



**CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY**

Name(s) Varun Chaturvedi	Project Number S0405
Project Title CD1d Antigen Expression for the Therapeutics of Prostate Cancer	
Objectives/Goals Abstract Prostate Cancer is one of the most common type of cancer for men over the age of 50. Thus deciphering the mechanism that promotes this cancer growth in an organism is of great interest to many of these scientists, specifically the interaction between antigen and antibodies in the immune system. The antigen of interest in my experiment is CD1 d Antigen which is recognized by the Natural Killer T-Cells in the immune system. First, we tested whether this CD1 d antigen was present between different cancers (prostate cancer, lung cancer, and liver) through a FACS Machine where the computer detects if CD1 d is expressed through fluorescence. It was through this experiment that we found prostate cancer to express this specific antigen. Our next experiment was to inject these cancer cells into mice with NK T-Cells and one without these cells. To a surprise after 2-3 weeks analysis, we found out that the mice with the NK T-Cells help induce prostate cancer growth, while the mice without these cells suppressed cancer growth. After accomplishing this experiment, it was seen, that the NK T-Cell, which has been proven to be one of the more complex defense mechanism in our bodies, actually helps induce Prostate Cancer growth. The results of this experiment really help show and presents conclusive evidence from cancer growth in mice with the NK T-Cells as opposed to knockout mice for these immune cells. Inclusive of this, results of this experiment can help many other scientists analyze as to why the bodies own defenses help grow cancerous cells and ultimately help in research to fight against prostate cancer.	
Summary Statement The main purpose of my project was to examine the role of an antigen presenting molecule, specifically the CD1 d Antigens, in the growth of prostate cancer.	
Help Received Dr. Vipin Kumar helped with the data analysis for the experiment, and helped with the procedures; My father helped review my lab write up	