



**CALIFORNIA STATE SCIENCE FAIR  
2003 PROJECT SUMMARY**

<b>Name(s)</b> <b>E. Anders Pedersen</b>	<b>Project Number</b> <b>J1427</b>
<b>Project Title</b> <b>The Effect of Mercury on Learning Behavior in Planaria</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The purpose of my research is to see if exposure to mercury effects the learning ability of planaria. My hypothesis is that planaria exposed to mercury either through their diet or through the water in which they live will have reduced ability to learn a simple Y maze when compared to those with no or minimal mercury exposure.</p> <p><b>Methods/Materials</b> Brown Planaria (three groups of 5 ) Train-a-Tray "Y" maze 6V battery Mercury contaminated water (Guadalupe River) Mercury free water (Hech-Hechy) Salmon Swordfish</p> <p>A month before I started my test I introduced my planaria into their environment. One group was put into mercury-contaminated water drawn from the Guadalupe River. This group was fed farmed salmon, which is mercury free. The second group was put into mercury-free Hech- Hechy water but was fed swordfish, which has a mercury level of.88-ppm. My control group was maintained in Hech-Hechy water on a diet of salmon to avoid any mercury exposure. After a month I began testing them in the "Y" maze. Each planarium was given three trial runs per day for six consecutive days. I used a pipette to place the planarium in the maze at point "A" facing towards the fork in the Y. As it traveled down the maze, I shocked it if it turned to the right. I continued giving it brief, light shocks until it went up the left arm of the maze. The direction of the first turn was recorded for each run and then the totals for the three groups were recorded for each day.</p> <p><b>Results</b> The first three days of training showed very little difference between the three groups. On the first three days they turned right in approximately half the trials. On the fourth day the third group showed great improvement in their learning with only two wrong turns. Although all three groups demonstrated improvement, when comparing the groups over the last three days, the group without mercury exposure made significantly fewer errors.</p> <p><b>Conclusions/Discussion</b> Mercury is believed to be associated with learning problems in humans. In this experiment planaria were exposed to mercury for one-month and then their learning ability was tested in a simple Y maze. I found</p>	
<b>Summary Statement</b> This experiment shows that mercury negatively effects the learning ability of planaria.	
<b>Help Received</b> mom, helped me by finding an article in the news about mercury contamination of the Guadalupe River telling me about planaria and by editing the final draft	