# Using Phytoaccumulation to End Mineral Deficiencies

Beaster, Emelyn (School: East High School)

Mineral deficiencies are incredibly common across the globe and can have devastating results for those affected. This study spotlights two minerals that many of the world is deficient in: Zinc (Zn) and Magnesium (Mg). My inspiration for this project stemmed from learning about the process of phytoremediation, where plants known as hyperaccumulators are used to absorb large amounts of heavy metals from a contaminated environment. In my first year study, I recreated this process by growing B. juncea plants hydroponically in variable concentrations of iron, and found that the samples were able to absorb a substantial amount of iron via phytoaccumulation. In my second year study, I wanted to continue with this study by testing the absorption of zinc and magnesium. Repeating my first year procedure, the plant samples were grown hydroponically, and the Zn and Mg absorbed was measured by titration with EDTA. I found that the process worked well in the zinc samples (at most, zinc samples absorbed 57.39% of the added mineral), however, the process was not as sufficient in the magnesium samples (at most, only 3.75% of the added magnesium was absorbed). Although the magnesium samples weren't able to absorb enough of the mineral to be considered effective at preventing deficiencies, the zinc samples exceeded my expectations. In conclusion, this could be an incredibly easy way to naturally increase the minerals in our diet without the need of supplements.

**Awards Won:**