoctoral supervisor and to obtain preliminary results which I have successfully used to acquire bigger grants, most importantly a 5-year assistant professorship funded by an external foundation. This professorship grant enabled me to set-up my own research group and I have by now hired three PhD students and supervised several master students.

Other fundings to prolong the research

Peter Hans Hofschneider Professorship for Molecular Medicine by the Stiftung Experimentelle Biomedizin (assistant professorship inclusive 1 PhD student salary and consumables), granted for 01/20-06/25
SNSF Project Grant: The impact of maternal microbiota and breast milk on host epigenetics and immune repertoire in the offspring (CHF 862'839), granted for 12/22-11/26

Publications/output related to that project

Although I have published several review articles on the topic of early life immunity and microbiota during the last few years, we have not yet published any original article on the data originating from the awarded project. A manuscript describing the data obtained is currently under preparation; however, additional experiments are required to solidify and extend our results. A PhD thesis on this project was submitted in November 2022.

Kalbermatter C, Fernandez Trigo N, Christensen S, Ganal-Vonarburg SC. Maternal Microbiota, Early Life Colonization and Breast Milk Drive Immune Development in the Newborn. *Front Immunol.* 2021 May 13;12:683022. PMID: [↗ 34054875](#).

Ganal-Vonarburg SC, Hornef MW, Macpherson AJ. Microbial-host molecular exchange and its functional consequences in early mammalian life. *Science*. 2020 May 8;368(6491):604-607. PMID: [↗ 32381716](#).

2019

Dr. Maria – Nieves Sanz



Awarded Project's Title: "Mitochondrial preservation and mitochondrial damage-associated molecular patterns (mtDAMPs) in DCD heart transplantation"

Current position: Senior Associate Scientist in Quality Control in Janssen Vaccines (Bern, Switzerland)

Research interest: Generation of new vaccines and medicines through Quality Control to validate batches of new vaccines that are released for use in Clinical Trials

I completed the project, for which I received an award. All experimental groups were completed and subsequent experiments with tissue and perfusate samples were finalized. An analysis of the most recently obtained data is currently underway, and the manuscript is in preparation, with expected submission by mid 2023.

Impact of the project and award on your research career

This award has been highly valuable for advancing of my scientific career. This had an enormous impact on my

professional development and supported my growth as an independent scientist and a project manager. In addition, it was instrumental in supporting subsequent experimental work performed in the awarded field. All of this, in turn, provided me with the opportunity to apply for SNSF and other funding sources to pursue an independent line of research. Furthermore, all the skills that I have developed in performing this research project are of great value to my tasks and duties in my current position in the pharmaceutical industry.

Other fundings to prolong the research

I used this award to support my application to the PRIMA program of the Swiss National Science Foundation for two consecutive calls: 2020 and 2021. In addition, I also applied for other funds such as the Novartis-FreeNovation grant (2022). Unfortunately, none of those applications were successful and I could not continue my work in the awarded field of research.

Publications/output related to that project

Longnus SL, Rutishauser N, Gillespie MN, Reichlin T, Carrel TP, Sanz MN. Mitochondrial Damage-associated Molecular Patterns as Potential Biomarkers in DCD Heart Transplantation: Lessons From Myocardial Infarction and Cardiac Arrest. *Transplant Direct*. 2021 Dec 16;8(1):e1265. Erratum in: *Transplant Direct*. 2022 Sep 15;8(10):e1386. PMID: [↗ 34934807](#).

2020

Dr. Joanna Triscott



Awarded Project's Title: "Exploiting metabolic vulnerabilities in advanced prostate cancer"

Current position: Senior Research Scientist, Cancer Therapy Resistance (CTR), DBMR, University of Bern.

Research interest: Exploration of PI5P4K biology in prostate cancer.

I am currently still conducting research on project I which was funded by the Johanna Dürmüller-Bol DBMR Research Award in the research group of Mark Rubin. I have been able to accomplish the main objectives of the research project for which I was funded the award. This has directly resulted in the publication of three manuscripts: a collaboration published in *Developmental Cell* (impact factor 13.42), an elite review article in *Nature Reviews Drug Discovery* (impact factor 112.3), and, recently, the main project publication in *Science Advances* (impact factor 14.14).

Presently, I am working to complete a second major manuscript on the research topic that is a continuation of the *Science Advances* publication. We anticipate that this manuscript will be submitted for publication in the next six months. Following this, I will be actively searching and transitioning to group leader roles.

Impact of the project and award on your research career

The Johanna Dürmüller-Bol DBMR Research Award had three major impacts on my research career thus far. First, the monetary funds supported project costs that were otherwise not covered by our current grants. This allowed some support for a transition between technician staff, and buffered the extra costs associated with the 2020 COVID pandemic. Second, the award was prestigious and made me more visible to the Swiss research community. Collaborators, award committees, and hiring committees view the Johanna Dürmüller-Bol DBMR Research Award very highly. Third, the award gave me personal confidence that I am capable of leading and funding projects independent of my postdoctoral mentor.

The award enabled support for recruitment and mentorship of a MSc student with a project focused on PI5P4K in prostate cancer and a one-year PhD candidate with a project focused on Mentored on PI5P4K project and prostate cancer metabolism studies.

Other fundings to prolong the research

Swiss National Science Foundation (SNF#310030_207635) (2022–2026). Towards understanding non-canonical phosphatidylinositol kinases as vulnerabilities in prostate cancer metabolism. ** NOTE: Mark Rubin is the PI on this grant. Joanna composed and manages it. Award: 908,000 CHF over four years with a start date of 01.04.2022.

Mentor of Swiss Government Excellence Scholar: Led successful award application and supervision of elite PhD student (Francielle Mosele, #2021.0383) from São Paulo State University, Brazil.

