

US CRACKDOWN HARMS CHINESE COLLABORATIONS

Some scientists in China reluctant to travel to United States because of foreign-interference investigations.

By Andrew Silver

Scientists in China have told *Nature* that they are reluctant to travel to the United States for conferences or other research activities, even when pandemic travel restrictions lift. They fear being caught up in the US government's crackdown on foreign interference in science, and in ongoing political tensions between the two nations. The scrutiny has led some researchers in China to dial back on collaborations with US colleagues and form new partnerships with teams in Europe or Japan.

Researchers in both countries say that US policies, such as increasingly onerous visa restrictions on Chinese scientists and students, and tightened export controls, are also having a chilling effect on research partnerships.

If researchers in China reduce their travel to the United States – because of political tensions, visa restrictions or pandemic travel restrictions – that will affect collaborations, says Caroline Wagner, a science and technology policy researcher at the Ohio State University in Columbus. Most research collaborations start from face-to-face meetings, she says, but researchers need to travel for those to happen: “Zoom is not a good substitute.”

Much of the evidence that US–China collaborations are under threat is anecdotal so far. China and the United States are each other's biggest collaborators in terms of co-authorship of published papers, and there's no sign of this changing as yet. And US government agencies say they're not seeing a change in US–China collaborations. But researchers and science-policy experts are still concerned by reports that collaborations are being affected.

“I think the worsening political relationship between the United States and China is certainly harming scientific collaboration between the two countries,” says John Holdren, an environmental-policy researcher at Harvard University in Cambridge, Massachusetts, who was science adviser to the administration of US president Barack Obama.

Political tensions

The research community has been embroiled in the political tension between the world's two largest economies for years. Since 2018, the United States has increasingly restricted visas for Chinese students in robotics and artificial intelligence (AI), and in May it stopped giving visas to researchers from China who have funding from or work for a Chinese institution with links to the military.

US controls on what research can be shared with China have also been tightened repeatedly since 2018. They have reduced collaborations on research in AI, quantum computing and semiconductors, says Denis Simon, former executive vice-chancellor of Duke Kunshan University in Kunshan, China, who returned to the United States in June.

US agencies, including the Department of Justice, have also been investigating foreign interference in government-funded science. The investigations have found that hundreds of researchers who have received National Institutes of Health (NIH) or National Science Foundation (NSF; see page 342) grants seem to have breached agency or institutional rules regarding the confidentiality of peer review, conflicts of interest or the disclosure of foreign ties. Many of the researchers had support from China.

Investigations have also led to the arrests of several scientists. In January, Charles Lieber, a chemist at Harvard, was arrested for allegedly making false statements about his affiliation with the Wuhan University of Technology in China and his participation in China's leading recruitment programme for overseas researchers, the Thousand Talents Plan. The justice department says its investigations are about protecting US intellectual property and national security. The NSF and the NIH both say they are concerned about foreign influence on research integrity, but that investigations are not targeting nationals of a particular country.

Yet researchers in China say the US government crackdown is making them less inclined to travel there for conferences and other academic exchanges. Yu Hongyu, dean of the School of Microelectronics at the Southern University of Science and Technology in Shenzhen, says many researchers at his institution have cancelled plans to go to the United States for conferences, in part because of the pandemic; they are unwilling to go even when pandemic-related travel restrictions end, because they fear US government agencies could investigate them just because they're from China. He says it's unclear which behaviour and activities are considered a national-security breach and should be avoided.

Some researchers in China have even reduced their communication with US researchers. “The United States government doesn't encourage top scientists working in the United States to have more contact and cooperation with us,” says Guan Jianguo, a dean at the Wuhan University of Technology. He is wary of contacting his former US collaborators by phone or e-mail, for fear it might put them on the radar of US agencies.

Earlier this year, Guan says, he started increasing his connections with scientists in Europe and elsewhere outside the United States. Yu adds that scientists at US universities seem to be reducing their collaborations



Charles Lieber has been indicted for making false statements about ties to China.

News in focus

with his institution. He doesn't know why, but thinks US scientists are under pressure not to collaborate with Chinese colleagues. He is still open to US partnerships, but will increase his university's connections to institutions in Canada, Europe and Japan.

Evidence reported by US agencies of Chinese nationals committing intellectual-property theft has created an environment in which some Chinese researchers aren't trusted, says Charles Wessner, an innovation-policy researcher at Georgetown University in Washington DC. He understands why some researchers in China might fear being investigated and so reduce their collaborations with the United States.

