Seminar/Talk

Evolution of the cerebral cortex at a single-cell resolution

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The stunning complexity of the brain, with its myriad of cell types and circuits, is nothing but the result of the evolutionary process. Studying brain evolution can thus provide general insights on brain organization and function.The cerebral cortex underwent a dramatic expansion and diversification in vertebrate evolution. With its six layers, the neocortex is a mammalian novelty that supports higher cognitive functions. By contrast, the cortex of reptiles has an ancestral three-layered organization. Do these anatomical differences obscure deeper similarities, visible only at cellular and molecular levels? To address this, we profiled cell types in the reptilian cortex with large-scale single-cell mRNA sequencing. In this presentation, I will illustrate how the quantitative comparison of single-cell transcriptomes across species elucidates the evolution of neocortex, hippocampus and amygdala, brain regions involved in learning and memory, spatial navigation and fear. This analysis leads to new hypotheses on the evolution of cortical development and function, which will be tested in the future with single-cell profiling and genome editing tools.

Tuesday, February 27, 2018 10:00am - 11:00am
Big Seminar room Ground floor / Office Bldg West (I21.EG.101)

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