

Breaking with tradition



Not long after Justin Brashares arrived in the United Kingdom for a postdoctoral fellowship in wildlife ecology at the University of Cambridge, he found himself in unexpected cross-cultural crossfire. As he quietly enjoyed a sandwich at his computer, two colleagues walked by his office door and did a double-take.

“They were staring, horrified, like I had dragged a raw sheep carcass into my office and was eating it at my desk,” recalls Brashares, who was sponsored by the US National Science Foundation (NSF) International Research Fellow Program. His new labmates eventually convinced him to take a break for lunch — and for tea twice a day. Although moving from the United States to Britain for a postdoc had seemed like a small shift, Brashares soon learned the benefits of working in a different scientific culture.

The time-tested track for academic postdocs, remaining in their home country to work within one research supervisor’s lab group, is not the only one. In some fields or for some individuals, traditional opportunities prove limiting. Seeing science done differently is just one of the advantages of following an alternative route. Some idiosyncratic opportunities can open doors to international mobility, personal flexibility and novel research projects. Venturing a little farther afield brings challenges too — but it can propel you into enviable permanent positions.

Globetrotting

Now an assistant professor of animal ecology at the University of California, Berkeley, Brashares split his time as a postdoc between fieldwork with the Wildlife Division of the Forestry Commission of Ghana and data analysis at Cambridge. The international contacts and independence he gained made him a stronger job candidate — he received two job offers in his first fellowship year. Recruiting departments, he says, “want to see that you are not just churning out things that you peeled off your adviser’s vision”.

International postdocs have their hurdles, though,

There’s more than one way to do postdoctoral research, and unconventional routes can lead to international collaboration, intellectual or personal freedom and better job prospects.

Kendall Powell explores the roads less travelled.

particularly in adjusting to a different rhythm of work. A couple of years ago in Ghana, Brashares had only dial-up access to the Internet — and that was just once a week. “You can either explode or learn to deal with it,” he says — and appreciate the break from e-mail.

Galen Halverson, another former NSF international research fellow, adds that switching countries means necessary downtime after the relocation. He moved from Boston, Massachusetts, to Toulouse, France, for a postdoc at the Laboratory for Transfer Mechanisms in Geology (LMTG). Not only did he have to overcome language barriers and adjust to a much more laid-back pace than he was used to, but it took about eight months before he was analysing data again.

“Allot yourself a good chunk of time to get going,” says Halverson, now a lecturer in geology at the University of Adelaide, Australia. Consider doing a slightly longer postdoc, he advises, or bring along some unfinished work to make best use of that downtime.

International fellowships can also be a route to gaining specialized technical expertise. At the LMTG, Halverson learnt how to use a relatively new kind of mass spectrometer for measuring isotopes. That knowledge was key to his current department colleagues, who want to acquire a similar instrument.

Charles Tahan took his postdoctoral collaborations in quantum devices to an extreme, working at the University of Melbourne, Australia, the University of Tokyo, Japan, and the University of Cambridge, UK. Through this continent-hopping, Tahan gained in two years contacts that would normally take a decade.

But with just a limited time at each place, he could not have followed Halverson’s advice. A peripatetic postdoc must be “physically and mentally ready to start a project right away” in order to actually finish anything, he says. If you want to take on something so ambitious, he recommends being extremely well read in the field you are entering before you show up.

There are definite downsides to extreme mobility, too. Tahan says he had to rely on his parents in the United States to take care of important mail and



Galen Halverson, top, and Andrea Decker: moving on.

logistics such as figuring out taxes, healthcare and banking as he bounced around. He also concedes that he would probably have published more papers if he had stayed in one place. But he feels the trade-off was worth it: “I gathered more new ideas in my back pocket that I can build on in the future.”

In the European Union (EU), Marie Curie fellowships allow postdocs to move within Europe or between the EU and other countries. They come with a bonus: the Marie Curie Fellows Association (MCFA), which has more than 3,000 current and former fellows as members and so forms a powerful cross-disciplinary and multicultural network. The MCFA runs projects to improve the working conditions of all young researchers in Europe and can help sort out common problems that arise for mobile fellows, says Vanessa Diaz, vice-chair of the MCFA and a postdoc at the University of Sheffield, UK.

“Go and see the grass on the other side of the fence,” encourages Diaz, an Italian who did her first degree in Venezuela and her doctorate in France. It shows you “the extraordinary richness of human society, which will hopefully translate into more exciting research.”

