



PROFILES IN SCIENCE ENGAGEMENT WITH FAITH COMMUNITIES

Raven BAXTER

Dr. Raven Baxter is a molecular biologist and science communicator. Her mission is to make complex science accessible, engaging, and meaningful to the public by using creative outlets like fashion, music, comedy, and popular culture. She is also Executive Director of The Science Haven. We spoke with her about sharing her science and her identity as a scientist, about how to combat misinformation, and about what science communication can learn from churches. (Photo: R. Baxter)

Tell us about your science journey.

My path to this career has very much been a walk of faith. I didn't even know that science communication existed when I was a kid. I've always had a passion for science, for the enthusiasm around discovery and learning. Growing up, I pursued a traditional science career and got bachelor's and master's degrees in biology. I ended up working in drug discovery in corporate America, and immediately realized that in my position as a research scientist, I wasn't able to share my work with anyone or invite them into my space.

In addition, I worked across the street from a homeless shelter for unhoused families and children. I would be pipetting in the lab and taking care of my cells, but then I'd look outside and see all these kids playing. They had no idea what I was doing in the lab or probably anything that was going on in the building, and it just broke my heart, because I really wanted to share with them. But I couldn't...so, I left. My priorities shifted significantly after having that experience.

Being exposed to a closed science environment for so long, staying in one just didn't feel right or ethical. So, I decided to go into science education, and got a Ph.D and started teaching at community colleges. But while I was getting my Ph.D., I learned about informal science education, and then I learned about science communication. And then, I started to explore ways that I could share science independently and not affiliated with an institution like a school or museum. And so I started making music. I've always loved music. I used to make beats in high school. I used to make diss tracks against my bullies.

The first song I made was Big Ole Geeks, and that was my breakout moment. Big Ole Geeks was my personal diary being read out to the world, saying that it's hard being a woman in STEM, but I'm going to keep being me. I have a place, I'm here to stay, and me and my girls are going to rock this in our own special way. And it was really cool, we were at a nightclub, we were in the lab, we were in front of this luxury vehicle. I wanted to blend rap culture with my interpretation of science culture and also give an alternative representation of what a scientist looks like. And things just took off from there.

I think there's a huge gap in the science community where people really just want to be able to do science as they are, and feel comfortable and have the license to be themselves. And I feel like I definitely contributed to that conversation when I started doing my science communication. That's how I got to where I am today, and I'm pretty much just finding my way step by step. But it's been really fun.

Was it your intention to do something that got a lot of public recognition, or were you surprised that it took off?

I was mortified! You do something because it seems like the right thing to do, but I had no expectations beyond using my voice how I felt I should. Whatever happened after that was fine.

I could never imagine that an entire career would come from that. But that first video I put out, I had so many people reaching out to me to say how I was impacting them. People writing me full letters, people from all walks of life. That first video, Big Ole Geeks, was really centered around the Black woman experience in STEM, but I had all kinds of people saying "That was inspirational. I needed to see that, thank you." Way beyond Black women.

And so I thought, "Okay, well there's more to be done here. I'm not finished." And I had more music that I wanted to write. So, then there was the music, and then there was fashion, and then the *Nerdy Jobs* series which I ended up filming, and so much more. But I'd like to think that everything I do is to fill a gap, and it just so happens that people are actually paying attention.

Were there any lessons from your work in biology that you took with you to science communication?

Absolutely. I'm actually giving a talk at Howard soon making parallels between cancer biology, and mis- and disinformation. If we consider genes and genetics as information, when that gets botched, the whole thing gets messed up, and it has serious impacts on the whole organism. The same thing happens when information in society is not communicated properly. That has systemic issues as well, which we obviously saw during the pandemic. I'm actually writing an entire book on these parallels between cell and molecular biology and immunology and things that we see in society.

So, how do we combat misinformation?

This kind of communication should be a back and forth, otherwise you're just telling people stuff without knowing much about them. And you can't really have custom engagement if you don't have a space for the audience to share. Combating misinformation is really about being respectful. Seeing somebody as human and not some villain, and having a respectful conversation about who they are, who you are, what people believe, and where they got the information. Once you get to the root of that, you can figure out where something went wrong.

Providing resources is important as well. Misinformation is easier to spread when people don't know about or can't access the resources. Or they can't identify with the

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Dr. Raven Baxter holds up a copy of her interview in People magazine.

reliable sources, so they don't believe them. Sometimes organizations don't do a good job of adding context around information. They could talk about, who are the people doing this work? What are their stories? They could answer the public's questions in an accessible forum. I think there's a lot of healing to do in how things are communicated on many levels in society, and the best we can do is that two-way engagement, having those conversations.

What about more specifically, like how do you approach an individual?

A really positive way to approach someone is extending an invitation for conversation. When I go into those conversations, I'm not trying to convince anybody of anything. Whatever you hear someone say is real to that person, so take it seriously. You never want people to feel like you're removing their free will, and you never want to be combative. Also, I think a lot of people don't realize that combating misinformation is not done in one step, or even one conversation. It is an investment of time, because you have to build community and trust.

