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FUNDING

Hunt for hidden research riches

Grant funding is out there, if you know where to look.

BY ELIE DOLGIN

When infectious-disease epidemiologist Joshua Mendelsohn accepted a job at Pace University in New York City in 2015, he knew that the odds of securing a large government research grant were stacked against him. Funding success rates are notoriously low at the US National Institutes of Health (NIH) — especially for those under

40, as Mendelsohn was at the time. And Pace has tended to be more focused on teaching than on research, with few resources with which to pursue large federal grants.

Opting not to waste his time on long-shot petitions to the NIH, Mendelsohn has continued his research by finding grant support from a less-obvious source: a foreign government. A Canadian expat, Mendelsohn leaned on his professional network north of the border

to back his research into HIV treatment and prevention in at-risk populations, both as a principal investigator and as co-lead on several major projects funded by the Canadian Institutes of Health Research.

Mendelsohn hopes to target NIH funding soon, but in the meantime, the Canadian money has served as a bridge. And that Can\$350,000 (US\$260,000) or so per year, shared with his collaborators, has allowed Mendelsohn to travel regularly to places such as China and Uganda to study HIV mitigation strategies. “I was in a good position to advance my work because of the links I had in Canada,” he says.

Funds are available for those who are willing to hunt them out, says Peg AtKisson, a consultant in Millis, Massachusetts, who helps faculty members to develop their research. The trick remains knowing where to look “outside the standard grant box,” she says.

Yet to succeed financially in academia, especially as an early-career investigator, researchers must think strategically about pursuing multiple smaller grants from unlikely sources, AtKisson says — not just those government bodies and large non-profits that advertise their funding opportunities through requests for applications. “You have to develop really good search skills.”

THE SEARCH IS ON

One of the first places to rummage around for alternative grant opportunities is online portals such as PIVOT, SPIN and Grant Forward. These tools generally list different grants, awards and fellowships available to scientists throughout the world, mostly from philanthropies and other non-governmental grant-makers — the “unusual usual suspects”, says Alan Paul, president of Giant Angstrom, a funding consultancy in Los Angeles, California.

Many of the databases require a subscription, something most large university libraries offer. But if none of those resources is available, scientists can still gain access to one of the paid databases, notes Diane Leonard, a grants consultant in Clayton, New York. Through the Funding Information Network, a global group of libraries, community foundations and resource centres, anyone can view listings on the Foundation Directory Online. Although grant-seekers do have to spend funds to travel to a participating site and take time away from the laboratory, it’s worth it for the wealth of information that they can tap into, Leonard says. ▶

► Yet, even for those who don't leave the comfort of the office, the hunt for funds can be a drain on precious time. A 2018 survey of more than 11,000 academic lab heads in the United States found that, on average, respondents spent around 44% of their research time simply tracking down, preparing and dealing with grant applications (see go.nature.com/2waqygm). And as an Australian study of applicants to that country's National Health and Medical Research Council found (D. L. Herbert *et al.* *BMJ Open* 3, e002800; 2013), most of this grant-related time is simply wasted, with little or no benefit to scientific progress.

That amount of lost productivity frustrates research-development officer Stefania Grotti at the Polytechnic University of Milan in Italy. Like most research-development professionals around the world, Grotti's job is to guide faculty members through the burdensome funding labyrinth. "We are there to help," she says.

Yet according to Karen Eck, president of the National Organization of Research Development Professionals in Chicago, Illinois, few researchers take full advantage of the kind of services that offices such as Grotti's provide. Those include one-to-one coaching sessions, faculty workshops and research orientation seminars for new employees. "We try to touch base with everybody," says Eck, who also serves as assistant vice-president for research at Old Dominion University in Norfolk, Virginia, "but I would say that not enough faculty take full advantage of that".

PROACTIVE DUTY

Grotti's advice: "It's important to be very proactive." Scientists who seek unconventional funding need to form relationships with their research-development officers and meet up with those people on a regular basis, she says. That way, the officer will keep the fund-seeker in mind when relevant grant mechanisms come across their radar.

