

out early-career scientists' requests for data.

There is some evidence to support that statement. A study in 2014 sought data from 217 studies published between 2000 and 2013. But the team could secure only 40% of what they requested, and responses varied according to the requester's seniority³.

McGlynn says that many of the obstacles — whether real or perceived — to open science can be sidestepped. He is on the editorial board for the journal *Biotropica*, which encourages — but does not require — authors to contact the original researcher when they use someone else's archived data, which can be embargoed for up to three years. "Not only will you get their valuable insights, but it's inclusive and fair," he says.

Communication also helps for those who worry about jeopardizing a collaboration, he says. Concerns about open science should be discussed at the outset of a study. "Whenever you start a project with someone, you have to establish a clear understanding of expectations for who owns the data, at what point they go public and who can do what with them," he says.

It isn't hugely difficult to share data (see 'Open-data pro tips'). Online repositories such as FigShare or Zenodo make it increasingly easy to deposit scientific content for widespread consumption. More than 400 virtual communities have formed to share data, software and documented workflows so that a user can deploy them straight away, says Tim Smith, who oversees collaboration and information services at Zenodo. The repository launched in May 2013 at CERN, Europe's particle-physics laboratory near Geneva, Switzerland.

And although there is a time cost associated with uploading and organizing raw data, subsequent queries can often be averted by adding reader-friendly instructions at the start. Hogg recommends that researchers simultaneously upload tutorials and examples of how to use the content.

In the end, sharing data, software and materials with colleagues can help an early-career researcher to garner recognition — a crucial component of success. "The thing you are searching for is reputation," says Titus Brown, a genomics researcher at the University of California, Davis. "To get grants and jobs, you have to be relevant and achieve some level of public recognition. Anything you do that advances your presence — especially in a larger sphere, outside the communities you know — is a net win." ■

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1. Nosek, B. et al. *Science* **348**, 1422–1425 (2015).
2. Open Science Collaboration *Science* **349**, 6251 (2015).
3. Magee, A. F. et al. *PLoS ONE* **9**, e110268 (2014).

TURNING POINT

Andrew Simons



From 2008 to 2011, Andrew Simons led a programme in Ethiopia for a US-based non-profit relief organization. The former biologist recently earned a PhD in applied economics from Cornell University in Ithaca, New York, as a pathway to explore policies that could help to improve global food security — reliable access to affordable and nutritious food.

What sparked your interest in helping developing nations?

In 2000, as a biology undergraduate, I spent a semester in Latin America studying tropical biology. I lived with rural families in Guatemala and Nicaragua, where I saw grinding poverty. One night, I saw a woman rummaging through the garbage to find clothing. It was heartbreaking. I thought a lot about poverty and the 'right' response from someone living a relatively wealthy life in the United States.

How did you shift away from biology?

I went straight to a summer internship at a biophysics lab at Texas A&M University in College Station. There, I saw a powerful contrast between the economically privileged, who had access to technology, and the poor, who had no such access. I had always thought I would go into molecular genetics and work on crops that could improve nutrition and food security. But during my internship, I started thinking more broadly about how technology could be used to help the poor.

Did you pursue more opportunities overseas?

Yes. I did a short internship in the Dominican Republic with a US-based, Christian international-relief organization that sent groups to build a clinic in the slums of Santa Domingo. As they got more money, they went on to build homes. While there, I searched for and

found a masters programme in international development at the John F. Kennedy School of Government at Harvard University in Cambridge, Massachusetts. I was able to tailor my coursework to explore aspects of human health.

What brought you back to Ethiopia in 2008?

I had done short stints there and in Honduras, and I returned as director of programmes with a group that worked to alleviate chronic food insecurity in rural areas. We developed an initiative that provided food and cash to 300,000 people. We also planted trees throughout the country.

Why did you decide to pursue a PhD in economics?

I couldn't help thinking, instead of helping 300,000 people, what if I had the ear of government and could suggest policies that could help 7–8 million people? I was inspired by the work of Chris Barrett, an applied economist at Cornell who works on global food security and critiques food-aid projects worldwide. He has a lot of influence on governments, which are interested in his advice on how to make food-security efforts work better. My experience in Ethiopia paved the way for me to work on a handful of projects in East Africa for my PhD.

Can you describe some of the projects that you worked on in Ethiopia?

I monitored the use of fuel-efficient stoves. For 6 months, we tracked 1.7 million temperature data points from sensors in people's homes to understand when and how they used the stoves. In addition, I worked on a project to turn animal bones into a soil fertilizer. These projects aim to solve real problems — problems that will never be solved just by soil science or by applied economics. We've got to combine insights from all these areas to find useful solutions.

How have these experiences positioned you for the job market?

I have a wider tool kit than does someone who has studied just one discipline. I have an economics hammer, but I also have a few others to pick from. I want a job at a public-policy school — I'm gearing up to apply for more than 100 academic positions this year. I like working with non-governmental organizations, but I feel that an academic route will give me the chance to design research with people who can provide meaningful input on policy discussions. ■

INTERVIEW BY VIRGINIA GEWIN

This interview has been edited for length and clarity.