On paper, collaborations between the

United States and China seem as strong as ever. Publications indexed in the Scopus database with US and Chinese authors have been increasing each year for several decades. And the two countries are each other's largest collaborators, according to a 2018 NSF analysis of select science and engineering journals in the database (see go.nature.com/2wfpqxq1).

But co-authorships probably don't reflect recent changes in collaboration, says Wagner. Most partnerships that lead to papers start two to five years before the articles are published, she says. "The academic publication record lags."

Additional reporting by Richard van Noorden and Nidhi Subbaraman

Health (NIH) and other funders have been actively pushing universities and scientists to disclose ties, and the FBI has been seeking out undisclosed or inappropriate connections.

In June, the NIH said that 189 researchers might have violated grant or institutional rules on research integrity, with 93% having support from China.

The estimates that Keiser has provided are the first public account of foreign-interference investigations involving NSF grant recipients. Although the numbers are much lower than for the NIH, Kei Koizumi, a former adviser on science policy at the American Association of Science in Washington DC, says that this is reasonable, because the NSF's annual budget is comparatively smaller.

Heather Pierce, regulatory counsel at the Association of American Medical Colleges in Washington DC, adds that the difference makes sense given the focus on intellectual-property theft as an area of concern. "The research funded by NSF includes some fields that may appear less likely to have commercialization potential," she says.

Some scientists say that the NSF's approach with regard to scientists receiving support from foreign universities is getting stricter. "The rules are changing," says Steven Chu, a Nobel-prizewinning physicist at Stanford University in California who was US secretary of energy under president Barack Obama.

But Rita Colwell, a microbiologist who was head of the NSF from 1998 to 2004, says that disclosure rules have existed and been followed for decades – it might be that researchers today aren't aware of them, and need more training. "It's staggering to me that there would be wilful non-reporting," she says. "We did not have to deal with that."

Many have called for more transparency surrounding the investigations. Jeremy Wu, a member of the board of directors of the Committee of 100 in New York City, a group of prominent Chinese Americans that works to advance US–China relations, says that the NSF or its inspector-general should release more information, such as the number of people under scrutiny. Wu worries that investigations into foreign influence might unfairly target researchers with ties to China (see page 341). He says it's not clear whether researchers are being judged on the merits of their individual cases or are being targeted as a group.

Keiser says that the inspector-general spends "months and months" doing due diligence on cases before making recommendations to the NSF. She says that the NSF will continue to be as diligent as possible in enforcing policies, and to do everything it can to inform researchers and universities about requirements for disclosure. "We in the government should do even more to communicate these issues," she says.

US AGENCY REVEALS HOW IT IS TACKLING FOREIGN INFLUENCE

National Science Foundation has taken action in more than 16 cases, many involving 'well-known' researchers.

By Andrew Silver

The US National Science Foundation (NSF) has for the first time released figures on the actions it has taken against researchers found to have violated rules on the disclosure of foreign ties. Since 2018, the agency has reassigned, suspended or terminated grants, forced institutions to return funds or barred researchers from applying for future funding in 16–20 cases in which rules weren't followed, according to Rebecca Keiser, the agency's first chief of research security strategy and policy.

All of these were cases in which the NSF's Office of Inspector General, an independent body responsible for oversight of the agency and its grant recipients, had investigated and made recommendations on how to handle sanctions. Separately, the inspector-general referred an undisclosed number of criminal and civil cases involving fraud and non-disclosure to the US Department of Justice.

Furthermore, in the past two months, seven universities have contacted the NSF directly with information on faculty members who might have violated rules.

"We're only starting to understand these issues," says Keiser, who was appointed in March to tackle foreign interference. All but two of the cases involved ties to China, although a majority of the scientists in cases referred by the inspector-general are US

citizens and are not ethnically Chinese.

Most of the cases involve "very well-known academics", who seem to have been offered money or status because of their accomplishments in their fields, Keiser adds.

The 16–20 cases reported to the NSF by the inspector-general involve some grant recipients who spent several months a year outside the United States, strongly indicating an undisclosed affiliation. Others received

"We're only starting to understand these issues."

outside support for research that seems to be covered by an NSF grant, a practice known as double dipping.

A lot of the university-reported cases are not being referred to the inspector-general; in some, the NSF needs only to clarify details about potential funding overlaps with universities, Keiser says.

Caught by surprise

For several years, US funding agencies have been on high alert about the influence of foreign governments in federally funded research. The fear is that US intellectual property is being pilfered.

So the NSF, the US National Institutes of