Research officers can also help scientists who aren't proficient in English to find those non-governmental funding opportunities that are rarely posted in any other language. And if non-English speakers need extra support, advisers-for-hire can guide researchers to relevant grants on offer, notes Virginie Robin, chief executive of Euronovia, a funding consultancy in Paris. "Scientists who do not speak English very well can always manage their way," she says.

Another invaluable resource is professional societies, both for staying abreast of grant notices and for direct funding opportunities. For example, in addition to giving out its own awards to students, early-career plant scientists and more-established researchers, the Botanical Society of America alerts its 2,900-plus members to grant and fellowship opportunities through a monthly e-newsletter and an annual print bulletin. The society aims to support its members' professional

development, says its executive director, Heather Cacanindin in St Louis, Missouri.

The sums available from non-governmental funders might be smaller on a project-by-project basis. But the chances of winning those grants are usually much higher than they are with government agencies. And, collectively, the money available from lesser-known backers can quickly add up, while simultaneously helping scientists in their pursuit of big-ticket funding. "You can't go for those multimillion-dollar grants if you haven't shown prior performance on smaller grants," says Eck. "You have to build your funding résumé."

According to the latest Higher Education Research and Development Survey, an annual report compiled by the US National Science Foundation, state, local and federal governments continue to underwrite most research activities at US colleges and universities (see go.nature.com/2qem5ns). But a growing slice of the funding pie is coming from elsewhere — most notably, from internal institutional funds earmarked for faculty research projects.

In the United States, around 25% of all grant money comes from institutions' own coffers — which makes these "the biggest pool of money going to basic research after the federal government's", notes Marc Kastner, president of the Science Philanthropy

"It was a little bit of luck, a little bit of being in the right place at the right time and a lot of hard work leading up to that."

Alliance, a coalition of mostly US-based non-profit organizations that support basic science.

That's up from around 10% half a century ago, when government dollars accounted for more than 80% of all research support. Government support has now dipped below 60%, while the backing of sources such as industry and non-profits has held steady at 10–15% over the past few decades. Those numbers vary by discipline, with philanthropic dollars proving more important in the life sciences. But, in general, the relative importance of each funding source is consistent across research fields (see 'Bankroll breakdown').

In such a fractured funding environment, staying on top of grant opportunities becomes paramount. To do that, microbial biochemist Piotr Mydel from the University of Bergen in Norway doesn't limit himself to just his own institution's research-resource office. "I'm friends with administrators at many universities," says Mydel, who previously worked in the United States, Switzerland, Sweden and Poland. "If anything shows up, they send me the link."

It was thanks to local contacts at his own university that Mydel secured a small grant from the Broegelmann Foundation, a Bergen-based non-profit. And it was someone at the University of Louisville in Kentucky

who alerted him to a much larger funding opportunity — a unique collaboration between the NIH and the Research Council of Norway that eventually led to a multimillion-dollar grant for Mydel and his collaborators to identify new drug targets for gum disease.

WORK THE ROOM

For Rim Cherif, a telecommunications engineer at the University of Carthage in Tunis, domestic funding can be hard to come by in North Africa, a region of the world where no country spends more than 1% of its gross domestic product on research and development. She secures small travel grants from professional societies to attend their annual meetings. "This is the first door," Cherif says. Once at the conference, she then socializes with researchers from other countries because, as she explains, "when you meet more people, you have access to international grants worldwide".

That's how Cherif got to know physicist Ravindra Sinha, director of India's Central Scientific Instruments Organisation in Chandigarh. Cherif had leveraged a \$2,500 travel grant from the Optical Society in Washington DC to attend the group's annual meeting in the United States. Together with Sinha, Cherif then applied for — and won — a 45,000-Tunisian dollar (\$15,000) grant, jointly funded by the Indian and Tunisian governments, to develop next-generation optical fibres for high-speed communication networks.

