

The U.S. Must Take Action on China’s National Security–Related Life Sciences Programs

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KEY TAKEAWAYS

China is engaged in national security–related work in the life sciences, including biotechnology and possible dual use of international genomic data.

The U.S. is rightfully concerned about Beijing’s compliance with the Biological Weapons Convention, including the existence of an offensive bioweapons program.

Washington must take action to thwart efforts by the Chinese Communist Party to further develop life science capabilities with national security implications.

While the U.S. intelligence community toils to identify the exact origins of the SARS-COV2 (COVID-19) virus in the People’s Republic of China (PRC), there are additional reasons to be concerned about Beijing’s work in the life sciences, especially biotechnology.

Indeed, the U.S. State Department and the Department of Defense (DOD) have publicly noted their unease with the PRC’s dual-use research and development (R&D) in biotechnology that may have offensive military purposes.

These circumstances, especially in the aftermath of China’s infamous role in the COVID-19 pandemic, beg the question as to whether the PRC is developing—or has developed—asymmetric military capabilities in the life sciences, including biological weapons (BW), that may be injurious to U.S. national interests in the Indo–Pacific—and beyond.

This paper, in its entirety, can be found at <http://report.heritage.org/bg3731>

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Considering the PRC's prodigious geopolitical aspirations, its unprecedented military build-up, and revisionist view of global politics, the potential Chinese use of military biotechnology, including existing or novel BWs, in a crisis or conflict should be of concern—and must be addressed.

Accordingly, the Biden Administration and Congress, in cooperation with allies and partners, should:

- **Increase** the intelligence focus on Chinese military-related and security-related R&D in the life sciences;
- **Reassess** dual-capable life science technology transfers, especially biotechnology, to the PRC;
- **Appoint** a congressional blue-ribbon commission to assess the Chinese military-related life sciences and biotechnology threats and U.S. preparedness to mitigate these threats; and
- **Pressure**, in concert with like-minded international partners, the PRC to come into full compliance with the Biological Weapons Convention (BWC).

Treaty Troubles

Throughout history, biological pathogens have taken innumerable lives in natural outbreaks. During the 20th century, the Spanish flu of 1918 and 1919 may have taken as many as 50 million lives globally.

COVID-19, which originated in China in 2019 despite Beijing's claims to the contrary, has taken more than 6 million lives globally so far. The PRC's continued unwillingness to be transparent on the virus's true origins is cause for deep concern—and has wide-reaching implications.

The concerns about the PRC's involvement with pathogens does not end with COVID-19. Indeed, the State Department's recent report to Congress, "Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments," expresses continued concern about China's compliance with the BWC.¹

While the BWC allows member states to engage in peaceful research (such as vaccine development) to counter and protect against microbial and biological agents and toxins, it prohibits their development, possession, stockpiling, or use for offensive (military) purposes, including weapons or delivery systems.²

TEXT BOX 1

China's Cold War Biological Agents

Ricin: A poison found in castor beans that attacks cell processes. It can be transmitted through the air, food, or water, potentially causing illness and even death.

Botulinum toxins: A protein produced by bacteria that attack the nervous system, potentially producing breathing issues, muscle paralysis, and possible death.

Anthrax: A bacterium often found in animals that can be transmitted through the air, food, or water, possibly causing severe illness or death.

Cholera: A water-borne or food-borne bacterium that can cause intestinal distress and death.

Plague: A rodent-borne and flea-borne bacterium that results in the highly infectious pneumonic plague, leading to possible shock, respiratory failure, and death.

Tularemia: A bacterium that can be transmitted through insect bites, the air, food, water, or touch, potentially leading to respiratory illness and systemic infection.

Source: U.S. Centers for Disease Control and Prevention.

With concern, the State Department writes:

The People's Republic of China (PRC) continued to engage in activities with dual-use [civilian and/or military use] applications, which raise concerns regarding its compliance with Article I of the BWC. In addition, the United States does not have sufficient information to determine whether the PRC has eliminated its assessed historical biological warfare (BW) program, as required under Article II of the Convention.³

According to the State Department's April compliance report, China—which joined the BWC in 1984—possessed a BWs program from the 1950s to the late 1980s that should have been ended, diverted, or destroyed upon entering the BWC.⁴

To this day, Beijing has not acknowledged the existence of or current disposition of that Cold War offensive BWs program, which weaponized “ricin, botulinum toxins, and the causative agents of anthrax, cholera, plague, and tularemia.”⁵

Even more alarming, the State Department reports that Beijing's military medical institutions have published papers that discuss “identifying, testing and characterizing diverse families of potent toxins with dual-use applications” that could pose a BWs threat.⁶

