Rex Stowers
Junior Division Plant Sciences
Phytoremediation: Can Plants Clean Soil?

The purpose of my experiment was to see if plants could clean soil contaminated by a heavy metal through phytoremediation. This process is where plants absorb a contaminant through their normal absorption process. I used radish, lettuce, and mustard plants. I used $CuSO_4$ as my contaminant. Copper contamination comes from mining, pesticides, fungicides, medical waste and military testing. My hypothesis was that the mustard plants would be able to absorb the most $CuSO_4$ because they are good at binding heavy metals. I sprouted three different seeds on paper towels. I put them into containers of potting soil. The containers had filters so the filtrate could pass through the soil and be collected in the bottom of the container. My control was just plain potting soil. At our school lab, I made a 0.1M solution of Copper Sulfate by mixing 15.96 grams $CuSO_4$ and 1 liter of distilled water. I watered the containers with the solution. I tested the filtrate with a copper test kit. It measured copper in parts per million. My hypothesis was correct. The mustard plants did the best job of binding the copper. The control and radish filtrates had 5.0 ppm, the lettuce had 2.0 ppm, and the mustard had 1.5 ppm. Phytoremediation is a good way to clean up contaminated soil. I'd like to see if plants could clean soil at our local gun range for my next project.