

CAREERS

POST-PHD New graduates' plans vary by discipline **p.315**

GRANT FUNDING Younger and older applicants have similar success rates **p.315**

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Expat life can give scientists a chance to experience other cultures and make new connections.

GLOBAL JOBS

A taste for travel

Moves in science are common, exhilarating — and challenging. Read on for survival tips.

BY EMILY SOHN

For his work as a palaeoclimatologist, Dominik Fleitmann has moved across oceans and continents 5 times in the past 20 years. Born in Germany, where he earned an undergraduate and a master's degree, he has studied and worked in Switzerland, California, Massachusetts, Switzerland again — and now the United Kingdom for a faculty position at the University of Reading.

With each move, Fleitmann faced discomfiting challenges. He once had to scrape money out of his daughter's piggy bank to pay bills

before an international bank transfer arrived. Another time, his family spent several weeks in one small room of their new home while the rest of the house was being renovated. Many times, in the middle of a relocation, he felt on the verge of a nervous breakdown.

But he has come to recognize the useful lessons that moving has taught him, including the need to remain flexible and resilient — both in the lab and at home. "Every scientist has to deal with unexpected or difficult situations: rejections of proposals or manuscripts, analytical and administrative problems," he says. "Moving around and adapting to new

circumstances can help train your mental and emotional strength. What doesn't kill you makes you stronger."

Moving to another lab or country is standard for early-career scientists. They are likely to relocate for graduate school, for one or more postdoc positions and then for a permanent or contract job. By changing workplaces, scientists can certainly reap benefits — new collaborators, cultural insights and stronger problem-solving skills — but leaving one way of life to start another is often stressful. Whether you're slogging halfway around the world or just to another city, you will need to cultivate patience, ►

► open-mindedness and a spirit of adventure. Many junior scientists think that they must travel to advance their career. They worry that advisers, lab heads and potential employers will view them as lazy or unmotivated if they stay put. “You hear throw-away comments like, ‘Ah, that’ll look good on your CV because you moved,’” says Pia Lentini, an ecologist at the University of Melbourne, Australia. She says that Australian ecologists face particularly intense pressure from colleagues to relocate and learn about ecosystems elsewhere that are more common than Australia’s unique island ecology.

But such pressure is not just a Southern Hemisphere thing. Some senior researchers might prioritize outside candidates or outright refuse to hire someone from their own organization. Michael Merrifield, an astronomer at the University of Nottingham, UK, often sits on hiring committees for universities and national fellowship panels. He says that senior faculty members with such objections usually argue that applicants with a history of moving have better shown their ambition and devotion to pursuing the best opportunities in science.

GLOBAL GUMPTION

Unquestionably, there are upsides to moving, especially to another country. Fleitmann found that exposure to unfamiliar cultural norms helped him to expand his intellectual limits. In Germany and Switzerland, he says, he had internalized a risk-averse and perfectionist cultural mentality that views failure as a sign of personal defeat. But after time in the United States, he gained the courage to take risks and try new endeavours, such as learning to use a high-resolution ion microprobe to measure trace elements in long cores of coral.

After he moved back to Europe, that experience led to an international collaboration and co-authorship on a paper published in 2007

that used ancient coral samples to understand the history of soil erosion in East Africa. It remains one of the most exciting projects of his career (D. Fleitmann *et al. Geophys. Res. Lett.* 34, L04401; 2007). His US experience also helped him to break down his own hierarchical assumptions and become open to learning from fellow students — not just from professors, as he had long thought was the only proper option.

Moving can help researchers to refine the way that they do science, Merrifield says. When he arrived at Nottingham, he noticed that students were writing astronomy papers in passive voice: “The experiment was done.” It struck him as strange because he had grown used to seeing active construction when he was doing his PhD

and postdoc in the United States and Canada. He helped to create a style guide for students at his new university, which explains that either tense is acceptable. “If you’ve spent too long looking at one system, you would assume that’s the way it has to be because that’s the way it is,” he says. “You never question it.”

Long-distance moves can provide enduring social and research-related benefits, says Pablo Manavella, a molecular biologist and group leader at the Agrobiotechnology Institute of Santa Fe in Argentina. He met an international group of colleagues during a postdoc in Germany, and stayed in touch with many of them after he returned to Argentina. Those connections have since led to collaborations.