The State Department report also cautions that more information is provided in a “higher classification annex,” meaning that additional details may

not be released to the public due to the analysis being based on sensitive intelligence sources and methods.⁷

Equally troubling, Beijing postponed a bilateral, virtual BWC-related meeting in 2021 with Washington and canceled a similar meeting in early 2022. Such actions do not inspire confidence in the age of COVID-19, but instead foster concerns about China's BWC compliance and America's rivalrous global relations with the PRC.⁸

Weapons Worries

The Pentagon's annual report to Congress in late 2021, "Military and Security Developments Involving the People's Republic of China," highlights Chinese high-technology developments and potential military applications.⁹

These Pentagon concerns include the field of biotechnology, especially in the life sciences subfields of precision medicine, biological warfare, enhanced soldier performance, and human-machine teaming.¹⁰

The DOD report also expresses: "The PRC continues to develop its biotechnology infrastructure and pursue scientific cooperation with countries of concern."¹¹ While unspecified in the DOD report, these countries of concern could include Russia, Iran, and North Korea, based on analysis of State Department nonproliferation reporting.

Indeed, Chinese equities have pontificated on the future usage of biotechnology in military applications. Researchers have compiled examples of the PRC's military's—the People's Liberation Army (PLA)—interest in exploiting this fast-evolving, potentially impactful technology.¹²

For example, in 2015, then-president of the Chinese Academy of Military Medical Sciences, He Fuchu, argued that biotechnology will gain the "strategic commanding heights" of national defense, including "brain control" weapons and future materials.¹³

In addition, the former president of China's National Defense University, Zhang Shibo, identified biology as a new domain of warfare and asserted that "modern biotechnology development is gradually showing strong signs characteristic of an offensive capability," including possible "specific ethnic genetic attacks."¹⁴

In another instance, the PRC's Central Military Commission reportedly funded "military brain science, advanced biomimetic systems, biological and biomimetic materials, human performance enhancement, and 'new concept' biotechnology."¹⁵

China's interest and testing in advanced gene editing using clustered regularly interspaced short palindromic repeats (CRISPR) has caused concerns globally in recent years since its initial development.¹⁶

U.S. researchers recently noted that Chinese military scientists are beginning to explore using CRISPR to "increase human capabilities on the future battlefield." However, they say its potential remains hypothetical at this point since it is a nascent technology.¹⁷

These new "frontiers" that the PRC is exploring with CRISPR could include gene editing to improve cognitive function and to "boost personnel combat effectiveness" as well as separate work on "bionic robotics, intelligentized exoskeletons, and techniques for human-machine collaboration."¹⁸

These types of possible dual-use scientific research on CRISPR are being conducted in conjunction with the Chinese company BGI, the world's largest biotech firm, which manages China's National Genebank. BGI has been scrutinized for attempts to run U.S. state-based COVID-19 testing labs,¹⁹ and the linkages with the PLA's National University of Defense Technology are profoundly concerning.²⁰

Former Director of National Intelligence John Ratcliffe stated that U.S. intelligence "shows that China has even conducted human testing on members of the People's Liberation Army in the hope of developing soldiers with biologically enhanced capabilities" and that "there are no ethical boundaries to Beijing's pursuit of power."²¹

Another issue that may have national security implications is the PRC's collection and use of massive datasets of genomic and health care information from across the globe to advance its "biotech revolution" and desired role as a "global biotech leader."²²

In 2016, China launched a 15-year, \$9 billion effort to collect, analyze, and sequence genomic data to lead the world in precision medicine.²³ China has additionally sought access to U.S. health care data through joint projects with universities, medical institutes, and other research institutes in the United States.²⁴

As a result, there are rightful concerns about the Chinese collection and usage of biodata, including personally identifying information and genomic data, for purposes that could run counter to U.S. interests.

These Chinese government biotechnology programs could be used to achieve military, intelligence, or other national security objectives, including allowing "the PRC vast opportunities to precisely target individuals in foreign governments, private industries, or other sectors for potential surveillance, manipulation, or extortion."²⁵

Though specifics from the U.S. government on this issue are few in the public sphere—likely due to understandable security classification restrictions—a general overview of Chinese work in the life sciences is deeply troubling.

Perceived Threat Drivers

Since few other countries are currently suspected of having BW programs (such as Iran, North Korea, and Russia), the question then becomes: Why might China be pursuing offensive BW and life sciences programs?

There are at least a few potential reasons.

