



CALIFORNIA SCIENCE & ENGINEERING FAIR 2019 PROJECT SUMMARY

Name(s) Gary Song	Project Number S0521
Project Title Single-Molecule Transcriptome: Wide Dynamics of Translation	
<p style="text-align: center;">Abstract</p> <p>Objectives The goal of this experiment was to conduct a further study into the dynamics of translation using single-molecule FRET techniques. We analyzed mRNA traces to attempt to find a possible correlation with the protein translational efficiency and binding rate of the eIF4E protein.</p> <p>Methods Yeast, Fluorescence dye, RS II, eIF4E protein. Annealed dye onto yeast mRNA then ran traces through the RS II machine.</p> <p>Results Found a 50x differences between the binding rate of difference mRNAs. The graph of our total results was found to be made of many small normal models.</p> <p>Conclusions Our results seem to confirm that there is a possible correlation with translational efficiency. This leads us to believe eIF4E might be the limiting step of Translation, and using this fact will allow us to possible control protein synthesis.</p>	
Summary Statement Finding a correlation between eIF4E binding and protein synthesis by looking at the eIF4E binding rates.	
Help Received I conducted most of expirement. My graduate student(Burak Cetin) helped supervise the procedure to check for any mistakes and taught me how to analyze the data through MATLAB.	