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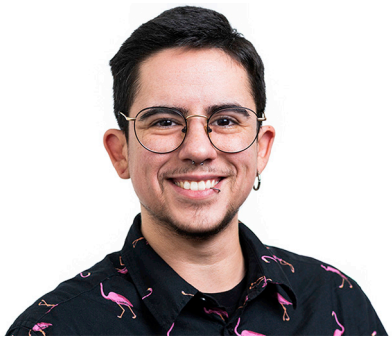
Voices

STEM Pride: Perspectives from transgender, nonbinary, and genderqueer scientists

In celebration of Pride Month, we asked transgender, genderqueer, and nonbinary scientists to tell us about what fascinates them, their ambitions and achievements, and how their gender identities have shaped their experiences in STEM. We owe a special thanks to 500 Queer Scientists (https://500queerscientists.com/), whose network and efforts at increasing LGBTQ+ scientists' visibility made this article possible.



Adam Armada-Moreira (he/him)
Linköping University

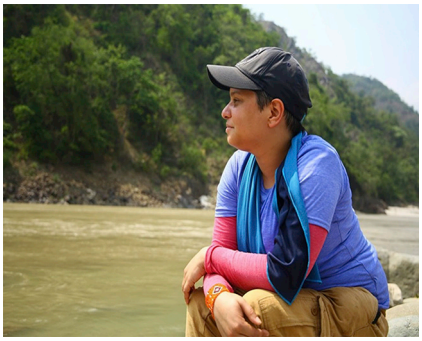
Is your existence considered political? Mine is

Academia is home for misfits. All of us who would be bored with a less demanding job, all of us who might prefer data over people, all of us who want to thrive and be celebrated in a world that seems annoyed that we keep pushing the bar. My name is Adam. I have 28 tattoos, two cats, and I'm a transgender man. I am one of us. Oh, and I'm a scientist with a PhD in neurosciences. It has always been easier to "reduce" myself to my ideas and my brain, thus ignoring gender dysphoria. Academia gave me the space to do that, to be celebrated by the novelties I brought instead of being recriminated for not fitting into some random societal box. But I am one of the lucky ones. Successful and respected trans people are still in the ppm range or even beyond the limit of detection. We are still being targeted and murdered every day all over the world. Still, being "a lucky trans" in academia is bittersweet. I have a fine-tuned ability to identify sexism, personally knowing how it is to be perceived as a female versus a male scientist. I also went through something that most don't consider: I had to change my name in my earlier publications. Do you know how that goes? "Hey, reputable scientific journal. I am trans, and that name you have no longer exists. Displaying it might invite transphobia toward me in the future. Could you please change it"? "No." It takes a lot of angry emails, and I was only fully successful in fewer than 50% of the cases. I'm looking at you publishers. Move with the times. Protect trans scientists. For my fellow queers: come out, fight, live, thrive. You are not alone.

Carrie Cizauskas (they/them)
Independent scientific consultant

Embracing the liminal space

I've long lived in the liminal space, the area in between this place and that, the state of being not quite and both at the same time. As a genderqueer person, I've been woman enough to have to constantly deal with sexism but not woman enough to get the support and boost of a sisterhood. I've been man enough to hang with the chauvinistic cultures of fieldwork and the wildlife-ranger/veterinary world of Sub-Saharan Africa but not man enough to be given the opportunity to speak without being interrupted or the benefit of the doubt when it comes to new research ideas. As a scientist, I'm a veterinarian who doesn't practice clinical medicine; an ecologist with more formal training in immunology and physiology than in environmental science; a teacher and mentor without a classroom; a researcher who eschewed academia for industry; and now, an independent scientific consultant, illustrator, and writer who exists across several professions but without an institutional title. I used to be worried that I wasn't enough of one thing to give an easy answer when someone asks "Who are you? What do you do?" I now feel that this is a strength. In a world that increasingly values specialization, we still need creative generalists and "Renaissance people" who travel between and across professions, fields of knowledge, and personal experiences. Being this person has helped me to do some of the first complex immunological ecology research, publish in very different areas of science and technology, mentor many diverse students and others in academia and industry, and collaborate with artists and scientists around the world.



Gabriela Fleury (they/them)
Rainforest Trust

Interspecies diplomat

I'm fascinated by the human-wildlife interaction spectrum and a tinkerer at heart. The work I do to mitigate human-wildlife conflict draws on anthropology, human psychology, animal behavioral ecology, and spatial science, but it also can involve aspects of engineering and environmental education.

One of my favorite collaborations was with software engineer Jaymie Krambeck, where we designed and created three human-wildlife conflict-mitigation video games and beta-tested them with a conservation organization in Mozambique. Another fun series of projects was testing out deterrents in South Africa and Namibia to determine different methods of reducing livestock losses to carnivores.

