

United States International Trade Commission

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# China's State Support and Pricing Practices in the Biotechnology Sector: Impact on U.S. Industry

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## **Introduction**

Commission Secretary Barton and distinguished members of the Commission, on behalf of the Foundation for Defense of Democracies, thank you for the opportunity to testify before you today.

This hearing is timely. China's biotechnology sector has risen from a minor presence in global medicine to a leading force developing and deploying cutting-edge therapies increasingly on par with Western pharmaceutical firms. Kendall Square now has competition not only from San Diego but also from Shenzhen.

From factory floors filled with bioreactors to clinical sites across the United States, China is a growing presence within the American life sciences sector. Beijing is looking to replace Bethesda as the core anchor of biomedical research, having spent hundreds of millions of dollars advancing China's basic research ecosystem. Chinese firms routinely fulfill research contracts for American start-ups while competing with them for licensing agreements. Data collected from clinical trials across China now routinely fills FDA submissions as both Western and Chinese firms race to market novel treatments.

At the same time, the United States has responded with a lack of urgency against China's state-backed biotech ambitions. Efforts to reshore manufacturing or hedge against supply shocks for essential medicines remain incomplete. Washington has failed to use the entirety of its economic arsenal — procurement bans, investment reviews, and export controls — to level the playing field with Chinese competitors. Federal funding for science has not kept pace with the speed of the field, and bouts of institutional uncertainty have harmed long-term investment prospects.

The implications of these trends are sobering. China's state-supported biotechnology sector threatens the engines of the American life sciences sector by unfairly undercutting domestic start-ups, which produce an outsized share of innovation, enhance productivity, and often contribute the novel compounds larger firms bring to market as promising drug candidates. Likewise, Beijing's hold over key pharmaceutical ingredients threatens the execution of current U.S. biodefense strategy, engineering a dangerous dependency that could be weaponized during a crisis.

My testimony will lay out China's overarching biotechnology strategy, its growing state-supported dominance across both the global and American biotech ecosystems, and the national security implications of Beijing's rise within this pivotal field of economic innovation and military necessity.

## **Beijing's Biotech Strategy**

China's biotechnology strategy is predicated on securing a lasting advantage in an arena bound to define 21st-century science. Across the Chinese Communist Party's (CCP's) "Made in China

2025” initiative, the 14th Five Year Plan, the “Healthy China 2030” initiative, and other provincial and municipal programs, Beijing describes biotechnology as a future engine of economic growth, a necessity for societal stability, and an emerging area of military competition.

For Beijing, biotechnology promises to be a “new productive force,” akin to the manufacturing revolution that powered the country’s earlier economic rise — a merger of advanced technology in a broad range of sectors, from farming to factories to pharmacies.<sup>1</sup> China has invested heavily in building out the country’s commercial life sciences sector, including investments in basic research, pharmaceutical development, and clinical trial reform.<sup>2</sup> These investments are intended to provide a foundation for further innovation, combining the necessary data, intellectual capital, and manufacturing supply chains to drive biological breakthroughs, turning Chinese firms into global pharmaceutical leaders on par with major Western firms.<sup>3</sup>

Beijing’s push for economic growth cannot be divorced from its desire for social stability amid a rapidly aging Chinese society that expects ever higher standards of living. Despite dramatic improvements over the past two decades, Chinese healthcare remains highly unequal — gleaming hospitals rise in top-tier cities, while rural communities receive healthcare from only a few trained physicians working with limited equipment.<sup>4</sup> Because China does not employ enough physicians for its population, Beijing prioritizes new technologies, particularly artificial intelligence (AI), to handle rapidly rising caseloads while lowering costs to its limited social safety net.<sup>5</sup> China also retains a strong memory of famine — accordingly, Chinese biotech invests heavily in food security, particularly crop engineering, to limit its reliance on imports while easing the strain on its overworked, often contaminated soil.<sup>6</sup>

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<sup>1</sup> Craig Singleton and Amaya Marion, “Safeguarding U.S. Interests in the Face of China’s ‘New Productive Forces’ Strategy,” *Foundation for Defense of Democracies*, May 2, 2024. (<https://www.fdd.org/analysis/2024/05/02/safeguarding-u-s-interests-in-the-face-of-chinas-new-productive-forces-strategy>)

<sup>2</sup> Jack Burnham and Johanna Yang, “Notice of Request for Public Comments on Section 232 National Security Investigation of Imports of Pharmaceuticals and Pharmaceutical Ingredients,” *Foundation for Defense of Democracies*, May 6, 2025. (<https://www.fdd.org/analysis/2025/05/06/notice-of-request-for-public-comments-on-section-232-national-security-investigation-of-imports-of-pharmaceuticals-and-pharmaceutical-ingredients>)

<sup>3</sup> Ibid.