You mentioned before the phrase "custom engagement." What do you mean by that?

One of the first things I learned in my science education Ph.D. was about different ways of knowing. What we call "science" is actually only one way of constructing knowledge. I read a paper that found that our environment influences even how we interpret simple things like shapes; imagine what else it

influences. True knowledge construction is very deep, and you cannot just throw something at a group of people and expect them to all get the same message from it. I love DEI initiatives in science communication because it gives us an opportunity to hone in on specific communities and do culturally responsive messaging.

For example, there's a group called the COVID Vaccine Equity and Education Project, CVEEP. In addition to other efforts, they also engage with people who don't want to get the COVID vaccine – not trying to make them get the vaccine, but making sure that they have access to alternatives. The approach accepts that some people won't get the vaccine. And instead of being angry about it or trying to shame them, CVEEP suggests other ways to help keep them and their communities safe. We can't just abandon those people because there are still options for them. And if we respect their decision to not get vaccinated, while also highly recommending that they do these other things, that signals that there's still a place for those people.

We can't just neglect, or ostracize, or hurt a group of people because they don't agree with us. People may not see it this way, but that's actually a colonizer mindset. We can't do that with science. We should be starting as young as possible to develop scientific literacy through both formal and informal education. Anywhere we can convey information, we should be communicating how to engage in dialogue and the scientific process and the story of science. It's really fascinating, and it's not told enough.

Has faith had an impact on your science communication career?

When I was in high school, I read a book called "Quantum Physics and Theology" by John Polkinghorne. It's a really approachable read on theoretical physics, but it also draws parallels between faith and discovery of the particles and their functions, and talks about how we don't even have proof for some of the theories, and no tools to measure them. And his point was that that is what faith is. We have reasons to have faith in things that we cannot prove or see.

So, I've always had that shaping my perspective. And then for me personally, I was raised Catholic. Recently I've been learning a lot about my religion. There were books of the Bible that weren't put into the King James version; there are dozens of others that tell other stories, so there's much more to discover. I think that the more we discover, the more we find ourselves. And it's the same with science. My journey in pursuit of discovery strengthens both my faith and my ability to do science.

Have you ever done engagement specifically with people or communities of faith?

Not directly. But my second video that I put out went super viral. After its release, a Google search alert pinged me with a recording of a church service. It turns out that they showed my music video in church during the service! This was earlier in 2020, and they were trying to encourage their members to be mindful of the pandemic and encouraging social distancing. But they were showing my music video in church to communicate a message about Covid. That was my first signal that



A still of Dr. Baxter from the "Big Ole Geeks" video.

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my science communication can exist in faith spaces. It showed me that a good strategy, and a good mindset and framework around what you do really can go a long way.

Are there specific science communication lessons you've learned from faith communities?

There are so many different experiences with religion, and mine is specific to me. That said, I've only ever seen people being welcomed in church, regardless of who they are. Ultimately the goal of the church is to expand the church community and get more people involved in Christianity or whatever faith, but they understand that, similar to how we were talking about science conversations, it's not one and done. You don't have to get saved today; you're free to come and go as you please. Nobody is being forced to do anything. And unless you've been exposed to that kind of inclusion in some setting, it may be kind of hard to have conversations about science with people who don't necessarily believe in it and say, "Well, you can just come as you are. Come as many times as you want and I'll be around. You might not believe it today, you might not ever believe it, but you're still invited."

There's so much the science community can learn from a good church community. Just being able to witness how inclusive the church actually can be is really important to understanding how to have conversations about science. My experience with the church is truly a come-as-you-are type situation. My pastor that I grew up with used to be a drug dealer, and he talks about it during church. No one is perfect and no one is expected to show up perfectly, but everybody's there to receive a message. It's the same thing about science. You want to communicate a message, okay, what is that environment going to look like?

I want to make it like a church, to be honest, where nobody is ever turned away. Even if they don't believe the same thing I do, I don't have to make them leave or convince them to be like me so they can stay.

Any tips for people just starting to think about culturally responsive science engagement?

First, think about how you want to convey your message. Do you want to do it through art? Do you want to be an illustrator? Do you want to be behind the camera? Be a producer? Be the host or the face of the communication? There are so many ways to present science.

Keep in mind that even the most basic notion of science can be completely fascinating and mind blowing to a large demographic of people. Start small, and then build up to bigger concepts. Don't be afraid to talk about science through your identity and your lens as a human. Two-way communication is amazing.

Remember that even though we're all individuals, we're still part of a larger community, so I should be mindful of how I treat you. When I go to sleep, I shouldn't be thinking, "That fight with that anti-vax person was really hard." I should go to bed thinking, "Wow, that conversation with that anti-vax person was really insightful."

For me, being a science communicator is about serving the public – not just the people that agree with you. You should decide if you truly want to serve everyone or just want people to agree with you. Be honest with yourself, because science communication is ultimately about building community, even with people who disagree. I think that's the whole point of communication. ∞

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Image from Dr. Baxter's Nerdy Jobs series.

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