

Teisha Coffield

*Chemotaxis in Physarum polycephalum: A Model for the Effects of Antioxidants on Cancer Progression*

Antioxidants have been suggested as a weapon for the fight against cancer. However a recent study found an increased risk of prostate cancer for those who took Vitamin E supplements (Klein, 2011). The purpose of this research was to examine the possible effects of the antioxidants Vitamin E, Vitamin C, and Beta-Carotene on cell signaling using the slime mold *Physarum polycephalum* as a cancer cell model. It was hypothesized *Physarum polycephalum* will show a chemotactic response when exposed to Vitamin E, Vitamin C, and Beta-Carotene when in a supplement form and in a food form, because antioxidants interfere with the reactions of free radicals and cellular reproduction. *P. polycephalum* were cultured on a 1 by 1 cm filter paper square and placed in the middle of a petri dish. The right side of the petri dish had a 1 by 1 cm filter paper square that was soaked in distilled water and the left side had a piece of filter paper soaked in the test substance. These plates were observed approximately every hour for 63 hours. Growth rates were calculated. *P. polycephalum* grew towards the vitamin E at higher rates than the control. Blueberry at lower rates than the control. There was no growth for the cantaloupe, strawberry, or beta-carotene. On the control plates *P. polycephalum* grew towards the test side of the plate, and on the vitamin C plates moved along the mid line. The hypothesis was supported.