Publications/output related to that project

- Triscott J, Reist M, Küng L, Moselle FC, Lehner M, Gallon J, Ravi A, Arora GK, de Brot S, Lundquist M, Gallart-Ayala H, Ivanisevic J, Piscuoglio S, Cantley LC, Emerling BM, Rubin MA. PI5P4Kα supports prostate cancer metabolism and exposes a survival vulnerability during androgen receptor inhibition. *Sci Adv.* 2023 Feb 3;9(5): eade8641. Epub 2023 Feb 1. PMID: [↗ 36724278](#).
- Burke JE, Triscott J, Emerling BM, Hammond GRV. Beyond PI3Ks: targeting phosphoinositide kinases in disease. *Nat Rev Drug Discov.* 2022 Nov 14:1–30. Epub ahead of print. PMID: [↗ 36376561](#).
- Ravi A, Palamiuc L, Loughran RM, Triscott J, Arora GK, Kumar A, Tieu V, Pauli C, Reist M, Lew RJ, Houlihan SL, Fellmann C, Metallo C, Rubin MA, Emerling BM. PI5P4Ks drive metabolic homeostasis through peroxisome-mitochondria interplay. *Dev Cell.* 2021 Jun 7;56(11):1661-1676.e10. Epub 2021 May 12. PMID: [↗ 33984270](#). *authors contributed equally

Key Events

Opening Murtenstrasse 24–28

The DBMR organized a mini-symposium in March 2022 with Prof. Dr. Susan Gasser (University of Lausanne) and Prof. Dr. Johann de Bono (The Institute of Cancer Research, UK) as keynote speakers. Other highlights included talks by Prof. Dr. Hugues Abriel and Prof. Dr. Willy Hofstetter, followed by the award ceremony to Dr. Noëlle Annick Dommann, the winner of the Benoît Pochon Prize 2021, and Dr. Joel Zindel, the recipient of the Johanna Dürmüller-Bol DBMR Research Award 2021.

In September 2022, the DBMR had an open-door event. The public was guided through the DBMR Core Facilities, had a virtual tour of Forensic Medicine and building technology.

Day of BioMedical Research 2022, Wednesday 6 July 2022

After a 2-year interruption, the event was held in person in July 2022. Highlights included the lectures of the keynote speakers: Prof. Dr. Andrea Califano (Columbia University) and Prof. Dr. Botond Roska (University of Basel) and the announcement of the Poster Prizes selected among the more than 110 posters., of the Best DBMR Publication 2021, and of Dr. Emma Hodcroft as the winner of the Johanna Dürmüller-Bol DBMR Research Award 2022.

Johanna Dürmüller-Bol Research Award 2022

Emma Britt Hodcroft, PhD

Institute of Social and Preventive Medicine, University of Bern
"Investigating the impact of pandemic restrictions on circulation and genetic diversity of a respiratory virus"

Poster Prizes of the Day of BioMedical Research 2022

Best preclinical project

Liana Hayrapetyan

Department of Radiation Oncology,

Inselspital, Bern University Hospital
"HPV and p53 Status Determine Irradiation-related Responses to a Selective DNA-PK Inhibitor in Head and Neck Squamous Cell Carcinoma Models"

Best clinical project

Department of Pediatrics, University Hospital Bern, Bern, Switzerland
Maria Natalia Rojas Velazquez
"A founder mutation in P450 reductase from Argentina causes virilization in 46,XY patients."

Best medical project of a medical student

Cosima Meret Schmid
 Department of Human Genetics, Inselspital Bern, University of Bern, Bern, Switzerland
"LHX2 loss of function causes neurodevelopmental deficits in humans and flies"

Research Prize Alumni MedBern

Charlotte Kern
 Clinical Pharmacology and Toxicology, Department of General Internal Medicine, Inselspital, Bern University Hospital, Switzerland
"Designing impactful treatments against emerging SARS-CoV-2 variants"

SCRM Poster Prize for Best Stem Cell Project

Chantal Bachmann
 Tumor Immunology, Department for BioMedical Research, University of Bern, Switzerland
"Immune-Checkpoints in the Regulation of Leukemia and Cancer Stem Cells"

Prize for Best DBMR Publication 2021

Dr. Tim Rollenske

Mucosal Immunology, Visceral Surgery, Department for BioMedical Research
"Parallelism of intestinal secretory IgA shapes functional microbial fitness" shows how antibodies shape the fitness of intestinal bacteria."

DBMR Research Conferences 2022

7 February 2022

Prof. Dr. Hugues Abriel

Institute of Biochemistry and Molecular Medicine and NCCR TransCure, University of Bern
 "Genes coding for ion channels and ion channels to sequence genes: Experience in two African medical genetics laboratories"

7 March 2022

Prof. Dr. Martin Stoddart

Regenerative Orthopaedics, Principal Scientist, AO Research Institute Davos (ARI) | AO Foundation
 "Mechanical regulation of MSC chondrogenesis. Can we repurpose rehabilitation?"

30 June 2022

Dr. Axel Visel

Lawrence Berkeley National Laboratory and Joint Genome Institute, School of Natural Sciences, University of California, Merced (US)
 "Epigenomic Strategies for Discovery and Characterization of Enhancers in Human Disease"

5 September 2022

Prof. Alexandre Reymond, PhD

Director Center for Integrative Genomics, University of Lausanne
 Blurring the boundaries of common and rare diseases

13 October 2022

Ass. Prof. Rahul N Kanadia

Department of Physiology and Neurobiology, University of Connecticut (USA)
 "Evolution of minor introns and their role in development, disease, and therapeutics"

31 October 2022

Prof. Dr. Ron M.A. Heeren

The Maastricht MultiModal, Molecular Imaging Institute, Maastricht University, The Netherlands
 "Translational molecular imaging: Using a mass spectrometer as a microscope"

Personnel Update

Lecturer

PD Dr. Matthias Moor
Nephrology

PD Ramanjaneyulu Allam
Blood

PD Dr. rer. nat. Kerstin Klein
Lung Precision Medicine

PhD (Supervisor in parentheses)

Katalin Bartos, PhD
(Prof. Dr. Uyen Huynh-Do, PD Dr. med. et phil. Matthias Moor)
Role of Memo in osteoblast biology during health and disease

Carmen Widmer, PhD
(Prof. Dr. Sven Rottenberg)
"Investigating Platinum Drug Resistance using BRCA1;p53-deficient Mouse Mammary Tumors"

Marine Inglebert, PhD
(Prof. Dr. Sven Rottenberg)
"Investigating canine mammary tumors and patient-derived organoids as a preclinical model for breast cancer"

Kucharzyk Patrycja, PhD
(Prof. Dr. Daniel G. Fuster)
"Mechanisms of thiazide-induced glucose intolerance"

Laetitia Scherler, PhD
(Prof. Dr. Geneviève Escher)
"Role of vitamin D and vitamin D metabolizing enzymes in the prevention of atherosclerosis"

Cecilia Bazzini, PhD
(Prof. Dr. Christoph Schlapbach)
"TH9 cells depend on cystine uptake and PPAR-γ signaling to prevent unchecked lipid ROS and cell death"

Dzhangar Dzhumashev, PhD
(Prof. Dr. Jochen Karl Rössler, PD Dr. sc. nat. Michele Bernascon)
"Liposomal targeted drug delivery to rhabdomyosarcoma"

Martyna Dziadosz, PhD
(Prof. Dr. Roland Kreis)
"Enhancing Magnetic Resonance Spectroscopy (MRS) by relaxation enhancement and machine learning."

