



**CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY**

Name(s) San Singh	Project Number S0425
Project Title Zbtb7 Gene Expression in Various Cancer Cell Lines	
Abstract Objectives/Goals The purpose of this investigation is to determine differences in the endogenous expression of the zbtb7 gene in different cancer cell lines. Methods/Materials The experimental design of this experiment involved comparing various cancer cell lines for expression levels of the zbtb7 gene. First, RNA will be extracted from various cancer cell lines. Next, RNA concentrations will be standardized using UV-Vis spectroscopy. Then qRT-PCR will be used to isolate the zbtb7 gene and amplify it. Finally, gel electrophoresis combined with Kodak Digital Science densitometry software will be used to quantitatively analyze the results. Results The densitometry results from the gel electrophoresis of the experiment showed that the mean intensity values for the MCF7 breast cancer cells, the A549 lung cancer cells, and the PC3 prostate cancer cells were statistically equivalent to each other. Conclusions/Discussion These results support the notion that the zbtb7 gene plays an important role in the regulatory processes of the cell cycle and that it is especially important in this role in that it could act as a more universal controller of the oncogenes that lead to the breakdown of the regulatory functions of the cell cycle. It has been suggested that the zbtb7 gene functions by preventing the function of p14ARF, which serves to inhibit mdm2, thus promoting p53, which leads to the activation of p21, inactivating a number of cyclin-CDK complexes which allow cells to pass through the G1/S phase of the cell cycle. Preventing the zbtb7 gene from causing these effects would be an interesting avenue for approaching further research on the universal mechanisms of cancer. Furthermore, this specific avenue of cancer research regarding the control of the cell cycle would also offer the unique benefit of being able to halt the progression of the cancer at any stage by shutting down its ability to rapidly engage in uncontrolled cell division.	
Summary Statement This project measured zbtb7 gene expression in various cancer cell lines.	
Help Received Used lab equipment at the University of the Pacific under the supervision of Dr. Jesika Faridi and graduate student Ashish Sawhney.	