



**CALIFORNIA STATE SCIENCE FAIR  
2004 PROJECT SUMMARY**

<b>Name(s)</b> <b>Melinda Ng; Jim Yu</b>	<b>Project Number</b> <b>S1415</b>
<b>Project Title</b> <b>Pseudoestrogen Affecting the Gender of Fish</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The objective is to determine whether high doses of nonylphenol will affect the sexes of the offspring of guppies.</p> <p><b>Methods/Materials</b> Nonylphenol was extracted from saran wrap through boiling, microwaving, and soaking. Boiling and microwaving provided the highest doses of nonylphenol so then those tests were done to fill up two 10-gallon tanks, one from microwaving and the other from boiling saran wrap in water. Then one was left as a control, one had 6ppm/Liter of nonylphenol, and the last one had 8ppm/liter of nonylphenol. Guppies were then introduced into the tanks with 2 males and 4 females. They mated and the offspring were raised separately and then after about a month, their sexes were distinguished.</p> <p><b>Results</b> The more nonylphenol that the guppies were exposed to, the more female babies there were. In the control batch of guppies, we had 16 females to 14 males which gives us a percentage of 53.33% females. In the tank, which contained low nonylphenol, we had a female to male ratio of 21 to 16 giving us a 56.76% of females. In the tank with high nonylphenol, there were 23 out of 37 female guppies, presenting us with 62.16% female babies.</p> <p><b>Conclusions/Discussion</b> Nonylphenol is secreted from heating saran wrap. It is an estrogen mimic that is hazardous to human health leading to breast cancer, low sperm count, mental retardation, premature death, etc. Despite these kinds of consequences, there are no warning label that tells consumers the possible effects of nonylphenol when used a certain way. There is no public awareness that educates people about the harm that could lead to numerous possible health risks in humans.</p> <p>With our experiment, it showed that nonylphenol feminizes the fish population with higher doses of nonylphenol. This can lead to an environmental disaster because factories leak out nonylphenol into streams and causes more female fishes in that stream. If there are only female fishes in an enclosed area, the fish population can decrease dramatically. Thus, affecting many species that count on fish as food and that in turn will alter the food web leading to a disaster far greater than we can imagine.</p>	
<b>Summary Statement</b> Our project examines the affects of nonylphenol in the male to female ratios in guppies.	
<b>Help Received</b> Dr. Cheryl Moody helped measure the amounts of nonylphenol in tested water; Dr. Sarah Palmer helped brainstorm ideas; Mr. Greg Martinez gave us lab equipment; Used Lawrence Livermore Lab's facilities.	