As a childhood cancer survivor, I know time is never a given. Through a combination of hard work and luck, I worked full time in several different African countries and was managing my first team before 25. Now that I'm starting to mentor others, I think what I'm proudest of is my drive and the fact that I'm able to contribute to nonbinary BIPOC representation in conservation science. I feel passionate about being able to help shatter the stereotypes that you have to be high income, cisgender, heterosexual, or white to succeed in this field. I'm starting my PhD in Fall 2022, focusing on African wild dog and livestock conflict in Botswana, and I can't wait to see what new adventures are in store!

Sofia Kirke Forslund (she/her)
MDC/Charité Berlin

What being trans means for me

Caveat: my white, middle-class trans experience may not generalize. Still: debating the validity of the sex or gender of trans persons cannot be a harmless intellectual exercise for me. For decades, I thought gender was merely stereotype, and I deconstructed the one assigned me, exploring unlabeled androgyny and femininity. My distress remained, for in truth, I need to be understood (by myself and by you) not as (atypically) male but (atypically) female. I believe now, beyond culturally contingent stereotypes, that most human brains instinctively label those we meet as "same sex" or "other sex" and that whatever neural substrate underlies this constitutes the most relevant human sex characteristic. Seeing my body and its reflections in others' eyes, my brain labeled it "other sex," causing constant low-level disconnect. I escaped into science partly from this sense of otherness. By altering all I could (so far) about my body and its framing in the eyes of the world (for we are pack animals that evolved to care how others see us), the disconnect ceased and instead of "my body," this woman is now just *me*. Whereas before I was held back by coping mechanisms requiring hours each day, I can now stay in the moment and devote myself fully to scientific ambitions and experiencing life. Social interactions drain me less for I now feel I *am* a self that others can see, instead of an enigma draped in ill-fitting flesh. As female (while in many ways proudly atypical), I can simply live as scientist, daughter, friend, and partner. Worldwide, many now want to deny me this and instead codify my non-recognition. Please don't let them. Photo courtesy of Pablo Castagnola (https://www.pablocastagnola.com/).

Eartha Mae Guthman (she/her and e/er)
Princeton University

Trans neuroendocrinology

I am a queer trans woman, a postdoctoral research associate in the lab of Dr. Annegret Falkner at the Princeton Neuroscience Institute, and a Senior Fellow at the Center for Applied Transgender Studies. I am fascinated by how hormones flexibly coordinate neural circuit dynamics to control social behavior and metabolism. Further, studying the ability of hormones to drive plastic changes in neural circuits is directly translatable to the transgender community, many of whom take hormone replacement therapy (HRT) as part of their transitions. Currently, I am studying the role of gonadal hormones in orchestrating the activity dynamics of a brain-wide macrocircuit of hormone-sensitive neural populations to control social behavior. To do this, I am developing and applying novel methods for calcium imaging and behavior quantification. In the future, I hope to secure an independent faculty position where I can extend this work to mouse models of HRT, allowing us to begin to understand how HRT regulates neural circuitry, thereby promoting its beneficial effects on mental health. This research could lead to improved and more personalized HRT regimens. Historically, biomedical research on and treatment for transgender populations has been led by cisgender people who often

discount the needs of transgender people. I plan to intentionally build my lab to pursue research related to transgender biology and healthcare. Let's embrace the diversity and variability that makes biology beautiful and evolution possible!

Aflah Hanafiah (she/her)
Pennsylvania State University College of Medicine

A long road to becoming

I grew up questioning my gender identity while living in a queerphobic country. I quickly learned that addressing those questions could invite harm, so I tucked my true self away. In my silent suffering, I found that studying biology took me to a different world. I reckon that my interest piqued from questioning my own "biology," and naturally, I sought to understand myself more. Since then, I made it my life goal to become a scientist and possibly use the opportunity to carve a better life for myself. Being financially underprivileged, my options to move forward in life were limited. Determined to achieve my goals, I worked hard to win a government sponsorship to pursue a bachelor's degree abroad, which I was awarded. I continued my education in the US, where I met my late undergraduate research advisor, Dr. Irene Evans. She provided me with continuous support and guidance that opened the door for me to pursue a PhD program here at Penn State University. Throughout my time in the US, I was finally able to re-visit my questions about my gender identity as I slowly become whole. As a trans Muslim scientist, I could say that the reason you can hear my voice now is my sheer determination and resilience, but in truth, it would have easily been silenced had I not received opportunities and support to realize my ambitions.

Jen M. Hope (they/them)
Stanford University

We don't need rainbows

Ben Barres passed away when I was in my third year of grad school at Stanford. I remember feeling so frustrated that I had spent years only a short walk from one of my few trans elders in science and yet I hadn't ever met him. I remember feeling acutely the pain that, as trans folks, so many of our elders have passed before we could know them.

Our research institutions paint rainbows every June, and they hold pride events where cis gays talk about how far we've come while the trans community and our struggles are left unseen. I need my colleagues in science to understand that it is not my transness that oppresses me. My transness is an expansion of possibility, the ability to move through the world with harmony between my body and mind. It is a shattering of arbitrary divisions. It is freedom. But academia is resistant to deviation from the norm. My colleagues balance doing cutting-edge research with fighting for a bathroom they can use in their building. We are told that if we *really* love science, we'll apply for jobs everywhere, even though we know that we are not safe just anywhere. Even as we mourn our murdered siblings every November.