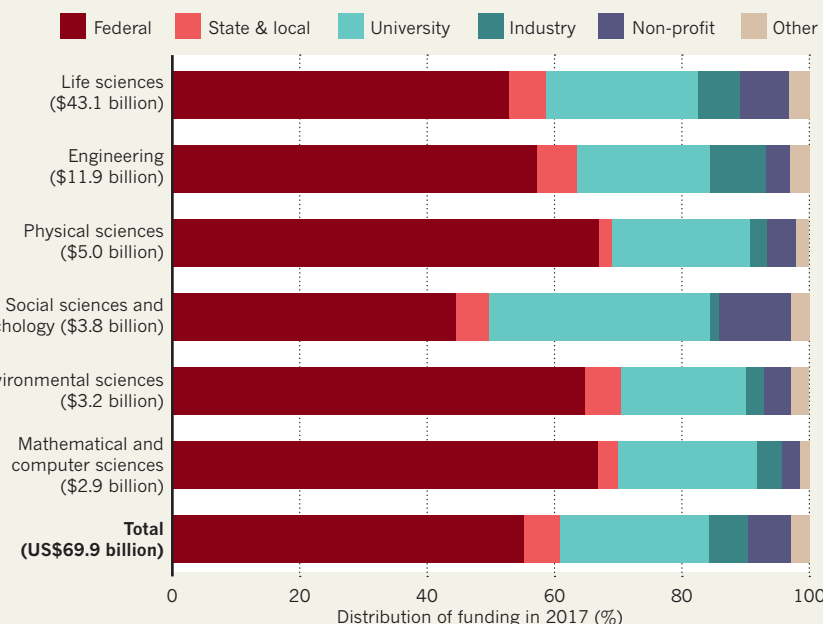
Mingling is also how Jonathan Dillman, a paediatric radiologist at the Cincinnati Children's Hospital Medical Center in Ohio, landed funding to develop non-invasive imaging tools for diagnosing intestinal scarring in people with Crohn's disease. Last October, he sat down for breakfast at the New Jersey hotel where he was attending a meeting dedicated to biomarkers for inflammatory bowel diseases such as Crohn's. At the table happened to be Laurie Churchill, a programme officer from the Leona M. and Harry B. Helmsley Charitable Trust in New York City, who expressed interest in Dillman's research.

Churchill later arranged a phone call to discuss projects that the charity might want to fund. That led to further e-mails, a pre-proposal and ultimately a formal proposal that Dillman developed with feedback from Churchill and her team. In February, just six months after first making contact, the Helmsley Trust awarded Dillman nearly \$2 million for his research. "It was a little bit of luck, a little bit of being in the right place at the right time and a lot of hard work leading up to that," Dillman says.

Laurence Lovat, a gastroenterologist at University College London, similarly received funding earlier this year from the Helmsley Trust to develop a saliva-based test for Crohn's. He describes the iterative and rapid process of proposal development as "a

BANKROLL BREAKDOWN

In the United States, every scientific field relies heavily on government support, and the importance of other funding sources varies.



A big advantage of collecting money online from the general public is that it doesn't require preliminary data or name recognition, as many conventional, peer-reviewed funding mechanisms do. "You can apply even as someone without a track record," notes Henry Sauermann, a social scientist at the European School of Management and Technology in Berlin who has studied the reward model. "Anybody can try — but it's going to take a lot of effort and time," he warns, "and the investments you have to make to succeed are relatively high."

CREATIVE CAPITAL

Jacquelyn Gill, a palaeoecologist at the University of Maine in Orono, learnt how much of a slog crowdfunding can be in 2014 when she and her students attempted to raise \$10,000 to study how the climate history of the Falkland Islands in the South Atlantic Ocean has affected the coastal grasslands that serve as breeding grounds for penguins, seals and other vulnerable marine life. Gill first promoted the scientific merits of the project on social media. Then she highlighted the all-female nature of the research team involved. She tried emphasizing the climate-change and conservation angles. But none of these sales pitches helped her to recruit many backers.