Andrea Stephanie Karolin
(PD Dr. Daniel Sidler)
"Mechanisms of Calcineurin Inhibitor Toxicity of the Kidney"

Federica Pilotto, PhD
(Prof. Dr. Smita Saxena)
"Adaptive to Vulnerability Mechanisms in Neurodegeneration"

Patricia Verena Renz, PhD
(Prof. Dr. med. Daniel Surbek)
"Understanding astrocyte polarization in perinatal white matter injury and its contribution to disease outcomes"

Viviana Rubino, PhD
(Prof. Dr. Carsten Riether)
"Immune receptors as stemness regulators in acute myeloid leukemia"

Beatrice Lisa Steiner, PhD
(Prof. Dr. Pascal Escher)
"Visual Cycle and Photoreceptor Development"

Michelle Andrea von Siebenthal, PhD
(Prof. Dr. Katia Monastyrskaya-Stäuber)
"Identification of Molecular Targets to Treat Obstructed and Neurogenic Bladder Dysfunction"

Adrienne Nina Vancura, PhD
(Dr. med. Simon Häfliger)
"Characterizing lncRNAs in cancer and investigating the role of miRNAs in lung cancer detection and therapy resistance"

Madeleine Wyss, PhD
(Dr. Kathy McCoy)
"Effects of Microbial and Diet Composition on the Immune System"

Carla Pernaci, PhD
(Prof. Dr. Antoine Roger Adamantidis)
"Dysregulated PC's Ca2+ homeostasis drives Spinocerebellar ataxia-1 (SCA1) pathology"

Joao Filipe Pinheiro Marques, PhD
(Prof. Dr. Antoine Roger Adamantidis)
"C9ORF72-ALS/FTD associated DPRs disrupt Na+/K+-ATPase function and promote TDP43 proteinopathy"

Fatemeh Safari, PhD
(Prof. Dr. Wilhelm Hofstetter)
"Exogenous and intrinsic regulators of bone remodelling"

Vito Andrea Timpanaro, PhD
(PD Dr.sc.nat. Michele Bernascon, Prof. Dr. Jochen Karl Rössler)
"Chimeric Antigen Receptor (CAR) T cell therapy for rhabdomyosarcoma: novel targets identified by surfaceome profiling and promising pre-clinical efficacy targeting CD276 and FGFR4"

Song Xue, PhD
(Prof. Dr. Kuangyu Shi)
"Dose Optimization in Nuclear Medicine with Artificial Intelligence"

MD, PhD (Supervisor in parentheses)

Ismar Klebic, Dr.med.vet
(Supervisor: Prof. Dr. Sven Rottenberg)
"Establishment of cis- and carboplatin-resistant BRCA1;p53-deficient mouse mammary tumors"

Darya Karatkevich, MD-PhD
(PD. Dr. Thomas Marti)
"Increasing the efficiency of chemotherapy for malignant pleural mesothelioma"

Vetsch Andri, MD
(Prof. Dr. Daniel G. Fuster)
"Impact of the V2 receptor antagonist Tolvaptan on acid-base and mineral metabolism parameters in patients with polycystic kidney disease"

Chaonan Jin, MD-PhD
(Prof. Dr. Jordi Gracia Sancho and Prof. Dr. Annalisa Berzigotti)
"Novel insights in non-alcoholic fatty liver disease pathophysiology: endoplasmic reticulum-mitochondria contacts & protein acetylation"

Andras Laszlo Soti, MD-PhD
(Prof. Dr. med. Philipp Latzin)
"The significance of environmental and genetic factors for the developing immune system"

Yuly Mendoza MD-PhD
(Prof. Dr. Annalisa Berzigotti)
"New concepts and novel non-invasive tools for risk stratification in advanced chronic liver disease (ACLD)"

Susana Gomes Rodrigues MD-PhD
(Co-Supervisor: Prof. Dr. Annalisa Berzigotti)
"Noninvasive serum biomarkers of portal hypertension in liver cirrhosis"

Luca Gabriele Valente, MD-PhD
(Prof. Dr. med. dr. phil Yok-Ai-Que)
"Prophylaxis and Treatment of Staphylococcal and Pneumococcal Infections with Bacteriophages and their Endolysins"

New Staff
Franziska Fuchs

Secretary of the Directors
Direction (since Sep.)

Lutz Hempel

Head of Finances
Administration (since Mar.)

Urs Mumenthaler

House Staff
House Staff and Supply Center (since Aug.)

Aino Alise Paasinen Sohns

Lab Technician
Rubin Lab (since Nov.)

Daniela Susanne Scherer–Jendly

Human Resources Assistant
Administration (since Sep.)

Alexandra Emanuela Burger

PhD Student
PMS CF (since Nov.)

Fiona Appiah

Lab Technician
FCCS CF (since Aug.)

Virginie Tissieres

Lab Technician
Osterwald Lab (since Oct.)

Dr. Mitra Lovelin Gultom

Postdoc
Rieben Lab (since Aug.)

Dr. Gabriele Chiffi

Early Postdoc
Rieben Lab (since Jan.)

Jianfang Ren

PhD Student
Rieben Lab (since Jan.)

Resignations
Andrej Benkaj

Scientific Assistant
Ng Lab (until Feb.)

Kellie Anne Cotter

Assistant
Rubin Lab (until Jan.)

Safari Fatemeh

PhD Student
Gantenbein & Hofstetter Lab (until Dec.)

Julie Gamart

Lab Technician
Osterwald Lab (until Sep.)

Izzem Gemici

Lab Assistant
Rubin Lab (until Sep.)

Willy Hofstetter

Group Leader
Gantenbein & Hofstetter Lab (until Dec.)

Bernadette Nyfeler

Lab Technician
FCCS CF (until July)

Nivetha Ravindran

Polymechanic
House Staff (until Jul.)

Cornita Rohda

Director's Secretary
Direction (until Jul.)

Senija Selimovic-Hamza

Assistant
Rubin Lab (until Mar.)

Arbresh Seljmani

Lab Technician
LCI CF (until Jun.)

Beatrix Margrit Stalder

Secretary
Administration (until Aug.)

Sigrid Zimmermann

Human Resources Assistant
Administration (until Aug.)

Short employment
Roselle Lumanog Bieri

Secretary
Administration (Aug.–Dec.)

