



**CALIFORNIA STATE SCIENCE FAIR  
2005 PROJECT SUMMARY**

<b>Name(s)</b> <b>Dylan K. Lake</b>	<b>Project Number</b> <b>S0415</b>
<b>Project Title</b> <b>Analyzing Interactions between mRNA Splicing and Transcription with Proteins BBP and BUR2 in Saccharomyces cerevisiae</b>	
<b>Abstract</b> <b>Objectives/Goals</b> My goal was to study possible interactions between the proteins BBP, a splicing factor, and BUR2, a transcription factor, in yeast. Finding an interaction would suggest a larger relationship between the execution of transcription and splicing in the cell. <b>Methods/Materials</b> Sporulation of yeast cells was utilized to create cells deleted of both BBP and BUR2 from single mutants of the genes. These double mutants were then transformed with plasmids containing mutant versions of BBP. The growth rates of the mutated strains were compared. <b>Results</b> A particular mutant of BBP with single replacements in the zinc knuckle and in the MUD2/UAF65 binding region had no distinct phenotype by itself but showed a severe growth defect when combined with a deletion of BUR2. <b>Conclusions/Discussion</b> Because the deletion of BUR2 increases the severity of a mutation in BBP, it is likely that the two genes are involved in overlapping processes. This further suggests that the processes of mRNA splicing and transcription are closely linked and supports the theory that they occur simultaneously.	
<b>Summary Statement</b> I manipulated yeast genetics to determine an interaction between the proteins BBP, a splicing factor, and BUR2, a transcription factor, supporting the theory that mRNA splicing and transcription occur simultaneously.	
<b>Help Received</b> Used lab equipment at UCSD under the supervision of Dr. Tracy Johnson, Phd.	