



**CALIFORNIA STATE SCIENCE FAIR
2015 PROJECT SUMMARY**

Name(s) Virginia F. Hsiao	Project Number S1804
Project Title Investigating the Effect of Magnetism on Pollen Germination and Pollen Tube Directionality	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals Pollen germination, which results in pollen tube growth, facilitates fertilization in angiosperms. While modern technology has increased magnetic exposure to plants, current research about the effects remains inconclusive. The goal of this project is to investigate the effects of magnetism on pollen germination and pollen tube directionality.</p> <p>Methods/Materials Lily pollen was tapped onto glass slides with 90 μL of water and placed in petri dishes lined with coffee filters soaked in 5 mL of water. A control group received no further treatment and was isolated from other groups. Two treatment groups of neodymium magnets with either 1.27 cm (large) or 0.635 cm (small) diameters were set up. Two respective magnets, one facing toward north and the other south, were placed 1.5 cm away from each edge of the slides. After 24 hours, the number of pollen tubes and the directionality were recorded.</p> <p>Results The large magnet conferred the highest pollen germination rate, followed by the small magnet, then by the control. For directionality, pollen tubes exposed to the small magnet showed a preference towards the north end. The pollen tubes exposed to the large magnet showed no preference.</p> <p>Conclusions/Discussion This study indicates that magnetism has an effect on pollen germination and pollen tube directionality. T-tests found that the large magnet group's germination rate was statistically significant compared to the control and found that the small magnet group's germination rate was insignificant compared to the control. T-tests also confirmed that the small magnet's tendency to the north end was statistically significant compared to the south end. Further research on the large magnet's effects of directionality is suggested.</p>	
Summary Statement I investigated the effect of magnetism on pollen germination and tube directionality and found that increased magnetic exposure increased pollen germination and that pollen tube directionality was only affected by certain magnetic strengths	
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