



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Ashley A. Elder	Project Number J1310
Project Title Electromagnetic Radiation on Saccharomyces: Do EMF's Affect Yeast Growth?	
Abstract Objectives/Goals Electromagnetic fields {EMF#s) are common in our everyday lives. Whether or not EMF#s pose a negative health effect is an ongoing controversy. The purpose of the project is to determine if electromagnetic field radiation (EMR), produced by an AC or DC device, causes an increase in the growth of Saccharomyces cerevisiae . Methods/Materials The testing location was chosen after taking readings with an AC EMF meter (0.1 mG-199.9mG) and a DC Gaussmeter (0.1mG-19,999.9mG). Yeast of the species Saccharomyces cerevisiae was used as a test subject. Three groups were exposed to an electrical device of an alternating current or a direct current or a control environment. The duration of exposure lasted 45 minutes. The irradiated and unirradiated yeast were placed in a lower EMF location for a 10 minute proof and a measurement of the volume was taken in milliliters. One hundred eight trials were tested in an ambient temperature of 70°F. Results Through the testing described above, electromagnetic field radiation influenced the function or life cycle of the AC and DC test subjects. Yeast cultures exposed to the AC environment (200+mG) grew an average 30.7% greater than the control group. The AC group had a mean volume of 15.65 mL. Yeast cultures exposed to the DC environment (2,500 mG) grew an average 15.7% greater than the control group. The DC group had a mean volume of 14.18 mL. Conclusions/Discussion Contradicting the hypothesis of the experimenter, the DC did positively affect the yeast growth. Bearing in mind that DC has 0 hertz and is near the bottom of the electromagnetic energy spectrum, the experimenter thought the DC group would have equivalent growth to the control group. The yeast cultures may have gained more volume due to abnormal water retention resulting from stress within the cell structure caused by EMR. Electrons in the current of the electric devices emit fields which ionized the yeast cultures. This data shows that EMF#s do have biological effects.	
Summary Statement When exposed to electromagnetic fields of AC devices, the yeasts significantly gained volume.	
Help Received Thank you to my mother for edit of report. Thank you to Alpha Lab, Inc. for providing field tester.	