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**Small-school science**

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**BY CHRIS WOOLSTON**

Sometimes, downsizing pays off. After working as a postdoctoral researcher at large institutions including the University of California, Berkeley, and the University of Oregon in Eugene, evolutionary biologist Hélène Morlon now runs her own laboratory at the École Normale Supérieure (ENS), a small college tucked into central Paris.

Morlon is one of only seven principal investigators in the ecology and evolution section; Berkeley, by comparison, lists nearly 70 faculty members in its analogous integrative-biology department. Her section might be tiny, but Morlon maintains a global network of collaborators that keeps her connected. She also has no shortage of visitors, whether for a long stint in the lab or a quick conference talk. "It's easy," she says. "Even if we give them an economy ticket, they come because it's Paris."

The ENS is ranked by the London-based Times Higher Education as one of the best small universities (defined as having fewer than 5,000 students) in the world. But in common with all such institutions, its size is both a help and a hindrance. Researchers at small universities have fewer colleagues down the hall for conversation or collaboration, and this can lead to a sense of detachment in their field. On the other hand, it forces them out of their intellectual comfort zones. Morlon says that she has much more contact with colleagues in other disciplines than she ever had at a large university. "I've never before been to so many genomic and neurobiology talks," she says.

Scientists who are considering employment at small institutions will also need to modify their expectations when applying for large grants and setting timelines for producing publications. They must also take a highly focused, hands-on approach to building collaborations and dealing with lab and administrative tasks that researchers at larger institutions can usually delegate.

Still, for many (see ‘Finding your niche’), small is the right fit. At Lincoln University in Christchurch — the smallest in New Zealand, with roughly 2,000 full-time students — environmental chemist Brett Robinson has learnt to rely on pluck and ingenuity to overcome a relative lack of resources. "At a small institution, we don’t necessarily have all of the equipment or perhaps even the expertise that a large university would have," he says. "You have to find new ways of doing things instead of throwing up your hands and giving up. You need a can-do attitude."

That spirit became essential after an earthquake shook the campus in 2011, causing extensive damage to the university. "We operate under a tighter financial space because we have fewer students to support basic services," he says. "We don't have the economies of scale. That makes us more vulnerable in a crisis."

After rounds of staff cuts in the aftermath of the quake, the university now seems to be financially stable enough to survive and move forward, Robinson says.

Where on-campus alliances or support are lacking, outside connections become crucial. Nic Bury, an aquatic toxicologist, recently moved from King's College London (where more than 27,600 students were enrolled in 2016) to the University of Suffolk (total enrolment about 5,000), in the small UK town of Ipswich. "I've had a lot of collaborations over the years, and I'll need to keep those alive," he says.

Robinson also relies on his networks to maintain connections with researchers at larger, more prominent organizations. "A lot of my collaborations are with European..."
institutions, including ETH Zurich and the Institute of Soil Science in Vienna,” he says. Some scientists at small institutions appreciate what they feel is a more laid-back culture than might prevail at a large university. Bury relocated to Suffolk partly for family reasons, but he is also comfortable with its environment.

Yet the security of Suffolk comes with some sacrifice, particularly to his research programme. He anticipates teaching three or four courses every term, a load that will make it impossible to keep up the research schedule he’s been used to. “At King’s College, I had five projects running at a time,” he says. “I’m going to have to cut that down to one or two.”

Researchers at small institutions can also feel uneasy about their ability to win competitive grants. Karl Johnson, a neuroscientist at Pomona College in Claremont, California, says that his grants are consistently rejected. Pomona, a 4-year liberal-arts college, has an enrolment of about 1,600. “I keep getting turned down in the preliminary stages,” he says. He suspects that the size of US liberal-arts colleges — enrolment is below 5,000 for each of the top 100 such institutions, as ranked by US News and World Report — puts them at a funding disadvantage. He acknowledges that his lab could never handle a big, complicated project, but he also feels that his ideas are worth funding. And without grant money, he can’t afford the experiments that could validate his concepts and justify more funding. “Once you’re out of the grant cycle, it’s very hard to get back in,” he says.

Bury shares these concerns. Scientists at larger institutions, which can support complex, high-profile projects, have an advantage when applying for European Research Council (ERC) grants, he thinks. He plans to seek money from other sources, but he’s still thinking big. He has applied for a grant from the Biotechnology and Biological Sciences Research Council, a major governmental funding organization in the United Kingdom.

But researchers from larger institutions don’t necessarily have better luck winning ERC grants, according to the organization’s most recently compiled data, covering 2007–13. The ERC doesn’t track overall success rates for smaller institutions, but many such places have a strong record of winning grants.

The ENS won 15 grants out of 47 submissions over that period, a success rate of 31.9%. The Research Institute of Molecular Pathology in Vienna supports 200 scientists in 15 labs, but those scientists enjoyed a 71% success rate — the highest of any institution with at least 10 grant recipients. By comparison, the overall success rate for ERC applications was just over 10%. The council notes that it funds researchers at more than 600 universities and research centres of widely varying size. “The ERC is able to find excellence wherever it is and to offer opportunities to thousands of researchers regardless of the profile of their organizations,” says Jean-Pierre Bourguignon, the council’s president.

Researchers at small US universities have some specialized funding options. The US National Science Foundation (NSF), for instance, provides Research in Undergraduate Institutions grants to colleges that don’t offer graduate degrees. The NSF funded 132 such grants in fiscal year 2015, at an average of roughly US$110,000 each. “NSF values the research and education proposals it receives from faculty at all types of academic institutions,” says Suzi Iacono, head of the NSF Office of Integrative Activities. “The participation of researchers at different types of schools brings new perspectives, research approaches and ideas to the scientific community.”

Still, scientists at smaller institutions don’t always require a steady stream of grants to keep their labs running. Like many of his colleagues, Johnson operates his lab on a bare-bones budget. “I’m happy with my research productivity,” he says. He works on Drosophila flies, which don’t need a lot of expensive upkeep. And because Pomona is an undergraduate institution, he doesn’t have to pay salaries to graduate students. Instead, he staffs his lab with undergraduates who, although short on experience, are long on enthusiasm.

But the absence of a larger lab team also means fewer hands to help out. Joshua Sandquist, a cellular biologist at Grinnell College, an undergraduate liberal-arts college in Iowa, says he’s extremely busy, largely because he lacks people who can help him with mundane tasks such as performing statistical analyses or procuring lab supplies. “It’s not everybody’s priority to get your lab up and running,” he says. He will have two undergraduate
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