



Life Sciences Seminar

Optogenetic fUSI for brain-wide mapping of neural activity mediating collicular-dependent behaviors

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Host: Maximilian Jösch

Neuronal cell-types are arranged in brain-wide circuits that guide behavior. However, current approaches have fostered a reductionist conceptualization identifying specific mono- or di-synaptic circuits as necessary and sufficient for a behavior. This can promote observational biases and hinder the discovery of potentially critical unobserved cell-populations, pathways and the interactions between them. To avoid this, during my PhD, I combined functional ultrasound imaging (fUSI) with optogenetics to reveal the brain-wide networks activated by specific genetically defined cell-types. I used this framework to investigate 4 distinct cell-types in the mouse superior colliculus, a midbrain area that mediates innate orienting and defensive behaviors. This approach allowed me to identify new brain areas involved in colliculus-driven behaviors and demonstrate that each cell-type mediates behavior via a broad yet distinct downstream network of brain regions. related publication: Sans-Dublanc A, Chrzanowska A, Reinhard K, Lemmon D, Nuttin B, Lambert T, Montaldo G, Urban A, Farrow K. Optogenetic fUSI for brain-wide mapping of neural activity mediating collicular-dependent behaviors. *Neuron*. 2021 Jun 2;109(11):1888-1905.e10. doi: 10.1016/j.neuron.2021.04.008. Epub 2021 Apr 29. PMID: 33930307.

Wednesday, August 25, 2021 11:00am - 12:00pm

Heinzel Seminar Room / Office Bldg West (I21.EG.101)



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