Several international postdocs say their advisers or labmates warned against leaving their home country’s system if they wanted to return to a permanent position there. But none regrets the decision or struggled to find a job later. On the contrary, most say their fellowship opened more doors than it closed.

Go mentorless

The doors are continually revolving at two unique centres for synthesis research: the National Center for Ecological Analysis and Synthesis (NCEAS), part of the University of California, Santa Barbara, and the National Evolutionary Synthesis Center (NESCent) in Durham, North Carolina (see Table, overleaf). Fellows rub elbows with hundreds of scientists each year.

“The opportunity to meet a lot of different people is really powerful,” says Melinda Smith, former NCEAS postdoc and now a plant-community ecologist at Yale University. “It exposed you to how science is done successfully in many ways.” That’s a big advantage for job searching, she says.

The flipside is that these positions are mentorless. Fellows have no lab group or research adviser. Such independent research is a boon when it’s time to move on: 84% of NCEAS postdocs go on to tenure-track or equivalent positions. But it can be daunting early on.

“It is hard to get over the hump and get started,” says Kirsten Fisher, a current NESCent fellow. “It helps to have a monthly game plan.” Fellows who are self-motivated will flourish, although some find it useful to set deadlines with collaborators.

Both centres have extra resources for computing and statistical help. Postdocs learn from each other: Fisher says she could have picked up bioinformatic techniques more quickly had she asked colleagues sooner. To prevent any feeling of working in a vacuum, NESCent encourages fellows to associate with a lab group from one of three local universities, and the NCEAS provides an allowance to visit faraway mentors.

These centres are not for everyone. They emphasize synthesis research and discourage gathering new



Elsa Cleland: gathering skills that will last for a whole career.

primary data. Fellows use raw data gathered by others, or crunch numbers from published studies in novel ways. This would not appeal to anyone craving fieldwork or wishing to learn about a new organism, ecosystem or technique.

But they promote career-development skills such as project management and collaboration. Many of the postdocs are operating like academic faculty members — and recruiters seek people who can do this. “Every day, I consult someone and ask their opinion about something I’m doing,” says postdoc Elsa Cleland. “That’s

what you do for the rest of your career.”

These researchers may lack the camaraderie of a lab group, but many say they feel less isolated, with their cohort of fellows, than in a traditional postdoc position.

“It’s a different niche that wasn’t available before,” says Kathleen Smith, director of NESCent. “And for a lot of postdocs it’s perfect.”

Beyond the lab

Another set of fellowships may suit young scientists who want to teach as well as research, or who are looking for flexible work schedules or a bridge between academia and industry. They are harder to find than standard postdoc positions, but could help you find your own perfect niche in the research enterprise.

SPIRE fellows at the University of North Carolina at Chapel Hill spend two years in the lab and one year teaching undergraduate students at other universities in the state that have historically drawn most of their students from minority ethnic groups. The National Institute of General Medical Sciences also has such programmes in California, Arizona, Georgia, Kansas and Tennessee.

Designed for those committed to both teaching and research, SPIRE (Seeding Postdoctoral Innovators in Research and Education) has an amazing track record: every one of its graduates has gone on to the position of their choice, with 70% in a tenure-track position.

Katie Shannon, a former participant and now a cell biologist at the University of Missouri-Rolla, was looking for a programme that valued teaching. Through SPIRE she got hands-on lessons in pedagogy and built a portfolio that placed her on several job shortlists.

Because the research portion is limited to two years, Shannon advises choosing a relatively well developed project and an adviser who is supportive of your decision to teach. She cut her preparation time for giving a lecture from six hours to two during the fellowship, which gave her a head start in Missouri.

“There is a big market out there for fellows who want to stay in science and are desperately looking to get the professional teaching skills they also need,” says programme director Leslie Lerea.

Another fellowship targets postdocs who might otherwise leave science by giving them more flexible work schedules. The Dorothy Hodgkin Fellowships, sponsored by the Royal Society in the United Kingdom, support young scientists who need to care for children or other relatives, or who have a medical disability.

The fellowship guarantees four years of funding that can be used for up to six years of research. In other words, fellows are free to take a leave of absence or work part-time for a spell and make up that time at the

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— Justin Brashares

end of the fellowship.

