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Does sequence specificity of the 5'end of mRNA affect ribosome loading?

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Translation initiation is considered to be the rate limiting step in mRNA translation. Translation initiation begins with the assembly of the preitiation complex of 40S ribosomal subunit and initiation factors at the mRNA 5' cap. The efficiency of ribosome loading may depend on the sequence specificity of the extreme 5' end of the mRNA. A well-studied example of such dependency is the sensitivity of mRNAs containing 5'¬Terminal OligoPyrimidine tracts (5'TOP) to mTOR inhibition. To systematically explore how sequences at mRNA 5' end might affect translation efficiency we designed a library of mRNA molecules containing all possible decamers at mRNA 5' ends. Enrichment of particular decamers found in polysome fractions can be used as an indicator of efficient translation. Such an assay could be used to rank mRNA 5'¬ends in terms of their effect on translation efficiency under various cellular conditions including stress and cancer. Here we will present our progress in achieving this goal.

Biography

Anjali Pai is an Engineer in Biotechnology, India and has completed her Masters in Cancer Biology from University College London. She is currently pursuing her PhD in Cancer Biology under the prestigious PhD Scholars Program in Cancer Biology, UCC, Ireland under the supervision of Dr. Pavel Baranov.

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