

# LES CONFÉRENCES DE L'ICM



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## Hosted by Claire WYART

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*Kate E. LEWIS - November 21, 2011 at 11:00*

## Interneuron specification in the vertebrate spinal cord

Interneurons constitute most of the neurons in the vertebrate CNS and they function in almost all neuronal circuits and behaviors. However, we still know very little about how specific interneurons with particular physiological and functional characteristics develop and form functional neuronal circuitry. All the evidence so far suggests that the properties of distinct interneurons are determined by the transcription factors that the cells express as they become post-mitotic and start differentiating. However, we still do not know how many interneuron properties are specified and we do not know the full complement of transcription factors expressed by any population of spinal interneurons, in any vertebrate.

To address these questions we are using and developing a variety of techniques. For example, we are constructing transgenic zebrafish lines where specific neurons are labeled with fluorescent proteins. This enables us to FAC-sort these cells, expression profile them and identify all of the transcription factors that they express. We can then identify transcription factors that are strong candidates for specifying particular functional characteristics by comparing and contrasting expression profiles of zebrafish interneurons with similar and different properties (e.g. interneurons with inhibitory neurotransmitter phenotypes versus interneurons with excitatory neurotransmitter phenotypes).

To determine the functions of specific transcription factors, we are knocking them down in zebrafish embryos, singly and in combination, using existing mutant lines, morpholinos and dominant-negative constructs and analyzing the effects on neuronal functional characteristics such as neurotransmitter phenotypes (using *in situ* hybridization and immunohistochemistry) and axon morphology (using the transgenic lines mentioned above).

**Lundi 21 novembre 2011 à 11H00 / Auditorium de l'ICM  
Hôpital Pitié-Salpêtrière, 47 boulevard de l'hôpital - 75013 Paris**