Even more invaluable, they have yielded a generous network of trustworthy friends who offer discussion, consultation and experimental troubleshooting on a daily basis. He brought along techniques that he learned in Europe,

including more-efficient ways to grow plants — by using sticks and paper bags to avoid contamination — and to organize equipment (by colour-coding tubes). “You learn a lot from being in the world and talking with people about science who have a point of view that is totally different from yours,” he says. “You can read papers and reach people by mail, but it’s not the same.”

Tight bonds can form quickly between uprooted colleagues, adds Danelle Seymour, now a postdoc at the University of California, Irvine. Not long after she moved from California to study plant genetics for a PhD at the Max Planck Institute for Developmental Biology in Tübingen, Germany, her boyfriend severely cut his hand. A colleague whom they had known for just a few months rode in the ambulance to the hospital, an hour away, to help them to communicate in German. “I think you make friends faster than you would in your own country, and they’re there for you,” she says. She remains close with the colleague today.

ISOLATION BLUES

But trying to settle into a new environment is not always an upbeat, exciting challenge. Sometimes, moving back to one’s home nation or region can bring its own breed of cultural whiplash. When Manavella returned to Argentina with his wife and then-1-year-old son, who was born in Europe, he discovered a medical divide. “The paediatrician in Germany told us, ‘You have to feed this guy more — he’s too skinny,’” Manavella says. “We got to Argentina and the paediatrician said, ‘You’ve got to stop feeding him so much. He’s too fat.’ There were totally different perspectives we had to get used to.”

Stumbling on cultural differences that arise from a change of city can also produce painful epiphanies, even in the same country. When medical student Lisa Strate arrived in Boston, Massachusetts, for a gastroenterology residency and fellowship, she hopped onto the city bus to explore residential neighbourhoods for housing options. On one ride, she noticed another passenger holding a book that she had recently read. She tried to strike up a friendly chat about it — an exchange that would have been commonplace in California’s Bay Area, where she had done her undergraduate and medical-school studies. “She just glared at me and didn’t say anything. I thought, ‘Wow, that would’ve been a good conversation starter. I guess no one here wants to chat on the bus.’ I felt a similar attitude in the grocery store and other situations. That was really hard for me to get used to.”

Even without snubbing, isolation is a common by-product of moving, and it can carry a heavy emotional toll. Strate, now at the University of Washington in Seattle, tries to make friends through her job and children, but admits that it’s slow going. Manavella’s mother died while he was in Germany, and he wasn’t able to get back to Argentina for her funeral. With no

“You learn a lot from talking with people who have a point of view that is totally different from yours.”



Dominik Fleitmann prepares for a move to the United Kingdom, one of many relocations for his career.

GLOBAL CITIZENRY

Expatriate advice

- When you're caught up in the scrum and chaos of your move, keep your long-term goals in mind.
- Accept that it will take six months or longer before you start to feel settled in a new place.
- Seek out international-student houses and other resources that support incoming students and researchers at your new institution.
- If you move to another country, learn the language.
- Travel around your area, talk to strangers and try foods that are unfamiliar to you.
- Accept every social invitation that you receive from colleagues and co-workers, no matter how shy or tired you are — especially in the beginning. You can skip gatherings later once you have a broad social network. *E.S.*

family nearby, he was left to mourn on his own and with friends, and he threw himself into work until he could return home at Christmas to be with family and honour her.

To combat isolation at a new destination, experienced nomads suggest accepting every social invitation (see 'Expatriate advice'). Seymour was not much of a cyclist before she moved to Germany, but she joined long-distance rides of up to 50 kilometres simply because she was asked. It is important not to neglect your social life, even while putting in the extra time that it takes to get started at a new job, so that you can connect with others in the community and learn your way around. "When you've moved somewhere and you don't know anyone, it's easy to work around the clock," she says. "That's not the best way to be in the end."

Finding room-mates who work outside of science can also help you to expand your social network, suggests Merrifield. When he moved to Toronto for his first postdoc, he used a local real-estate agent to find an apartment in a converted house with an eclectic mix of neighbours in the building, including one who worked in finance and several musicians. "That helped broaden my circle of friends beyond the people in my department," he says. "We had the coolest parties."

