



**CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY**

Name(s) Rachel E. Choi	Project Number S2203
Project Title Effect of Maternal Wounding on Embryonic Development in <i>Drosophila melanogaster</i>	
Objectives/Goals The objective of this project was to determine whether female fruit flies that are injected with <i>Listeria monocytogenes</i> bacteria produce more successful embryos. This could be part of the immune reaction of the fly to either the <i>L. monocytogenes</i> infection, which establishes a lethal infection for the fly, or the wound required to introduce the bacteria.	
Abstract Methods/Materials For the experiment, wild-type female fruit flies were divided into three groups: flies injected with <i>L. monocytogenes</i> , flies injected with phosphate buffer saline (PBS), a sham saline solution used to test for wounding effects, and uninjected/unwounded flies. These flies were allowed to mate with male flies and lay eggs for 24 hours, at which point eggs were collected. Eggs were then counted the next day to determine the hatching rates for the various groups, to measure how successful the embryonic development was in each group.	
Results On all days of the experiment, there was a significantly higher hatching rate for either the <i>L. monocytogenes</i> group or the PBS group, compared to the uninjected/unwounded group.	
Conclusions/Discussion While there was no significant difference between the hatching rates of the PBS and the <i>Listeria</i> groups, both groups had significantly higher hatching rates compared to the uninjected group. The results show that female fruit flies produce embryos with higher hatching rates in reaction to the wounds required to inject the flies with either the PBS or the bacteria. This may be a way that the female fruit flies react to the wound stress in order to ensure that more of their offspring survive. The results also indicate the possibility of a signaling pathway between the wound and the reproductive system.	
Summary Statement When female fruit flies are wounded, they produce embryos with higher hatching rates, possibly to ensure that more of their offspring survive.	
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