"So, one night, in an act of desperation, I just started tweeting fake penguin facts" — silly remarks about the seabirds that briefly spurred an Internet meme — "and money started coming in", Gill says. "It was ridiculous, but it hooked people."

Gill's team ultimately met its funding goal, and her students turned the initial money raised through Experiment.com into larger foundation awards to pay for extra field seasons in the Falklands. The researchers' unpublished work showed not only how sensitive the coastal breeding habitats are to climate change, but also that humans were probably living on the Falklands archipelago before Europeans settled there in the mid-eighteenth century — meaning that people have been having an impact on this biodiversity hotspot for much longer than previously thought.

Like Mendelsohn, Gill fumbled her way through alternative sources of funding, with her eyes always on the prize of a more substantial conventional grant. "Grant by grant, things are getting bigger, and now I'm finally feeling like, as we start to submit our first round of papers, I can apply for a [government] grant to do this work," she says.

Some find hidden caches of research support at meetings, others by pure chance. For Gill, the secret happened to be Internet humour. "It's just funny what people connect with," she muses. "But if I'm going to be begging people for money, I should at least entertain them." ■

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grant-writer's heaven." "They were giving me constructive feedback" through each round of revisions, Lovat says, "and I made sensible changes, which enabled a better study."

UNSOLICITED ADVICE

The Helmsley Trust and some other non-profits such as the Gordon and Betty Moore Foundation in Palo Alto, California, do not typically issue requests for proposals or accept unsolicited petitions for funding, unlike many large philanthropic organizations that back scientific research. "Our grants are by invitations only," says Garabet Yeretssian, head of the Helmsley's Crohn's programme. (Industry funding often works the same way, too.)

Yeretssian, who approached Lovat at a meeting and started a conversation that eventually led to the gastroenterologist's \$1.1-million award, defends the non-profit's less formal and somewhat opaque approach to grant-giving. "We embrace a sense of urgency," he says, arguing that it leads to high-impact research funded in a more timely fashion than any system that relies on open calls for applications.

However, Yeretssian doesn't want the foundation to come across as secretive or an insiders' club. "We partner with everyone," he says. Whenever programme officers from the Helmsley Trust attend a conference, they post on the foundation's Twitter feed, he notes. That lets others know someone from the organization is there — and Yeretssian invites researchers to "introduce yourself and talk to us". He also counsels aspiring grantees, especially junior scientists, to openly present data at meetings, including unpublished results, to

increase their visibility in both the research and funding communities.

Maintaining an active personal website can help, too. As Lucy Deckard, a research-development consultant in College Station, Texas, points out: "The big things are networking and visibility." But conferences are not just venues for elbow rubbing with would-be financial backers — be they foundations, private companies or anyone else. New sources of funding can also be found simply by listening carefully to colleagues' talks.

That's how neonatologist Camilia Martin from the Beth Israel Deaconess Medical Center in Boston, Massachusetts, learnt of a small foundation she had not previously heard of. At a national conference about a decade ago, a presenter at the end of one talk thanked the John W. Alden Trust — a small Boston-based non-profit that supports paediatric research — for financial assistance. Martin took notice: "Huh, they supported that person and we do similar things," she thought to herself. "Maybe they'd support me." Indeed they did, with a \$75,000 grant that allowed Martin and her team to study the importance of fatty acids on the health of preterm babies.

Extensive searching and schmoozing does not always bring in the money, however. So, some scientists have turned to crowdfunding sites such as Experiment.com, SciFundChallenge.org and MedStartr.com. "Crowdfunding offers an important means of acquiring external funding and fostering the seeds of innovation," says Shin-ichi Yamamoto, dean of research at the National Institution for Academic Degrees and Quality Enhancement of Higher Education in Tokyo.