



**CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY**

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Project Title Can Cell Phones Harm Living Cells?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals I wanted to see if it was possible for the radiation from a cell phone transmitter to harm living cells in your body. I used bacteria to represent the living cells, and a microwave oven to represent the microwave radiation from a cell phone transmitter. My hypothesis was that microwaves would be able to kill bacteria, but at the low power of a cell phone there would be no effect.</p> <p>Methods/Materials I used non-pathogenic acidophilus bacteria from dietary supplement capsules because I thought that bacteria might be sensitive enough to be killed by the microwaves. I diluted them in water, exposed them to the microwaves, then cultured them in nutrient media to measure the effects. A microwave oven has a similar frequency to a cell phone transmitter but a much higher power, so I exposed the bacteria for a short time to get the same energy. I used different exposure times to study the effect of energy, and I used different power microwaves to study the effect of power.</p> <p>Results I observed that the microwave energy could kill bacteria. I found that the higher energy exposure killed more bacteria, which is what I expected. I also found that for equal energies, exposure to a lower power for a longer period of time killed more bacteria, which I did not expect.</p> <p>Conclusions/Discussion The first part of my hypothesis turned out to be correct, because I observed that microwave energy could kill living bacteria cells. However, the second part of my hypothesis was wrong because when I observed that the lower power exposure for a longer time killed more bacteria I found that a low power cell phone could have an effect. Although my results predict that a cell phone could kill bacteria, because of the low power I would expect only skin cells on the surface of your body to be effected, and not as many would be harmed because skin cells are stronger than bacteria.</p>	
Summary Statement This experiment uses bacteria and microwave energy to determine if it was possible for the radiation from a cell phone transmitter to harm living cells in your body.	
Help Received My father helped me by supervising my safe handling of the bacteria.	