<sup>4</sup> Jiajia Li, Leiyu Shi, Hailun Liang, Gan Ding, Lingzhong Xu, “Urban-rural disparities in health care utilization among Chinese adults from 1993 to 2011,” *BMC Health Services Research*, February 19, 2018. (<https://pmc.ncbi.nlm.nih.gov/articles/PMC5807772>); Ran Yan, “COVID-19 Exposed Weaknesses in China’s Rural Healthcare,” *The Diplomat*, March 30, 2023. (<https://thediplomat.com/2023/03/covid-19-exposed-weaknesses-in-chinas-rural-healthcare>)

<sup>5</sup> “Dr Chatbot is popping up all over China,” *The Economist* (UK), November 27, 2025. (<https://www.economist.com/china/2025/11/27/dr-chatbot-is-popping-up-all-over-china>)

<sup>6</sup> Jared S. Hopkins, “China’s Biotech Advances Threaten U.S. Dominance, Warns Congressional Report,” *The Wall Street Journal*, April 8, 2025. (<https://www.wsj.com/tech/biotech/china-biotech-industry-research-threat-e91ddddd6>); Lauren Greenwood, “China’s Interests in U.S. Agriculture: Augmenting Food Security through Investment Abroad,” *U.S.-China Economic and Security Review Commission*, May 26, 2022. (<https://www.uscc.gov/research/chinas-interests-us-agriculture-augmenting-food-security-through-investment-abroad>)

As the victim of an infamous Japanese biological warfare campaign during World War II, Beijing is also keenly focused on the military application of novel biotechnologies. While the People's Liberation Army (PLA) is likely not currently developing offensive biological weapons, the foundation for such a program — as measured by conviction in its necessity, capacity to develop threats, and capability to deliver them — has only grown stronger over the past two decades. China is well-prepared to integrate life science innovations into its military industrial base, having argued since 2005 that “newly developed biotechnologies” such as genetic engineering, cloning, and tissue repair mechanisms “lend themselves to military purposes.”<sup>7</sup> In that vein, the PLA has updated its doctrine since to define biotechnology as a new domain (新兴领域) of “military struggle” and publicly discussed the merits of gene editing for both offensive biological warfare and improving the efficacy of PLA combat personnel.<sup>8</sup>

### **China Increasingly Dominates the Foundations of Biotech Innovation**

The greatest strength of China's biotech sector is found not in a clinical suite but rather on the factory floor. Chinese firms dominate the production of crucial inputs needed to produce novel biotechnologies — key starting materials (KSMs) for active pharmaceutical ingredients (APIs) used in a broad range of medications and high-quality data streams used to identify potential treatment pathways.

China is the sole source supplier for at least one of the KSMs in over 700 different APIs, with China surpassing India in API drug master file submissions in 2024, marking its rapid ascent as the foremost producer of essential pharmaceutical ingredients.<sup>9</sup> This lead is even stronger within the American market, with nearly 41 percent of KSMs used in U.S.-approved APIs being sole-sourced from China, a rate more than twice as high as the next leading sole-source supplier, India.<sup>10</sup> China's hold on the KSM market also ensures that efforts to relocate API production to countries such as India often still rely on Chinese firms for key inputs, allowing dependency to become dominance.

China's biotechnology industry also relies on its control of high-quality streams of biological data. China has collected vast amounts of genetic data and biological samples while passing laws

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<sup>7</sup> Craig Singleton, “Biotech Battlefield: Weaponizing Innovation in the Age of Genomics,” *Foundation for Defense Democracies*, January 15, 2025. (<https://www.fdd.org/analysis/2025/01/15/biotech-battlefield>)

<sup>8</sup> Ibid

<sup>9</sup> Aayushi Pratap, “Raw materials from overseas fuel the production of medicines used in the US,” *Chemical and Engineering News*, October 22, 2025. (<https://cen.acs.org/pharmaceuticals/Raw-materials-overseas-fuel-production/103/web/2025/10>); Erkan Duman, “Global manufacturing capacity for active pharmaceutical ingredients remains concentrated,” *U.S. Pharmacopeia*, January 8, 2026. (<https://qualitymatters.usp.org/global-manufacturing-capacity-active-pharmaceutical-ingredients-remains-concentrated>)

