JHU BIOLOGY DEPARMENT SPECIAL SEMINAR Basis of Speed and Fidelity in Eukaryotic Translation

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Host: John Kim

Abstract:

It is unclear how translation termination, which liberates the nascent polypeptide from the ribosome, retains specificity for stop codons without sacrificing speed. Using an in vitro reconstituted yeast translation system and single-molecule assays, we tracked the interplay of eukaryotic release factors (eRF1 and eRF3) with ribosomes halted at stop codons. We found that eRF1 and eRF3 acted together to quickly recognize stop codons and elicit termination via a tightly regulated process that resembles how ribosomes select proper tRNAs in translation elongation. Since the release factors are conserved throughout eukaryotes, we propose that the molecular choreography of yeast termination is a fundamental feature of eukaryotic protein synthesis. In the future, these technologies will be applied to uncover the mechanisms used by ribosomes and specialized factors to distinguish normal from defective mRNAs.

Tuesday, December 6th, 2022 4pm - Mudd 100