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**Subcommittee on Investigations and Oversight**  
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Chairman McCormick, Ranking Member Sykes, Members of the Subcommittee,

Thank you for inviting me to testify on this vitally important topic. Striking the right balance in how the U.S. research enterprise interacts with China is critical to U.S. national security and competitiveness.

In my testimony, I will primarily be discussing academia, the part of the research ecosystem with which I am most familiar, and I will be speaking primarily in my role as the co-chair of the Congressionally created National Science, Technology and Security Roundtable at the National Academies, which recently completed its work. I will also be drawing on my experience at MIT, including my years as the vice president for research, and my service in the first Trump Administration as chair of the National Science Board, and in the Biden Administration as co-chair of the President's Council of Advisors on Science and Technology.

Let me begin with a few premises with which I imagine we can all agree. China's rapid rise presents a perhaps unprecedented challenge to the U.S., economically, geopolitically and militarily. And China's rise was facilitated by science and technology it obtained from other countries, especially the U.S., by licit and illicit means. China now is a science and technology powerhouse in many fields, but it still tries to build on its success by gathering information and skills from others, including illegally.

The question for the U.S. now is how best to compete successfully with China, given these premises. And that is a question that requires a clear-eyed assessment of when the U.S. can gain from interactions with China and when we are, to put it bluntly, being played for fools. But that assessment is not always easy to make.

Cutting all ties to China is likely to hobble the U.S. at least as much as it does China. Focusing exclusively on tripping up China is a less successful strategy than a combined approach that includes protection and also investing in enhancing the U.S. ability to win the race. There are additional steps that the government and universities could and should take to limit China's ability to take undue advantage of U.S. research, but we also need to strengthen U.S. science.

Before talking about what needs to be done, let me set the stage by describing the current situation. It is true that many universities and researchers were slow to appreciate the challenge posed by China and the way that nation was changing under President Xi. There were many reasons for this, but two primary ones were probably the sense that scientists have of science as an open, international effort to advance humankind, and the fact that for several decades U.S. policy under administrations and

congressional leadership of both political parties had encouraged increasing scientific cooperation with China. It also didn't help that the government often offered vague fears instead of specific information.

Academics are a data-driven community and not easily persuaded by vague descriptions of threats. The scientific culture is ironically opposite to that of law enforcement, which reveals as little as possible until a conviction is obtained. Bridging this cultural divide was one of the tasks of the Roundtable, and there has been real progress in this regard.

Today, universities have long since gotten the message that things have changed – China has changed; U.S. policy has changed; the needs of our nation have changed. Universities approach interactions with China with increased caution and scrutiny. Many universities have ongoing conversations with the FBI and other law enforcement, helping both. Does that mean there are never issues? Of course not. But I think we are past the point where there is any kind of systemic failure causing universities not to take questions about China seriously.

I can point to the way MIT has been handling China issues, and MIT is seen in the academic community as a leader in this arena that others often seek to follow. In 2018 – 2019, MIT was the first U.S. university to cut off research with Huawei, after I received information in a classified briefing. I then began talking to my counterparts in other universities about the threat (without providing the classified details), and they began to follow suit.

Also in that period, MIT instituted an elevated risk process, which is still in effect. Any proposed research or education cooperation with a Chinese entity goes through enhanced scrutiny, and the toughest calls go to the Senior Risk Group (SRG), composed of the Vice Provost for International Activities, the Vice President for Research, and the General Counsel. They are assisted by MIT's chief research security officer – who is a former assistant U.S. attorney with experience in national security investigations, staff from the General Counsel's office, and the head of our Washington Office. Though I stepped down as vice president for research, I continue to participate in my role as the MIT president's senior advisor on science and technology policy.

Over the past five years, SRG has approved projects, rejected projects, and modified quite a few – often by clarifying MIT's control over Intellectual Property Rights and our ability to exit any agreement. In recent years, the number of proposed research agreements with China has slowed to a trickle, in any event.

SRG examines each proposal considering its potential impact on U.S. national security and economic security, and on human rights. It also looks to ensure that the project provides real scientific benefits to MIT – and therefore to the U.S. We are long

past the point of assuming that any international cooperation inherently is a benefit to us, or that monetary benefit alone is sufficient to merit MIT taking on a specific research or educational collaboration. As I hope is clear, this review goes far beyond compliance with U.S. law, which is a starting point and a given.

The process has had broad support from our faculty from the outset, as they know they are not able to judge all the ramifications of work they might do with, or in China. Building on the elevated risk process, in November 2022, MIT released the report, “University Engagement with China: An MIT Approach,” which continues to be MIT’s guide and a model for schools in the U.S. and Europe.

The report, requested by then-President Rafael Reif, and written by a committee of experts from across the university, embraced a balanced approach. The report summarized its approach as “combin[ing] selective engagement with targeted risk assessment and management.”

The report rejected a complete cut-off of research collaboration with China because there are fields where China is ahead – and a properly structured engagement could give us access to ideas, people and equipment that would help us – and because collaboration is also a way to stay abreast of developments in China. There are also areas, like climate science, food safety, and some areas of health where there is much to gain through international collaboration and little risk.

