



**CALIFORNIA STATE SCIENCE FAIR
2016 PROJECT SUMMARY**

Name(s) Joshua Risk	Project Number 36743
Project Title Modeling Stem Cell Growth in a Reclaimed Water Environment Using <i>Girardia tigrina</i> (Planaria Flatworm)	
Abstract Objectives/Goals The objective of this study was to see if the regeneration of planarian flatworms were affected by the use of reclaimed water rather than spring water. The regeneration ability of planarians is used to model stem cell behavior. Because of California's drought, reclaimed water is being used for irrigation. I wanted to test to see if reclaimed water could also be consumed. I used the planarians to model human ability to consume this. Methods/Materials 38 planarian flatworms, spring water, reclaimed water, scalpel. I performed/bisected the planarians and observed their regeneration into multiple specimens in both a spring water and reclaimed water environment. Results When I performed surgery to the 38 planarians, all 76 specimens started to regenerate and move with 4 days of exposure to spring water. Within 2 weeks 72 planarians had fully regrown. I bisected the 72 planarians and placed them in reclaimed water. Within 4 days, all 144 specimens began to move. 142 planarians had fully regrown within 2 weeks. Conclusions/Discussion Planarians normally live in spring water. In my experiment after surgery, it took four days for all the planarians to be moving around, then about 2 weeks total to fully regenerate. The use of reclaimed water appears to have no effect on the cellular regeneration of planarian flatworms.	
Summary Statement The cellular regeneration of the planarian flatworm was not affected by using reclaimed water rather than spring water.	
Help Received I performed the experiment by myself; my mother helped me with my graphs.	