



**CALIFORNIA STATE SCIENCE FAIR
2015 PROJECT SUMMARY**

Name(s) Ali Zia	Project Number J2118
Project Title Plants Beware! Effects of Electromagnetic Radiation on the Growth of Radish Plants	
Objectives/Goals The purpose of this experiment is to determine the effects of electromagnetic radiation on the growth of radish plants. It was hypothesized that the shorter the wavelength of radiation exposure, the shorter the average plant length would be. It was also hypothesized that within each radiation group, the longer the time of exposure, the shorter the average plant length would be.	
Abstract Methods/Materials Radish seeds were exposed to gamma, x-ray, ultraviolet, infrared, and microwave radiation for periods of 30, 60, and 90 seconds. Each group of seeds was planted and the growth of each plant was recorded once a week for three weeks.	
Results It was discovered that the shorter the wavelength of exposure, the shorter the radish plants grew; the growth of the plants (dependent variable) increased as wavelength (independent variable) increased. However, the only group that did not follow this pattern was the microwave group; the microwave group had the shortest average plant length, when it was expected that they would have the longest average plant length (because microwaves have the longest wavelength). This can be explained by the fact that microwave ovens release extra heat, which damaged the radish seeds. Additionally, the results of the experiment show that within each radiation group, there was no pattern or consistency in terms of the time length of radiation exposure. There was no relationship between the time of exposure (independent variable) and the length of the plants (dependent variable).	
Conclusions/Discussion The results of my experiment partially support my first hypothesis, which was that as the wavelength of exposure decreases, plant growth would also decrease. However, the results do not support my second hypothesis, which was that within each radiation group, the longer the time of exposure, the shorter the average plant length would be. This project shows that radiation does in fact have negative effects on the growth of radish plants. Although the exposure time did not affect the plant growth, it can be concluded that electromagnetic radiation still does inhibit the growth of radish plants. This project demonstrates the fact that electromagnetic radiation has the potential to damage and negatively affect the growth of plants.	
Summary Statement The purpose of this project is to determine the effects of electromagnetic radiation on the growth of radish plants.	
Help Received Dr. Nabila Patel helped by exposing the radish seeds to x-rays; Ms. Moinuddin gave me advice and guidance	