



**CALIFORNIA STATE SCIENCE FAIR
2016 PROJECT SUMMARY**

Name(s) Therese Santiago	Project Number S0531
Project Title Detection of Biomarker Ciz1 b variant for Early Diagnosis of Lung Cancer	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of the study is to determine if there are elevated expressions of the biomarker Ciz1 b variant in the plasma of non-small cell lung cancer patients.</p> <p>Methods/Materials Ciz1 b variant expression was examined in the plasma of patients with biopsy-proven NSCLC. The plasma of patients with healthy and inflamed lungs was used as the control. Plasma of patients with adenocarcinoma, a type of non-small cell lung cancer, was studied as well. RNA extraction followed by cDNA synthesis was performed using the Qiagen miScript II RT kit with the HiFlex Buffer (Qiagen, Valencia, CA). Quantitative PCR assays were performed using (P1) 5#-CAGGGGCATAAGGACAAAG, (P2) 5#-TCCGAGCCCTTCCACTCCTCTCTGG, primers using Qiagen#s QuantiTect Probe PCR kit and SYBR Green PCR kits. Ciz1 b variant expression data was analyzed and expressed by fold increase as compared to control. $P < 0.05$ was considered statistically significant.</p> <p>Results Ciz1 b variant was not expressed in control patients. Ciz1 b variant was, however, expressed in the plasma of non-small cell lung cancer patients.</p> <p>Conclusions/Discussion This finding may open an important avenue for Ciz1 as a biomarker for early detection of lung cancer, which could lead to better prognosis of the disease. It is possible that Ciz1 b variant, in the blood of lung cancer patients, can be used to monitor the response to treatment. Ciz1 b variant may have high potential to be used as a marker alongside low dose CT scans. Blood tests offer a noninvasive approach that may help in the early diagnosis of lung cancer as compared to tumor biopsies, and they are far more inexpensive than biopsies, which makes it likely that more patients will receive early diagnosis.</p>	
Summary Statement It was found that Ciz1 b variant has the potential to be used as a biomarker for non-small cell lung cancer due to its presence in the blood.	
Help Received Blood tests and PCR were done by Dr. Upadhyay at UCSF, Fresno, but all other research and analysis was done by me.	