



**CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY**

Name(s) Sasha A.C. Foo	Project Number S1513
Project Title The Effects of Melatonin on the Cumulative Sleep Time and the Inception of Sleep of Drosophila melanogaster	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My project helps gain insight into the triggers of the genetic sleep cycle, melatonin being a possible trigger. My hypothesis is the melatonin will shift the sleep cycle of flies so that they wake up earlier and sleep longer. Furthermore if 0.0015g of melatonin is added to the food source of each fly culture, the cumulative sleeping time will be twenty minutes longer than the control, and the inception of sleep will occur thirty minutes earlier than the control. Also if 0.003g of melatoni was added, cumulative sleeping time will be thirty minutes longer than the control, and theinception of sleep will ooccur forty minutes before the control.</p> <p>Methods/Materials 1. Make homemade fly cultures out of a plastic vial and foam. 2. Divide Drosophila medium into thirds. Two-thirds will be used with melatonin. 3. Weigh melatonin capsules and measure 0.003 and 0.0015g. 4. Use mortar and pestle to ground 0.003 into a fine powder. 5. Add 0.0015 g of melatonin to the amount of water needed for one culture. 6. Stir thouroughly. 7. Put Drosophila medium in cultures. 8. Add water and melatonin solution to Drosophila medium. There are equal amounts of water and medium. 9. Let set for one minute. 10. Repeat but with 0.0015 g. 11. Repeat again for the control. Skip steps six and seven. 12. Divide flies into three groups of seven. 13. Put the fly culture in the freezer on its side for thirty minutes. 14. Get ice pack. 15. Tap seven flies into the Petri dish. 16. Pick them up using the brush and place them in the new culture. 17. Repeat two times. Use ice pack to keep. 18. Set up video equipment. 19. Videotape each culture's activities. 20. Watch tapes and record the time of the initiation of sleep and total hours slept. 21. Repeat.</p> <p>Results I found that the general hypothesis was right. The fruit flies did fall asleep earlier and sleep longer. However the results of the dosage were wrong. The 0.0015g flies fell asleep forty-four minutes before the control and slept fourty-nine minutes longer. The 0.003f flies fell asleep and hour and five minutes before the control and slept and hour and six minutes longer than the control. My T-Test results yielded a result in all occasions that $p < 0.001$.</p> <p>Conclusions/Discussion My data does not prove that melatonin triggers the genetic sleep cycle. It does strongly support that theory. Also, it proves that melatonin and the genetic sleep cycle are directly related.</p>	
Summary Statement My project focuses on the effects of melatonin on the sleep cycle of Drosophila .	
Help Received Two teachers helped me set up the VCR used in the experiment.	