Pride began as a riot led by Black and brown trans women who decided enough was enough. Our liberation is inextricably bound up with police abolition and anti-fascist movements. Our existence is political, and this will lead to tension in our academic careers until our cis colleagues recognize their own positionality, power, and responsibility in our political landscape.

Izzy Jayasinghe (she/her)
The University of Sheffield

From microscopy to academic activism

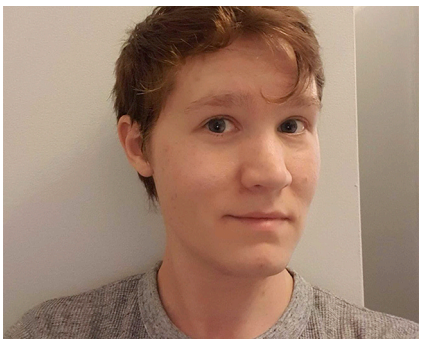
I have spent 15 years working on novel optical microscopy methods, particularly optical super-resolution microscopy and their applications in biomedical science. In this time, the super-resolution community has become a highly inclusive community of innovators and scientists who have pushed the limits on cellular features that can be resolved optically from the scale of ~200 nm to ~2 nm. I am proud to have been in this community and proud to have worked with colleagues who, together, have harnessed this technology to optically resolve the true organization of ryanodine receptors—the main signal transducer that activates the heartbeat. This is a discovery that has led to highly insightful research on the etiology of life-threatening heart conditions. My ongoing and longer-term plans focus on refining these optical tools toward more applied sciences (e.g., clinical, environmental, and physical sciences). As a trans woman of color, I have experienced certain levels of rejection, prejudice, and exclusion,

although the vast majority of my colleagues have been fantastic allies. These experiences have driven me to understand, advocate against, and write about the exclusionary practices that exist in academia. Gaining greater understanding of these issues has certainly given me more resilience as a scientist. I also find that openly talking about these issues is a really effective way of improving the culture that we work in. My hope for the future is that we, as a community, will continue this trajectory to value both the innovations of our colleagues as well as diversity.

Danny McSweeney (he/they)
University of Massachusetts Amherst

Embrace your winding road

I wouldn't be completing a PhD in developmental neurobiology if I wasn't also a trans theater kid. In my early 20s, I worked as a clothing tailor in theaters and opera houses, building elaborate costumes from scratch. I spent these years in deep personal reflection, connecting the dots of my past to ultimately discover I was transgender. When I began my new career in science, I experienced severe imposter syndrome and loneliness, convinced that a trans person from the arts couldn't excel in science. I was pleasantly surprised to find quite the opposite: the seemingly unconnected life experiences of costuming and personal self-reflection equipped me with the tools to excel at the bench. Constructing a costume is similar to STEM in a lot of ways: it takes precision, effective teamwork, an ability to translate a 2D plan into a 3D structure, and a passion for the work. Through my years of self-reflection, I developed crucial scientific skills in observation and recognizing patterns by using my personal "data" to form conclusions about my own gender identity. Each person's road can look very different; it is rarely straight and narrow. It is vitally important that we each embrace and learn from our own winding paths to science.



Iris D. Young (he/him)
UC, San Francisco

Memoirs of an ex-pile of goo

To borrow a phrase from *Detransition, Baby*, I was a Trump-era trans (trans, like queer, is not a noun unless you're a trans person reclaiming it as such)—I started hormones the day before the 2016 election. For some related and some unrelated reasons, 90% of the things that have ever gone wrong in my life happened in those first couple years, and I found out how I operate under extreme stress. At one point I stopped feeling hungry for a week and then spent another several months perpetually nauseous; another time, I couldn't be jolted out of dissociation long enough to hold a conversation. I suddenly lived in a different world than coworkers who had never experienced housing insecurity; never been unable to access healthcare; never had to read up on laws before traveling; and never been called evil, predatory, or sick by Supreme Court judges or elected officials. (I did, it turns out, have colleagues who suffered each of these injustices, but I didn't know it at the time.) I tried not to show it, but I was barely holding together.

I'm thriving now because I've had mentors who gave me time and understanding but never lowered their expectations for what I was capable of. This is what I want for everyone. Transition is ultimately one of the most rewarding things most of us will ever get to do—rebuilding your life from the ground up gives you a rare chance to reassess what matters. I'm hoping future generations have less rubble to pick through, less rebuilding to do, but for the foreseeable future, this transformation is messy. I resonated embarrassingly strongly with something I read on Twitter about caterpillars becoming butterflies by way of dissolving into "disgusting pile[s] of goo" (although I did give myself credit for being a pile of goo with a doctorate). To stick with the analogy perhaps further than it was built to stretch: mentors and supervisors, you'll be much happier with the end result if you protect that cocoon and wait it out.