Dr. Melle Holwerda

Early Postdoc
Rieben Lab (until Jan.)

Dr. Nicoletta Sorvillo

Senior Research Assistant
Rieben Lab (until Aug.)

Dr. Junhua Wang

Scientific Associate
Rieben Lab (until Jul.)

Dr. Isabel Arenas

MD-PhD Student
Rieben Lab (until Dec.)

Carole Gygax

Lab Technician
Rieben Lab (until Jul.)

Kirsten Irmeler

Lab Technician
Rieben Lab (until Dec.)

Awards/Grants

Prof. Dr. Sven Rottenberg

Cancer Therapy Resistance
Swiss Cancer League

“Understanding and overcoming mechanism of resistance of platinum-based chemotherapy”

Prof. Dr. Sven Rottenberg

Co-PI: Dr. Intidhar Labidi-Galy (HUG)

Cancer Therapy Resistance

Congressionally directed Medical Research Programs – Ovarian Cancer Research Program, US Department of Defense
“Targeting PARPi resistance”

SNF Prof. Marco Osterwalder

Co-PI: Dr. sc. nat. Christian Zuppinger

Cardiovascular Diseases

SNF NRP 79- Advancing 3R

“HeartX: Decoding cardiac regulatory landscape in an all-human model for cardiogenesis”

Prof. Dr. Nadia Mercader

Cardiovascular Diseases

Bern Center for Precision Medicine

“Establishment of an in-vitro and in-vivo pipeline for precision medicine in Neuroendocrine tumors”

Prof. Dr. Nadia Mercader

Cardiovascular Diseases

European Commission

“101073238 — REGENERATE-IT — HORIZON-MSCA-2021-DN-01”

Anastasia Milusev

Cardiovascular Diseases

Best Flash Presentation for Fundamental Research CVRC Annual Meeting 2022, Bern (CH)

Isabel Arenas Hoyos

Cardiovascular Diseases

TTS Scientific Abstract Travel Award for the 15th Meeting of the International Society of Vascularized Composite Allotransplantation. Cancun, Mexico, sponsored by The Transplantation Society
“Neutrophil extracellular traps are found in rejected Vascularized Composite Allografts and are inhibited by tacrolimus”

Prof. Dr. Marianna Kruthof-de Julio

Co-PI: Dr. Bernhard Kiss

Cancer Therapy Resistance

ISREC TANDEM 2022

“NEREUS (Network based drug response and repurposing at single cell resolution)”

Dr. Dilara Akhoundova

Cancer Therapy Resistance

Nuovo-Soldati Foundation for Cancer Research

“In vitro modelling and genotype-specific therapeutic targeting on homologous recombination deficiency in prostate cancer using in vitro models.”

Dr. Dilara Akhoundova

Cancer Therapy Resistance

Kurt and Senta Herrmann Foundation Research Grant

“In vitro modelling and genotype-specific therapeutic targeting of homologous recombination deficiency (HRD) in human prostate cancer”

Prof. Dr. Mark A. Rubin, Dr. Anke Augspach, Prof. Dr. Gunnar Rätsch (ETHZ),

Ass. Prof. Rahul Kanadia (UConn)

Cancer Therapy Resistance

Prostate Cancer Foundation Challenge Award

“Leveraging poison introns for therapeutics and diagnostics of lethal prostate cancer.”

Prof. Dr. Mark A. Rubin

Cancer Therapy Resistance

Swiss National Science Foundation

“Towards understanding non-canonical phosphatidylinositol kinases as vulnerabilities in prostate cancer metabolism.”

Prof. Dr. Mark A. Rubin

Cancer Therapy Resistance

ISREC Foundation Translational Project

“Advanced in vitro models of prostate cancer metastases: unravelling and overcoming ARSI resistance.”

Prof. Dr. Mark A. Rubin

Cancer Therapy Resistance

Werner and Hedy Berger-Janser Foundation for cancer research

“Molecular characterization, in vitro modelling and therapeutic targeting of prostate cancer liver metastases”

Prof. Dr. Mark A. Rubin

Cancer Therapy Resistance

Bern Center for Precision Medicine

“Precision oncology approach towards understanding prostate cancer lineage plasticity”

Dr. med. Antonio Rodriguez

Cancer Therapy Resistance

Benjamin Castleman Award (USCAP)

“Alterations in homologous recombination repair genes in prostate cancer brain metastases”

Dr. med. Dr. phil. Yok-Ai Que

Emerging and difficult-to-treat infections

Swiss National Science Foundation

“What’s in a dose? Refining phage and antibiotic dosing for effective treatment of multidrug resistant bacterial infections”

Dr. med. Dr. phil. Yok-Ai Que (Co-PI)

Emerging and difficult-to-treat infections

Swiss Personalized Health Network, National Data Stream

“Personalized, data-driven prediction and assessment of infection related outcomes in Swiss ICUs (IICU)”

Dr. Loretta Müller

Lung Precision Medicine

Swiss Lung Foundation

“Genetische Charakterisierung von Patient:innen mit Primärer Ziliärer Dyskinesie (PCD) in der Schweiz”

Dr. Loretta Müller

Lung Precision Medicine

Foundation KinderInsel

“Effekte von e-Dampfen auf die respiratorische Gesundheit von Jugendlichen – die Rolle der nasalen Epithelzellen”

Prof. Dr. Guido Beldi

Co-PI: Prof. Dr. Daniel Candinas, Prof. Dr. Andrew Macpherson, Dr. Bahtyar Yilmaz, Prof. Dr. Siegfried Hapfelmeier, Prof. Dr. Christoph Stettler, Prof. Dr. Lia Bally, Prof. Dr. Matthias Siepe, Prof. Florian Schönhoff, Prof. Dr. Klaus Siebenrock, Dr. Philipp Jent

Systems Biomedicine of Cellular Development and Signaling in Health and Disease

Strategic Funding Board, University of Bern

“Toward reducing infection after healthcare-associated interventions”

Prof. Dr. Guido Beldi and Dr. Olga Endrich

Co-PIs: Dr. Karen Triep, Prof. Dr. Christian Lovis

(University of Geneva)

Systems Biomedicine of Cellular Development and Signaling in Health and Disease

SPHN Demonstrator Project

“INFRA: INFRection Radar”

Prof Dr. Deborah Stroka and

Prof Dr. Daniel Candinas

Systems Biomedicine of Cellular Development and Signaling in Health and Disease

Aclon Foundation

“Adult Stem Cell for Regenerative Medicine”

Dr. Felix Baier

Systems Biomedicine of Cellular Development and Signaling in Health and Disease

Venture Fellowship 2022 (UniBE)

