

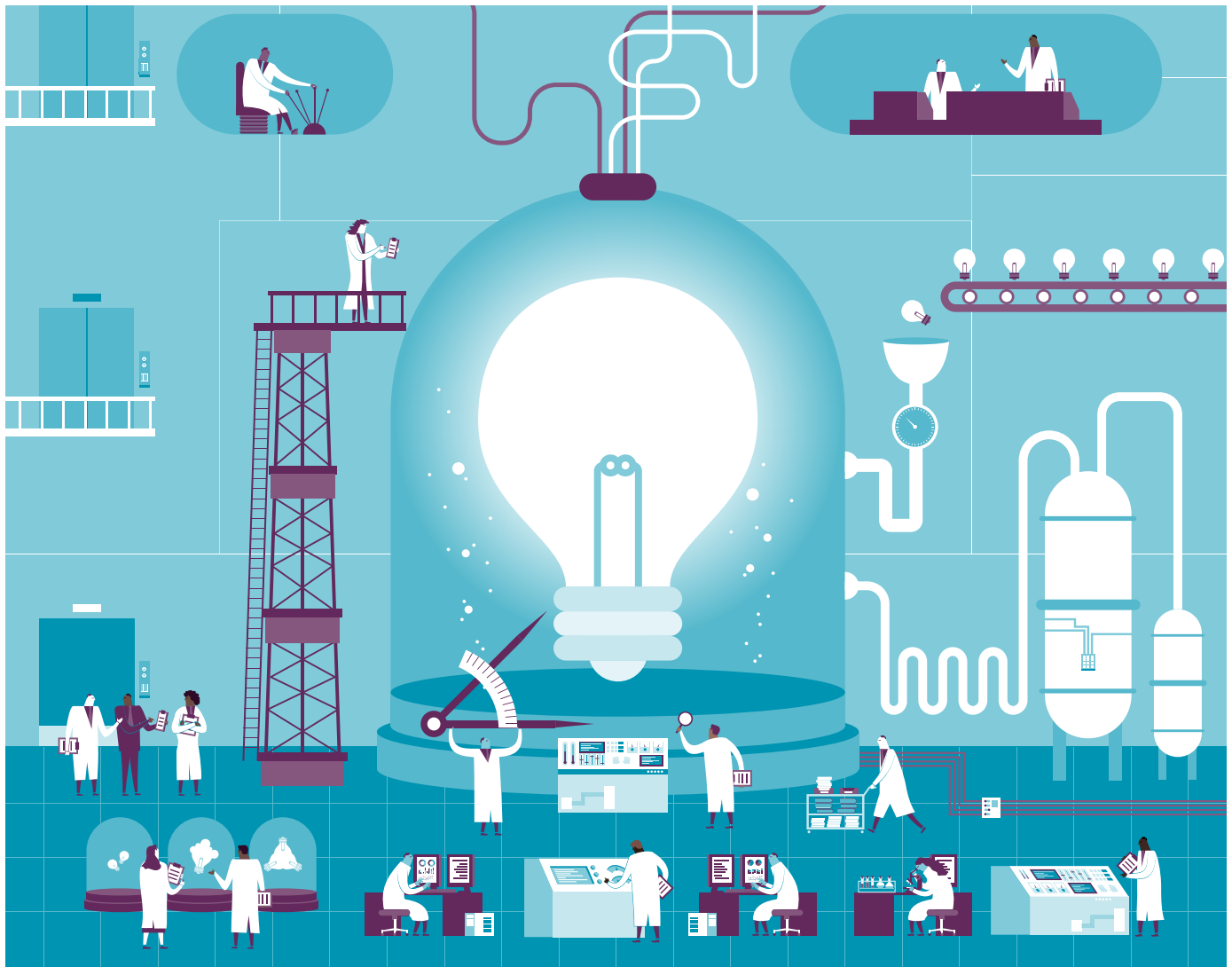
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CREATIVE COLLABORATION

Strength in numbers

Smarter ways to pool resources can add up to a big boost for research.

BY TRACY STAEDTER

For scientists, collaborating on research projects is nothing new. But even beyond the lab bench, there are plenty of ways to pull together and have a direct and positive impact on research itself. Here, *Nature* speaks to researchers who have found innovative ways to network, connect across

disciplines, mentor and support one another and share knowledge and resources.

