



# CDB SEMINAR

## Manuel Irimia

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Monday, November 15, 2010

16:00~17:00 C1F CDB Auditorium

## Stepwise Assembly of a Tissue-specific Network in the Vertebrate Brain

### Summary

Understanding the emergence of complex biological functions requires characterizing the assembly of the molecular networks underlying these functions. *Nova* is a splicing factor specifically expressed in vertebrate brains, where it regulates a variety of genes involved in synapse function and axon guidance. By binding to position-dependent sequence motifs in pre-mRNAs, *Nova* differentially inhibits or encourages the inclusion of a set of exons in neuron-expressed transcripts with respect to transcripts from the same genes expressed in non-neural tissues. We sought to investigate the origin of the vertebrate *Nova* network by studying, in key invertebrate species: (i) conservation of the molecular mechanism of *Nova* splicing regulation, (ii) conservation of central nervous system-specific developmental expression, and (iii) presence of exons and signals targeted by *Nova* in vertebrates. We find that brain-specific *Nova* network is a vertebrate novelty, and reconstruct the step-by-step emergence of this network. In addition, we find widely varied *Nova* expression patterns across metazoans, and particularly different tissue-specific expression in multiple lineages, suggesting parallel assembly and elaboration of *Nova*-regulated networks in diverse metazoans.

### Host:

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