



LOUISE JASPER PHOTOGRAPHY

Charlie Gardner speaks at an Extinction Rebellion protest.

SCIENTIST-ADVOCATES SPEAK OUT DESPITE THE RISKS

Three researchers petition for climate-change action, wildfire management and neuroscience funding.

For many scientists, engaging in activism and advocacy feels like a calling. They find fulfilment in using their expertise to push for changes to national or local policies, increased research funding or better patient care.

Depending on the political context, however, there can be career repercussions to speaking out. It can also come at a cost to career advancement: time spent talking to elected representatives or campaigners is time not spent on

producing papers – a main metric of achievement for many institutions. Peers might not recognize this non-research work, either. As such, many scientists who are committed to influencing policy do it in their own time.

In a survey run by a consortium led by UK science-funding giant Wellcome, 61% of respondents cited insufficient time as the main reason that they did not get involved in public engagement (see go.nature.com/3jmahcc). Respondents said that being relieved of other

work, such as teaching, would be the biggest incentive for helping them to participate in such activities.

All too often, advocacy is treated as an extra-curricular activity rather than an important part of the job. Even so, many scientists with the desire and opportunity to engage carve out ways to influence policies and the public, outside the laboratories and lecture halls. Here, three researchers share how they have managed to balance advocacy with scholarship.

Charlie Gardner

Charlie Gardner is an associate senior lecturer in conservation biology at the Durrell Institute of Conservation and Ecology at the University of Kent in Canterbury, UK. He regularly participates in protests with Scientists for Extinction Rebellion, an offshoot of a broader movement that uses non-violent civil disobedience to push for action on the climate and biodiversity crises. He has also advised on legislation such as the UK Climate and Ecological Emergency Bill, which seeks to curb the nation's greenhouse-gas emissions and biodiversity loss and is currently making its way through Parliament.

What drove you to activism?

Teaching. Five or six years ago, I was standing at the front of a lecture theatre, full of young people who are going to be affected by climate change much more than I am. I couldn't stand that I wasn't doing everything I could. When Extinction Rebellion (XR) was launched in the United Kingdom in October 2018, it felt like the answer. As conservationists, we silently wish that members of the general public cared more about the destruction of nature. Now they are taking to the streets, and I have this moral obligation to be there in support.

How did Scientists for XR start?

In October 2019, a group of scientists came together to create Scientists for XR, which has carried out many actions. These include pasting scientific papers to the walls of the London headquarters of News Corp in 2021 in protest against inadequate climate-change coverage in the company's newspapers.

The group has various functions. One is to provide scientific support for the wider XR movement, so that it remains founded on solid scientific ground. A second is to advocate. Scientists vocally supporting XR sends a powerful message. Society trusts scientists.

A third function is direct action. Scientists for XR groups have been involved in a number of XR events. For example, at the 2021 opening of a London Science Museum exhibition sponsored by oil and gas company Shell, some scientists locked themselves to parts of the exhibition in protest against the sponsorship, while our group set up a table outside to demonstrate principles of atmospheric cooling and engage with the public. Such events serve to highlight the issue of science museums accepting sponsorship from fossil-fuel companies.



Wildfires are becoming more frequent in the Orinoquía region of Colombia.

María Constanza Meza Elizalde

María Constanza Meza Elizalde is a forest engineer and PhD student at the National University of Colombia in Bogotá, where she researches fire ecology and conducts fieldwork in hard-to-reach areas with recurring fire problems. With her adviser and other students in her research group, she's been drafting and lobbying for legislation that aims to reduce fire risk overall, while recognizing diverse business and cultural practices related to fire.

Why is there a need for a science-backed fire-management bill?

I study the Orinoquía region, near the border with Venezuela. It's an area of extensive savannahs, where the number of wildfires is increasing, mainly because of activities such as hunting, along with agricultural burning that gets out of control. Landscape-management decisions, very frequent burning or total

fire suppression in the savannah are also factors. And climate change is affecting the wildfire dynamics.

As a result, we are seeing changing patterns, with more frequent and intense wildfires in forest areas where they were not common before, and covering larger areas. This leads to forest degradation and to political decisions in which only the negative side of fire is seen.

Communities living in fire-dependent ecosystems know how to reduce risks, but environmental authorities don't recognize these practices. Right now, there are no laws or conservation strategies in Colombia that recognize the ecological role of fire.

How did you get involved in drafting fire legislation?

Because there were no public forums to talk about fires and develop strategies for reducing the risks, we began a dialogue with local communities about the problems and benefits of fires, while also involving non-governmental organizations, public entities, fire departments and national parks.

