Department of Orthopedic Surgery and Traumatology


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PD Dr. Michael Schär


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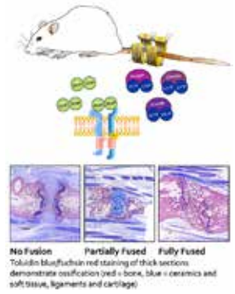
Through a tiered care model, the Department ensures that each patient receives optimal care and has access to the latest developments and methods. The aim of a university clinic is to combine research, teaching, and service. Scientific activity has a high priority and the knowledge gained is implemented in daily clinical practice.

BMP2 analogue L51P could decrease BMP-2 doses in spinal fusion surgery

Through close collaboration between basic research, the team of Prof. Dr. Benjamin Gantenbein, and the clinics, Prof. Dr. Chistoph Albers, we could demonstrate that the cytokine L51P together with low dosages of BMP-2 has the potential to increase ossification in spinal fusion surgery significantly. These show the results of a recent in vivo rat tail study involving X-ray, µCT, and histology.



Toluidin blue/fuchsin red staining of thick sections demonstrate ossification (red = bone, blue = ceramics and soft tissue, ligaments and cartilage)

Gantenbein et al., Acta Biomater. 2024

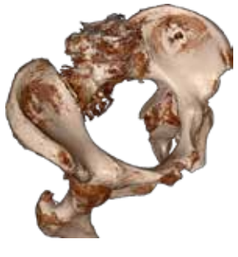
Dynamic biplanar radiographic analysis of shoulder instability

To improve the diagnosis and treatment planning of rotator cuff tears, we have developed deep learning based methods for automatic 3D modelling and analysis of the shoulder joint, including the soft tissues from MRI for the first time. Combined with dynamic biplanar radiography (Dynamic Imaging Center, sitem-insel), our methods are currently being used to study the biomechanical effect of bony lesions and muscle activation on joint stability in patients with anteroinferior shoulder instability within an SNF funded project (grant 10000342).

Oswald et al., Front Bioeng Biotechnol. 2024

Advancing orthogeriatrics with AI-based diagnosis

Traditional acetabular fracture classification systems, such as Letournel's, lack reliability among non-experts and fail to address the growing prevalence of geriatric fractures, including new patterns within this cohort resulting from demographic shifts and low-energy trauma. Within a SNF funded project (grant 10000351), we are developing an automated AI-based system using 3D CT and deep learning to improve classification accuracy, incorporate emerging fracture patterns, and enhance clinical decision-making.



To the project page of the SNSF

Department of Pediatrics


Prof. Matthias Kopp
Director


Prof. Philipp Latzin


Prof. Christa Flück


Prof. Andrea Klein


Prof. Rhoikos Furtwängler


Prof. Christoph Aebi


Prof. Klaus Tenbrock


Prof. Regula Everts


Prof. Thomas Riedel


Prof. André Kidszun


Prof. Sebastian Grunt


Prof. Amit Pandey


Prof. Michele Bernasconi


Prof. Karen Lidzba

As one of the leading Children's hospitals in Switzerland, the Department not only offers outstanding medical care, but also conducts internationally recognized, cutting-edge research. Research teams from a wide range of disciplines are committed to advancing pediatric medicine.

Development of cognitive and psychosocial functions in patients with pediatric cancer

This longitudinal study presents evidence that around half of pediatric cancer patients show stable or improved cognitive and psychosocial development during the course of cancer recovery, while others experience declines. These results highlight the need for early, personalized monitoring and interventions.

Schuerch et al., Pediatr Res. 2024

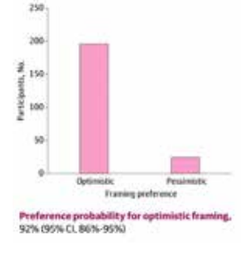
Outcome of synchronous bilateral Wilms Tumour in the SIOP WT 2001 study: report from the SIOP Renal Tumour Study Group

This international multicenter study proved that few neoadjuvant cycle(s) of only Dactinomycin and Vincristine (AV) without cardiotoxic anthracyclines are sufficient to facilitate nephron-sparing surgery and achieve convincing survival rates in most patients. Results further suggest that only 4 weeks of adjuvant AV might be sufficient for bilateral stage I intermediate-risk WT patients in contrast to ≥ 27 treatment weeks.

Sudour-Bonnange et al., Br J Cancer. 2024

Do parents of very preterm infants prefer optimistic or pessimistic message framing when informed of a serious complication?

In this crossover randomized trial, 220 parents of very preterm infants with severe intraventricular hemorrhage watched two video vignettes showing a neonatologist discussing prognosis. The vignettes framed identical outcomes either optimistically (survival and no impairment) or pessimistically (risk of death and impairment). We found that a clear majority of parents preferred the optimistic framing.



