



**CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY**

Name(s) Katie E. Weaver	Project Number J2222
Project Title The Effects of Carbohydrates on Lifespan	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals Dietary restriction has been shown to extend lifespan and reduce age related diseases. However, new research suggests that dietary composition may also effect lifespan. Specifically, one candidate for this phenomenon may be dietary carbohydrate, as insulin and insulin-like growth factor are linked to age-related diseases. Therefore, we tested whether dietary carbohydrate would influence lifespan in Drosophila, an organism with a carbohydrate metabolism similar to ours.</p> <p>Methods/Materials Oregon R Wild Type Drosophila (Carolina Biological); Yeast Hydrolysate Enzymatic (MP Bio Medicals); Tegosept M- Mold Inhibitor (Carolina Biological); Agar, Reagent Grade (Carolina Biological); Sucrose (Vons); Microscope; Freezer; Humidifier; Heater; Seal-a-Meal vacuum pump and bags; Autoclave. Procedures: Commercially avail. Dros. media is not a fully defined material. For the study, the exact amount of carbohydrate had to be known; we therefore made our own media, with defined carbohydrate. Media was prepared, sterilized by autoclave, cooled and dispensed into tubes. Drosophila: Sex 480 (day 0 after emerging from pupal case) Drosophila: 240 females, 240 males. Culture with approx. 12 hours light/dark cycle, at approx. 77 degrees F and 60-70% humidity. Change food every 3 to 4 d. Score for dead daily.</p> <p>Results For males, the Control Diet group (50% less CHO than std. American diet) had the longest lifespan. This finding supports other studies, which have shown that reduced carbohydrate diets are correlated with a longer lifespan. In Drosophila, a lower carbohydrate intake leads to less insulin (Chico), and doesn't stimulate the release of FOXO proteins from DNA, which promotes a longer life. For females, the Medium Carbohydrate Diet (25% less CHO than std. American diet) had the longest average life span. It may be that females of the Oregon R strain need more carbohydrate than the males.</p> <p>Conclusions/Discussion In conclusion, when extrapolated, it can be estimated that an average human male on the control diet (50% less CHO than std. Am. diet), would live an extra 38 years (total 113). Human females on the medium-carbohydrate diet (25% less CHO than std. Am. diet) would live an extra 128 years (total 209). Our results indicate that a reduced carbohydrate diet extends lifespan in Drosophila, a finding that may be</p>	
Summary Statement Testing whether a low-carbohydrate diet will effect lifespan in Drosophila.	
Help Received Mother helped with working with fruit flies.	