The great challenge is to articulate scientific, local and institutional knowledge to guarantee a fire-management plan that will result in safe and resilient landscapes. People think that only legislators can make laws. This



MARIA MEZA

is not true — citizens can propose them. We had the support of Congressman Mauricio Toro, who is a member of Colombia's Green Alliance party, and his technical legislative staff. We designed a bill that recognizes both scientific and ancestral, traditional knowledge, while respecting ecological heritage and

“A communication strategy that considers economic disparities or technological barriers is essential.”

regulations for integrated fire management. The bill would also promote research to develop strategies for reducing the risk of wildfires, and encouraging ecological restoration, environmental rehabilitation and recovery of natural ecosystems affected by forest fires.

How do you balance this advocacy work with your PhD commitments?

It is difficult. Fortunately, my network of academic and family support allows me to raise my voice. Dolores Armenteras, my PhD supervisor, listened to my suggestion and taught me and the rest of the group to

organize ourselves and work collaboratively.

When it comes to research, all the students in the group have our own theses, but we are a team, whose research and joint work contribute to our influence in decision-making. Alone, we couldn't have had much impact.

Have you encountered people who don't take you or your science seriously?

At the regional and local levels, the reaction has been mostly positive. And although not all national-level institutions take us seriously, we've found that legislators, regardless of their political position, take our science-based recommendations seriously. For me, as a PhD student, it has been very gratifying to have support from members of all political parties.

As a woman, I have other challenges to being heard. Being a woman in discussion spaces where the majority of participants are men, it takes more time to build your confidence. For example, I am an early-career researcher but I am also an engineer and I have a master's degree. Yet, in some workspaces, people keep calling me a 'girl'.

What's your advice for early-career scientists who want to influence policy?

First, I want to express my admiration for scientists who work in remote areas affected by armed conflict. I know how difficult and even dangerous it is for environmental defenders to discuss controversial ideas to influence policies.

The greatest lesson I've learnt about the legislative process is how to communicate science more effectively and contribute to politicians' capacity for understanding complex scientific problems.

As scientists, we do not always consider other stakeholders' access to information, but it's important that research results reach interested parties outside academia in a timely manner.

A communication strategy that considers economic disparities or technological barriers is essential. For example, written pamphlets are useless in communities with high illiteracy. So our group has been incorporating different communication strategies, including an art exhibition and a radio soap opera, to make the messages more effective.

This feels important, because in Colombia, we have many problems of climate change and armed conflict. We're facing huge challenges but they are not insurmountable. If scientists work together, we can influence the attitudes and actions of communities and governments. The only way forward is collaborative work.

How can scientists dip their toes into this type of work?

What the public sees of these direct actions is the tip of the iceberg. For every person out on the streets, there are 20 more behind the scenes involved in other tasks: organizing, producing press releases, baking cakes for marchers. Whatever you enjoy doing and have skills in, there is a role for you.

Taking part does not have to involve engaging in civil disobedience yourself, or putting yourself in a risky position. One of the most important jobs at a protest is for people to stand at the edges, engaging the public in conversations. That's a role that scientists can perform fantastically.

How have your advocacy and activism benefited you?

There's this crazy notion that scientists shouldn't speak out because it will damage their reputations. But activism has had the opposite effect on my career. My research is based on conservation in Madagascar; it's fairly niche. I previously had no global reputation. Since becoming a vocal scientist-activist, my reputation and my visibility as a scientist have soared.

Also, activism is great for my mental health. Knowing I'm doing what I can is important to me. There are simply the best people in these movements, and there's a sense of community.

Does being a vocal activist diminish your scientific credibility?

Popular perception holds that scientists must be neutral purveyors of information and not speak up about what that information means. Somehow, if we do so, it could damage our credibility.

But when scientists take personal risks and make personal sacrifices, that communicates the urgency of the situation in an important way. If scientists are saying that it's time for action, but not acting themselves, that undermines their own arguments.

How do you balance your academic responsibilities with advocacy?

For five years, I worked half-time at the University of Kent. I did this deliberately, to allow me the freedom to engage in other activities, including conservation consultancy, activism and writing popular non-fiction. I left that post last year, partly to focus on activism and writing, and partly out of frustration with the precarity of academic life.

There are things that enable me to be less single-minded in the pursuit of my career: I come from a position of relative privilege; I'm not interested in accumulating money; and I don't have children. So I think academia has been a good fit for me, but only because it doesn't fill my life.

Christin Godale

Christin Godale has lived with epilepsy since being diagnosed around the age of two. She credits neuroscience with saving her life and giving her a vocation; in 2016, she started a PhD in neuroscience at the University of Cincinnati in Ohio. Godale advocates for neuroscience funding, as both a patient and a scientist.

Describe your advocacy for funding

I work with the US Society for Neuroscience (SfN) as an early-career policy ambassador. In this role, I have opportunities to meet policymakers, maintain relationships with the offices of elected officials and contribute to collaborative advocacy through phone calls, social media and letter-writing with the SfN.

