

# Correspondence

## Networks, mentors and role models

Women in the Middle East and North Africa (MENA) have fewer career opportunities in the health and science sectors than do men, mainly because of cultural norms and traditional obligations. In the absence of the legal equity afforded to some female scientists in the West, I suggest that mentoring, networking opportunities and inspirational role models can help (see also *Nature* **560**, 164; 2018).

The region's limited research opportunities are generally offered to men (see [go.nature.com/2p4ruxt](http://go.nature.com/2p4ruxt)). And family expectations lead to a high drop-out rate for female researchers (see [go.nature.com/2zget46](http://go.nature.com/2zget46)).

As the Three Circles of Aemat initiative (<https://tca.jssr.jo/>) shows, supportive mentors can help female scientists to balance family and work and to progress along career paths that are conventionally dominated by men. Other professional women can act as role models. And male scientists need to understand that family responsibilities should no longer concern only women; they, too, must stand up for equality.

After all, it was an Arab Muslim woman, Fatima al-Fihri, who founded the world's first university, in the ninth century. **Hossein Bannazadeh Baghi** *Tabriz University of Medical Sciences, Tabriz, Iran.* [hbannazadeh@tbzmed.ac.ir](mailto:hbannazadeh@tbzmed.ac.ir)

## Pay PIs' salaries and benefits

Principal investigators (PIs) working in basic research at US biomedical institutions have to draw upwards of 65% of their own salary and benefits from the direct costs covered by their research grants. The situation discourages top talent and is a roadblock to diversity.

Yet institutions continue to take on PIs because each is a new source of grants and funds to cover indirect costs. PIs therefore

need to spend more and more time applying (and reapplying) for grants. Up to US\$6 billion of the annual research funding paid out by the National Institutes of Health is spent on PIs' salaries and benefits (L. R. Pool *et al.* *FASEB J.* **30**, 1023–1036; 2016). Government institutions pay the salaries and benefits of teachers and firefighters — research centres should do the same for PIs.

US public funding for universities is falling. Increasing tuition fees is not an acceptable option. Instead, funds to cover faculty salaries could continue to come mainly from federal agencies — but through direct negotiation with institutions, in the same way that indirect costs are met. Philanthropic funds should be directed more towards programmes that include salaries and less towards new buildings. A longer-term solution might be to both eliminate the tenure system and plan for a sustainable faculty pool that is based on merit.

Research institutions rightly opposed US President Donald Trump's proposal last year to slash coverage for indirect costs. However, it is the same institutions that benefit from and perpetuate the status quo in research-faculty employment. **Emily Bernstein** *Icahn School of Medicine at Mount Sinai, New York, New York, USA.* **Alexander Meissner** *Max Planck Institute for Molecular Genetics, Berlin, Germany.* **Miguel Ramalho-Santos** *Lunenfeld-Tanenbaum Research Institute, University of Toronto, Canada.* [mrsantos@lunenfeld.ca](mailto:mrsantos@lunenfeld.ca)

## Lab agreements improve mentoring

We suggest that written lab agreements on best practices help to improve mentoring of students and trainees (see also *Nature* **561**, 7; 2018).

Such agreements focus on the responsibilities of mentor and trainee, on facilitating

communication between them and on their mutual expectations in matters including availability, contributions to lab life, tasks and meetings (see also D. Norris *et al.* *Nature* **557**, 302–304; 2018). They promote collaborative discussion and accountability, and should be updated regularly to incorporate feedback.

Given the potential importance of such agreements for lab members, faculty members should be recognized for creating them. The more scientists involved in the endeavour, the more resources, dialogue and momentum there will be.

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\*On behalf of 5 correspondents (see [go.nature.com/2jfpzc7](http://go.nature.com/2jfpzc7) for details).

## Promote flexitarian diets worldwide

Marco Springmann and colleagues warn that we must shift to more plant-based 'flexitarian' diets if we are to reduce the food system's projected greenhouse-gas emissions and meet the targets of the 2015 Paris Agreement (*Nature* **562**, 519–525; 2018). We urge countries to work with the United Nations towards a global agreement on food and agriculture that promotes the adoption of such diets, which are more sustainable than meat-based diets and are backed by evidence on healthy eating.

Such an agreement would be in line with findings by focus groups in the United States, China, Brazil and the United Kingdom, which indicate that governments should urgently address unsustainable meat consumption (see [go.nature.com/2asd1ag](http://go.nature.com/2asd1ag)). In industrial agriculture, cereals that are edible to humans are fed to animals for conversion into meat and milk. This undermines our food security: rearing livestock is efficient only if the animals convert materials we cannot consume into food

we can eat. That means raising them on extensive grasslands, rotating integrated crop-livestock systems and using by-products, unavoidable food waste and crop residues as feed.

Feeding animals exclusively on such materials would greatly reduce the availability and hence the consumption of meat and dairy products, as well as the use of water, energy and pesticides — thereby cutting greenhouse-gas emissions.

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\*On behalf of 58 co-signatories (see [go.nature.com/2z32kkn](http://go.nature.com/2z32kkn) for full list). [philip@ciwf.org](mailto:philip@ciwf.org)

## 3D print unique specimens

Museum collections should use 3D printing to create replicas of their most important specimens. This would guard against loss or damage, as has occurred on a massive scale in Brazil. Two of South America's largest scientific collections have burned down: the National Museum in Rio de Janeiro, in September, and the Butantan Institute in São Paulo in 2010. Copies would also obviate the need for direct access to specimens, which is an advantage for distant scholars.

When I analysed collected material for my master's thesis on systematics 10 years ago, I measured more than 600 individuals of *Scinax granulatus*, an amphibian from South America. As a Brazilian living back home at the time, I was unable to measure the most important specimen — the name-bearing holotype — because it is in a German museum. Indeed, much of the Southern Hemisphere's biodiversity was described from specimens held in Europe and North America.

3D printed replicas would benefit taxonomy and systematics worldwide.

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