

## Interdisciplinary Colloquium Regenerative Medicine I

**Tuesday, 31 May 2016 at 12:30 – 1:30 pm**  
**Nord 1, Kurszimmer C301,**  
**University Hospital Zurich**

### **Prof. Sebastian Jessberger**

**Laboratory of Neural Plasticity, Brain Research Institute,  
University of Zurich**

## **Cellular and molecular mechanisms regulating neural stem cell activity**

Neural stem cells (NSCs) generate new neurons in distinct regions of the mammalian brain throughout life. This process, called adult neurogenesis, is critically involved in certain forms of learning and memory. In addition, failing or altered neurogenesis has been associated with a number of neuro-psychiatric diseases such as major depression and epilepsy. However, the molecular and cellular mechanisms underlying life-long neurogenesis remain poorly understood. Here we present novel mechanisms governing the neurogenic process in the adult brain and show that NSCs in vitro and within the developing forebrain generate a diffusion barrier during cell division allowing for the retention of certain aging/senescence factors within the stem cell. Thus, the data presented here describe novel regulators of adult neurogenesis and identify a novel mechanism how age is asymmetrically distributed in the context of somatic stem cell division that may allow for the selective extension of stem cell-based plasticity of the adult mammalian brain.

**Organiser:** Prof. Dr. Dr. Simon P. Hoerstrup

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

ReMedi & Wyss Zurich, Univ. Hospital Zurich & Univ. of Zurich