



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

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Project Title Polymorphisms in the Coding Region of Substance P	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals Complex Regional Pain Syndrome is an often undiagnosed condition that may affect millions in the United States alone. The causes of CRPS remain unknown though the syndrome has been linked to the protein Substance P. In this experiment, we identified polymorphisms in the coding region of the protein in different strains of mouse DNA to later correlate with an increased frequency of CRPS.</p> <p>Methods/Materials In this experiment, the coding region of Substance P was isolated from genetically different strains of mice. They were then replicated, and sequenced. The resulting DNA sequences were then cross-referenced in order to detect polymorphisms.</p> <p>Results Nearly all the polymorphisms that were found were located upstream of the coding region for Substance P. This may be linked to the promoter region and over/under expression of the protein. A few polymorphisms were located in the coding region itself, and may be responsible for a different amino acid sequence.</p> <p>Conclusions/Discussion These preliminary results should be verified through further trials. Case studies should also be performed to possibly link the detected polymorphisms to an increased frequency of CRPS.</p>	
Summary Statement We detected polymorphisms in the coding region of Substance P, which may serve to understand the causes of Complex Regional Pain Syndrome.	
Help Received Used lab equipment from Menlo School under the supervision of Dr. Strong; Applied Biosystems provided reagents and sequenced the DNA.	