



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

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| Name(s) Nicholas Tong | Project Number S2019 |
| Project Title Oxygen Generation from Golden Ribbon in Photosynthesis under Different Colored Lights | |
| <p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of my project was to determine whether component color lights of the visible light spectrum is more efficient in oxygen generation than the white light in photosynthesis.</p> <p>Methods/Materials I built a cylindrical transparent plastic container to hold the golden ribbon aquatic plant (dracaena variegates) and use a 200-watt incandescent light bulb as a light source. Color lights were simulated by using colored cellophane sheets. Oxygen generation was monitored by Pasco Scientific Xplorer GLX instrument with Oxygen Gas Sensor. Sixty experiments were performed in my project. Total time was about 122 hours.</p> <p>Results Experimental results confirmed my hypothesis that on the average purple and blue lights, that are shorter in wavelengths and therefore more energetic, did generate more oxygen in the aquatic plant golden ribbon used. White light turned out to be in the middle of the range in oxygen generation followed by red, orange, yellow, and green colored lights.</p> <p>Conclusions/Discussion My science project concluded that single color lights like blue and purple lights are more efficient at oxygen generation in photosynthesis. In the process of doing this project I also learned and discovered the concept of photorespiration. When plants are put in confined environment and if not enough carbon dioxide is available, they tend to use oxygen instead of continuing with photosynthesis and give off oxygen.</p> | |
| Summary Statement My experiment showed that blue and purple color lights with higher energy spectrum helped plants generated more oxygen. | |
| Help Received My biology teacher, Mrs. Angelina Sill, gave me guidance and reviews on how to do a science project. My dad, David Tong, helped me designed the plastic container. My school principal, Mr. Jerry Romsa, gave me guidance on my display board. | |