

# The Effect of Extracted Phycocyanin from *Spirulina platensis* on Irradiated *Saccharomyces cerevisiae* Cells

Evans, Luke (School: No. 6 High School)

Evans, John (School: No. 6 High School)

Experimentation used yeast as a model organism to determine possible benefits phycocyanin could provide to irradiated cells. Since genetic damages may be caused by UV radiation, finding a solution for this threat is important for future human health. By investigating the potential benefits of *Spirulina platensis* and the extracted protein phycocyanin, we may be able to determine a basic solution for preventing radiation damage. It was hypothesized if a *Spirulina platensis* solution was introduced to irradiated *Saccharomyces cerevisiae* cells, then the growth rate and the amount of genetic damages would be reduced because of the radiation resistant and anti-cancerous properties of the phycocyanin protein within *Spirulina*. The project was conducted by experimenting on four groups of yeast, giving two groups of yeast 6% phycocyanin contained within *Spirulina*. Test groups consisted of yeast that was 1) not irradiated, nor fed *Spirulina*, 2) not irradiated but fed *Spirulina*, 3) irradiated but not fed *Spirulina*, and 4) irradiated and fed *Spirulina*. The results indicated *Saccharomyces cerevisiae* receiving *Spirulina platensis* was genetically similar to the control group. Yeast solely irradiated had the greatest variance in band lengths from the control (average of 1.56 mm), while yeast given *Spirulina* and irradiated had the least variance from the control (0.91 mm). The group receiving both UV radiation and *Spirulina* had the slowest growth rate, indicating *Spirulina* may have reduced the rate of cell growth, suggesting a role in apoptosis. It can be concluded phycocyanin in association with *Spirulina*, prevented genetic damages within the yeast, suggesting it may be an effective preventative.