PhD DEFENSE

TEMASEK LIFESCIENCES LABORATORY

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11am

Seminar Room 05-41

**Scan for address*

All Are Welcome!

Genetic compensation between ribosomal protein paralogs mediated by a cognate sisRNA in *Drosophila*

Evidence of inter-regulation between paralogs have been emerging in recent years. However, the mechanism of how paralogs communicate to modulate their expression levels is unknown. Here, I show how *Drosophila melanogaster* ribosomal protein (RP) paralogs RpL22 and RpL22-like function extra-ribosomally in this inter-regulation. Both RPs are mutually regulated by the circular stable intronic sequence RNA (sisRNA) *circRpL22* produced from the *RpL22* locus. RpL22 represses the expression of itself and *RpL22-like*. *circRpL22* binds to RpL22 to repress *RpL22-like*, but not *RpL22*, suggesting that the sisRNA modulates the activity of RpL22. RpL22-like controls *circRpL22* activity by binding to it, indirectly modulating RpL22's repressive function to achieve homeostasis. The physiological significance of this *circRpL22*-centric regulatory circuit is seen when the loss of *RpL22-like* expression is genetically compensated by *RpL22* upregulation to ensure robust male germline development in *Drosophila*.