

By Joseph Swift

# The point of it all

It seems like a rite of passage now for Ph.D. students: confronting the harsh prospects of academic careers. I'm just at the beginning of my doctorate at New York University (NYU) in New York City, but already my peers are concerned about how to survive within academic institutions. Our career paths are described as risky undertakings, littered with pitfalls and wrong turns, and the journey can often lead to a dead end. At first I shared their anxiety, but I started to wonder about how this would affect my development as a scientist. How can one produce the best science while focusing on survival? If students remain in a constant state of competitiveness, they may end up trading their creativity for a shortsighted scramble for results. Would merely surviving fulfill my goals?

I decided it was better not to overthink the whole survival thing. Negativity paired with a good imagination can be crippling. As with experiments, sometimes it is best to relax expectations until you see the results.

As I was thinking along these lines, I was offered a rotation project at NYU Abu Dhabi in the United Arab Emirates. The goal was to develop algae strains that could be used as a cheap source of biofuel. As in all rotation projects, I was given a taste of the research, but I didn't have time to really sink my teeth in. I embraced the opportunity because I wanted to work on an environmental biotech project, but I didn't expect to save the world.

My 9 weeks in Abu Dhabi provided something unexpected: a renewed sense of purpose.

Abu Dhabi is a rapidly evolving urban center; think Chinese megacities. What makes Abu Dhabi remarkable is that it survives in the middle of a desert. What little arable land and fresh water Abu Dhabi has cannot provide for a city that size. Resources must instead be created from scratch.

I'm passionate about environmental biotechnology, but up until that point, my exposure to the subject had been limited to the scientific literature and some small adventures in the lab. The Abu Dhabi project helped me understand what environmental biotech strives to achieve. It became clear that innovations in algal wastewater treatment and salt-tolerant crop breeding could be real game changers in an environment that provides so little. Many Western cities also depend on advanced infrastructure to



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stay afloat, but in Abu Dhabi the need was much more obvious.

This forced me to think differently about my sources of motivation. I became less concerned about how I was going to survive or what I was going to do after my Ph.D. I got more interested in the potential impacts of environmental biotechnology. I suppose the effect might be similar to what medical scientists who work at hospitals experience: Proximity to the site of application inspires a certain kind of urgency. This urgency, I believe, is better for science than that provoked by the academic rat race.

How does Ph.D. research affect the world? As obvious as it sounds, this question is often overlooked during grad school. It's easy to lose sight of the larger purpose of your research, especially when you are distracted by concerns about survival. I suspect this distraction is present at other career stages as well.

Now that I'm back in New York, the experience in Abu Dhabi seems a bit like a desert mirage, but it continues to influence my thinking. I got a glimpse of how my environmental biotechnology research could have a wider impact.

Wrestling with a research question is a rewarding intellectual exercise, but an appreciation of the broader context of the research can enrich it. These multiple sources of motivation leave little room for career-related anxiety. ■

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