

QUICK TIPS

Navigating disciplines

Stephanie Pfirman, a polar researcher at Columbia University in New York city who has published a report on how to handle interdisciplinary-research issues, suggests four ways that can help researchers to carve out their niche.

- Make sure that your CV spells out your contribution and how it was integral to the overall project.
- Attend the most relevant meeting in your core discipline and run a session on your topic to highlight its importance and to help spur connections.
- Indicate your academic reach. Include a link to your Google Analytics web page, for example, and use it as a citation index because it illustrates impacts more broadly.
- Expand your network by making contact with authors of papers that cite yours. **V.G.**

for the Advancement of Sustainability in Higher Education in Denver, Colorado, to identify universities and colleges that give interdisciplinary research the same weight as traditional disciplinary research.

There is also no escaping the fact that interdisciplinary research spans not just different disciplines but different academic cultures. Researchers often end up in joint appointments — a faculty position that reports to two departments. Such positions can be risky because the person is effectively serving two masters, who may have differing views on the achievements needed for tenure.

One strategy is to cultivate a large network in both fields, but some researchers caution against spreading their efforts too thinly. “If you try to be everywhere, you may not get traction anywhere,” says Pfirman. That said, she adds, visibility and recognition are crucial for early-career scholars. Young scientists should focus their efforts on a big disciplinary meeting that is close to their interdisciplinary speciality, she says, and make a name for themselves there.

Ultimately, any career arc needs to tell a coherent story. Early-career researchers need to make clear how their work ties together into a “meaningful, original research agenda”, says Hassenzahl. “That’s what academia is all about.” ■

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TURNING POINT

Drew Purves

Drew Purves, who heads the Computational Ecology and Environmental Science group at Microsoft Research Cambridge, UK, published the first-ever mechanistic general ecosystem model in April (M. B. J. Harfoot et al. PLoS Biol. 12, e1001841; 2014). This tool simulates the interactions of all organisms on Earth and the underlying ecological mechanisms that govern biodiversity patterns, which may help to predict how invasive species or pollution shape the world.

How did you tackle the ecosystem model?

Stephen Emmott, our head of computational science, likes to take a broad-sweep approach to science. One day he asked: “Why don’t we model all life on Earth?” I was sceptical, but I like a challenge, and we wanted to do something that would be useful for the conservation community. It took four years, and the model turned out to be unusual — we couldn’t model every individual species, so the key development was figuring out how to properly simulate nature using realistic and rigorous approximations.

Are you a geek at heart?

Yes. I got into computer programming when I was 7 — I got a Commodore 64, one of the first home computers. Around age 14, I watched a documentary about artificial life, and started reading about how to simulate life through a computer. Looking back, I realize now that my interest as a student in examining real-life processes of ecology and evolution at the University of Cambridge evolved from my interest in studying artificial life.

How did your postdoc shape your career?

In 2001, I was lucky enough to get a postdoc with ecologist and evolutionary biologist Stephen Pacala at Princeton University in New Jersey. He had just become director of the Princeton Environmental Institute, which had support from the global oil company BP and the US car manufacturer Ford. As a result of working with him, I met several senior executives from these companies who wanted to do cool and risky stuff, such as carbon capture and storage. After meeting them, I was more open to considering the Microsoft research job when it came up. Before I had those experiences, I had presumed that big corporations were evil and only out for profit.

What convinced you to go for the Microsoft job?

The job advertisement sounded ambitious. They said they wanted a computational ecologist, a phrase I had never heard before, but it



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sounded like what I wanted to do. In many ways it didn’t make sense to take this position when I was starting to get offers to do the academic jobs I had trained for. But I rationalized that there would always be university jobs available.

How does this position differ from an academic research job?

There is no predefined idea of success here. There is an expectation that what we are doing will have an impact on society, but that impact could take the shape of high-profile publications or software development that could enhance the field of computational ecology. It makes me weep that in academia we take the cleverest people in society and rank them on a single dimension — their publication record. At Microsoft, we do not have to pursue predefined ideas. I can follow my interests — helping humanity to achieve a better understanding of nature and the biosphere we all depend on. My group is a small team with limited resources, but we take on big projects, such as predictive modelling of global agriculture.

Where do you go from here?

I want to run more scenarios to see how well real-world data fit our model and to try, for example, to predict outcomes under different climate conditions. I’ll use the results to explore interesting applied questions as well; for example, I would like to simulate Australia’s cane-toad invasion. We need to find ways to sufficiently connect our models to existing data; with enough of those links, we can put realistic limits on the model to learn how and where it works best. In my darkest moments, I wonder whether this is still science. But surely it’s science in the same way that we model how galaxies formed? ■

INTERVIEW BY VIRGINIA GEWIN