BIOENGINEERING SEMINAR

“Microfluidics Neuro-Engineering for Neurological Disorder In Vitro Models“

Monday, January 22, 2018, 16h00
EPFL – room SV1717

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host: Prof. Philippe Renaud

Abstract

Developing minimalistic biological neural networks and observing their functional activity is crucial to decipher the information processing in the brain. Microfluidic systems have been used to develop in vitro microenvironments that mimic part of the complexity when studying in vivo neurological disorders. In this presentation I will highlight our approach to use microfluidic systems to bridge the gap between molecular and network analysis of neural circuits. Using 3D printing technologies and microfluidic neuro-engineering design rules, I will present the translational process to create neural networks of high complexity using computer aided design, to fabricate and then to observe physiologically relevant in vitro neural networks. Combined with proper readout of the network functionality using an electro-optical transducer, such minimalistic environments can provide on-demand neural networks and neurological disorder models for massive drug screening.

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