BDR SEMINAR via Zoom

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Tuesday, August 17, 2021

16:00-17:00

Meeting URL will be announced on the event day by e-mail.
※This seminar is open only to BDR members.

Examining human brain expansion through the lens of neural organoids

Summary

The human brain sets us apart as a species, with its size being one of its most striking features. Brain size is largely determined during development as vast numbers of neurons and supportive glia are generated. In an effort to better understand the events that determine the human brain's cellular makeup, and therefore its size, we use a human model system in a dish, called cerebral organoids. These 3D tissues are generated from pluripotent stem cells through neural differentiation and a supportive 3D microenvironment to generate organoids with the same tissue architecture as the early human fetal brain. Such organoids are allowing us to tackle questions previously impossible with more traditional approaches. Indeed, our recent findings provide insight into regulation of brain size and neuron number across ape species, identifying key stages of early neural stem cell expansion that set up a larger starting cell number to enable the production of increased numbers of neurons. We are also investigating the role of extrinsic regulators in determining numbers and types of neurons produced in the human cerebral cortex. Overall, our findings are pointing to key, human-specific aspects of brain development and function, that have important implications for neurological disease.

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