First, though it does not, the PRC may believe that the United States still has an offensive BW program and that it would use these weapons in conflict. This idea may be based on the PRC's and the Soviet Union's propaganda-driven assertion that the U.S. used BWs in the Korean War against North Korean and Chinese forces.²⁶

If this unfounded belief still holds in Chinese national security circles, China could believe that it needs a BW program both for defensive—and offensive—purposes due to the possibility that the PRC and the United States might clash militarily and that sub-nuclear weapons of mass destruction might be involved.

The PRC may also be using the opacity and ambiguity surrounding an offensive BW program to serve as a strategic deterrent to potential opponents, including the United States and regional rivals, such as Japan and India.

Lastly, Beijing may be looking to develop an asymmetric advantage over potential opponents in the military use of the life sciences, especially the United States, through the development of advanced military, intelligence, and other security applications, including novel BWs.

Due to these concerns, Washington should:

- **Increase the intelligence focus on Chinese military-related and security-related R&D in the life sciences.** In 2021, then-CIA Director William Burns ordered the creation of the China Mission Center and the Transnational and Technology Mission Center.²⁷ Both centers were created to dedicate agency focus and resources to missions that would include the threat of China and disruptive new technologies, including biotechnology. Congress must provide keen oversight of the stand-up of both centers as well as broader work by the Office of the Director of National Intelligence, capturing the work of all 18 intelligence agencies, “breaking down information silos,” and addressing possible dual-use life science threats to U.S. interests.

- **Reassess dual-capable life sciences technology transfers, especially biotechnology, to the PRC.** This reassessment should include, but not be limited to, stricter “guardrails” on technology transfers, greater transparency involving transfers, and more oversight of academic and commercial joint R&D in the field of the life sciences, especially biotechnology, with Chinese entities. This initiative should also apply to foreign enterprises cooperating or collaborating with PRC life sciences entities to prevent the indirect transfer of important U.S. technology and industrial processes to the Chinese government. Washington should also consider possible restrictions on Chinese student visas in fields related to life sciences and other areas of high technology (such as artificial intelligence and quantum information science) and should examine further restrictions to protect the purchase or transfer of U.S. genomic and medical data to foreign adversaries, including the PRC. Congress should consider legislation, such as Senator Jim Risch’s (R-ID) S. 2912 Biological Weapons Policy Act of 2021, which seeks to strengthen State Department authorities to prevent BW proliferation; establishes a country team assessment requirement for countries of concern, including China, to prevent the “misuse of life sciences research for military purposes”; prohibits the use of federal funds for gain-of-function research with China and countries of concern; and mandates and requires various oversight reports on government grants in life sciences research and national security concerns and collaboration with China on pathogens, viruses, toxins, biotechnology, and synthetic biology.²⁸
- **Appoint a congressional blue-ribbon commission to assess the Chinese military-related life sciences and biotechnology threats and U.S. preparedness to mitigate these threats.** Congress should authorize and fund a six-month commission consisting of outside, non-governmental experts with access to all available intelligence information to assess the threat of Chinese military-related and national security-related life sciences R&D. The final report should include public policy recommendations to remediate any conceivable threats. If possible, the report should also be issued in an unclassified format for public consumption. The Cyberspace Solarium Commission could be used as a framework for the commission.
- **Pressure, in concert with like-minded international partners, the PRC to comply fully with the BWC.** While difficult, this effort at confidence-building and compliance should come at both the

bilateral level and in multilateral fora, including at the United Nations. Washington and its partners should also raise questions about China holding leadership positions under the BWC while these questions linger. In addition, the United States must establish further ties with international partners on life sciences R&D while sharing, where applicable, intelligence on Chinese efforts to subvert, obtain legally or illegally, and transfer military-related and national security-related life sciences technology from leading institutions in the partner's country to the PRC.

Conclusion

The PRC has one of the world's most advanced life science R&D enterprises. Beijing is clearly driven to become the world's biotechnology leader for a variety of reasons, including national security purposes.

Beijing's national "military-civilian fusion" policy means that work in the life sciences for peaceful civilian ends could support belligerent military, intelligence, and other national security applications and policies.

The PRC's dual-use ambitions in the life sciences will have yet-to-be-seen consequences for U.S. national interests.

Indeed, though not explicitly directed at the PRC, but likely applicable to Beijing, the Director of National Intelligence's 2022 "Annual Threat Assessment of the U.S. Intelligence Community" amplifies the warning, stating: Rapid advances in dual-use technology, including bioinformatics, synthetic biology, and genomic editing, could enable the development of novel biological weapons that complicate detection, attribution, and treatment.²⁹

Considering the PRC's geopolitical aspirations, unprecedented military build-up, and revisionist vision of global politics, Beijing's potential use of the life sciences, especially biotechnology, must be of deep concern to U.S. policymakers—and requires U.S. action.

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