<sup>10</sup> Jack Burnham, “The U.S. Will Rely on China To Defend Against the Next Pandemic,” *Foundation for Defense Democracies*, October 17, 2025. (<https://www.fdd.org/analysis/2025/10/17/the-u-s-will-rely-on-china-to-defend-against-the-next-pandemic>)

to restrict foreign access under the country's 2020 Biosecurity Law.<sup>11</sup> These bio-banking initiatives, which cover genetic information, blood and cell samples, and other resources, are a significant resource for state-backed epidemiological research while providing the raw material needed to accelerate genetic research and train advanced AI systems for clinical work and drug discovery.<sup>12</sup>

While the United States has attempted to mitigate China's dominance of these fundamental inputs, Washington's efforts often remain slow and diffuse, having failed to preemptively prevent Beijing from accessing critical technologies or impose equitable standards on data-sharing arrangements.

Only after China rapidly accelerated its gene-banking efforts did the Commerce Department begin banning the sale of industrial-grade high-parameter flow cytometers and liquid chromatography mass spectrometers to China over fears that such equipment could be used to train AI systems to design biological products, potentially including biological weapons.<sup>13</sup> While the Trump administration introduced the Strategic Active Pharmaceutical Ingredients Reserve in 2020 to prevent China from engineering a supply shock during a crisis, the project is only intended to cover 26 essential medicines.<sup>14</sup> The National Institutes of Health (NIH) has also been slow to limit Chinese researchers' access to several controlled-access data repositories, allowing for further advancement in Chinese capabilities.<sup>15</sup>

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<sup>11</sup> Jack Burnham and Craig Singleton, "NIH Controlled-Access Data Policy and Proposed Revisions to NIH Genomic Data Sharing Policy," *Foundation for Defense of Democracies*, March 18, 2026.

(<https://www.fdd.org/analysis/2026/03/18/nih-controlled-access-data-policy-and-proposed-revisions-to-nih-genomic-data-sharing-policy>); Craig Singleton, "Biotech Battlefield: Weaponizing Innovation in the Age of Genomics," *Foundation for Defense of Democracies*, January 15, 2025.

(<https://www.fdd.org/analysis/2025/01/15/biotech-battlefield>); Julian E. Barnes, "U.S. Warns of Efforts by China to Collect Genetic Data," *The New York Times*, October 22, 2021.

(<https://www.nytimes.com/2021/10/22/us/politics/china-genetic-data-collection.html>)

<sup>12</sup> Julian E. Barnes, "U.S. Warns of Efforts by China to Collect Genetic Data," *The New York Times*, October 22, 2021. (<https://www.nytimes.com/2021/10/22/us/politics/china-genetic-data-collection.html>); Karoline Kan and Amber Tong, "China Races to Build Record Biobank to Rival US Drugs Research," *Bloomberg News*, April 27, 2026. (<https://www.bloomberg.com/news/features/2026-04-27/china-races-to-build-world-s-largest-biobank-to-rival-us-drugs-research>)

<sup>13</sup> Jack Burnham and Johanna Yang, "New U.S. Export Controls Seek to Prevent China From Weaponizing Biotech," *Foundation for Defense of Democracies*, January 21, 2025. (<https://www.fdd.org/analysis/2025/01/21/new-u-s-export-controls-seek-to-prevent-china-from-weaponizing-biotech>)

<sup>14</sup> Executive Order 14336, "Ensuring American Pharmaceutical Supply Chain Resilience by Filling the Strategic Active Pharmaceutical Ingredients Reserve," August 19, 2025. (<https://www.federalregister.gov/documents/2025/08/19/2025-15823/ensuring-american-pharmaceutical-supply-chain-resilience-by-filling-the-strategic-active>)

<sup>15</sup> Jack Burnham and Craig Singleton, "NIH Controlled-Access Data Policy and Proposed Revisions to NIH Genomic Data Sharing Policy," *Foundation for Defense of Democracies*, March 18, 2026.

