Department of Angiology

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Profile

- Teaching programs, student lectures and courses (clinical skills), weekly internal & DHGE lectures
- Research projects comprise analysis, classification and computational hemodynamic modeling of congenital vascular malformations, risk factor analysis and risk factor modulating therapies in peripheral artery disease, basic atherosclerosis research, integration of omics technologies in research of vascular malformations and atherosclerosis, drug therapy and endovascular management of venous thromboembolism
- External Partners: Switzerland: Departments of Angiology from University Hospital Basel & University Hospital Zürich; Luzerner Kantonsspital; Clinics of Vascular Surgery, Kantonsspital St.Gallen; Germany: Institute for Cardiovascular Prevention, University Hospital LMU Munich; Westdeutsches Morbus Osler Zentrum, University Hospital Essen; Clinic for Vascular and Endovascular Surgery, TUM Munich; Center of Cardiology & Angiology, University Medical Center Mainz; USA: Heart and Vascular Center, University Hospital Denver, Colorado; Italy: Department of Pharmacological and Biomolecular Sciences, University of Milan; United Kingdom: Cardiovascular Strategic Research Initiative Institution, University of Cambridge; Canada: Department of Human Genetics, McGill University, Montreal; Belgium: De Duve Institute, University of Louvain, Brussels

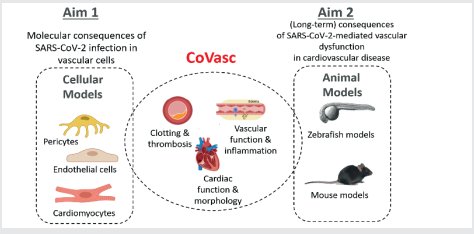
Grants

- SNSF IICT Project "Immediate revascularization versus standard of care alone in patients with diabetic foot ulcer and non-critical peripheral artery disease: a randomized controlled trial", Prof. I. Baumgartner, PD. Dr. M. Schindewolf, Prof. C. Stettler, Dr. A. Haine, PD. Dr. V. Makaloski, Prof. F. Krause, Prof. D. Staub, Prof. F. Dick, Dr. U. Benecke, Dr. T. Bieri, Prof. T. Zeller, Prof. D. Scheinert, PD. Dr. S. Trelle, Prof. C. Espinola-Klein, Prof. J. Donzé, Dr. A. Czock
- SNSF SINERGIA Project "Disease-targeted next-generation sequencing panel (VASCSequ) for detection of somatic-mosaic mutations in congenital vascular malformations to enable further advances in personalized therapeutic decision making", Prof. I. Baumgartner, Prof. J. Rössler, Prof. H. von Tengg-Kobligk, Prof. M. Vikkula, PD. Dr. U. Amstutz
- SNSF NRP 78 Project "Unravelling consequences of SARS-CoV-2 mediated inflammatory immune responses in heart and vasculature", Prof. Y. Döring, Prof. B. Engelhardt, Prof. N. Mercader Huber, Prof. R. Rieben
- SNSF Project Grant „Molecular mechanism and translational relevance of the atypical chemokine receptor ACKR3 in atherosclerosis", Prof. Y. Döring
- Boston Scientific International "Criteria to predict mid-term outcome after stenting of chronic iliac vein obstruction", Dr. U. Hügel

Highlights

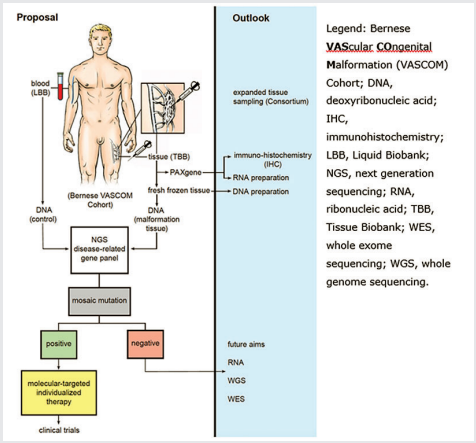
SNSF NRP 78: Unravelling consequences of SARS-CoV-2 mediated inflammatory immune responses in heart and vasculature (Acronym: CoVasc)

