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## *Characterization of the active domains of the mRNA associated CUGBP1*

Jim Watson laid out two major steps for gene expression in his central dogma: genes in DNA are transcribed into an mRNA form and then the mRNA is translated into proteins. The study of gene expression has allowed for detailed understanding of the many chronic and acute diseases that remain prevalent in modern society. Regulation of mRNA formation, or transcription, is the best characterized point of gene regulation with post-translational regulation being less studied. The focus of the lab where I work is regulation of gene expression through mRNA transcript degradation. My studies focus on a protein called CUG-binding protein 1 (CUGBP1) which has been shown to bind to specific sequences in the 3' end of mRNA transcripts and promote degradation. Using a mammalian cell line expressing a luciferase reporter transcript, I tethered domains of the CUGBP1 protein to an RNA-binding protein not involved in mammalian mRNA degradation in order to determine which domain of the CUGBP1 protein caused destabilized the luciferase reporter. Using this reporter system I have been able to affect the stability of the luciferase reporter with CUGBP1, yet the spliced domains show a less prominent effect. Should a single domain be shown through this assay to affect reporter expression, this would only suggest that the domain was acting to elicit mRNA decay. mRNA decay assays would need to be performed to detail the mechanism of this destabilization.



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