LSA CHEMISTRY
UNIVERSITY OF MICHIGAN

Ribosome-Associated Protein Quality Control

Onn Brandman

Assistant Professor of Biochemistry,
Stanford University

Chembio Chemistry Seminar

Thursday, May 4 at 4:00 pm
in 1640 Chemistry

Protein synthesis by the ribosome can fail for numerous reasons including faulty mRNA, insufficient availability of charged tRNAs and genetic errors. Premature arrest of protein synthesis within the open reading frame elicits a protective response that degrades the incomplete nascent chain. In this response, arrested 80S ribosomes are split into their large and small subunits, allowing assembly of the Ribosome Quality control Complex (RQC), which targets nascent chains for degradation. How the cell recognizes arrested nascent chains among the vast pool of actively translating polypeptides is poorly understood. We systematically examined translation arrest and modification of nascent chains in Saccharomyces cerevisiae to characterize the steps that couple arrest to RQC targeting. We propose that cells target arresting ribosomes and that this targeting event is a precondition for the RQC to engage the incomplete nascent chain and facilitate its degradation.