

BioGENEius Awards: In Rena Weis' Words

According to Rena Weis, it all started with investigating bugs in her family's backyard. Her natural curiosity for science would continue to blossom in high school fairs and eventually in the 2013 BioGENEius Challenge, which she calls a "life-changing experience." Today, Weis works as a civil engineer, solving environmental and water resource challenges in the Midwest. In the essay that follows, she explains why she's so passionate about sharing stories of science and engineering—especially with members of the non-scientific community.

Growing up, I loved looking at the stars and studying bugs in my family's garden – one could say I have always had a natural curiosity for science. Through the years, I entered science fairs, studying a wide range of topics spanning behavioral science to magnetism. In high school, I found my passion and studied the effects of biochar, a charcoal-like soil amendment, on agricultural crop health, soil moisture, and crop yield. I also studied the safety of foods grown in biochar amended soils and the feasibility of reducing nitrogen fertilizer application rates in combination with biochar. The series of projects I completed over four years fulfilled my desire to research ways to improve food security across the globe and benefit the environment by reducing nutrient runoff and protecting water resources.

My science fair efforts culminated at the BioGENEius Challenge in 2013, where I placed in the top 10 projects and advanced to international competition. Recognition as a top finalist at the BioGENEius Challenge was a life changing experience. I had done my project in my backyard, and after years of dedication and hard work, my efforts were recognized by prestigious judges and I was invited on stage—my dad beamed with pride from the audience. My positive experiences with the science fair inspired me to serve as a judge at local science fairs, which provides an opportunity to share my story and encourage the next generation of STEM leaders each year.

Now, I am employed as a consulting civil engineer and apply my technical skills to solve environmental and water resources challenges across the midwestern United States. My work includes stormwater management, wastewater treatment and industrial discharge permitting, investigation of contaminated sites, and water quality studies and improvement plans. These projects protect and advance human health by constructing resilient infrastructure capable of withstanding floods, ensuring sanitation and access to clean drinking water, strengthening communities via remediation of contaminated sites, and providing safe recreational access to public waters.

Recently, I joined Engineers Without Borders and am part of a project team volunteering to design and construct infrastructure that will provide access to reliable and clean drinking water for a remote community in Peru.

Science truly touches all of us – it is used to treat our drinking water, grow our food, design our transportation systems, keep our bodies healthy, and care for the planet we all share. As a civil engineer, many of the systems I work on are taken for granted by the public every day. No one really acknowledges civil engineers unless a bridge fails, water is unsafe, or floods are uncontrollable. However, it is of utmost importance that the stories of science and engineering are communicated, so the public can understand the value and credibility that scientific research provides. I hope that sharing my story can inspire others to pursue their interests in science and serve as advocates of science and engineering.

The content and views presented here are those of the individual Challenge participant.