“CALDRE. Cholestasis and liver disease resolved”

Dr. med. Dr. sc. nat. Joel Zindel

Systems Biomedicine of Cellular Development and Signaling in Health and Disease

Zwillenberg Prize

“Peritoneal macrophage aggregation and EGFRdependent mesothelial to mesenchymal transition: novel therapeutic avenues for peritoneal adhesions”

Dr. med. Dr. sc. nat. Joel Zindel

Systems Biomedicine of Cellular Development and Signaling in Health and Disease

Paul Klee Thesis Award

“Peritoneal macrophage aggregation and EGFRdependent mesothelial to mesenchymal transition: novel therapeutic avenues for peritoneal adhesions”

Dr. med. Dr. sc. nat. Joel Zindel

Systems Biomedicine of Cellular Development and Signaling in Health and Disease

Swiss College of Surgeons: Prize for Promoting Surgical Research for Scientific Work

“Intraperitoneal microbial contamination drives post-surgical peritoneal adhesions by mesothelial EGFR-signaling”

ERC Prof. Ziad Al Nabhani

Systems Biomedicine of Cellular Development and Signaling in Health and Disease

Alzheimer’s Association Research Grant

“Role of child gut microbiota on adult Alzheimer’s disease susceptibility.”

ERC Prof. Ziad Al Nabhani

Systems Biomedicine of Cellular Development and Signaling in Health and Disease

Novartis Foundation
“How child gut microbiota influence the lifelong immunity.”

ERC Prof. Ziad Al Nabhani

Co-PIs: Daniel Erny (University of Freiburg, DE), Evgenia Salta (Netherlands Institute for Neuroscience), Francesca Ronchi (Charité Institute, DE), Ayça Arslan Ergü (Bilkent University, TR)
Systems Biomedicine of Cellular Development and Signaling in Health and Disease
The EU Joint Program – Swiss National Science Foundation
“Unlock the early life pathological imprinting of Alzheimer’s disease via lifestyle”

ERC Prof. Ziad Al Nabhani

Systems Biomedicine of Cellular Development and Signaling in Health and Disease
Eduardo R., Giovanni, Giuseppe und Chiarina Sassella-Stiftung (Foundation)
“Role of child gut microbiota on colorectal cancer development”

ERC Prof. Ziad Al Nabhani

Co-PI: Dr. Bahtiyar Yilmaz
System Biomedicine of Cellular Development and Signaling in Health and Disease
Swiss Cancer Research Foundation
“Role of immune memory early in life on colon cancer development”

ERC Prof. Ziad Al Nabhani

Systems Biomedicine of Cellular Development and Signaling in Health and Disease
Novartis Foundation
“How does child intestinal bacteria prevent colorectal cancer development”

Prof. Dr. med. Annalisa Berzigotti

Systems Biomedicine of Cellular Development and Signaling in Health and Disease
Swiss National Science Foundation
“Surveillance of primary liver cancer in non-alcoholic fatty liver disease”

Dr. med. Maria Lucília de Brito Rodrigues Nunes

Systems Biomedicine of Cellular Development and Signaling in Health and Disease
Kommission des Naturhistorischen Museums der Burgergemeinde Bern (Commission of the Natural History Museum of the Community Bern)
“Predictors and management of post-banding ulcer bleeding in cirrhosis”

Prof. Dr. med. Jordi Sergio Gracia Sancho

Systems Biomedicine of Cellular Development and Signaling in Health and Disease
Prize 2022 of the Swiss NASH Foundation
“Pan-PPAR agonist lanifibranor improves portal hypertension and hepatic fibrosis in experimental advanced chronic liver disease”

Dr. med. Pompilia Radu

Systems Biomedicine of Cellular Development and Signaling in Health and Disease
Fondation Suisse Contre le Cancer du Foie
“Imaging analysis of body mass composition: a new tool to predict the efficacy of

immune-checkpoint inhibitors based regimes in patients with hepatocellular carcinoma”

Dr. med. Yuly Mendoza

Systems Biomedicine of Cellular Development and Signaling in Health and Disease
Paul Klee Forschungspreis für fibrosierende Erkrankungen (Paul Klee Research Prize for Fibrotic Diseases)
“New concepts and novel non-invasive tools for risk stratification in advanced chronic liver disease (ACLD)”

Dr. med. Elise Vuille-Lessard

Systems Biomedicine of Cellular Development and Signaling in Health and Disease
Kommission des Naturhistorischen Museums der Burgergemeinde Bern (Commission of the Natural History Museum of the Community Bern)
“Aliment Studie”

Prof. Dr. Stephanie Galal-Vonarburg

Systems Biomedicine of Cellular Development and Signaling in Health and Disease
Swiss National Science Foundation
“The impact of maternal microbiota and breast milk on host epigenetics and immune repertoire in the offspring”

Prof. Dr. Stephanie Galal-Vonarburg,

Dr. Hai Li, Dr. Julien Limenitakis
Systems Biomedicine of Cellular Development and Signaling in Health and Disease
Pfizer Research Prize 2022
“Bakterien-Besiedelung im Darm beeinflusst B-Zellentwicklung” (Bacterial colonization in the intestine influences B cell development)

Prof. Dr. Andrew Macpherson

Systems Biomedicine of Cellular Development and Signaling in Health and Disease
Swiss National Science Foundation Project Grant
“Development of functional secretory IgA responses against the intestinal microbiota”

Prof. Dr. Andrew Macpherson

Co-PIs: Dr. Uwe Sauer (ETHZ), Dr. Randall Platt (ETHZ), Dr. Jörg Stelling (ETHZ)
Systems Biomedicine of Cellular Development and Signaling in Health and Disease
Swiss National Science Foundation Sinergia Grant
“Dynamic consortium interactions that establish the microbiota during weaning”

Prof. Dr. Andrew Macpherson

Co-PI: Dr. Randall Platt (ETHZ)
Systems Biomedicine of Cellular Development and Signaling in Health and Disease
Swiss National Science Foundation Bridge Grant
“Engineering safety of live microbials for human health”

Prof. Dr. Andrew Macpherson

Co-PI: Prof. Dr. Volker Heussler
Systems Biomedicine of Cellular Development and Signaling in Health and Disease
Multidisciplinary Center for Infectious Diseases (MCID) Research Funding
“Interplay of infections and the microbiota on outcomes for host health”

Dr. re. nat. Jakob Zimmermann

Systems Biomedicine of Cellular Development and Signaling in Health and Disease
Novartis Foundation
“Female reproductive health through the lens of vaginal microbiota-immune cell crosstalk”