A complete cut-off of academic engagement in basic science and engineering is not necessary or desirable even now, though great care is needed in any collaboration. Academic collaboration produces openly publishable research that is several, and often many steps away from resulting in any product or process. Also, collaborations don’t necessarily involve working together in the same lab, where know-how may be picked up from each other.

We can’t ignore what we have to gain from such cooperation even though that needs to be balanced against the risks. Bills like the DETERRENT Act, which would effectively outlaw cooperation, go too far. (This is separate from the transparency provisions of that bill.)

It is essential that researchers and universities be transparent about any collaboration and about any money received from Chinese entities. Congress has rightly tightened the laws on disclosure and on foreign talent program participation over the last several years. Higher education groups and schools, including MIT, have helped Congress draft those provisions.

The Trump and Biden administrations, through National Security Presidential Memorandum (NSPM)-33, have also put in place disclosure requirements, while trying to streamline and standardize them across agencies. Individual agencies have also enhanced their apparatus for screening grant applications and have made their criteria

public. While there have been bumps in the road, this has all been movement in the right direction.

Violations of disclosure rules should be addressed and corrected, but unless there is evidence of malicious intent or illegal activity, criminal prosecution is the wrong way to deal with failures to disclose. The China Initiative picked up far too many innocent people in its dragnet, pushed excellent scientists away from federally funded work, and spurred discrimination.

For example, MIT's Gang Chen, a top mechanical engineer, was mired in China Initiative charges for a year that were ultimately dropped, and now he will not apply for any federal grants. The original charges included an accusation that he had hidden information about a collaboration with a Chinese university that MIT had actually publicly announced. (That research collaboration has since expired.)

So far, I have not mentioned Chinese students, but they may be the most important aspect of U.S. academic interaction with China. For decades, U.S. doctoral programs in the physical sciences and engineering have depended on Chinese students. Chinese post-docs in the life sciences are also a key part of the U.S. scientific workforce. It's frankly hard to imagine how the U.S. research enterprise would function at its preeminent level without international students and post-docs. This is not a matter of revenue; it's about getting the talented people we need to do the work.

While as a nation we obviously need to do much more to get U.S. students to go on to graduate degrees in these fields, the U.S. has benefited enormously from this influx of top talent. Even if we had all the domestic students we needed to fill graduate programs – and that will take years to do – we would still benefit from attracting to the U.S. top talent from around the world.

It's essential to point out that most of these international graduate students remain in the U.S. after their studies are completed – and more probably would if our policies did not seek to chase them away. It's long since time to pass legislation that would “staple a green card” to a STEM Ph.D.

The stay rates are remarkably high. A National Science Foundation study in 2021, found that 88 percent of students from China who had received a STEM Ph.D. five years earlier were still in the country, and 81 percent of students from China who had received a STEM Ph.D. 10 years earlier were still in the country. In the same study, NSF also found that almost 43 percent of individuals in the U.S. science and engineering workforce with Ph.D.s were foreign-born.

No one could argue that Chinese students present absolutely no risk to the U.S. Some students return home and bring the skills they gained in the U.S. Probably some engage in illegal activities, and they should be apprehended and deported. But there is

no question that by far the net beneficiary of having Chinese students in the U.S. has been, and is, the U.S.

Cutting off Chinese graduate students or discouraging them from coming (purposely or inadvertently) would be a colossal mistake that would cut the U.S. off from some of the world's best future scientists and engineers. Other nations are chomping at the bit to take advantage of such U.S. folly.

This is even truer because the risk is so low. Very few charges have been filed against Chinese grad students; they are the least risky Chinese entrants to the U.S. Obviously, the U.S. should vet all visa applicants from China closely, but there should not be a general goal of reducing U.S. access to talent.

Since the first Trump Administration, Presidential Proclamation 10043 has blocked visas for those who have worked on "civil military fusion." The criteria for that should be made public. The Chinese no doubt know who is being kept out, but U.S. institutions are left in the dark.

At MIT, we vet students and scholars from several countries that present heightened risk before a visa is ever applied for. If we had clearer information, we could save time and frustration for our research leaders and for the government by steering clear of individuals who pose risks.

There are some sensible limits that can be put on recruitment. For example, in its China report, MIT decided it would not take post-docs coming from any of the schools in China known as the "Seven Sons of National Defense." Not every individual connected with those schools is a security risk, but for that group of schools, the risks did seem to outweigh any benefits. Similarly, MIT will not appoint as post-docs or visiting researchers individuals who are known to be members of China's armed forces or otherwise currently employed by Chinese military and security institutions.

But vague, broad concerns about Chinese students are not warranted by the evidence I have seen. It is true that the Chinese government could go after the family of any Chinese student, but I am not aware of any evidence that this has resulted in any significant loss of scientific information from the U.S. What *is* mathematically demonstrable is the loss the U.S. would experience if it lost access to Chinese students.

So where do we go from here?

