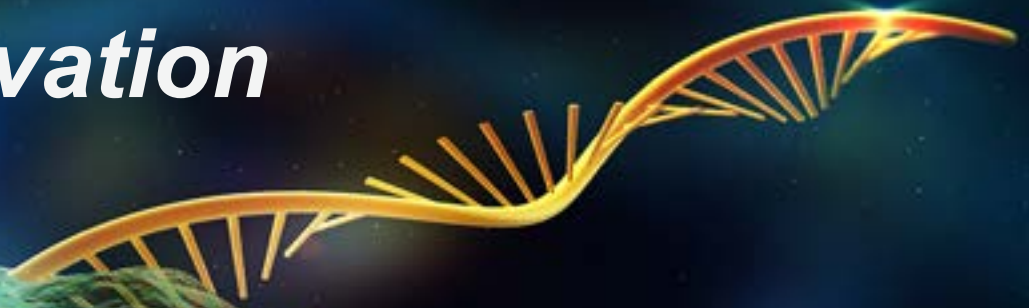


RNA Innovation Seminars

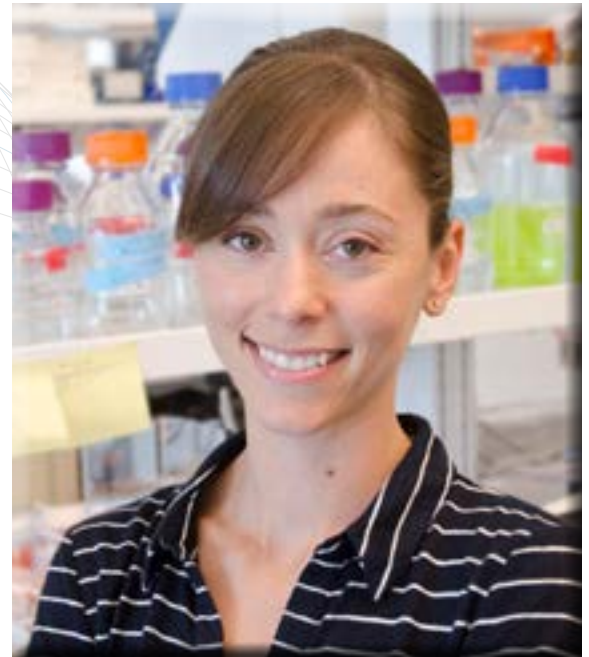


Monday, May 3, 2021 4:00 PM EST
[Zoom Link](#)

Regulating the Regulators: Control of RNA Binding Proteins during Embryogenesis

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Abstract

The maternal-to-zygotic transition (MZT) is a conserved step in animal development, where control is passed from the maternal to the zygotic genome. Although the MZT is typically considered from its impact on the transcriptome, we previously found that three maternally deposited *Drosophila* RNA binding proteins (ME31B, Trailer Hitch [TRAL], and Cup) are also cleared during the MZT by unknown mechanisms. Here, we show that these proteins are degraded by the ubiquitin-proteasome system. Marie Kondo, an E2 conjugating enzyme, and the E3 CTLH ligase are required for the destruction of ME31B, TRAL, and Cup. Structure modeling of the *Drosophila* CTLH complex suggests that substrate recognition is different than orthologous complexes. Despite occurring hours earlier, egg activation mediates clearance of these proteins through the Pan Gu kinase, which stimulates translation of Kondo mRNA. Clearance of the maternal protein dowry thus appears to be a coordinated, but as-yet underappreciated, aspect of the MZT.