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A boost for Palestinian science

Researchers from around the world can help to support and collaborate with colleagues in troubled regions.

Scientist-statesman Chaim Weizmann was Israel's first president. He was also a chemist, and had earlier helped to create the world-ranking research institute in Rehovot that now bears his name. He famously declared that a state should be built on science — then he tried to do just that. Today, Israel is a global player, investing more than 4% of its gross domestic product in research and development, one of the highest proportions in the world. Its scientists are winning some of the most prestigious international grants, and are collaborating with partners around the world.

Yet since 2002, scientists in Israel have faced calls for an academic boycott, a move that *Nature* opposed at the time and continues to disagree with (see *Nature* 417, 1; 2002). The controversy is a reminder that Israel's stellar science is often overshadowed by the troubled politics of the region. Not least of these is Israel's occupation of the Palestinian territories, which concerns researchers around the world and many Israeli scientists, too.

If Israeli science is overshadowed by politics, then Palestinian science has an even more diminished profile. A *Nature* reporting trip to the region showed how hard conditions are. Frustration and anger bubble below the surface — but the scientific spirit endures.

In the West Bank and East Jerusalem, the welcome seeds of sustainable research are being planted. Wittingly or not, academics there poignantly echo Weizmann's sentiment that any new state needs to be based on science. The challenges they face are immense (see page 308). The conditions of the occupation prevent people from moving freely in and out of the territories, and block or delay imports of crucial research consumables. Money for research, from any source, is at best a pittance.

The situation in Gaza is even more critical. There, even the basics of daily life, such as continuous access to drinking water, cannot be taken for granted. And scientists have few resources for research and even less contact with the outside world. Electricity is rationed to a few hours per day. Yet science is pursued. Physicist Hala El-Khozondar at the Islamic University of Gaza, barely 70 kilometres from Tel Aviv, has started to use a recycled truck battery to charge her laptop so she can achieve a full working day.

The Weizmann Institute of Science did not have it easy, either, in its early days, when the newly founded and very poor state of Israel had to build itself up from scratch and defend itself from hostile neighbours. International support was fundamental in the country's rise to a scientific power.

International support can help Palestinians to at least establish a scientific base. There is already a scattering of foreign funding programmes and external collaborations, and more would help. Scientists can help by donating equipment. And some universities generously grant online access to their own libraries for short periods. When that happens, says El-Khozondar, she and her colleagues binge read. "The environment affects everything, even your mood and certainly your research," she says. "We want to be up to date for when the situation

changes; so we do our best to keep up."

Interaction with scientists abroad can reduce the isolation felt by Palestinian colleagues, as well as open up more opportunities for funding and collaboration. Many Palestinian scientists don't want to work with Israelis, saying that it would normalize the occupation. Few, in any case, dare. They say the mood in the territories is so bitter that if they openly collaborate with an Israeli team, they risk their lab — or worse, their home — being torched. This is tragic.

"International support can help Palestinians to at least establish a scientific base."

Science is not going to solve the Israeli–Palestinian dispute, but it can be helpful in keeping international dialogue open. Time and again, scientific diplomacy has proved a useful tool in broad efforts to resolve disputes. The classic example is how CERN, the

international particle-physics lab near Geneva, Switzerland, signed agreements with Soviet scientific institutes at the height of the cold war in the 1960s. The Synchrotron-Light for Experimental Science and Applications in the Middle East (SESAME) facility in Jordan, which was inaugurated last year, was designed for a similar purpose and includes both Israeli and Palestinian researchers. Through such steps, science can help in building a state of mind, and maybe more. ■

Mutual benefit

Researchers should do much more to involve those who take part in clinical trials.

When researchers at the drug giant Pfizer wanted to improve their clinical trials, the people who had taken part had a clear suggestion: researchers should say thank you.

It is a simple request, but a revealing one. When a clinical trial is completed, many participants walk away empty-handed. Most never hear from the investigators or the trial's sponsor again. Many do not learn the results of the study in which they took part. It's not good enough — and it indicates a deeper problem.

As we discuss in a News Feature on page 312, clinical-trial participants and the people who care for them are increasingly seen as partners in research. They are more informed than ever about their conditions and their medical options. And they are demanding — and receiving — more of a say in how clinical trials are designed and conducted. Some of this activity has been boosted by social media, which has allowed people with medical conditions and their carers to band together, share their experiences and advocate for change.

There has been some progress. In the late 1990s, Sharon Terry

arrived for a meeting at the US National Institutes of Health to discuss a project to study a condition called pseudoxanthoma elasticum, which affects elastic fibres in some tissues. Even though Terry was the founder of an advocacy group that wanted to fund part of the study, she was told that she could not join the meeting because she wasn't trained in biomedical research. She was eventually allowed to attend, but only if she served as an assistant to the medical director of her group. (Terry decided to pull funding for the project.)

Terry says it is hard to imagine the same scene today. Many pharmaceutical companies and medical centres now routinely consult people with a condition about clinical-trial designs, to get early feedback rather than risk launching a trial that no one wants to join. In response, trial organizers have tweaked protocols and created research programmes. In cancer studies, for example, this type of feedback has fuelled a push to find ways to combat the side effects of cancer treatment, and to improve care for survivors of cancer.