Preference probability for optimistic framing, 92% (95% CI, 86%-95%)

Forth et al., JAMA Netw Open. 2024

Department for BioMedical Research

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

DBMR Day of BioMedical Research 2024

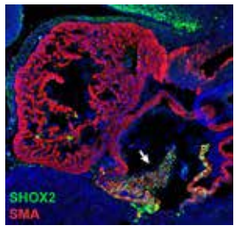
The event was held in July 2024. More than 110 posters were submitted, from which five were selected for the DBMR Poster Prizes, Alumni MedBern Research Prize and Best Cell Stem Poster Prize. Highlights of the event included the lecture of the keynote speaker Prof. Dr. Katerina Politi, Co-Leader, Cancer Signaling Networks, Yale Cancer Center and the announcement of several awards, including the Best DBMR Publication 2023, the Benoît Pochon Prize 2023, the DBMR Prize for Innovative Research Idea 2024, and of Dr. Andrea Felser as the winner of the Johanna Dürmüller-Bol DBMR Research Award 2024 for her project 'The role of mitochondrial energy metabolism in adrenal hyperandrogenism: mechanisms and clinical implications'. Additionally, the DBMR Technician of the Year Award was presented for the first time.

Prof. Mark Rubin and the award winners: (from left to right) Roberta Esposito, Kay-Sara Sauter-Etter, Sara Çaku, Laura Gallucci, Jacopo Soldini, Mark Rubin, Siavash Rahimi, Janine Lux, Anke Augspach, Martina Minoli, Mark Wehrli, Andrea Felser.

To the DBMR website, Day of BioMedical Research

Study funded by SNSF shows how a 'gene desert' regulates embryonic development and cardiac function

A significant study led by Prof. Dr. Marco Osterwalder was published in Nature Communications. In collaboration with Prof. Dr. John Cobb from the University of Calgary in Canada, the Lawrence Berkeley National Laboratory, USA, and other partners, the research team discovered that 'gene desert' adjacent to the Shox2 gene plays an important role in the development of the embryo and the heart in both mice and humans. The study provides further evidence for the significance of gene-free DNA segments in gene regulation and are particularly relevant for the 'mapping' of the human genome.



Mouse embryo heart tissue section. Red -myocardial cells. Green - SHOX2 protein. Blue - embryonic cells' nuclei. © Marco Osterwalder

Abassah-Oppong et al., Nat Commun. 2024

TeX-DisK - Project to develop 3D implants from regenerated silk for intervertebral disc regeneration

Prof. Dr. Benjamin Gantenbein and collaborators have successfully acquired funding for TeX-DisK. This German- Swiss collaboration on tissue engineering of intervertebral disc replacements with silk to address disc-related pain was funded by the SNSF Weave Agency and the German Grant Agency for three years.

Whole scaffold of a fiber-based additive manufactured silk used to mimic an inter-vertebral disc. © Courtesy of Benjamin Gantenbein

To the project page on the SNSF Data Portal

Department of Clinical Research

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Director

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Head CIU

Dr. Kristin Marie Bivens
Head of Education & Head of PPI

Dr. Felix Rintelen
Head of Clinical Study Management

Miriam Wegmann
Head of Data Management

Dr. Martina Zimmermann
Head of Monitoring

Valérie Progin,
Head of Quality Management

Dr. Lukas Bütikofer
Head of Statistics & Methodology

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

Ongoing growth of the Department of Clinical Research

In 2024, the Department of Clinical Research experienced significant growth, welcoming several new members and initiatives. Among these was the Global Health research group, led by PD Dr. med. Kristina Keitel, which focuses on utilizing AI and large data models to improve pediatric healthcare worldwide. Additionally, the department expanded its team with the recruitment of 12 new employees, highlighting the increasing demand for our collaborations and research projects. This growth strengthens our ability to advance clinical research and foster innovation.

Part of the DCR team attending a team event in 2024

Day and Week of Clinical Research 2024 – D/WoCR 2024

The second annual DCR Day and Week of Clinical Research, a flagship event for clinical research in the Bern region hosted by Prof. Dr. med. Eva Segelov, showcased academic achievements, featuring keynote lectures by Prof. Dr. Asma Khalil on „Controversies Related to Preterm Birth in Twins" and Prof. Dr. Vincenzo Mazzaferro on „Research Progress in Liver Transplantation." Highlights included a Junior Research Showcase, a poster walk, and interactive discussions with international experts. Prof. Dr. Khalil also shared her experiences and career as a successful academic while addressing the challenges of gender equality and work-life balance in a Breakfast Talk. The event concluded with a panel discussion moderated by Prof. Dr. Urs Fischer on optimizing the use of patient data in clinical research.

D/WoCR 2024: Prof. D. Surbek & Prof. E. Segelov (Organising Committee) &
Prof. A. Khalil, Prof. L. Raio and Prof. V. Mazzaferro (Keynote speaker)

Extended range of educational courses

DCR currently offers an array of courses, including swissethics-recognized Good Clinical Practice and REDCap Database courses, as well as courses designed specifically for clinicians: Medical Grant Writing for Clinicians, Fundamental Statistics for Clinicians (new in 2025), Advanced Statistics for Clinicians (new in 2025), Patient and Public Involvement for Clinicians (new in 2025), Models of Contemporary Excellence in Clinical Research (new in 2025) and Clinical Trials in Action for Clinicians (new in 2025). Our courses align with the Swiss Clinical Research Core Competencies. This expansion provides even more opportunities for clinicians and clinical researchers to enhance their knowledge and skills.

Impression of a 2024 grant writing course at the sitem-insel building