

COVID, racism, China: three tests for next NIH leader

The successor to Francis Collins will need to be steadfast, nimble and creative in how they run the US biomedical agency at a pivotal time.

Francis Collins will leave big shoes to fill when he steps down later this year, after 12 years as director of the world's biggest public funder of biomedical research. By then, he is expected to have obtained bipartisan support for a funding increase that would bring the US National Institutes of Health (NIH) budget to US\$43 billion for the fiscal year 2021; when he took on the job, in 2009, it was \$30 billion. His scientific credentials as a physician and geneticist – which include heading up the public effort to sequence the human genome in the 1990s and early 2000s – positioned him to establish a number of big-biology initiatives at the agency. These have allowed the NIH to maintain its position as a global research powerhouse.

The challenge now comes in replacing him – a process involving nomination by the president, and hearings and a vote in the Senate. Whoever takes on the role will need to be able to work with presidents and members of Congress, and to have the requisite scientific and administrative skills. The job also has a big diplomatic component, involving liaison with heads of international governments, as well as business leaders and those running philanthropic foundations, who are an increasing force in many research fields.

The agency's new leader will face myriad challenges, among them guiding biomedical research during and after the COVID-19 pandemic; dealing with systemic racism and inequity in science; and navigating scientific cooperation with China. That is in addition to the core role: securing the agency's budget, and being more creative in making the case for basic research. The choice of director must reflect an increasingly diverse nation. For all but 2 years of its 134-year history, the NIH has been led by a man; cardiologist Bernadine Healy, who ran the NIH from 1991 to 1993, is the only woman to have led the agency. It's time for change.

COVID response

The NIH director oversees the agency's 27 institutes and centres, which together employ more than 20,000 people, including 1,200 principal investigators and over 4,000 postdocs. But its reach extends well beyond its headquarters in Bethesda, Maryland. More than 80% of the NIH's funding supports hundreds of thousands of researchers in labs across the United States and around the world.

The pandemic is an immediate priority. COVID-19 prompted the NIH, under Collins, to speed up some

of its grant-distribution systems and to initiate rapid-response research into SARS-CoV-2 testing, vaccines and therapeutics. The success of mRNA vaccines against the virus stemmed, in part, from groundwork laid before the pandemic by NIH-funded research. The agency has also launched a \$1.15-billion research investigation over four years into long COVID. The next director must build on these initiatives and find the best way to support basic research on efforts to bring the current pandemic to an end – and to prepare for the next one. One of the biggest challenges will be to balance this need with the other priorities and disease burdens that the NIH is set up to address.

Racism and equity

As one of many organizations confronting discrimination, the NIH has had mixed results on its efforts to boost diversity, equity and inclusion in bioscience and its workforce. Under Collins, the agency announced that it will end its over-reliance on male animals and cells, and take sex into account in the design of biomedical studies. But the NIH was slower than some other US federal agencies to adopt strict reporting guidelines when grant recipients are found to have violated an institution's sexual-harassment policies.

Anti-racism work needs to be a priority for Collins's successor. Black applicants received only 1.8% of NIH grant awards in 2020, a number that has barely budged since 2013 – and their success rate is lower than that for applicants from white, Hispanic and Asian communities. Earlier this year, the NIH embarked on an initiative called UNITE, intended to end structural racism in biomedical science. The agency plans to spend \$90 million on projects to reduce health disparities, and on studying how structural racism affects the health of minority communities. This work must also draw on the latest social science.

These are welcome moves, but much more funding and commitment are needed to tackle the persistent under-representation of Black researchers among the agency's grant recipients. It is imperative that the next director addresses real systemic barriers.

Diplomacy

The ability to work effectively with elected representatives is a crucial aspect of the NIH director's role – it involves responding to predictable diplomatic and political challenges, and reacting swiftly to new ones as they arise. The NIH director also works closely with the president. Joe Biden has a deep personal interest in biomedical research, having worked with research advocates, particularly in cancer, when he served in the Senate and as vice-president under former president Barack Obama.

Collins also served during the four years of the administration of former president Donald Trump, who reappointed him to the post. It's a reminder that the NIH chief must have a constructive working relationship with whichever party is in office.