PLANTING ROOTS

Another downside: the time that it takes to adjust to unfamiliar surroundings can negatively affect work performance, says physicist Philip Moriarty, who completed his undergraduate degree and PhD at Dublin City University before moving for a postdoc to Nottingham, where he is now. As a principal

investigator, Moriarty values postdocs who stay around long enough to give his research group a sense of continuity. From a stable position, he adds, scientists can still expand their horizons with extended lab visits, workshops and conferences.

"It's not a particularly conducive environment for a postdoc to do their best work if they're worrying all the time about where the next position will be and having to drag their families across the world," he says. "If you stay in the same place, you can build on your previous work and establish yourself as a truly independent researcher in a more sustained way than you can if you're moving from post to post."

Indeed, some find that the right decision may well be to stay put. While Strate was working on her research fellowship in Boston, her physician-scientist husband accepted a job offer in Seattle. She was working to launch her career, had research funding and wasn't ready to leave. So for several years, the couple lived 4,000 kilometres apart from each other, even as they cared for their two young children.

Once Strate felt that she had a foot in the door to an established research career, and that she could carry on her work in Seattle, she felt comfortable joining her husband and reuniting her family, while continuing to collaborate with colleagues in Boston. The separation was hard, she says, but she thinks that it was the right decision. "You don't want to be regretful," she says. "It can lead to resentment."

Given all the pros, cons and unknowns, it can be hard to make decisions about if, when and where to move, says Henry Sauermann, an economist who specializes in studies of science and innovation and relocated from Germany to North Carolina before landing his current position at the Georgia Institute of Technology in Atlanta. Before each of his moves, he listed and ranked his priorities, both professional and personal. He suggests considering factors such as lab sociability, access to data, tenure guidelines, proximity to friends and family, and gut feelings.

At the end of the day, there is no escaping the fact that major life decisions are always going to be hard. "I do remember vividly, the night before I had to make the decisions, I felt like I had no idea," Fleitmann says. "But it still came together somehow."

It helps to remember that eventually, there will be a new normal, impossible though it might seem. "You have these difficult moments when you are sitting at your desk, and your brain is so full of the things you still have to do," Sauermann says. At times like this, he found inspiration in a famous Winston Churchill quote: "If you're going through hell, keep going." ■

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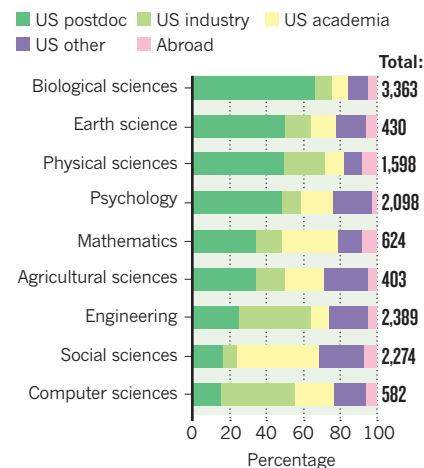
POSTDOCTORAL PLANS

PhD — now what?

Two-thirds of US citizens and permanent residents looking towards their first post after a biology PhD in 2014 said that they planned to do postdoctoral research — the highest proportion in any scientific discipline, a report from the US National Science Foundation has found (see 'Next step on the ladder'). The survey, 'Women, Minorities and Persons with Disabilities in Science and Engineering', also found that biology PhDs outnumbered those in other scientific disciplines. Overall, 42% of science and engineering graduates who had plans said that they intended to do a postdoc, down from 44% in 2012, although the number of PhD recipients rose slightly. In 2001, 39% of graduates with definite plans were heading to a postdoc.

NEXT STEP ON THE LADDER

Overall, 42% of new US PhDs in science and engineering accept postdocs, but specialties vary.



GRANT AWARDS

Age is no advantage

Contrary to common perceptions, the US National Institutes of Health (NIH) awards grants to younger applicants at about the same rate as it does to older ones (M. L. Heggeness *et al. Cell Stem Cell* **19**, 15–18; 2016). Older researchers do win more grants, the study found, but that is because more applicants are older. This could be because scientists receive tenure-track positions later in life, or because younger scientists are taking jobs outside academia, the authors say. For typical 'R01' type grants, applications from people under 40 have declined since the 1980s, but the number of applicants aged 60–64 grew by 40% between 2005 and 2014. In 2014, funding rates were 23% for this group, compared with 25% for researchers aged 35–40 and 19% for researchers under 35.