



**CALIFORNIA STATE SCIENCE FAIR  
2004 PROJECT SUMMARY**

<b>Name(s)</b> Shawn H. McLeod	<b>Project Number</b> <b>J1016</b>
<b>Project Title</b> <b>A Spoonful of Sugar Helps the Medicine Go Down: Reliable Dosing of Oral Medication to Pet Rats</b>	
<b>Objectives/Goals</b> This project was to determine a convenient and accurate way to orally administer an anti-parasitic drug, Ivermectin, to pet rats in order to treat them for Fur Mites.	
<b>Abstract</b> <b>Methods/Materials</b> Three pet rats needed to be treated. Six "treats" (apple, marshmallow, peanut butter, cheese, popcorn, and raisins) that the rats were known to like were placed on paper plates arranged in a circular pattern on a tabletop. The rats were positioned, one at a time, in the middle of the circle of treats. Their preferences (which treat they ate first) were recorded. Twelve trials were run for each of the three rats. The proper dose of Ivermectin was determined, from several sources on the Internet, to be 0.2 mg/kg. The rats were weighed and the proper dose to be administered was determined. A one-percent solution of Ivermectin was diluted with sterile water at a 1:30 ratio to prepare a mixture that was 0.33 mg/ml. This resulted in a volume of 0.2ml to properly dose the 330 gram rats. The "preferred treats" were then injected with this dose and fed to the rats.	
<b>Results</b> Of the six treats tested, the rats showed a strong preference for marshmallows and popcorn. Additionally, the rats always consumed these two treats completely, whereas they only nibbled at the others. Popcorn was easily injected with the drug whereas the marshmallows would not hold any injected fluid without leaking. The rats eagerly consumed the injected popcorn and the Fur Mites were successfully treated by this method.	
<b>Conclusions/Discussion</b> The rats had contracted Fur Mites ( <i>Radfordia ensifera</i> ), a common rat parasite that causes intense itching. The Veterinary drug Ivermectin, at a dose of 0.2mg/kg, has been used successfully to treat fur mites but is not commercially available in a dosing format that lends itself to conveniently treating small pets. In order to avoid the need to inject the rats to deliver the medication, the problem of accurately dosing rats orally was solved by determining a "treat" that the rats would reliably consume completely when injected with the proper dose of Ivermectin.	
<b>Summary Statement</b> The objective of this project was to find a way to orally administer Ivermectin , an anti-parasitic drug, to my pet rats to treat fur mites.	
<b>Help Received</b> Father (an Oral surgeon) helped determine proper drug dosage/ helped me type	