



University of  
Zurich<sup>UZH</sup>

Institute for Regenerative  
Medicine (IREM)



Colloquium

## Clinical Colloquium Regenerative Medicine

Thursday, 26<sup>th</sup> April 2018 at 1–2pm,  
Institute for Regenerative Medicine (IREM),  
University of Zurich, Wagistrasse 12,  
WAD-904 (Founders Lab), 8952 Schlieren

**Prof. Timm Schroeder**

Department of Biosystems Science and Engineering  
ETH Zurich, Basel, Switzerland

### Long-term single-cell quantification: New tools for old questions

Despite intensive research, surprisingly many long-standing questions in stem cell research remain disputed. One major reason is the fact that we usually analyse only populations of cells - rather than individual cells – and at very few time points of an experiment – rather than continuously. We therefore develop imaging systems and software to image, segment and track cells long-term, and to quantify e.g. divisional history, position, interaction, and protein expression or activity of all individual cells over many generations. Dedicated software, machine learning and computational modelling enable data acquisition, curation and analysis. Custom-made microfluidics devices improve cell observation, dynamic manipulation and molecular analysis. The resulting continuous single-cell data is used for analysing the dynamics, interplay and functions of signalling pathway and transcription factor networks in controlling hematopoietic, pluripotent, skeletal and neural stem cell fate decisions.

**Organiser:** Prof. Dr. Dr. Simon P. Hoerstrup / Prof. Dr. Roger M. Nitsch

**Execution/Chair:** Dr. Steffen M. Zeisberger / Dr. Christian Tackenberg

IREM, University of Zurich

[www.irem.uzh.ch/en/teaching](http://www.irem.uzh.ch/en/teaching)