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LEAH LINDSAY/SEEDING LABS

Seeding Labs personnel in Massachusetts prepare donated lab supplies for shipping to Zimbabwe.

NON-PROFIT ORGANIZATIONS

Scientists on a mission

Opportunities abound in the non-profit sector for researchers who seek to follow their passions.

BY JULIE GOULD

Molecular biologist Nina Dudnik was studying rice in Côte d'Ivoire when she realized the logistical challenge of doing research in the developing world. "I was trying to conduct research in a country an ocean away from where the equipment manufacturers and reagent suppliers were," she says. "We had to wait months to get them."

When she returned to start her PhD course at Harvard University in Cambridge, Massachusetts, she led a group of fellow students to collect surplus equipment and supplies for labs in need in developing countries. Eventually, her volunteer work became a non-profit business, and in 2007, she founded Seeding Labs in Boston, Massachusetts. The firm provides scientific training and refurbished equipment to research institutions. "We work with a large network of corporations and research institutions that donate their surplus equipment to us, and we distribute it to the labs that need it," Dudnik says. Since its inception Seeding has partnered with scientists in 22 nations, and in 2015 it was hailed by *Fast Company* magazine as one of the world's top ten most innovative non-profit organizations.

Dudnik expects to ship equipment to about 15 university departments next year. In support of her goal, last year she won a US$3-million grant from the US Agency for International Development. She has four full-time employees and next year expects to hire a fifth.

The non-profit sector appealed to Dudnik because of its vast potential for helping others. "This is a problem with great social impact," she says of labs in developing nations that struggle with insufficient and worn-out equipment and resources. "My desire to solve it has nothing to do with becoming rich and famous."

This objective represents the biggest difference between for-profit and non-profit businesses: non-profit groups are driven by their mission rather than by the need to bolster the bottom line. "They're interested in solving problems," says Joanne Kamens, who is executive director at Addgene, a non-profit organization in Cambridge, Massachusetts, that operates a plasmid repository for the research community.

For that reason, scientists often thrive in non-profit organizations, Kamens says, because they value knowledge and solutions. Roles for scientists in the non-profit sector are as diverse as the types of organizations that exist in it. Scientists might, for example, do bench research, manage large-scale community projects, work with disease-advocacy groups or become science communicators at professional societies.

Finding the type of non-profit that dovetails with one's interests requires an understanding of how the organizations operate and the opportunities that they offer. Networking contacts and online job sites, such as Idealist (www.idealist.org), can help to provide this information, says Dudnik. She recommends talking with a broad cross-section of employees in the sector to get a clear idea of their organization's mission and available jobs, internships and volunteer posts.

Scientists are increasingly deciding that they are a good fit with the sector: the number of PhD holders from the life and physical sciences who enter it is rising, according to the US National Science Foundation's biennial Survey of Doctoral Recipients (go.nature.com/hkzsmg). In 2003, 5% of science-doctorate holders were working in the non-profit sector; the rate increased to about 7% by 2013. Employment opportunities in the sector are also on ▶

TRADE TALK
Policy analyst


CATHERINE BALL

Catherine Ball is an analyst for the House of Lords Science and Technology Select Committee in the United Kingdom. She explains the talents needed in a science-policy post.

What does 'science policy' mean?
It means feeding in scientific expertise to enable policy decisions to be made using scientific evidence. It also means ensuring that the best scientific research can happen, and making decisions about research funding, the publishing landscape and diversity.

What does your role involve?
I research topics that the committee is discussing — I explore subjects that members can look into, draw out key areas of investigation and identify people in the academic community to contribute feedback. I also help to draft reports of enquiries and to draw up recommendations for the committee to include in its reports to the UK government.

What experience did you need?
I realized that science communication was the skill I would most need to hone. When writing a thesis or a scientific paper, you use specific terminology. When writing for a policy audience, you need to be able to communicate the science in a very different, more accessible way. At the University of Oxford, UK, I wrote a section of my research group's website that explained our work to non-scientists, and I wrote a review of my area of research (C. J. Ball and M. C. Willis *Eur. J. Organ. Chem.* **2013,** 425–441; 2013). I also shadowed at the UK Government Office for Science and attended a committee meeting of the House of Lords.