Dr. re. nat. Jakob Zimmermann

Systems Biomedicine of Cellular Development and Signaling in Health and Disease
AAI Bright Spark Award (DE)

Prof. Dr. Benjamin Misselwitz, Dr. Bahtiyar Yilmaz

Systems Biomedicine of Cellular Development and Signaling in Health and Disease
Bristol Meyers Squibb Grant
“Microbiota signatures predicting clinical response to ozanimod in patients with ulcerative colitis”

Dr. Bahtiyar Yilmaz

Systems Biomedicine of Cellular Development and Signaling in Health and Disease
SAMW Young Talents in Clinical Research Grant (Swiss Academies of Arts and Sciences)
“Impact of a low carbohydrate diet on the small intestinal microbiota”

Dr. Bahtiyar Yilmaz

Systems Biomedicine of Cellular Development and Signaling in Health and Disease
Bern Center for Precision Medicine (BCPM)
“Targeting D-lactate producing gut microbial strains in pediatric IBD patients”

Dr. Bahtiyar Yilmaz

Co-PI: PD Dr. sc. nat. Pascal Juillerat
Systems Biomedicine of Cellular Development and Signaling in Health and Disease
IBDNet
“Precise tracking of bacterial strains replacement in Crohn’s disease patients after fecal microbiota transplantation from healthy household members”

Dr. Bahtiyar Yilmaz

Systems Biomedicine of Cellular Development and Signaling in Health and Disease
European Crohn’s and Colitis Organization
“Looking for a needle in a haystack: Identification of the gut microbial strains contributing to chronic inflammation in human and mice”

Dr. Bahtiyar Yilmaz

Systems Biomedicine of Cellular Development and Signaling in Health and Disease
Swiss National Foundation Starting Grant
“Coordination of Host-Microbe Interactions by crosstalk with anti-Gal antibodies in inflammatory bowel diseases”

Prof. Dr. Volker Enzmann

Co-PI: Prof. Dr. Pascal Escher
Regenerative Neuroscience
Hans-Goldmann-Stiftung (Foundation)
“Establishing cone- and rod-containing macula-like human retinal organoid system for comparative pathology modelling and functional evaluation.”

Prof. Dr. Volker Enzmann

Regenerative Neuroscience
Hanela-Stiftung (Foundation)

“Investigating retinal degeneration in vitro by using human organoids”

Dr. med. Sophia Charlotte Morandi

Regenerative Neuroscience
SAMS and G. & J. Bangerter-Rhyner Foundation
“The Ocular Surface Microbiome in Health and Disease”

Dr. Giulia Venturini, Dr. Despina Kokona, PhD, Dr. Beatrice Lisa Steiner

Regenerative Neuroscience
SWISS ophtAWARD
“In vivo analysis of onset and progression of retinal degeneration in the Nr2e3rd7 mouse model of enhanced S-cone sensitivity syndrome”

Dr. Beatrice Lisa Steiner

Regenerative Neuroscience
RetiAward
“Lipid metabolism in murine photoreceptors”

Dr. Charlotte Ng

Oncogenomics
Bern Center for Precision Medicine
“Towards translating hepatocellular carcinoma cellular interactions into biomarkers”

Dr. Charlotte Ng

Oncogenomics
2022 Hepatology Prize
Swiss Society of Gastroenterology

Prof. em. Matthias Hediger

Co-PI: Prof. Dr. Martin Lochner
Translational Hormone Research
Swiss National Science Foundation
“Modulation of calcium influx by Orai channel isoforms and pharmaceutical interventions.”

Prof. em. Matthias Hediger

Co-PI: Prof. Dr. phil. nat. Inti Zlobe
Translational Hormone Research
Swiss Cancer League Grant
“The role of nutrient transporters in the development of anticancer drug resistance.”

Prof. Dr. Amit V. Pandey

Translational Hormone Research
Cancer Research Switzerland Grant
“Inhibitors of androgen biosynthesis for the treatment of castration-resistant prostate cancer”

Prof. Dr. Amit V. Pandey

Translational Hormone Research
Swiss National Science Foundation
“Metabolic regulation by conformational changes in an electron transport protein”

Prof. Dr. Amit V. Pandey

Translational Hormone Research
Berne University Research Foundation
“Metabolic regulation by P450 oxidoreductase”

Prof. Dr. Med. Christa E. Flück

Translational Hormone Research
Swiss National Science Foundation

“Finding early biomarkers of premature adrenarche to prevent long-term consequences – AdmiR3”

Dr. Therina du Toit

Translational Hormone Research
University of Bern Initiator Grant 2022
“Exploring novel hepatic hydroxylation pathways in neonatal health and disease”

Maria Natalia Rojas Velazquez

Translational Hormone Research
Swiss Government Excellence Scholarship
“Role of human cytochrome P450 oxidoreductase mutations in metabolic disorders”

Maria Natalia Rojas Velazquez

Translational Hormone Research
Best oral presentation
Swiss Society for Endocrinology and Diabetology Annual Meeting, Bern (CH)
“Loss of protein stability and function caused by a single point mutation (P228L) in the Cytochrome P450 Oxidoreductase.”

Maria Natalia Rojas Velazquez

Translational Hormone Research
American Society for Pharmacology and Experimental Therapeutics, Young Scientist Travel Award for EB2022 meeting in Philadelphia, USA

Maria Natalia Rojas Velazquez

Translational Hormone Research
Young Scientist Travel Award
European Society for Pediatric Endocrinology, Annual Meeting, Rome, Italy

Maria Natalia Rojas Velazquez

Translational Hormone Research
Young scientist award – 2nd place
23rd International Conference on Cytochrome P450, Washington DC, USA.
“Loss of protein stability and function caused by a single point mutation (P228L) in the Cytochrome P450 Oxidoreductase.”

Idoia Martinez de La Piscina

Translational Hormone Research
Best poster award
European Society for Pediatric Endocrinology, Annual Meeting, Rome, Italy
“SF1next study: spectrum of SF-1/NR5A1 gene variants in this large international cohort.”

Jibira Yakubu

Translational Hormone Research
Swiss Government Excellence Scholarship
“Novel Chemical leads for the treatment of castration-resistant prostate cancer.”