“It’s not always possible to be productive on a weekly or monthly basis,” says Deirdre Black, a theoretical particle physicist at the University of Cambridge and mother of a young son. Having four or five years in this scheme to build up a body of research will keep her competitive for permanent positions with people who haven’t been rearing young children, she says.

After her maternity leave, Black returned to work at 40% for a few months and now works 80%, or slightly shorter days, five days a week. That way, she can participate in her research group every day and still have more time with her son.

For those wondering which side of the academia–industry fence is greener, there are opportunities to hop over without committing yourself. Most postdocs who have worked in industry say you can almost always go back to academia if you want to badly enough. It’s the person who never ventures into the corporate world at all who misses out on exploring a range of job options.

But there are some industry postdocs that definitely make the crossing easier. Take the Marie Curie ‘transfer of knowledge’ fellowships, which allow for the exchange of postdoctoral researchers between academic and industrial institutions in the EU.

Antonella Di Trapani did her postdoctoral work in nanomaterials with chemicals company Johnson Matthey in Sonning Common, UK. She learned skills in sales, marketing and applied science, and liked the tightly focused research. Changing projects every few months appealed to her, as did having the resources to do more efficient experiments.

“The world seems so small in academia, but once you are in industry, the opportunities open up,” she says. She followed her interest in research management to become programme coordinator for materials science at the

Fellowship	Number of annual places	Field of research	Duration	Annual salary	Other funds and resources
NCEAS	12–18	Ecology	2 to 3 years	\$42,000 to \$44,000	\$2,500/year research funds, \$2,000 mentor allowance, access to Berkeley resources
NESCent	7–8	Evolutionary biology	2 to 3 years	\$37,000 plus benefits	\$5,000 research funds, connections to local universities
SPIRE	4–7	Any area funded by NIGMS	3 years	\$37,000 and up (NIH payscale)	Allowances for research, travel, computer
Dorothy Hodgkin	About 10	Any area funded by the Royal Society	4 to 6 years	Host institution’s payscale	£11,000–13,000/year research funds; childcare allowance during travel
NSF International Research	30–35	Any area funded by the NSF	9 months to 2 years	\$30,000 to \$60,000	Allowances for relocation, health insurance, professional travel, and research funds



Kathleen Smith: some want a new and different niche.

European Science Foundation in Strasbourg, France.

Andrea Decker still cannot decide between tenure-track or high-tech, but luckily her postdoc position at IBM’s Zurich Research Laboratory in Switzerland leaves all options open. Decker does early-stage exploratory research on nanotechnology, publishes her findings and presents her work at conferences — in contrast to most industry postdoc fellows.

Still, she acknowledges the danger of losing contact with the academic world. She encourages industry postdocs to seek work on the large collaborative projects set up in the European Research Area framework. Meetings provide ample opportunity to network with academic researchers from across the EU.

“Move about and get to know different cultures,” Decker advises — both scientifically and globally. Brashares agrees; he stays in daily contact with UK and West African collaborators. Busy setting up his own group at Berkeley, he is back to eating his lunch over the keyboard. But he hasn’t forgotten the lessons his unconventional postdoc taught him. “People applying for these positions should be gluttons for adventure,” Brashares says. “They want to move around and cross-pollinate with as many researchers as possible. It will give them a more complete view of the big questions and different approaches to answering them.”

Kendall Powell is a freelance science writer based in Broomfield, Colorado.

Web links

- Australia Research Council
♦ www.arc.gov.au
- Dorothy Hodgkin Fellowships
♦ www.royalsoc.ac.uk/funding.asp?id=1122
- European Molecular Biology Organization
♦ www.embo.org/fellowships/index.html
- Japan Society for the Promotion of Science
♦ www.jsps.go.jp/english/e-fellow/fellow.html
- IBM Zurich Research Laboratory
♦ www.zurich.ibm.com
- Marie Curie Fellows Association
♦ www.mariecurie.org
- Marie Curie Actions
♦ cordis.europa.eu/mariecurie-actions
- National Center for Ecological Analysis and Synthesis
♦ www.nceas.ucsb.edu
- National Evolutionary Synthesis Center
♦ www.nescent.org
- NSF International Research Fellowship Program
♦ www.nsf.gov/funding/pgm_summ.jsp?pims_id=5179
- SPIRE
♦ spire.unc.edu/links/iracda.html



Justin Brashares: ideal work if you’re a glutton for adventure.

C. BURTON