

The colliding ribosome as a hub for translational regulation

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mRNA surveillance pathways in eukaryotes moderate the effects of natural genetic or processing errors in the cell and mRNA-specific damage. We have used genetics, proteomics, biochemistry and ribosome profiling experiments in yeast and mammals to identify and characterize critical factors involved in these processes and the role of the colliding ribosome in signaling translational dysfunction.

Key kinases that directly bind to ribosome collisions to signal downstream responses include GCN2 and the MAP3K ZAK.

Current efforts are focused on biochemical and phosphoproteomic approaches to decipher the signaling networks that allow cells to mount a measured response to environmental insults.