Science She-roes: Seven women scientists reflect on their journey to the AAAS STPF fellowship

Tuesday, April 13, 2021

Author(s)

Kazue Chinen

As a Korean-American woman, learning how to express myself as both a scientist and a woman of color has not been without its challenges or rewards. Growing up as a military brat and a Korean-American, I learned early how different communities deal with diversity. The color of my skin mattered. My gender mattered. When I became a graduate student in Environmental Science and Engineering, I was not surprised to learn there was another layer of challenges to being a woman in science.

Now, as an AAAS Science &Technology Policy Fellow (STPF) at the State Department at the beginning of a new administration that prioritizes racial equity and gender identity, this experience is

a pivotal moment for me, both personally and professionally.

I wanted to know how my fellow fellows came up through their own journeys. Normally, we would share our stories at happy hours and professional development events, but the pandemic has isolated us. For this blog post, I interviewed many brilliant and courageous AAAS STPF women scientists to bring their stories to the forefront and meaningfully connect through their unique experiences. What I hoped to learn was who mentored these women and how they overcame any challenges.

Women mentors are key

For many fellows, women mentors served as pivotal role models and pushed them to pursue science. **Meagan Postema** (Ph.D., Cell and Developmental Biology, Vanderbilt University), who is a fellow in the Directorate for Geosciences at the National Science Foundation (NSF), explained that it never crossed her mind that she couldn't do what she wanted because of her gender. She grew up in an all-woman household and then worked in a graduate lab almost completely staffed with women scientists; this normalized her understanding that women are equal to men and her gender wouldn't hold her back.

Ezinne Achinivu, a fellow in the U.S. Department of Energy (DOE) Office of Energy Efficiency and Renewable Energy (EERE) (Ph.D. in Chemical and Biomolecular Engineering at N.C. State University), said her female undergraduate research mentor gave her the opportunity to work in the lab, which influenced her path to becoming a Ph.D. Ezinne pointed out that supportive ecosystems can influence professional development. From her experience as a postdoctoral fellow at the DOE-sponsored Sandia and Lawrence Berkeley National Labs, which openly held leadership-driven discussions on diversity and inclusivity, and at her current office where her mentor is a female director, Ezinne said that strong and conscientious leadership can help break down stereotypes and systemic issues and create safe, positive workplace culture.

Having female science role models as early as high school can also be a game-changer. **Marika Schulhof** (Ph.D. in Ecology & Evolutionary Biology from UC San Diego), a fellow at the U.S. Environmental Protection Agency, said that her high school biology teacher was instrumental in inspiring her career in science. Her teacher, a woman, and former Ph.D. research scientist introduced her to research early on and piqued her curiosity about biology as a possible career path. Marika affirmed the importance of mentorship for normalizing the concept that women can be interested in and talented at science.

Role models, however, do not necessarily have to be within the scientific field, as was the case for **Adria Brooks** (Ph.D. from UW-Madison in Electrical Engineering) who now works in the Office of Energy Efficiency and Renewable Energy at DOE. Adria said that she always knew that she wanted to do energy policy. However, as a masculine-presenting queer woman, Adria recounted that she did not have any queer or gender non-conforming role model scientists; the few female engineers she had met identified as straight and cis-gendered. In fact, as a young queer on the nonbinary gender spectrum, a lot of the people who looked like her weren't in professional jobs. Fortunately, she met queer masculine-presenting women lawyers and medical professionals who showed Adria that her identity and ambition should not keep her from attaining the career or education that she wanted. These mentorships supported her personal and career goals.

Challenges in STEM education and workforce

In addition to positive experiences, fellows recounted their challenges. Not all fellows had positive female-led environments. At times, some fellows were the only women or women of color professionals in their classes or workplace. For some, the STPF fellowship is the first time they have had a female boss or mentor. The desire to disassociate from the identity of being a woman to overcompensate from being seen as different or “too feminine” was noted as a common defense mechanism. For one fellow, she became so normalized to her experience of being the only woman in the room that it took her years to realize how much she was modifying her behavior to fit the male-dominated culture and how much she was missing by not having female mentors and coworkers to talk to. Once during a meeting where she was present and the clear expert on the topic, a male colleague said about her: “Don’t listen to her, she’s a woman and she doesn’t know what she’s talking about.”

For another fellow, in her undergraduate education experience, it was not uncommon for project team members to ignore what she said, which caused her to adopt more dominant behaviors as a survival technique. She even found that if a male undergrad student said the exact same thing, he would receive praise. In several stories, adhering to the White, male standard became the norm, causing certain fellows to do whatever they could to fit into that box. One fellow bluntly explained that she simply would never talk about gender discrimination and just dealt with it internally.

Sadly, female supervisors were not always aware of how internalized misogyny affected their actions. One fellow noted how her female PI overcompensated for being female in a male-dominated work environment and was actually doubly aggressive towards her. It seems this mentor missed out on the real truth: You can be a female-identifying scientist **and** be powerful.

What is the future of women scientists?

Catherine Clark (Ph.D. in Materials Science from the University of Minnesota), an MRS/OSA Congressional Science and Engineering Fellow, envisions a future where female-identified students are encouraged at a very young age to be involved in STEM. Catherine says that retention is as important as recruitment because once women enter their field, they have to go against systemic issues which can often create toxic and unsustainable work environments. Catherine boldly suggested ideas on cluster hires, mental health resources, accountability for microaggressions/aggressions, and training as retention mechanisms.

Adria highlighted the toxic masculinity that inhibited her scientific work and said that creating camaraderie in work settings can actually lessen mistakes and make better science and better work. In addition, allowing space to ask for help creates trust, which allows scientists and engineers to be more productive in their jobs and problem-solve together.

Coming from a policy perspective, **Esha Mathew**, an alum STPF fellow who did her fellowship at the U.S. Department of Defense (DoD), advocates for policy reform to create inclusive, supportive environments. For this reform to be successful, however, recruitment needs to be paired with these efforts. Esha noted that without addressing the structural issues that impede a female-identifying scientists’ ability to thrive, women can get pulled into punitive environments. While these important discussions have taken on momentum in recent years, continuing to listen, learn, and advocate for thoughtful and intersectional policies and practices is critical for the research enterprise to support everyone who loves science and seeks a career in it.

Conclusion

Over the course of interviewing these women, I realized how the STPF fellows' experiences and stories gave different yet interconnected accounts of their paths to the policy fellowship. For me, I am still coming to terms with situations where I've been judged on my skin color or have been treated poorly as a woman scientist. In some settings, I was the only female-identifying scientist of color; in others, I received only conditional recognition for my scientific expertise while praised for my nonscientific soft skills from my male colleagues. But, it has driven my current approach to leverage science as a tool for social good and equal rights.

When I asked Ezinne if she would change anything about her career, she said that she believed strongly that nothing in her experience was wasted and that "everything was a factor in moving her to where she is today." At the same time, she was glad that she had good influences that supported her and feels that the scientific community as a whole needs to work together to address these systemic and cultural issues within academia that create/perpetuate toxic environments. For Catherine, she truly appreciates the online camaraderie of the STPF fellows, and especially the other brilliant and amazing women-identified scientists and engineers. For her, it's been important to see people who have walked this path alongside her. It matters.

Image: Technology vector created by freepik (https://www.freepik.com/vectors/technology)

Meagan Postema, Ezinne Achinivu, Marika Schulhof, Adria Brooks, Catherine Clark, and Esha Mathew contributed to this article.