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Disabled people face many challenges in academia — and that must be corrected.

ACADEMIA'S ABLEIST MINDSET NEEDS TO CHANGE

Four junior researchers with disabilities describe their career experiences so far, and how colleagues can act as allies.

By Kendall Powell

Last year, disabled early-career researchers were under-represented among PhD graduates in science, technology, engineering and maths (STEM) fields.

In the United States, 25% of adults live with a disability, but in 2020 those with impaired hearing or vision earned just 4% of US STEM PhDs, and those with a mobility limitation earned just 1% of STEM PhDs.

A report by the UK Royal Society in January 2021 found that 12.5% of UK STEM graduates had a disability in the 2018–19 academic year, up from 6.1% in 2007–08. This rise is attributed to increases in students reporting mental-health conditions and learning difficulties. Those with physical disabilities comprised roughly 2% of UK STEM graduate students in 2019.

In this second feature to mark National Disability Employment Awareness Month in the United States (October; a similar UK event, Disability History Month, runs from 18 November to 18 December), four disabled early-career researchers recount their own experiences with navigating ableism in academia and how they are surmounting barriers in research spaces. An earlier article focused on disabled group leaders, and how academia's ableist culture — beliefs or practices that devalue and discriminate against people with disabilities (whether physical conditions, mental-health issues, chronic illnesses or cognitive differences) — needs to change (see *Nature* 598, 221–223; 2021). These junior researchers describe how graduate-student and postdoctoral-researcher colleagues can better advocate for accessibility and inclusiveness in laboratory teams.

SARA RIVERA DON'T MAKE ASSUMPTIONS

I was treated for anxiety, depression and panic attacks after being sexually assaulted during my second undergraduate year at the University of Michigan in Ann Arbor. I lost my short-term memory. The university's sexual-assault prevention and awareness centre wrote to my professors, explaining the situation and listing steps to help me, including postponing my exams.

I was diagnosed with post-traumatic stress disorder (PTSD) eight months after the attack and was granted some course extensions. I graduated a semester late, and started graduate school at the Scripps Institution of Oceanography in San Diego, California, in 2014, a year later than I had intended. I thought that being in

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a new place would help, but I left my entire support network and my family back in Michigan.

Three months into graduate school, I was back in crisis counselling. Graduate school was re-traumatizing in many ways. I had panic attacks going into meetings with my adviser, and I was re-diagnosed with PTSD.

I turned to my established support network at Michigan. A former professor suggested applying for a postdoc that was co-advised by someone at the US National Oceanic and Atmospheric Administration to explore federal research options. I was successful, and began working at Michigan again in 2020.

Once in my new role, I asked about the process for reporting a disability. I told my two postdoctoral advisers, "I have this disability, I have PTSD, and these are some of the accommodations I need." This is an awkward way to start a new job – but now I work four ten-hour days each week, and I work remotely. I rely on maintaining a schedule to keep my mental health in check. It's really different having my support network and my family locally. I am Hispanic, and family is hugely important in our culture.

My current adviser is incredibly supportive of people taking time off to deal with their health. I get called out for not scheduling a holiday. Leaves of absence should be normalized. My advice to others is: you don't know what's going on with other people. Don't assume someone is being lazy or doesn't care. And remember that when someone is struggling with their mental health, it's hard for them to assess their own mental state. Don't treat people like crap.

Sara Rivera is a microbial ecologist and postdoctoral researcher at the University of Michigan and the National Oceanic and Atmospheric Administration in Ann Arbor.

VANESSA CRISTINA DA SILVA FERREIRA CREATE EQUITY FOR ALL

In 2014, on the first day of my second undergraduate semester at university, I seriously injured my ankle after a car hit me. I had to use a wheelchair for six months, and my mother had to go to classes with me. The next semester was very hard: I was learning to walk again, and I was diagnosed with attention deficit hyperactivity disorder (ADHD).

It took me six years to get my undergraduate degree in physics. I took fewer classes each semester owing to difficulties navigating a huge campus. I had amazing and supportive friends, but not all of my classmates had their attitude.

