Control of Hox gene expression during differentiation of embryonic stem cells to spinal motor neurons.

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Amphithatre Durand, batiment Esclangon, 4 place jussieu, 75005 Pairs

Invitation : I. Caillé (UMR 7102)

Ce séminaire est donné dans le cadre du réseau ENP cellules souches

Combinatorial pattern of Hox gene expression controls subtype identity and connectivity of spinal motor neurons. We employed directed differentiation of embryonic stem cells to spinal motor neurons as a model to study genetic and epigenetic mechanisms controlling specification of motor neuron subtype identity. We show that the initial pattern of Hox gene expression is established in early neuroepithelial progenitor cells in response to relevant rostro-caudal patterning signals. Contrary to the anticipated progressive and directional changes in histone modification patterns within Hox chromatin, we observed rapid and synchronous formation of discreet chromatin domains. This finding is inconsistent with the proposed role of histone modifications in the control of temporally progressive and collinear pattern of Hox gene expression. Instead we propose that rapid changes in histone modification patterns are important for the consolidation and maintenance of patterned Hox gene expression (so called “epigenetic memory”) during embryonic development.