



**CALIFORNIA STATE SCIENCE FAIR  
2007 PROJECT SUMMARY**

<b>Name(s)</b> <b>William C. Martin</b>	<b>Project Number</b> <b>S0414</b>
<b>Project Title</b> <b>The Effects of the 4EBP P-Element in Drosophila melanogaster</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The objective of my project is to examine the effects of the 4EBP P-Element in Drosophila melanogaster. I believe that the P-Element will increase lifespan when expressed and have an affect on the fly's metabolic rate. <b>Methods/Materials</b> I set up two parts to my project, a starvation resistance lifespan, and a series of metabolic readings on flies under dietary restriction. The lifespan involved starving the flies on a diet containing no nutrition, which made stressful living conditions for the flies hoping to induce 4EBP. My metabolic assays involved testing flies with and without the P-Element, and examining their change in protein and triglyceride levels under high and low protein diets by using a microplate reader. <b>Results</b> In the starvation resistance lifespan, I discovered that flies with the P-Element lived longer than flies without it, and that the flies with the P-Element lived longer on low protein. Also, the females lived longer with the 4EBP than males. In my metabolic assays, I discovered that flies with the P-Element had lower levels of protein on both diets, which meant that the P-Element inhibited translation. Also, flies under high yeast diets had lower triglyceride levels than flies under a low yeast diet. <b>Conclusions/Discussion</b> In conclusion, my hypothesis was correct. 4EBP proved to be induced in times of stress and it did increase the lifespans of the flies throughout the experimental process. A very interesting thing that came up was that females were more affected, which could have to do with the inhibition of fertility. Last, I can conclude that the flies with the P-Element had lower protein levels than flies without the P-Element under both a low yeast and high yeast, which means that 4EBP does indeed inhibit translation.	
<b>Summary Statement</b> My project is about discovering a method for increasing human lifespan by experimenting with Drosophila melanogaster and the effects the 4EBP P-Element has on it.	
<b>Help Received</b> Used lab equipment at the California Institute of Technology under the supervision of graduate student Brian Zid.	