In one episode, I had a lab class on the second floor, and the elevator was never working. I had to ask friends to help me up the stairs, and then they'd go back and get my wheelchair and my bag – it was a huge operation. For our



Sara Rivera works in the lab.

SARA R. RIVERA

final-exam experiment, we had to split into two groups because there was not enough equipment. There would be a lottery to see which half of the class had to come back the next day. One friend asked the instructor whether I could go on that day because I had already gotten up the stairs, but another student said it would be unfair to take me out of the lottery.

My professors were all very supportive, but my university did not have an office to deal with disabilities at that time. I asked professors and administrators whether I could have rides between buildings on campus, but they said no. Instead, they suggested that I could study from home by e-mailing my professors and scheduling exams. (This was before the pandemic, so there were no remote lectures.) But I wanted to go to classes. That is my right.

I spent a year in Portugal, learning Portuguese sign language and teaching science to a deaf-blind student. My experiences there were very different. The elevators were always working. I asked whether the university needed documentation of my disability, and administrators and my supervisor said, "No, if you say you have it, we trust you."

I use one crutch for stability because my right leg is weaker than my left one, and my ankle can easily roll and make me fall. I have a lot of pain and cannot walk or sit for too long. I need to take breaks and stretch sometimes during class.

Now, there is a working group on campus to address disabled students' concerns, but they

don't always hear us. When I expressed worries about being restricted to remote classes, a senior researcher dismissed my concerns, claiming her 20 years of inclusion-research experience didn't support them. I'm the one who lives with my mobility restrictions and ADHD every day. I cannot put them in a box today because I don't want to think about them. They're part of me.

On the university campus, students and faculty members just need to ask whether people need help. That can solve many problems, but if the disabled person says, "No, thank you," then they must accept that and not be offended. Sometimes, we need to go alone or try to do something for ourselves.

After my undergraduate graduation, some students and faculty members with disabilities formed a support and advocacy group. Together, we are in a stronger position to ask the university for better accessibility and for policy changes. In July 2021, we got the university to add accessibility rights to their policies for applying for master's studies.

When I had all these issues with using the wheelchair, I had a lot of support from the cleaners at the university. They asked whether I needed anything and were always smiling and encouraging me. During my honours-thesis presentation, I thanked these women because they were so important to my success. They are people that other people sometimes don't see – just like disabled people.

Some people think that a disability is

somehow a privilege, but in reality disabled students need equity – not equality. With equality, we are not getting anywhere. But with equity, all students can access the same facilities and education. We cannot give up, even though it's hard sometimes. I won't be quiet. Disabled people are part of society, and disability is just another human characteristic.

Vanessa Cristina da Silva Ferreira is a master's student in science and maths education for deaf people at the Federal Rural University of Rio de Janeiro in Seropédica, Brazil.

LOGAN GIN DISABILITY ISN'T A DIRTY WORD

I have diastrophic dysplasia, a form of dwarfism, which means that I use forearm crutches to get around, and an electric scooter to travel longer distances. Standing for long periods and reaching things can be challenging. I'm often navigating spaces that weren't built or designed for people with disabilities.

A theme throughout my academic career has been challenging myself in STEM, despite the accessibility issues I face in this arena.

As an undergraduate, I had to navigate the older, hilly campus of my university. Ramps were tacked onto the backs of buildings. I'd enter one lecture hall through a backstage entrance. What message is the university sending?

I wrestled with the challenges for disabled students who want to feel like a part of the STEM community. For biology and chemistry lab classes, all of the benches and fume hoods were made for someone of average height. The course instructors would try to set up a platform or a stool that I could stand on to reach things. But it eventually became a safety issue because I wasn't comfortable reaching for chemicals from these surfaces.

The solution came in the form of my lab partner, another student whom I met early on. We made a great team: he did all the hands-on manipulations, and I did the data collection and analysis. We matched our schedules to take all our lab courses together. He understood what I needed, and I was able to contribute.

When I tell this story, I say I feel very fortunate. But so many people might go into that first-year lab course and have a partner who doesn't work well with them, or a lab coordinator who is not accommodating, and then they are done with STEM. That's it.

