

# DBMR Research Conference

Langhans Hörsaal Pathologie  
Murtenstrasse 31, 3008 Bern

Date September 3, 2018, 5 pm – 6 pm

Title **Targeting Cancer Stem Cells**

Speaker Prof. Dr. Joerg Huelsken  
Swiss Institute for Experimental Cancer Research, EPFL Lausanne

## Biosketch

Joerg Huelsken is Associate Professor at the EPF Lausanne since 2011. He received a Diploma in Biology from Ruhr University Bochum in 1993 and a Ph.D. in Molecular Biology from Humboldt University Berlin in 1998 studying the role of Wnt signaling for early embryonic development and lineage commitment in vertebrates. As postdoctoral scientist, he worked on the specification of tissue-specific stem cells at the Max-Delbrück-Center for Molecular Medicine in Berlin until 2002. From 2003-2005 he was principal investigator at the Swiss Institute for Experimental Cancer Research (ISREC) in Epalinges, Switzerland and joined EPFL in 2005. His EPFL group "Tumor Heterogeneity and Stemness in Cancer" has internationally recognized expertise in cancer stem cells, tumor-stroma interactions and metastasis.

## Abstract

Many tissues in the adult organism sustain homeostasis via hierarchical organization with stem cells at the apex. The pathways which control stem cell maintenance and self-renewal are frequently mutated in cancer. Most carcinomas contain a subpopulation of tumor cells which maintain stem cell properties, resist standard therapies and can initiate relapse or metastasis. These cells have been termed cancer stem cells (CSC) and depletion of this population is expected to have profound therapeutic implications. Our main goal is to identify ways to target CSC using pre-clinical cancer models (GEMM and PDX). We have followed two approaches: characterizing regulatory signals which trigger stem cell differentiation or directly targeting CSCs using engineered T cells. In colon cancer, we identified a particular Hox gene as a major driver of terminal differentiation inducing loss of the cancer stem cell phenotype and preventing tumor progression and metastasis. Importantly, this Hox-mediated tumor differentiation can be achieved by pharmacological therapy and represents a tangible means to treat colon cancer. Our recent efforts to use adoptive immunotherapy to target breast cancer stem cells in metastatic disease have provided unexpected insights into the nature of the cancer stem cell phenotype. We identified unexpected functions of CSC in escaping immunoediting, increased therapy-resistance upon T cell attack and their role in the establishment of immune suppression. Using chimeric antigen receptor (CAR) expressing T cells we can overcome these limitations and cure progressive disease in pre-clinical models

Prof. Dr. Joerg Huelsken has been invited by Prof. Dr. Volker Enzmann, Augenheilkunde Research Group, DBMR, University of Bern.

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## October 1, 2018

Next DBMR Research Conference

*"What twin studies can tell us about the beginnings of MS"*  
Prof. Dr. Reinhard Hohlfeld, Institut für Klinische Neuroimmunologie  
Ludwig-Maximilians-Universität München, Deutschland

The DBMR Research Conference takes place from 5 pm – 6 pm and will be followed by an apéro.

*Everybody is welcome!*



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