TAKING UP SLACK

Prachee Avasthi had a lot of questions when, in 2015, she became a principal investigator (PI) at the University of Kansas Medical Center and started setting up her own cell-biology lab in Kansas City. How should she spend

her money? What equipment should she buy first? Would she have funds left over to hire a postdoctoral researcher, or even two? What interview questions should she ask?

“It was massive decision fatigue,” she says. But she didn’t think it would be fair to bombard her mentors with her questions. “Everyone is busy, and even if you have fantastic colleagues who are more than happy to make time for ▶

▶ you, it's not going to be immediate. That's not a reasonable expectation," says Avasthi.

Instead, Avasthi started a community workspace to connect with others in her position, using the online collaboration tool Slack. She called it 'New PI Slack — A community for new faculty', and set up a variety of channels on which members could exchange messages and share tools and documents related to matters such as grants, work-life balance and recruitment issues, and even seek support on especially challenging days.

In 2016, Avasthi announced the workspace in a short blog, and then tweeted about it, too. "It took off like wildfire," she says. Today, the community has more than 1,600 members, with about 400 active at any given time. Now, if she has questions about hiring someone or buying equipment, she can quickly get answers and advice from a dozen or more Slack collaborators.

Since then, members have added channels on topics such as child care, as well as local channels for PIs in Boston, Massachusetts, and at Johns Hopkins University in Baltimore, Maryland, for instance. Similar workspaces have popped up as well, including Future PI Slack and Grad Student Slack.

"You get a hive mind of the same people worried about the same things," Avasthi says. "I cannot imagine my life without it."

Avasthi has several tips for starting and running a Slack workspace: determine whether the site should be open to all or invitation-only; post a code of conduct to ensure that conversation stays on-topic and is appropriate for all members; appoint a few administrators to share the workload; and make decisions democratically so that everyone can have their say.

FILE SHARING FOR SUCCESS

In 2017, Julie Van De Weghe, a postdoc who researches cellular biology at the University of Washington, Seattle, was on the brink of applying for a K99 — a US National Institutes of Health (NIH) career-transition grant. The application is about 100 pages long, and asks for information on budget, equipment, laboratory space, collaborators, academic accomplishments and more, as well as details about the research strategy. Yet postdocs receive no formal training in how to complete it.

Inspired by a conference talk on the benefits of online file-sharing, Van De Weghe, who is co-chair of her university's postdoc association, put an advert in the association's monthly newsletter to invite other Seattle-based postdocs embarking on a K99 to join her Dropbox site. About ten people from various disciplines signed up, including specialists in microfluidic mechanical engineering, human-gut microbiota and the molecular epidemiology of cancer.

Members have uploaded examples of successful and unsuccessful applications, tips on how to fill out the application, historical funding data from NIH agencies, and more. A group e-mail keeps everyone in the loop

and encourages members to call on each other to read their applications, suggest edits or answer questions. About once a month, the postdocs get together in person to commiserate about the process or celebrate if someone wins funding.

The sheer variety of people involved has been helpful, says Van De Weghe. "It is of utmost importance that your application be understood by researchers outside of your field. Having a peer-mentoring group with people with diverse expertise can help identify areas that may need greater clarification," she says.

The file-sharing site has become a source of strength, she says. "It's super-useful and makes it a little more fun when you can lean on someone else for support, rather than keeping your head down and trucking on alone."

Besides casting a wide net to include a range of researchers, Van De Weghe has the following tips for setting up a similar group: establish clear rules about what can be shared to maintain individual privacy, and meet in person once in a while, for the sake of camaraderie.

LOCAL KNOWLEDGE

Some scientists face challenges simply because of their location. Researchers based in Perth, Australia, for instance, are separated from Sydney, Brisbane and Melbourne in the east by more than 3,800 kilometres. Travelling between coasts can be expensive and time-consuming, says Susan Fletcher, a biomedical researcher at Murdoch University in Perth. "It's really hard to get scientists from the eastern states to come to our meetings," she says.

