

# Keynote: The Art of Nontraditional Science Communication: Taking Joy in Being Curious About Our World

## SPEAKERS:

**Zoe Swann, PhD Candidate**

Arizona State University  
School of Life Sciences,  
Neuroscience, Class of 2022

## REPORTER:

**Christine Watt**

Editorial Administrator  
American Orthopaedic Society for  
Sports Medicine

When Zoe Swann steps onto the stage at the 2022 CSE Annual Meeting, she is not alone. This year's keynote speaker is accompanied by a strange looking instrument, somewhere between a guitar and an oddly proportioned lute. "It's actually the body of a [medieval] lute, which a luthier turned into a baritone ukulele for me," she later explains. For now, it serves as the kickoff salute to the annual meeting, as Swann sings a soulful love song about proteins and amino acids. The crowd erupts as she finishes and places the delicate instrument down with a wide grin. "Today I'm going to talk about what I just did: communicating science in rather nontraditional ways."

Thus, the tone is set for a talk on nontraditional communication from a (rather nontraditional) keynote speaker. Swann is young, an early career scientist, and one of the only students at Arizona State University to move from her bachelor's to PhD in under 4 years. As she speaks, her eyes light up—you can tell this is a subject she is passionate about. "That was fun!" she exclaims, and indeed it should be. For Swann, science is a joyful subject she has loved since childhood, something that should be filled with wonder and surprise.

However, this joy often gets lost.

Swann notes that studies have shown graduate students are 6 six times more likely to suffer depression and anxiety than the wider population. This is even more pronounced in science, technology, engineering, and mathematics (STEM) students, with a study from Berkely finding that 48% of STEM PhDs suffered from depression and career dissatisfaction. Swann can relate, having experienced disappointments and hurdles that almost stopped her in her tracks. After one particularly devastating setback, it took her several months to reorient and successfully defend her dissertation proposal. Even then, she found that she felt empty. "Part



Zoe Swann

of the problem," she says, "is that it feels like our work will never mean anything." But Swann pushes back, asking an important question: Why? Why the existential crisis and disillusionment? Why isn't science fun?

Nontraditional science communication might just be the most powerful antidote to anxiety-fueled burnout, Swann suggests. Communication is all about connection, and when you connect in nontraditional ways, you can share the passion and excitement of discovery. For Swann, this is key. "Even though it so easy to become disillusioned with our work, we shouldn't forget the toddler-like discovery; the magic of curiosity."

Thinking outside of the scientific communication box has other benefits. It often makes science more accessible, through technologies such as screen-readers and adaptive learning devices. Swann herself invented a medical device, consisting only of a cell phone, amplifier, and headphones, that enables even the most severely disabled stroke patients to communicate. Swann beams while relaying the story of a nonverbal stroke patient telling her husband she loves him for the first time since her stroke.

Nontraditional communication can also bring more diversity to the sciences. While teaching a cadaver lab at Arizona State University, Swann saw evidence of this. A group of non-STEM night students preferred games and

CONTINUED

---

interactive class periods to lectures. Many of these students are now pre-med.

By communicating nontraditionally, the love of science can be shared with a wider audience. In turn, this may prevent gatekeeping and could help to restore trust of the scientific community.

But how do we science communicators and members of CSE engage communities? Swann suggests starting with early career researchers like herself. "We only know one path," she maintains, "post-doc, then land a faculty position if we're lucky." Many early career scientists become unemployed, not because they aren't employable, but because they do not know of the opportunities available to them. Swann recommends hosting job fairs or visiting campuses and providing information about the work science communicators do, both in and outside of academia.

Providing nontraditional ways to collaborate with early career scientists can also build connections and foster future opportunities. While on the brink of burnout, Swann rediscovered her love of science through a "Dance Your PhD" contest held at her school. She describes it as one of the silliest things she has ever done, but it reminded her of her childhood passion. "By giving us opportunities to engage that way," she insists, "you'll change our lives."

A major opportunity for connection and growth lies in peer review. Swann was never formally taught how to do peer review but discovered that she really enjoyed it. Building peer-review training opportunities for scientists

while they are still in grad school fills a great need in science communication while teaching scientists how to use their skills in new ways.

Outside of early career scientists, Swann recommends engaging the community through events targeted to different age groups. Write lay articles for kids. Create writing contests on scientific themes. Arizona State University has programs dedicated to teaching STEM in prisons and helping STEM-interested foster youth transition into university. One of Swann's favorite opportunities is the annual "Earth and Space Exploration Day" held for kids of all ages. By providing these events to the community, scientists and science communicators allow themselves to have fun with science. It can help bring back the joy of the work.

By thinking outside of the box and allowing for greater flexibility of language and style, science communicators can promote accessibility, diversity, and community-wide engagement. Rather than just disseminating information, they can spread the joy and wonder of discovery through connection. "The pillars of happiness," Swann concludes, "are family, friends, and service. Service in science is a fundamental part of science itself ... let's work to be a source of connection and change ... this is my call to action."

Picking up her lute once more, Swann closes with the song that reignited her love for her work. In her music, her passion for science is evident. Connection is the key to a successful scientific future. All it takes is a little joy.