The next NIH director will not be working alone – they will be able to draw on the expertise and wisdom of leaders and staff throughout the agency, as well as the national and international research community. They must create

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opportunities and space to listen to diverse voices and perspectives. The pandemic has demonstrated the crucial importance of fundamental biomedical research in solving global problems and enhancing health. Now the world's leading biomedical research body must position itself to tackle many other problems – chronic disease, health inequality and the health dimensions of climate change – for which solutions have so far remained stubbornly out of reach.

Young people will be key to climate justice at COP26

The world's youth movements are following the science of climate change. It's high time that world leaders did, too.

The teenage climate campaigner Greta Thunberg spoke for many *Nature* readers in August when she summed up the latest report from the Intergovernmental Panel on Climate Change (IPCC) as a “solid (but cautious) summary” of the best available science. “It confirms what we already know from thousands of previous studies and reports,” she said. “It doesn't tell us what to do. It is up to us to be brave and take decisions based on the scientific evidence provided in these reports.”

As world leaders prepare to travel to Glasgow, UK, for the 26th Conference of the Parties (COP26) to the United Nations climate convention, they would be wise to listen to the science-led youth movements, and to an emerging generation of young climate scientists.

Young people are reading and engaging with climate and biodiversity science and policy in a way that previous generations haven't. They have good reason to: without action, their futures will be increasingly dominated by the heatwaves, storms and floods that have featured in climate projections since an early IPCC report in 1990 opened with a foreword calling global warming “potentially the greatest global environmental challenge facing mankind”.

“People are suffering. People are dying. Entire ecosystems are collapsing,” Thunberg said at a UN climate-action summit in New York City in 2019. “We are in the beginning of a mass extinction, and all you can talk about is money and fairy tales of eternal economic growth.”

The Glasgow meeting, which takes place from 31 October to 12 November, is not about a new international agreement – that happened in Paris in 2015, when nations agreed to limit warming to between 1.5 and 2 °C above pre-industrial levels. Instead, it will see countries report their progress (or lack thereof) towards cutting emissions, and lay out their

plans to become carbon neutral over the next decade. There are clear signs that some change is under way. Humanity's use of oil might already be levelling off – not because oil is running out, but because of the transition to electric vehicles, rising fuel efficiency and the falling costs of electricity from renewable sources. Support for new coal-fired power is falling in Europe and the United States, and China has pledged to stop financing new coal plants abroad.

Replacing fossil fuels is one section (although admittedly a large one) of a thousand-piece jigsaw. The scale of the net-zero challenge is like nothing that has come before. Tackling global warming requires a revolution in how economies are run, and in the choices world leaders must make. Energy and industry, agriculture, financial services, transport and much more must be transformed. Natural ecosystems that absorb carbon emissions need protection. But as of now, the prospects for Glasgow are anything but optimistic.

Many countries – especially those that have contributed the least to the world's carbon emissions, but stand to lose the most from a climate crisis – are rightly demanding action from rich nations. But leadership and resources are both in short supply. The Paris agreement requires countries to report on and update their climate pledges every five years. This timing allows emissions-reduction pledges to be adjusted to match the latest scientific assessments on what needs to be done to limit warming to 1.5–2 °C. Forty-eight countries – including major emitters – are yet to set new targets, and some clearly have no plans to accelerate their climate ambitions. In addition, the leaders of some of the largest nations – including Brazil, China, India and Russia – have not yet even committed to attending COP26.

At COP15 in Copenhagen in 2009, the richer countries agreed that by 2020, they would be providing US\$100 billion per year in financial assistance to less wealthy nations. What counts as climate finance was never defined, but even by their own – highly controversial – accounting, they have yet to meet that requirement (see page 400). Even if they do, the majority of pledges will be for loans, not grants.

This is where the new generation of climate researchers and campaigners can expect to make its mark. Glasgow marks the first time that countries must explain, in public, whether their actions will achieve climate targets, according to projections from research. Climate laggards, and countries that are not fulfilling their funding pledges, will be called out – regardless of whether their leaders attend.

For generations, world leaders have, in principle, accepted that the planet must be habitable for those that come after them. But this promise was never kept, perhaps because ‘future generations’ were not much more than words in a policy document. Now, that has changed. New generations are making themselves heard. Some of their representatives are being consulted as part of COP26; tens of millions more will be outside. They are reading climate science, and using that knowledge to argue for honesty and meaningful action from their leaders. Those attending COP26 would be wise to listen to their arguments, and involve them in decisions that will affect their futures more than anyone else's.

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