



**CALIFORNIA STATE SCIENCE FAIR  
2015 PROJECT SUMMARY**

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| <b>Name(s)</b><br><b>Paul Gauvreau</b>   | <b>Project Number</b><br><b>S0511</b> |
| <b>Project Title</b><br><b>Artificially Formed Stable Interactions through Gene Transfection</b>   |                                       |
| <b>Abstract</b><br><b>Objectives/Goals</b><br>Stable interactions between kidney cells allow them to adhere to each other. Kidney cell adhesions allow functional control of each other. The objective of the experiment is to cause stable interactions between two different kidney cell strains. This is significant as different kidney cell strains do not normally interact. More specifically, this experiment tested, that if plasmids containing the e-cadherin/firefly luciferase protein being transfected into hk-2 and hek-293 cells cause stable interactions or not.<br><b>Methods/Materials</b><br>The two different cell strains HK-2 and HEK-293 were cultured out separately. Then were passaged into a 24 well, 12 wells designated for each strain. In half of the wells we transfected the cell strains with the plasmid, and in other half we determined at which concentration of ampicillin stopped cell growth. After transfection the cell strains were grown out together in amp. The amp. killed all the cells with out the plasmid.<br><b>Results</b><br>The plasmid caused the two different cell strains to adhere to one another, biolumines, and continue to grow out in the ampicillin.<br><b>Conclusions/Discussion</b><br>When looking at the two experiments, the control (without e-cadherin plasmid) when mixing the two strains together the cells grew out separately and did not interact. However in our experimental (with the e-cadherin plasmid) the two different strain adhered to one another. The data supported my alternate hypothesis, that different kidney cell strains with the transfected e-cadherin plasmids will form stable interactions and adhere to each other. |                                       |
| <b>Summary Statement</b><br>Developing a method in which to artificially form stable interactions to provide an alternate step towards 3D printing organs.   |                                       |
| <b>Help Received</b><br>My teacher/mentor Mr. Ariel Hass taught me how to work and operate in a lab and Mr. Martin Haas gave me advice towards what materials to use and corrections to make.  |                                       |