



CDB SEMINAR

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The Salk Institute for Biological Studies

Friday, December 4, 2009

16:00~17:00 A7F Seminar Room

Control of frontal cortical size and neuronal number during development

Summary

Increased brain volume, relative to body size, is thought to underlie higher cognitive functions of animals during evolution. Particularly, the cerebral cortex has undergone disproportional expansion in its surface area, as seen the expanded frontal cortex of apes which is believed to contribute to mental and cognitive capacities. But the mechanisms of how the frontal cortical area size is controlled during development are largely unknown.

I recently find that Fgf10, one of fibroblast growth family members, controls frontal cortical size by regulating the transition of cortical progenitor differentiation at the stage from neuroepithelial cells (NE) to radial glia (RG), By delaying this transition, NE cells continue to increase their population by symmetric division rather than producing the RG that generate excitatory neurons. As a consequence of the loss of Fgf10, mutant mice exhibit selective expansion of the frontal cortex. This observation provides a clue for how particular brain regions could be enlarged during evolution, as well as a possible mechanism to transiently increase brain growth that is a characteristic in the onset of autism.

Host:

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