Katyayani Sharma

Translational Hormone Research
Young Scientist Travel Award for EB2022 meeting in Philadelphia, USA
American Society for Biochemistry and Molecular Biology (ASBMB)
Katyayani Sharma
Translational Hormone Research
Young Scientist Travel Award

European Society for Pediatric Endocrinology, Annual Meeting, Rome, Italy

Prof. Dr. Bruno Vogt

Translational Hormone Research
Fonds pour la Recherche Thérapeutique
“Role of ZIP8 in blood pressure regulation”

Prof. Dr. Bruno Vogt (co-PI)

PI: Prof. Dr. Dominik Meinel (FHNW, Olten)
Translational Hormone Research
Innosuisse
“Point-of-case, rapid screening test for Primary Aldosteronism”

Prof. Dr. Bruno Vogt

Co-PI: Dr. Daniel Pouly
Translational Hormone Research
Cystinosis Research Foundation
“Early events of cystinosis pathogenesis: pro-apoptotic signals and mRNA translation

PD Dr. Matthias Moor

Co-PI: Dr. Hannes Olauson (Karolinska Institute, SE)
Nephrology
Karolinska Institute Research Foundation
“FGF23-driven cell signalling in humans with chronic kidney disease”

PD Dr. Matthias Moor

Nephrology
Swiss National Science Foundation
“Aberrant FGF23-driven renal cell signalling with chronic kidney disease”

Dr. sc. nat. Clarissa Voegel (co-PI)

PI: Dr. Julijana Ivanisevic (UNIL)
Co-PI: Pedro Manuel Marques-Vidal (UNIL)
Translational Hormone Research
Swiss National Science Foundation
“Metabolic view on sex hormonal status health risk: A longitudinal lipidome-wide association study”

Dr. Therina du Toit

Experimental Nephrology
UniBE Initiator Grant
“Exploring novel hepatic hydroxylation pathways in neonatal health and disease”

Prof. Dr. Daniel G. Fuster

Co-PI: PD. Dr. Rémy Bruggmann
Experimental Nephrology
CAIM Research Project Fund (UniBE)
“Machine learning models in the prediction of kidney stone recurrence”

Prof. Dr. Daniel G. Fuster

Experimental Nephrology
CSL Vifor
“Deciphering the role of NHA2 in ADPKD”

Prof. Dr. med. Christa Emma Flück (co-PI)

PI: Prof. Dr. Jarmo Jääskeläinen (Kuopio University Hospital, FIN)
Translational Hormone Research
European Society for Paediatric Endocrinology (ESPE) Research Unit Grant
“Unraveling the mystery of adrenarche: Comprehensive metabolome profiling of the event and its association with growth and puberty”

Prof. Dr. Geneviève Escher

Translational Hormone Research
Swiss National Science Foundation
"Role of vitamin D and vitamin D metabolizing enzymes in the prevention of atherosclerosis"

Prof. Dr. med. et MME Uyen Huynh-Do

Experimental Nephrology
Swiss National Science Foundation
"NCCR Kidney.CH"

Prof. Dr. med. et MME Uyen Huynh-Do

Experimental Nephrology
CSL RAI (Research Acceleration Initiative)
"Fetuin A, a potential therapeutic modality in ischemia-reperfusion injury"

Dr. Emilie Seydoux

Lung Precision Medicine
Multidisciplinary Center for Infectious Diseases,
University of Bern
"Boosting influenza-specific adaptive responses using an adjuvant composed of bacterial lysates"

Prof. Dr. Matthias Kopp

Lung Precision Medicine
Strategische Förderung (SF) Board
"Early Life Intervention in Pediatrics Supported by E-health (ELIPSE): Preventing Obesity and Chronic Wheeze Using Digital Tools"

PD Dr. Amiq Gazdhar

Lung Precision Medicine
Industry supported research collaboration
Johnson and Johnson
"Electrospray for Lung cancer"

Dr. Tiziana Cremona

Co-PI: PD Dr. Amiq Gazdhar
Lung Precision Medicine
Lungenliga Bern (Berne Lung League)
"Long term effect of gene editing on lung function in AAT deficient Mice"

Dr. Tiziana Cremona

Lung Precision Medicine
Alpha 1 antitrypsin foundation award
"Beneficial long term effect of gene editing on lung function in AAT deficient Mice"

Burak Ozan

Lung Precision Medicine
Best Abstract
Swiss society of Pneumology Annual Meeting,
Luzern
"Lung organoids for disease modelling"

PD Dr. Kerstin Klein

Co-PI: PD Dr. Rémy Bruggmann
Lung Precision Medicine
UniBE ID Grant
"Molecular characterisation of patients with primary Sjögren's Syndrome"

PD Dr. Kerstin Klein

Lung Precision Medicine
Burgergemeinde Bern
"Sjögren Syndrome – Identifizierung von Biomarkern"

Prof. Dr. med. Britta Maurer

Lung Precision Medicine
Co-PI: PD Dr. Rémy Bruggmann (Unibe), Janine Gote-Schniering (Maurer), Marco Kreutzer (Bruggmann)
UniBE ID Grants 22
"Precision diagnosis and prediction of progressive fibrosing interstitial lung diseases using an artificial intelligence-based multi-omics approach"

Prof. Dr. med. Britta Maurer

Lung Precision Medicine
Novartis Foundation for Medical-Biological Research, Basel (#22B118)
"Local tissue priming through complement-mediated fibroblast activation as novel mechanism of progressive fibrosing interstitial lung disease"

Prof. Dr. Matthias Hediger

Translational Hormone Research
Swiss Cancer League
"The role of nutrient transporters in the development of anticancer drug resistance"

Prof. Dr. Gabriela M. Baerlocher

Experimental Hematology
Investigator initiated research Incyte
"Telomere biology in CML"

Dr. sc. ETH Monika Haubitz

Experimental Hematology
Candy Heberlein Award
"Project on Telomere Biology"

Prof. Dr. med. et phil. Lia Bally

Translational Hormone Research
Innosuisse
"Clinical AI Companion for Diabetes Optimization using Digital Data from Continuous Glucose Monitoring."

