



**CALIFORNIA STATE SCIENCE FAIR  
2003 PROJECT SUMMARY**

<b>Name(s)</b> <b>Arti R. Iyer</b>	<b>Project Number</b> <b>S0409</b>
<b>Project Title</b> <b>Could This Be the First Step to Finding a Cure for Cancer?</b>	
<b>Abstract</b>	
<b>Objectives/Goals</b> Problem/Statement: Can we identify tumor-specific proteins in a cat melanoma cell line? My objective is to see if there are proteins that are unique to the cat melanoma cells.  Hypothesis: I believe that more than one tumor-specific protein will be identified by the Mass Spectrometry machine.	
<b>Methods/Materials</b> Materials: 1 pipetter, 1 incubator, 12 isoelectric strips, 50 pipettes, 1 mass spectrometry machine, 100 needles, IEF container, 10 2 gels, 100 containers for proteins, 12 flasks, 1 isoelectric focusing machine, 1 computer, Pedi-quest computer program  Procedure: A. Thaw cat melanoma cells and normal cat cells from the freezer. B. Let the cells grow in separate flasks in the incubator for two weeks. C. Remove $2 \times 10^7$ cells from each flask. D. Rehydrate the proteins. E. Place the isoelectric focusing strips on to the solution. F. Put the isoelectric focusing strips into the isoelectric focusing machine. G. Place the strips on to the 2-D gel and run the 2-D gel. H. Identify unique proteins to the cancer cells on the Pedi-Quest computer program from the 2-D gel picture. I. Extract these specific proteins from the actual 2-D gel based on the computer program's analysis. J. Place these extracted proteins into eppendorfs, digest the proteins, and then place it into the mass spectrometry machine. K. The mass spectrometry machine identifies the unique proteins through the ethernet.	
<b>Results</b> Out of several thousand proteins, 175-200 unique proteins were identified in CT1413. Out of these 200, two unique proteins were identified in the melanoma cells that are not expressed in normal cat cells.	
<b>Conclusions/Discussion</b> This is how these proteins are being identified, but ten or more trials need to be done to make certain that these two proteins are actually apparent in all CT1413 cells.	
<b>Summary Statement</b> My project is to see if we can identify tumor-specific proteins in a cat melanoma cell lines through processes including Isoelectric Focusing, using a 2-D gel, and Mass Spectrometry.	
<b>Help Received</b> Dr. Suraiya Rasheed supervised my experiment. Zahrah Ali, Steven Doo, Arvan Chan, Jennifer, and Jane Chan all assisted me in various parts of my project.	