



CDB SEMINAR

Colette Dehay

Stem Cell and Brain Research Institute, France

Saturday, September 19, 2009

14:45~15:30 A7F CDB Seminar Room

Role of G1 phase regulation in mouse and primate corticogenesis

Summary

Two cell-cycle parameters determine neuron number production in the cerebral cortex : the rate of cell-cycle progression and the balance between cell-cycle re-entry and exit. I shall present evidence showing the crucial role of the G1 phase regulation in determining mode of division of cortical precursors of the VZ and SVZ. Our data in primate and mouse converge to prove the importance of the modulation of G1 phase duration in specifying cortical cytoarchitecture and therefore areal identity.

Host:

Yoichi Kosodo
Cell Asymmetry, CDB
kosodo@cdb.riken.jp
Tel:078-306-3216
(ext:1632)

RIKEN CENTER for DEVELOPMENTAL BIOLOGY (CDB)



CDB SEMINAR

Henry Kennedy

Stem Cell and Brain Research Institute, France

Saturday, September 19, 2009

15:30~16:15 A7F CDB Seminar Room

Tribal networks in cerebral cortex

Summary

Surprisingly little is known about the statistics of cortical networks largely due to an absence of investigation of their weighted and spatial properties. Brain-wide retrograde tracing experiments in macaque, generated a consistent database of interareal connections with projection densities, and distance information. This dense network (66%) is neither a sparse small-world graph nor scale-free. Local connectivity accounts for 79% of labeled neurons. Link weights, are highly characteristic across animals, follow a heavy-tailed lognormal distribution over 5 orders of magnitude, and decay exponentially with distance. This distance rule predicts the binary features of the network as well as the global and local communication efficiencies dependent on nested backbones. These findings underline the importance of weight-based hierarchical layering in cortical architecture and processing.

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