First, universities should continue to scrutinize any collaborations with China and should be in regular dialogue with law enforcement agencies, including the FBI and the Export Enforcement Office of the Bureau of Industry and Security at the Department of Commerce. This is more likely to happen if the massive improvements in university practices toward China are acknowledged by senior government officials. Many special agents on the ground seem to appreciate that there have been significant improvements

in their relationships with universities over the past several years. But that appreciation is not widely understood.

The government needs to continue to enhance its efforts to inform universities about real risks. Vague generalities do not help universities figure out what to do or build confidence in the seriousness of the issue. The more specific the government can be about threats – including by giving classified information to those with the appropriate clearances on campus – the better universities will be able to respond. MIT's action on Huawei mentioned above is an example of what is possible.

Within reason, lists of specific Chinese universities or entities to avoid are better than general descriptions, and easier to follow.

Government, and especially law enforcement, also needs to be more precise in talking about threats. Concerns about openly published research – more on that below – are very different from concerns about illicit activities, and they should not be treated as if they are the same thing.

The government also ought to acknowledge that academia is not the main problem when it comes to theft of technical information from the U.S. Industry – which, after all, keeps more things confidential and makes actual products – is a much bigger target for China. Academia gets a disproportionate amount of attention from those concerned about China because of universities' connections to the federal government and their openness.

The government no doubt will continue to issue guidelines under NSPM-33, as it should. Universities have been waiting for a long time now to hear greater specifics regarding the kind of security plans they will need and how they are to certify to the adequacy of those plans. This is another area where specificity would be helpful. Schools have been taking actions in response to guidance that has come out under NSPM-33, for example, providing training modules on research security for faculty and other researchers, whether through models offered by the National Science Foundation SECURE Center, or by developing training more specifically tailored to their specific institution's profile, and by enhancing the tools for registering international travel.

There are some areas where government should think carefully before moving forward. For example, while open science has its risks, the U.S. has benefited enormously from the free flow of scientific information. U.S. agencies are supposed to follow National Security Decision Directive (NSDD) - 189, issued during the Reagan Administration, which says the default for fundamental research should be that it is open, and when it can't be, it should be classified.

Despite NSDD -189, publication restrictions and other limitations have proliferated in recent years. This should not be happening without a thoughtful examination of the impacts on science as well as on security. In 2019, the National Science Foundation

commissioned a study from the JASON group – the independent advisory group put together by the Pentagon – that concluded that NSDD -189 should be reaffirmed. Perhaps a new look is needed, but prior studies should not be ignored. The recent tendency of some agencies to place “Confidential Unclassified Information” labels on research that is clearly both fundamental and basic is confusing and counterproductive; it makes it harder to effectively categorize information that truly does require confidential unclassified treatment. It also represents an additional compliance burden that is particularly problematic for small and not-well-resourced universities that are already challenged by the growing internal infrastructure needed to support STEM research.

Research agencies are also increasingly putting in place grant restrictions that limit the participation of Chinese students. In general, once a student has been admitted to the U.S., he or she should be treated as every other student is except when restricted by export controls or similar limitations. We want to fully benefit from these students, and we want them to stay after they complete their degrees.

That said, there are sometimes good reasons to restrict foreign nationals from a project, and in those cases, restrictions should be used for specific studies of concern rather than blanket restrictions on programs for students with approved visas.

There is an area where additional information and restrictions may be needed. The government should increase its scrutiny of the funding of start-up companies. In start-ups developed with IP owned by a university, the university often has no way of knowing whether, say, a Chinese entity is an investor at the time of the start-up’s creation, or at some later point. But such a start-up would not be subject to review by the Committee on Foreign Investment in the U.S. (CFIUS) because the IP would not be foreign owned.

But as I noted at the outset, all the defensive measures in the world are unlikely to do more than slow China’s technological advance a bit, temporarily. China has substantial assets of its own to draw on. Slowing China – if done in ways that don’t do greater harm to the U.S. – is worthwhile, but hardly enough to guarantee future U.S. success. The only way to do that is to ensure the U.S. is taking the steps needed to succeed.

Those steps include continuing to ensure that the U.S. is a magnet for the world’s top talent and continuing to invest in U.S. science and technology.

This Committee, on a bipartisan basis, played a key role in crafting the “CHIPS and Science Act,” which authorized significant increases for NSF, in part to promote U.S. competitiveness. And yet, Congress cut NSF’s budget in FY 24 – a very rare step – and funding is now frozen, while massive cuts are rumored for FY 26. We can limit China all we want, but we’re never going to succeed if we limit ourselves more. China’s own spending on science and technology is not being curtailed.

One need look no further than the recent announcement by DeepSeek, the Chinese AI company, to see the irrationality of assuming that defensive maneuvers alone are enough to guarantee U.S. success. Limits on exports of U.S. chips didn't keep DeepSeek from creating an AI system that is giving the U.S. competition a run for its money. And note that DeepSeek is open source – it is publishing its methods.

We shouldn't be naïve about China, but that includes not denying its strengths. We're not going to compete successfully just by building a moat around the U.S. We'd better be sure that everything we need from others – especially talent – can get across that moat, and we'd better be sure that nothing inside our moat is deteriorating.

Thank you. I look forward to answering your questions.