Prof. Dr. med. et phil. Lia Bally

Co-PI: Prof. Dr. med. Christoph Stettler
Translational Hormone Research
Fondation Johanna Dürmüller-Bol
"Das BRAINFOOD Projekt: Entscheidungen und Hirnaktivitäten rund um Lebensmittel"

Prof. Dr. med. et phil. Lia Bally

Translational Hormone Research
European Foundation for the Study of Diabetes EFSD
"Automated meal assessment to optimise glucose control in type 1 diabetes"

Prof. Dr. med. et phil. Lia Bally

Translational Hormone Research
Novo Nordisk / Novo Swiss ISS
"Towards an eating behavioural phenotype-guided approach for the treatment of obesity"

Prof. Dr. med. et phil. Lia Bally

Translational Hormone Research
Parexel
"Saxenda in weight management (ADDRESS)"

Prof. Dr. med. et phil. Lia Bally

Co-PI: Prof. Dr. med. Daniel Konrad
Translational Hormone Research

Schweizerische Diabetes Stiftung
(Swiss Diabetes Foundation)
"SMASH"

Prof. Dr. med. et phil. Lia Bally

Translational Hormone Research
Scherbarth Stiftung (Foundation)
"Implementing Closed-Loop Glucose Control at the Abdominal Surgery Ward (ABS-Loop)"

Prof. Dr. med. et phil. Lia Bally (Co-PI)

Translational Hormone Research
Strategische Förderung (SF) Board
"Towards reducing infections after health-care-associated interventions (INTRA)"

PD. Dr. med. Amiq Gazdhar

Co-PI: Prof. Dr. David Hradetzky (FHNW, Olten)
Lung Precision Medicine
Industry supported research collaboration
Johnson and Johnson
"Electrospray for Lung cancer"

Dr. Tiziana Cremona

Co-PI: PD. Dr. med. Amiq Gazdhar
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Lung Precision Medicine
Best abstract
Swiss Society of Pneumology Annual Meeting,
Luzern
"Lung organoids for disease modelling"

PD. Dr. Thomas Michael Marti

Oncology – Thoracic Malignancies
Stiftung zur Krebsbekämpfung
(Fight against Cancer Foundation)
"Malignant pleural mesothelioma: spatial RNA expression profile on the single cell level"

PD. Dr. Thomas Michael Marti

Co-PI: PD. Dr. Patrick Dorn
Oncology – Thoracic Malignancies
Swiss National Science Foundation
"Modulate cellular plasticity and lactate metabolism to augment lung cancer therapy"

Prof. Dr. Ren-Wang Peng

Oncology – Thoracic Malignancies
Bern Center for Precision Medicine
"Towards precision medicine for malignant pleural mesothelioma"

Prof. Dr. Ren-Wang Peng

Oncology – Thoracic Malignancies
Novartis Foundation for Medical-Biological Research, Basel
"Unlocking subtype-specific mechanisms to overcome heterogeneity and therapy resistance in KRAS-mutant lung adenocarcinoma"

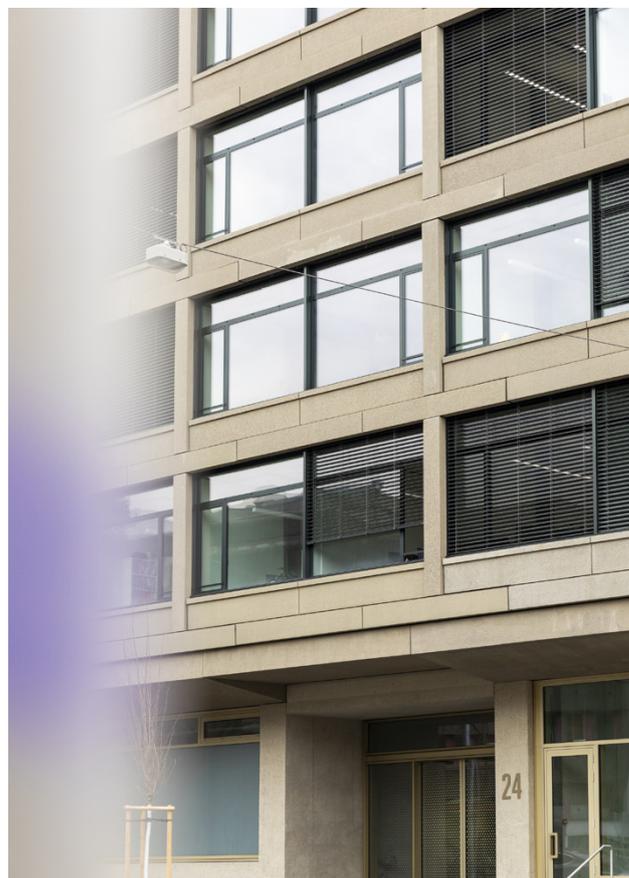
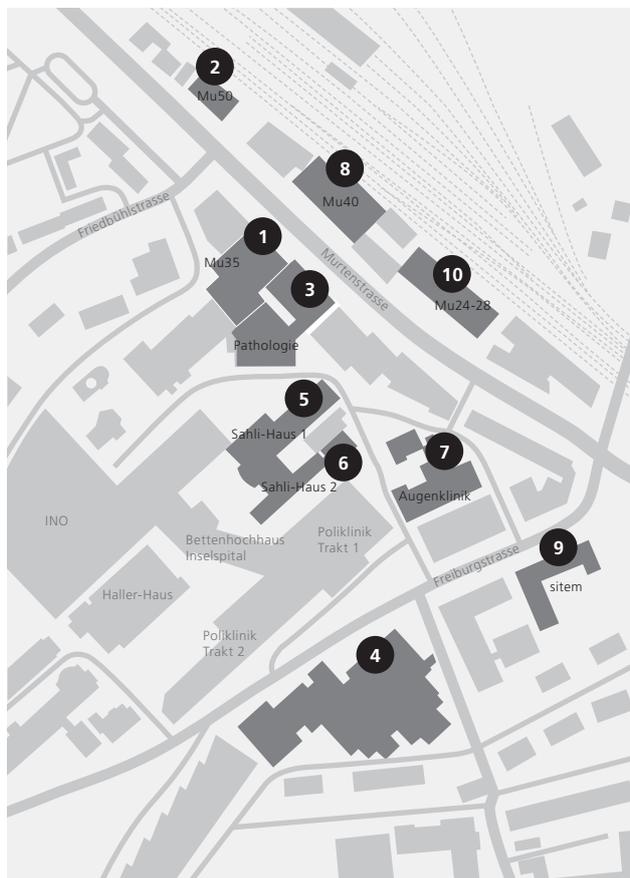
Publications

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- Andina N, de Meuron L, Schnegg-Kaufmann AS, Sarangdhar MA, Ansermet C, Bombaci G, Batta K, Keller N, Porret NA, Angelillo-Scherrer A, Bonadies N, Allam R. Increased Inflammation Activation Is Associated with Aging and Chronic Myelomonocytic Leukemia Disease Severity. *J Immunol.* 2023 Jan 20;220:0412. Epub ahead of print. PMID: [36661356](#).
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(Ophthalmology – Eye Clinic)
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(Institute of Pathology) | 8 Murtenstrasse 40 |
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