



# CALIFORNIA STATE SCIENCE FAIR 2015 PROJECT SUMMARY

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<b>Project Title</b> Analysis of Maturation of Rana pipiens in Correlated Radiated Environments	
<b>Objectives/Goals</b> The primary objective in this experiment was to observe the effects of radiation on the growth of a developing organism. Tadpoles of Rana Pipiens were studied and observations in development and behavior were noted for a standard period of ten weeks. The null hypothesis would be that radiation does not induce any significant growth within tadpole growth. The alternative hypothesis would be that the tadpoles developing in the radiated water will show stunted growth to that of the regulated water, proving that everyday radiation exposure is detrimental to the health and growth of organisms. <b>Abstract</b> <b>Methods/Materials</b> I created three separate tank environments to develop 6 tadpoles over a standard duration of 10 weeks. Initially the tadpoles were randomly allocated in a container. I then exposed one tank to 4 minutes of radiation exposure, one tank to 8 minutes and one tank with no radiation exposure. Radiation was induced through a convectional microwave oven. By a thermometer, I waited until the water was at room temperature of 20 C. The tadpoles then by groupings of 2 were assigned to each separate tank. Water would be dechlorinated, desalinized and exchanged on a weekly basis, length would also be recorded with a cm scale, and any observations in activity noted. <b>Results</b> When analyzing trends from the data, tadpoles with no exposure to radiation developed faster than those that were exposed. All tadpoles initially began at 2.3 and 2.4 cm, yet in the end, the largest tadpole grew to 5.4 cm, and the smallest to only 4.2 cm, proving a disparity of 1.2 cm length. When analyzing percentage growths, the largest tadpole showed a 125% growth increase, with the smallest only showing a 75% increase. The exposure to radiation also increased stimulation within tadpole activity and induced peculiar feeding and behavioral patterns. <b>Conclusions/Discussion</b> Through the course of this experiment, it was evident that radiation did have a significant effect on the growth and development of Rana Pipiens. In this experiment, the control group tadpoles that grew in the regular water grew at a justly faster rate than those developing in the radiated water. As for both experimental groups, the group with 4 minutes of radiation exposure grew slightly faster than the group with 8 minutes of radiation exposure. Even as their grow rates were not dramatic, it was notable that radiation did have an overall effect on the tadpole's development.	
<b>Summary Statement</b> This project intends to analyze and overlook the growth and development of Rana Pipiens in relation to varied sets of radiated water in order to better understand the long term effects of radiation exposure on a developing organism.	
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