



**CALIFORNIA STATE SCIENCE FAIR  
2004 PROJECT SUMMARY**

<b>Name(s)</b> <b>Kevin P. Kennedy</b>	<b>Project Number</b> <b>J1414</b>
<b>Project Title</b> <b>Glutathione Lowers Blood Pressure</b>	
<b>Abstract</b> <b>Objectives/Goals</b> Glutathione is a small peptide that is found throughout the body. One of its main functions is as an antioxidant which prevents damage to tissue due to chemical reactions in the body that produce free radicals. Previous studies have shown that drugs which block glutathione synthesis can raise blood pressure, but why and how this occurs is unclear. The purpose of my study was to determine if I could lower blood pressure in mice by giving them glutathione. I also investigated the means by which glutathione might lower blood pressure. <b>Methods/Materials</b> I measured blood pressure and heart rate in groups of anesthetized mice using an automated tail cuff blood pressure monitor. I injected the anesthetized mice under the skin with glutathione at concentrations ranging from 40 to 160 mg/kg body weight. In separate experiments I also determined the blood pressure and heart rate response to the blood pressure raising hormone norepinephrine both in control mice and in mice pretreated with glutathione. <b>Results</b> Glutathione significantly reduced both systolic and diastolic blood pressure at doses of 80 mg/kg body weight, and this effect was even larger at 160 mg/kg. Heart rate was not significantly changed by these doses of glutathione. Norepinephrine raised systolic and diastolic blood pressure by about 100 mm Hg when given to control mice, but the rise in diastolic was significantly less in glutathione pretreated mice. Glutathione pretreatment did not alter the heart rate response to norepinephrine. <b>Conclusions/Discussion</b> I conclude that glutathione can lower blood pressure in a dose related manner in mice, without directly altering heart rate. Glutathione can also reduce the blood pressure raising action of an important natural blood pressure raising hormone, norepinephrine. My results suggest that glutathione may lower blood pressure at least partially by reducing the ability of blood vessels to contract.	
<b>Summary Statement</b> My project determined the effects of glutathione on blood pressure and heart rate in mice.	
<b>Help Received</b> The mice were a gift from the Dept. of Medicine, UCSD. I also used an automated tail cuff from UCSD under the supervision of Dr. Brian Kennedy	