Only 2.5 million people — 10% of the country's population — live in Western Australia. The state's five universities and smattering of small medical institutions are often outcompeted for research funding. According to 2018 data from the National Health and Medical Research Council, only 13.3% of applications from Western Australia were funded, compared with 22.1% of those from Victoria and 18.4% of those from New South Wales.

The state's small population and lower rates of funding can make research difficult, but two long-term health studies have been based there, and those have encouraged collaborations throughout the state and attracted national and international attention, says Fletcher. The Busselton health study, launched in 1966 in the town of Busselton, is one of the world's longest running longitudinal studies, and has amassed data on a wide range of health conditions, including cardiovascular disease, respiratory disease, diabetes, cancer, obesity and sleep disorders. Similarly, the Raine study, which began in 1989, is one of the largest

studies to follow individuals from before birth, throughout childhood and adolescence and into adulthood. Both studies still provide plentiful opportunities for researchers to partner across institutes and disciplines. Collaborations such as these have strengthened Western Australia's research capabilities and reputation overall, says Fletcher.

Tight budgets and the high cost of air travel in the 1990s prompted Western Australian scientists to organize a conference that has since grown to become the Annual Combined Biological Sciences Meeting (CBSM). Every August, it brings local bioscience researchers from both medical and non-medical fields, including agriculture and fisheries, together under one roof. The meeting, organized entirely by volunteers, encourages students to attend and present their work, perhaps for the first time, and to network with project leaders and potential employers. Over the years, it has proved that even a conference with a regional focus can provide a crucial springboard for interdisciplinary teamwork.

"For those of us who have had some success, it really has been because we've collaborated with researchers at the other universities in Western Australia and elsewhere," says Fletcher.

Fletcher's tips for organizing a conference that is both local and wide-ranging are: reach out to all institutions and request representation; pick a chair who knows how to delegate; focus on events that promote collaboration rather than personal agendas; and set aside sessions for students to coach the next generation.

POOL YOUR GEAR

Financing a state-of-the-art lab — even one on a modest scale — can cost hundreds of thousands of dollars. In Western Australia, universities have begun to specialize in core research to maximize their return on investment. Curtin University in Perth, for instance, has put funds into genomics, computational medicine and chemistry. Elsewhere in the city, the University of Western Australia has opened a Centre for Microscopy, Characterisation and Analysis; and Murdoch University has established the Australian National Phenome Centre to characterize biological tissue and fluids.

The universities often make their equipment available to researchers from other institutions, at the same rate charged to their own staff. Regular e-mails keep everyone updated on instrument-training seminars. Special workshops at the CBSM introduce attendees to the latest technologies and opportunities to test out the instruments.

In addition, universities around the world are trying to share resources not only across regions, but also under their own roof. Typically, these sharing scenarios involve 'core labs', which have high-end instruments that can be rented out for a profit to external researchers when not being used by staff. But some institutions, including the University of Colorado

"Having a peer-mentoring group with people with diverse expertise can help identify areas that may need greater clarification."

Boulder, are investigating the in-house sharing of equipment such as centrifuges, drying ovens, incubators, freezers or plate readers, with a dedicated person to manage the system.

In 2017, Kathryn Ramirez-Aguilar, who manages the university's Green Labs programme, and her team won a university-funded competition to create shared laboratory spaces that could house equipment from several departments. With US\$25,000 in winnings and \$70,000 in seed money, the team launched the BioCore facility and appointed biologist Dustin Quandt to manage it.

Within a year, Quandt had catalogued nearly 4,000 pieces of equipment from three

departments that volunteered to participate. In the process, he worked out which items could be shared, sold, repaired, redistributed or thrown out. Eighty-five of those instruments, which cost US\$625,000, were moved into a few shared spaces for use by 60 researchers from 18 labs. The effort freed up more than 195 square metres of lab space, valued at around \$1.2 million in terms of avoided construction costs, according to Ramirez-Aguilar and her team. In addition, using shared equipment or acquiring surplus instruments has saved nearly \$220,000. Having Quandt on hand to train users, schedule their time slots and manage maintenance has improved

efficiency, too. "The real winners are the scientists themselves because they save money," says Ramirez-Aguilar.

