

By Rachel Yoho

# How science fairs shaped my career

**O**n a hot summer day nearly 10 years ago, I found myself straining pig manure to remove maggots for use in my high school science fair project. At the time, I certainly wondered if the results would be worth the effort. Although sometimes smelly, science projects were an essential part of my school experience. Now in the fourth year of my Ph.D. in an environmental microbiology lab, I wonder where I would be without those early opportunities to investigate.

I attended my first State Science Day in Ohio when I was in the seventh grade. I felt inspired while watching high school students earn scholarships for their projects. Although my path through science fairs was not smooth, I received the jury's highest category rating 6 years in a row for my environmental and microbiology projects. By the time I graduated from high school, I had also published a conference proceedings abstract in *The Ohio Journal of Science*. These early accomplishments helped me decide on a research career and earn scholarships to pay for my college and graduate education.

My senior-year project, the one that got published, investigated electrode materials for microbial fuel cells that utilized pig manure. The work later developed into an undergraduate project at Capital University, which yielded results that I presented at regional and national conferences. At the Posters on the Hill conference in Washington, D.C., my adviser and I met with congressional staff and representatives to discuss the importance of undergraduate scientific research.

Today, many schools are moving away from inquiry-based science education. A common argument against science fairs is that they take away from family time. But this needn't be the case: My parents embraced the adventure. Research rarely goes smoothly, so my parents and I have a number of now-entertaining memories from my science fair projects. The stories range from developing an efficient system to remove maggots from manure with my dad to nearly falling into a frigid reservoir with my mom while collecting water samples.

My science fair projects helped me develop many skills beyond doing research itself: I learned how to read the literature, write up results, and give presentations. I discovered that one of the most important skills for a young



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scientist's success is finding good mentors. Although another common complaint about science fairs is that they do not offer equal opportunities to all students, I do not feel that having two parents from nonscience backgrounds ever was a barrier. I found at home all the support and enthusiasm I needed to pursue my dreams, and I sought out research mentors and opportunities at nearby labs.

For graduate school, I received a fellowship from the National Science Foundation to expand my work on microbial fuel cell technologies using advanced electrochemical methods (and no pig poop, thankfully) at Arizona State University, Tempe. Following my Capitol Hill experience, I have added science education and communication research into my

Ph.D., exploring how the educational system presents hotly debated science topics. Beyond developing my research career, I strive to become an effective communicator and advocate for science in education and public outreach.

For me, rather than something to dread, the tri-fold board of a science fair display provided an invaluable educational experience. I encourage schools and funding agencies to consider the many career benefits before removing science fairs from the curriculum. Science fairs—or maybe it was the pig poop—helped me find my path into research. ■

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# Science

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