COVID-19 is a global public health challenge, with rapid spread, high reproductive rates, and until now a lack of specific treatment. Severe cases are significantly affected by cardiovascular disease (CVD) and kidney failure as well as symptoms of the central nervous system. Underlying mechanisms of non-pulmonary tissue



CoVasc aims at discovering entirely novel avenues for therapeutic Interventions in COVID-19 by targeting the vasculature

damage in COVID-19 and associated coagulopathies are poorly understood. Within CoVasc we combine our complementary expertise in cardiovascular biology to study if disease progression is dependent on the cell type infected. Analysis of in vitro and animal models will allow us to study acute but also long-term outcome of infection, which is currently completely unknown.

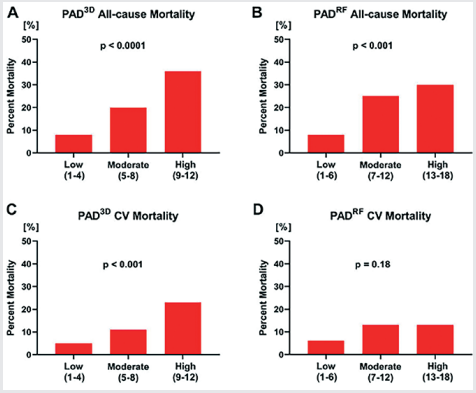


SNSF SINERGIA: Disease-targeted NGS for detection of mutations in congenital vascular malformations to enable personalized therapeutic approaches

We want to establish a customized disease-targeted gene-sequencing panel ("VASCSeq") to identify (known) malformation genes, which may allow for drug repurposing and want to consolidate an interdisciplinary collaboration network of vascular physicians, pediatricians, radiologists and geneticists to enable project harmonization between Bern and Brussels. Further, we aim at developing new standardized imaging to support a truly multiscale trial design.

Development of a 3-Dimensional Prognostic Score for Patients With Symptomatic Peripheral Artery Disease: PAD3D Score

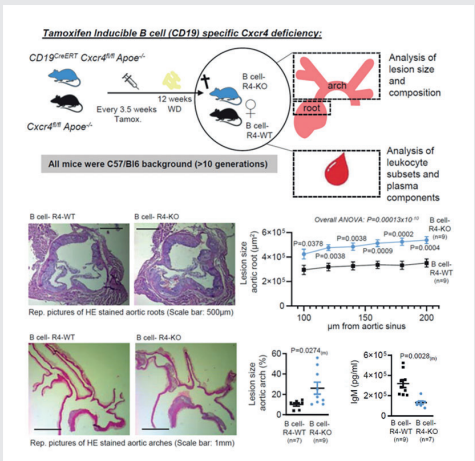
Peripheral artery disease (PAD) is a high-risk condition for cardiovascular (CV) events, but no specific prognosis assessment tool exists. We developed an individual risk score (PAD3D) based on the combined predictive value for mortality, including (1) age, (2) severity of PAD, and (3) extent of atherosclerosis. Addition of the classical risk factors to PAD3D did not further improve the prognostic value. We developed a score for precise prediction of all-cause and CV mortality. The PAD3D score promises to allow for personalized goals in risk intervention. Dopheide et al., Angiology 2020.



Peripheral arterial disease (PAD)3D score as prognostic predictor. Event rate of (A) all-cause mortality, (B) cardiovascular mortality for the PAD-3D score, as well as for the PAD-RF score (C, D) in the validation cohort

B-Cell Specific CXCR4 Protects Against Atherosclerosis Development and Increases Plasma IgM Levels

Over the last years, studies focusing on the role of B-cells in atherosclerosis have revealed that this cell subset can have both pro- as well as anti-atherosclerotic properties depending on the specific subset and method of targeting. Here we revealed that B cell specific CXCR4 deficiency specifically decreases B1 cell and thereby plasma IgM titers. Overall, these results suggest that the atherosclerotic effects observed upon B-cell CXCR4 deficiency are primarily caused by a B-cell-mediated decrease in IgM levels. Döring et al. Circulation Research, 2020.



Aortic roots and arches with main branch points were quantified for the extend of atherosclerotic lesions and plasma IgM levels were determined