

COLLOQUIUM

Thursday, November 12th, 14:00
Seminar room Neurobiology, ND 6/56

Charting Neuronal Networks in Intact, Cleared Mouse Brain by Light Sheet Microscopy

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Cellular resolution three-dimensional (3D) analysis of defined, fluorescently labeled long-range neuronal networks in the uncut adult mouse brain has been elusive. I will report on a virus-based strategy that allows fluorescent labeling of monosynaptically connected neuronal populations in the intact mouse brain. Development of improved tissue clearing combined with improved light-sheet fluorescence microscopy permits imaging of the resulting neuronal circuits in a single whole-brain scan at subcellular resolution. As a prove of concept I will present a detailed 3D reconstruction of the monosynaptic projections onto a target cell population in the entorhinal cortex showing that our methodology permits the quantification of whole-brain connectivity patterns at the cellular level. Finally I will present the first 3D representation and quantification of functional connections from transplanted human neuronal stem cells into mouse brain and discuss implications for stem cell therapy.

Host: Patrik Krieger (*Systems Neuroscience, Medical Faculty, RUB*)