What advice do you have for anyone who hopes to move into science policy?
It's not like academia, where the traditional career path for a scientist is set in stone. Each person in policy will have found a different way in — often a quite unusual and serendipitous one. So talk to as many people as possible. Read broadly about science policy, and keep up to date with developments. ■

INTERVIEW BY JULIE GOULD

This interview has been edited for length and clarity; see go.nature.com/ssnkdg for more.

the increase, according to a survey this year from Nonprofit HR, a US human-resources group based in Washington DC that serves the sector. The survey found that about half of non-profit organizations in the United States and Canada planned to create new positions this year.

Those who hope to land a professional post at a non-profit business should have volunteer or internship experience, both to provide a flavour of working in the sector and to deflect possible scepticism from potential co-workers. Some non-scientist employees in the sector may perceive a researcher as someone who can only pipette or peer into a microscope. "Having any kind of volunteering or interning experience is really, really vital," says Dudnik. "It will demonstrate that you are capable of more than research and that you have a passion for helping others."

Scientists in non-profit organizations often find themselves becoming part of a local community. Residents of Assen, the Netherlands, needed help to improve safety for cyclists along a canal at night, so the city turned to its regional science shop. Such 'shops' are non-profit groups that are usually linked to a university and provide research in response to local concerns. With help from the municipal government and volunteers, science-shop researchers found that green lights illuminated cyclists' paths without unduly disturbing the area's wildlife.

"It was a cooperation between different stakeholders that are involved in this specific problem," says Norbert Steinhaus, coordinator and international contact for Living Knowledge, which coordinates the international science-shop network.

FREED FROM THE BENCH

Many scientists who work at non-profit groups enjoy a latitude that would be unlikely in the for-profit sector. Aimee Dudley, a lab group leader at the non-profit Pacific Northwest Diabetes Research Institute in Seattle, Washington, says that she has considerable freedom in her research programme. "I consider myself the head of my own small business," she says. "I determine the direction of the lab, get funding, make sure it has the money to pay people and do experiments."

Dudley maintains an affiliate faculty post in the University of Washington's genome-sciences department, which links her with colleagues and their research. It also provides her with access to the university's library and subscriptions, as well as to graduate students, who can perform their thesis research work in her lab. "I enjoy teaching and supervising in the lab, and think it's important to help the next generation of researchers," she says. For her, hosting students and providing on-site training is another aspect of her flexibility. "If I wasn't interested in having students, I wouldn't," she says.

Autonomy has also been valuable to Cristina Eisenberg, a lead scientist at the Boston-based Earthwatch Institute. In the past year, she has travelled twice to the Pacaya-Samiria National Reserve in Peru's Amazonian region, where she oversees Earthwatch's projects, including a decade-long study of climate-change effects in the Amazon. "This position enables me to have far more impact on science and sustainability than if I was at a university teaching classes," she says.

Joseph Jerry is science director at the non-profit Pioneer Valley Life Sciences Institute (PVSLI) in Springfield, Massachusetts, as well as a faculty member at the University of Massachusetts Amherst. This means that he can augment his basic research into breast cancer at the university with more-translational research at PVSLI, where he says he gets to work closely with patients and advocates. The opportunity to interact directly with clinical patients has been an eye-opening experience for Jerry, who admits that as a scientist, he has been most comfortable in the lab. "I don't consider myself a people person, but working with patients is a wonderful experience," he says. "I've learned a lot about how to communicate better."

"Having any kind of volunteering or interning experience is really, really vital."

Yet for all of their upsides, non-profit organizations are hardly perfect; like any other business, they are vulnerable to a faltering economy. Historically, they have depended on a philanthropic business model: supported by hefty and regular donations, they provided a service or product for which consumers or clients did not pay. But that model has weakened along with the global economy, and non-profits are seeking other ways to secure funds. Seeding Labs, for example, no longer depends entirely on philanthropy — it charges clients a fee to cover part of the cost of doing business. The fee also increases the likelihood that Seeding's services will be more highly valued, Dudnik says.

Still, notes Kamens, in a shifting economic landscape, researchers may be especially desirable for non-profit posts that require fundraising because they typically have substantial experience of writing grants. "It's very hard to find people who are good at development work," she says.

Ultimately, researchers who work at non-profit groups become part of a community of people who care deeply about the organization's goals. That was the reason that Eisenberg left her academic post for Earthwatch in the first place. For her, working at a non-profit meant more than spending time in the jungle or the lab. "We work together," she says, "to advance our mission — science". ■

Julie Gould *is the editor of* Naturejobs.