Looking for a postdoctoral fellow and a project assistant

Understanding the movement of mRNAs in and out of translation

Our research group started in September 2013 at Department of Biochemistry, IISc. As a group we are excited about understanding the movements of mRNA between different functional states in cytoplasm. Research in our laboratory has been funded by the highly competitive Intermediate Fellowship from The Wellcome Trust/DBT India Alliance.

An mRNA can be a) translated b) degraded or c) stored in a translationally silent state in cytoplasm. We are trying to understand the mechanistic basis of various mRNA fate decisions. Movement of mRNA between these functional states plays an important role in various cellular processes such as Development, Learning, Memory, Ageing and Regeneration. It also plays a crucial role in disease conditions such as Cancer, Neurodegenerative disorders, Duchenne Muscular Dystrophy etc. Specifically deregulated and uncontrolled translation is considered to be a contributing factor to tumorigenesis.

We are interested in studying the regulation of proteins that reduce protein translation known as translation repressors in Saccharomyces cerevisiae. These factors act mostly at the translation initiation step. We are specifically working on translation repressors that contain Arginine-Glycine-Glycine (RGG) motif. We started addressing the role of arginine methylation of RGG-motifs in regulation of repression activity. We have now observed that RGG-motif protein Scd6 gets arginine methylated in Hmt1-dependent manner. Using a combination of genetic, biochemical and imaging approaches we observe that arginine methylation promotes Scd6 repression activity by augmenting its interaction with translation initiation factor eIF4G. These results were published last year as first publication from our group in *Nucleic Acids Research* journal. In this research we have demonstrated for the first time that arginine methylation regulates fundamental cellular process of translation repression. It raises a very exciting possibility that arginine methylation could be a general modulator of global translation since RNA binding proteins constitute the largest group of arginine methylated proteins.

We are currently focusing on looking at the role of arginine methylation in regulating other translation repressors. We are also exploring other modes of regulation of translation repressors. Incoming postdoc/project assistant can work on these exciting aspects or come with a plan to address a question of his/her interest within the purview of lab. You can reach us at rajyaguru@biochem.iisc.ernet.in.

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