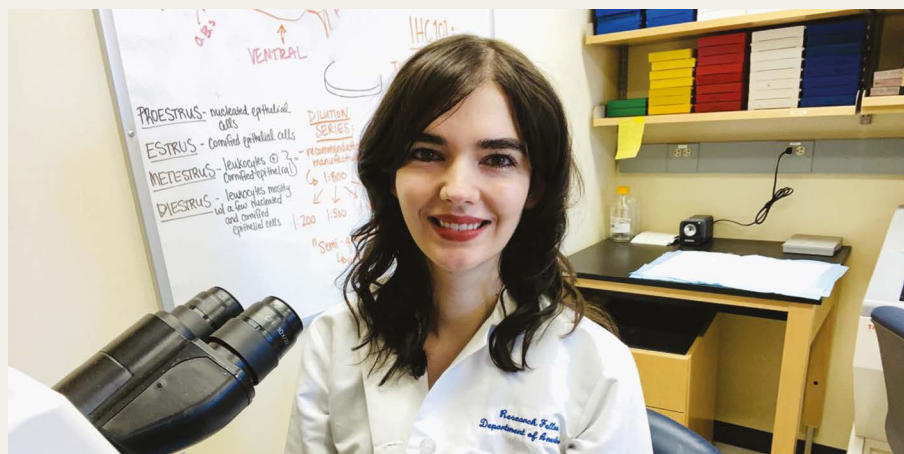
We're advocating for increases in federal funding of US\$49.4 billion for the US National Institutes of Health; \$612 million for the BRAIN Initiative, a research-technology project focusing on brain disorders; and \$904 million for neuroscience-related research at the US Department of Veterans Affairs.

We're also advocating for extra funding for federal research agencies to allow scientists to complete work halted by the COVID-19 pandemic, and to extend employment or training for people whose projects have been disrupted. The legislation to authorize this was introduced into the US House of Representatives last November. This was a result, we think, of many scientist-advocates holding 'Hill Days', events at which scientists discuss research with policymakers.

What support would you like to see?

I work on various local and national patient initiatives, including the Safe Step Act. This proposed federal legislation would allow exemptions from 'step therapy', whereby health insurers require patients to try, and fail on, multiple medications before they can receive the drug initially prescribed by their doctors. The process is meant to lower costs for the insurers, because some drugs are cheaper to prescribe; however, they might not be the correct ones for a specific case.

The act would exempt people with epilepsy from step-therapy protocols if they are stable on their anti-seizure medication or have already had a bad reaction to a treatment. Individuals who are forced by step therapy to go on multiple medications are at higher risk of developing breakthrough



Christin Godale in the Danzer lab at Cincinnati Children's Hospital Medical Centre, Ohio.

seizures, which can prove fatal.

Another bill, proposed in Ohio, would require publicly funded schools to create a 'seizure action plan' for each student with a seizure disorder. These plans include first aid and medication to help staff care for a student who has a seizure at school. Astonishingly, these plans are not commonly used or required in schools across the United States. I am campaigning for them to be implemented at the University of Cincinnati.

How does your lived experience of epilepsy shape your science advocacy?

Navigating graduate studies while living with epilepsy was challenging at first, but my adviser, Steve Danzer, and my lab-mates have provided me with the support that I needed to be successful. A lot of that support is made possible because they understand epilepsy not only at a mechanistic level, but also at a personal level. My colleagues always make themselves available to help with experiments on days when I have an unexpected seizure; they also ask for resources to educate themselves on patients' perspective, and volunteer at events for Epilepsy Alliance Ohio in Cincinnati, part of the nationwide support network Epilepsy Alliance America.

Like many people with epilepsy, I rely on anti-seizure medications, which allow me to pursue my dreams and ambitions. Advocating for basic science is very personal for the epilepsy community and myself. Researchers should consider the voices of patient advocates when performing basic research, writing a grant application or giving a scientific presentation.

How has the pandemic affected your work?

Early in the COVID-19 crisis, my university shut down non-essential scientific research. When my lab was not in service, I had more time to focus on advocacy efforts, specifically with the SfN. I participated in the SfN's NeuroAdvocate Challenge, which encouraged US neuroscientists to attend meetings of the Congressional Neuroscience Caucus, a bipartisan group that raises awareness of neurological conditions and mental illnesses, and to support researchers affected by the pandemic.

The crisis also brought to light shortcomings in the academic system – explicitly, a lack of training in science communication, which is needed to battle misinformation and pseudoscience. Many universities are now trying to improve in this area.

How do you balance your advocacy and research with your personal life?

When I started my graduate programme, I would work an insane number of hours a day. However, my work and mental health suffered from the resulting burnout. I learnt that I needed to have my own time, to spend with my family and cats and to dabble in some of my hobbies, such as cooking and listening to true-crime podcasts. I wish I'd discovered a healthy work-life balance earlier on, but I'm happy that I finally found it.

Interviews by Christine Ro.

Interviews have been edited for length and clarity.