In many ways, I was turned off by the physical aspects of doing science. I had to consider whether I wanted to continue dealing with the stress of navigating physical spaces. I did not, so I found an alternative field: education research. Now, 99% of my work is on the

computer. It was a tough decision, but I made it to preserve my mental and physical health. Now, my goal is to make it easier for those who come after me to navigate those spaces.

There are many fields in science, especially computational sciences, that don't require physical exertion. But students shouldn't all be shepherded towards those because they have disabilities. Can we create truly accessible experiences for all students to choose whichever field they wish?

At graduate school, both my PhD adviser and I found it difficult to get the accommodations I needed in our lab group's space – even simple things, such as a stool to reach the sink. As a graduate student registered with the disability office, I was told, "We only deal with accommodations related to coursework. That's a human resources (HR) concern because you are an employee." Then, HR would ping-pong me back to this disability office because I was a student.

In the end, the costs of my accommodations were shared by my advisers and my department, because they wanted me to be successful. What I needed was inexpensive, but other adaptive equipment could be pricey. If principal investigators think it has to come out of their budget, are they going to want to recruit and retain graduate students with disabilities?

The burden is often placed on students to self-advocate with their professors, mentors and the disability office – which takes time, effort and energy. Try to identify people who have your interests in mind. Find individuals who want to go to bat for you and will challenge ableism in academia. Sometimes people cannot help, but will connect you to those who can.

Checking in about accessibility needs should be a lab-group norm, not a special circumstance. Society is finally at the point where 'disability' isn't a dirty word, but we need to frequently discuss accessibility.

Logan Gin is a PhD student in biology education at Arizona State University in Tempe who is studying the undergraduate STEM experiences of students with disabilities.

DIVYA PERSAUD JUST ASK WHAT WE NEED

I developed a disabling chronic illness about halfway through my undergraduate programme, during which I took three periods of medical leave. I also took a year off before my PhD programme in space and climate physics.

Academia has a big problem with accommodating people with disabilities. Despite registering my disability with my university as an undergraduate, I still struggled to access recorded lectures and had my grades docked for not attending class. I taught myself by

reading textbooks, and came in when I could.

I dealt with a lot of hostility. Some professors told me I needed to communicate better, but I didn't want to be explicit about my illness. However, I was not getting the help I needed unless I laid it all on the table. I sometimes advise people to be gruesome: it is pretty common to be dismissed if you won't fully disclose your disability, although you have a right to privacy.

One of my informal mentors showed me what true accommodation was. She told me to work from wherever was comfortable. She also treated me as a researcher, which allowed me to see myself as one. I chose mentors who I knew would accommodate me and respect my autonomy. If you are a woman of colour in STEM, like me, informal mentors can help you to stay sane.

My condition is in flux and unpredictable. I often have to cancel commitments at the last minute. On the outside, I look flaky. It's very humbling: I have to prioritize paying attention to my body and say I cannot attend some events in person.

But I've also learnt that people should not apologize constantly. That tells the other person (and you) that it's your fault. Making incessant apologies affects how you view yourself. Instead, I say, "Thank you for your patience," or "I can't 100% commit to this in the next week." Also, be a little assertive. Disclose private details only when it serves to get you something.

If you want to advocate for a disabled peer, just ask what they need. It will be awkward, but that's life. Don't stop asking your disabled friends to go out. Don't do things out of kindness without asking for consent. Don't ever disclose someone's disability to someone else.

And don't assume that everyone in the room is able-bodied. To break the ableism mindset, engage with the work of disabled people: watch TED talks given by disabled scientists and read their words. My go-to activists are Alice Wong, who edited the 2020 book *Disability Visibility*, and Lydia X. Z. Brown, who writes about neurodiversity.

Try to reframe your perspective about people with different needs. Walk into a lab or classroom and consider: what about this space is disabling someone? The chairs? The lack of a ramp? Who can't go on a hiking outing? Is this event, which is being presented in an old London building, excluding people?

I think about this a lot: who are we missing in our field because of disability?

Divya Persaud is a PhD student in space and climate physics at University College London, working remotely from Pasadena, California.

Interviews by Kendall Powell.

These interviews have been edited for length and clarity.