Seminar/Talk

RNA structure-mediated RNP assembly for neuronal mRNA localisation

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Host: Mario De Bono

I will discuss the molecular elements that control the assembly and function of RNPs in development and disease. In particularly, I will present our new findings into the role of RNA structure in RNP assembly. We focused on Staufen proteins, which contain multiple domains that bind to double-stranded RNA regions, formed predominantly through base-pairing complementarity. We determined an atlas of RNA secondary structures that are bound by STAU1 & STAU2 in neurons using hiCLIP (RNA hybrid individual nucleotide resolution crosslinking and immunoprecipitation). We identified hundreds of thousands of stable RNA secondary structures that are enriched in synaptically localised transcripts. Notably, we observed patterns of dense RNA-RNA contacts that reflect the formation of topologically associating domains (RNA-TADs) on long 3UTRs, which are regulated throughout development and are linked to the binding of sequence-specific RBPs. Our evidence points towards a working model where RNA-structure dependent compaction of long 3UTRs organises multi-protein RNP assembly in Staufen-containing granules to mediate neuronal RNA localisation.

Tuesday, May 5, 2020 02:00pm - 03:00pm
Mondi Seminar Room 2, Central Building

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