Ramirez-Aguilar's tips for successfully pooling equipment are: encourage scientists to donate to a central unit, with a person from each lab in charge of maintenance and training new users; create a website to act as a central repository of all available equipment and who manages it; and apply for an internal grant to hire a manager who will run the website and update the inventory. ■

Tracy Staedter is a freelance science writer based in Milwaukee, Wisconsin.

FUNDING

UK funders pledge support

Updated treaty addresses current trends in research-career development.

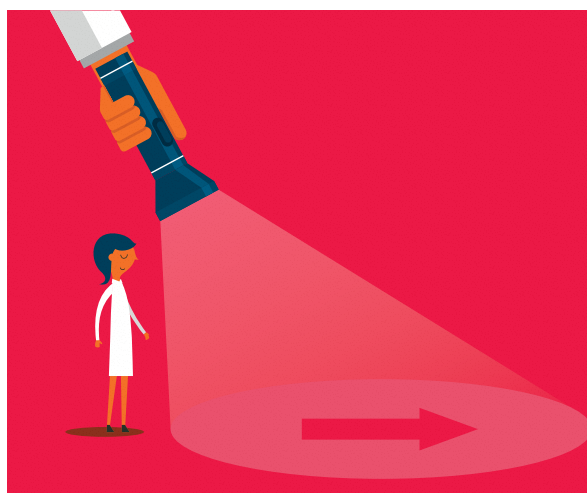
BY CHRIS WOOLSTON

An updated version of an 11-year-old treaty between researchers at UK universities and the institutions and government bodies that fund and employ them aims to improve the work-life balance and career development of scientists.

The Concordat Strategy Group, a collection of researchers from around the United Kingdom, created the Concordat to Support the Career Development of Researchers, which updates a previous treaty released in 2008. Participation in the agreement is voluntary, but its effects should be far-reaching, says Katie Wheat, head of higher education for Vitae, a scientist-advocacy group based in Cambridge, UK, that provided support for the project. "The principles outlined in the concordat are not just good for researchers, they are good for institutions, the quality of research, and for the supply of talent beyond academic research," she says. "All organizations should want to sign up."

The concordat targets staff members who are primarily employed to do research, including postdocs, contract researchers and technicians. The update addresses important trends that have affected scientists in the past 11 years, including the surge of fixed-term contracts for researchers and the growing awareness of mental-health issues in this group.

The new agreement reflects input from nearly 600 individuals and institutions who responded to a Vitae survey earlier this year. Respondents made a clear call for unity. As one wrote, "The new Concordat must have buy-in from all partners, be they Government, HEIs



[higher-education institutions], funders, institutions, Royal Societies, organisations and perhaps most importantly — the postdocs themselves."

Respondents almost unanimously agreed that scientists need more support for development of their research and career goals. To that end, the document suggests that researchers should be able to devote ten days every year to free professional-development training. Funders are expected to make this a requirement for all grants, and researchers are expected to take advantage of the opportunity, even if that means stepping away briefly from the laboratory.

As of 24 September, the Concordat had 15 signatories, including the London-based charity Wellcome, the largest non-governmental funder of research in the United Kingdom. Another notable signatory is UK Research and Innovation (UKRI), a non-governmental agency established in 2018 to direct funding

and boost cross-disciplinary research. Signatories are expected to uphold the tenets of the concordat and produce a publicly available annual report that shows the steps they've taken to uphold the treaty's mission.

Signatories agree to promote an 'equitable environment' when it comes to grants and grant reporting — a goal that received attention at a conference held by UK postdocs on 13 September at Queen Mary University of London. David McAllister, associate director of research and innovation at UKRI, said at the conference that the concordat should help postdocs to get much-deserved recognition on grant applications. He said that it is "morally unacceptable" that postdocs are

unnamed on most grant applications even though 60% of UKRI's funding goes to their salaries.

Owing to reports of high levels of stress, anxiety and depression in researchers, the concordat also calls on institutions to "promote good mental health and wellbeing through, for example, the effective management of workloads and people, and effective policies and practice for tackling discrimination, bullying and harassment".

A UKRI spokesperson says that, as part of its commitment to the concordat, the organization will provide funding to 17 UK universities in 2020 to support the mental health and well-being of postdoctoral researchers. UKRI says that it supports all of the principles of the document and is already working on plans to put them into action. ■

Additional reporting by David Payne, a managing editor at Nature.