The benefits of such an approach are persuasive. Closer engagement with participants could yield clinical-trial protocols that are more effective and convenient for patients. This can translate into a trial that meets its enrolment targets more quickly, and which has a lower dropout rate.

Nancy Roach, founder of the advocacy group Fight Colorectal Cancer in Springfield, Missouri, recalls a meeting at the US National Cancer Institute about a trial in which participants would be assigned a treatment on the basis of their tumour mutations. An early proposal called for tumour samples to be characterized in three to four weeks. Roach, as well as others at the meeting who represented the participants, said it would not work: the longest they would be willing to wait before settling

on a course of treatment was two weeks. After a subsequent survey of clinicians and investigators confirmed that they would also wait only two weeks before deciding on a treatment, the project team worked with pathologists at the trial sites to shorten the time it took to process the samples. The trial, called NCI-MATCH, initially had trouble meeting those goals because so many more people enrolled in the study than expected. So far, there are more than 6,000 participants.

“It is important to make sure that patient engagement is backed by meaningful action.”

More projects should follow this approach. As the phrase ‘patient engagement’ sweeps through medical science, it is important to make sure that it's backed by meaningful action. It is not enough to put a potential trial participant in the room during meetings to discuss protocol designs. And it's unacceptable that some scientists still consult people about a trial protocol only after it has been approved by a review board, when all involved are reluctant to revise it.

Engagement means offering training to participants and their carers so that they have the skills to contribute with confidence. Some say that it is intimidating to be in a room full of specialists, with the added responsibility of speaking for an entire community of people who have a medical condition. Engagement is also about researchers being willing to incorporate patient feedback. There are plenty of examples of best practice to follow, including lessons from social scientists who have studied community engagement to learn how best to achieve it.

Clinical trials depend on the willingness of participants, some of whom are critically ill. They all deserve a thank you. They rightly expect much more. ■

Welcome change

Science-based policies should benefit from midterm election results in the United States.

US President Donald Trump has taken a wrecking ball to the climate and environment policies of his predecessor, Barack Obama, over the past two years. To some extent, this is to be expected: any administration has the ability and right to lay out its policies and set a new course. But the Trump administration has also shown a complete disregard for the science and evidence that should underpin policy decisions.

In many cases, Republicans in Congress have been all too happy to sit back and watch. The political dynamic will now change, given that Democrats took control of the House of Representatives in the midterm elections last week (see page 302).

As *Nature* went to press, officials were still tallying votes in several close races, but the new balance of power is clear. Democrats have so far picked up 32 seats in the House, giving them a slim but significant majority they can use to block the administration's legislative agenda — just as Republicans did when Obama was president. The Trump administration has often used its executive authorities to advance its agenda independently of Congress, and will surely continue to do so. The difference now is that Democrats will have the power to investigate and raise questions about policies, and to issue subpoenas to compel testimony from reluctant administration officials. This won't necessarily stop the administration, but it will put a public spotlight on the decision-making process. For anybody who cares about evidence-based policies — including this journal — this is good news.

It's a different situation in the Senate, where Republicans will pick up at least two seats. Given the current polarization between Democrats and Republicans, the odds of bipartisan cooperation are slim, but there are some areas in which the two parties might work together. One is the protection of funding for science and science-based

agencies: the current Republican-led Congress has already declined Trump's demands to slash funding for the Environmental Protection Agency (EPA) and other such groups, and there will be little appetite to do so next year. (The long-term budget outlook is bleak, so there might still be plenty of cuts to come.) The other point on which the two parties could unite is spending for research infrastructure.

When it comes to science, all eyes are now on changes to the committees that oversee health and environmental agencies — most notably the EPA, a primary target of Trump's scorn and the main vehicle for his efforts to dismantle rules and regulations that protect the environment and public health but burden industry.

At minimum, expect a change in the language around global warming. The current chair of the House Committee on Science, Space, and Technology, which regularly weighs in on scientific and technical issues, has repeatedly questioned climate science while launching investigations into alleged wrongdoing by scientists and scientific agencies. But Democrat Eddie Bernice Johnson, who is a registered nurse and now the probable future chair of the committee, plans to set the record on climate change straight in hearings next year, starting with an acknowledgement that “it is real”.

As Democrats push back, legal battles will continue to play out in the courts. Republican gains in the Senate will make it even easier for the administration to appoint judges and push the judicial system in a conservative direction. But federal judges have already rejected some of Trump's decisions for lack of scientific analysis. Last week, a federal district court blocked construction of the Keystone XL pipeline, which would help to transport crude oil from the Canadian tar sands to the United States; the court ruled that the administration had “simply discarded” the threat of climate change when approving the pipeline.

Democrats will bring their own agendas. But lately, the party has shown more solidarity with science and evidence-based policymaking.

Come January, when the elected candidates assume their positions, science will have a more prominent place at the political table on Capitol Hill. The United States — and indeed, the world — is facing crucial questions about everything from public health and inequality to global warming. Any development that strengthens the voice of evidence, whatever side of the aisle it comes from, is one to support. ■