



**CALIFORNIA STATE SCIENCE FAIR
2015 PROJECT SUMMARY**

Name(s) Colton Allen; Gabriel Sigala	Project Number 35032
Project Title Column Chromatography: The Type of Stationary Phase Makes a Difference	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals Our project was to determine if using different materials like silica gel and space sand as a stationary phase in column chromatography affect the way sodas' dyes separate.</p> <p>Methods/Materials We tested two different stationary phase materials in a student created column chromatography system. The two stationary phase materials tested were Space Sand and silica gel beads. Columns were created with stationary phases compacted into 30mL syringes. Columns were then prepared with distilled water and alcohol before adding the testing material. Materials tested were four processed drinks with various color sources and dyes - our mobile phases. Eluate was collected in fraction cups, observed visually for color and then run through the spectrometer.</p> <p>Results The columns with the sand as the stationary phase separated the color sources and dyes from the mobile phase. The columns with the silica gel beads separated some of the dye but also absorbed the mobile phase. The visual observations for the sand trial of one of the sodas, grape soda, were recorded as red, plum, violet and light blue and the spectrometer readings confirmed those colors. The visual observations for the silica gel bead trial of the grape soda were recorded as bright purple and dark pink, again confirmed by the spectrometer.</p> <p>Conclusions/Discussion We believe the sand trials worked because the materials within the sand, i.e. silica, are similar to stationary phases used in laboratories and therefore could attract dyes such as the red dye #40 and blue dye #1 the best. The silica gel beads were not successful as a stationary phase. They did not separate the dyes well because they expanded, absorbed liquid and formed solid masses within the syringe. It was not the correct form of silica for our column chromatography experiment.</p>	
Summary Statement Our project is about testing different stationary phases in a student designed column chromatography system.	
Help Received Used laboratory and equipment at Clovis Community College Center under the direction of Shawn Flemming PhD; Our mothers helped us purchase our materials, type our documents and helped us with our graphs in Excel.	