(<https://www.fdd.org/analysis/2026/03/18/nih-controlled-access-data-policy-and-proposed-revisions-to-nih-genomic-data-sharing-policy>)

## Chinese Research and Development Pipeline Remains Primed for Growth

Along with accessing the raw materials for growth, China has poured resources into developing the sinews of its innovation ecosystem — a network of basic science investments intended to rival the NIH’s research funding priorities in both scale and scope.

Paramount leader Xi Jinping has repeatedly called for China to strengthen its basic research pipeline, recognizing the value of such research in ultimately delivering scalable innovation across the life sciences.<sup>16</sup> This represents a pivot from China’s historical focus on promoting applied science, which emphasizes improving preexisting discoveries and is often conducted by Chinese firms rather than government-sponsored labs or university clusters.<sup>17</sup> Rather than abandon its initial approach however, China has accelerated its investment in grant-driven inquiry, similar to the model used by the NIH and the National Science Foundation to direct grant funding, with spending in this category rising 11 percent from 2024 to 2025.<sup>18</sup>

This growth, coupled with parallel investments in the country’s university network and military-related research, has brought Chinese state research spending to reach parity with Washington’s.<sup>19</sup> This surge in spending has been paired with aggressive recruitment of top foreign scientists and Chinese nationals residing abroad, including introducing new visa programs timed to coincide with slowing science spending within the United States.<sup>20</sup>

These investments are increasingly paying dividends. Nearly half of all new drug molecules that began human trials in the first half of 2025 originated in Chinese biopharma companies, while major drug candidates increasingly contain assets developed by Chinese firms.<sup>21</sup> Genetic engineering and biotechnology patents represented almost a fifth of the nearly 500,000 Chinese

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<sup>16</sup> “China Focus: Experts hail Xi’s important speech on basic research as key guidance for China’s sci-tech advancement,” *Xinhua* (China), May 3, 2026.

(<https://english.news.cn/20260503/58ae45b455b2440aab5836dd2af93263/c.html>)

<sup>17</sup> Jack Burnham, Dr. Georgianna Shea, RADM (Ret.) Mark Montgomery, and Craig Singleton, “Accelerating the American Scientific Enterprise,” *Foundation for Defense of Democracies*, December 22, 2025.

(<https://www.fdd.org/analysis/2025/12/22/accelerating-the-american-scientific-enterprise>)

<sup>18</sup> Ye Yuan, “How Chinese labs race for the next ‘first-in-class’ breakthrough,” *Chemical and Engineering News*, March 12, 2026. (<https://cen.acs.org/policy/china-research-labs-energy-materials-biotech-breakthrough/104/web/2026/03>)

<sup>19</sup> Jack Burnham and Johanna Yang, “Aiming for Parity With U.S., China Announces Increase in Science and Technology Spending,” *Foundation for Defense of Democracies*, March 19, 2025.

([https://www.fdd.org/analysis/policy\\_briefs/2025/03/19/aiming-for-parity-with-u-s-china-announces-increase-in-science-and-technology-spending](https://www.fdd.org/analysis/policy_briefs/2025/03/19/aiming-for-parity-with-u-s-china-announces-increase-in-science-and-technology-spending)); Matt Hourihan, “It’s Official: China Tops U.S. in R&D Spending,” *Association of American Universities*, March 31, 2026. (<https://www.aau.edu/newsroom/leading-research-universities-report/its-official-china-tops-us-rd-spending>)

<sup>20</sup> Jack Burnham and Annie Fixler, “China Is Winning the AI Race With America’s Own Manhattan Project Lessons,” *The National Interest*, September 1, 2025. (<https://nationalinterest.org/blog/techland/china-is-winning-the-ai-race-with-americas-own-manhattan-project-lessons>)

<sup>21</sup> “China Is Increasing Its Share of Global Drug Development,” *Goldman Sachs*, December 17, 2025.

(<https://www.goldmansachs.com/insights/articles/china-is-increasing-its-share-of-global-drug-development>)

chemistry patents published during 2025, signaling the underlying strength of the domestic market.<sup>22</sup>

This trend has significantly impacted American biotech research and development by threatening a key innovation pipeline. The value of China-to-West biotech licensing agreements grew 66 percent from 2023 to 2024, reaching a record \$41.5 billion — a trend partially driven by China’s strong genetic therapy pipeline and American firms’ desire to access promising candidates for conditions such as cancer.<sup>23</sup> Given the potent price advantage of Chinese compounds and molecules, major American pharmaceutical firms have increasingly turned to purchasing drug licensing rights from smaller Chinese pharmaceutical start-ups rather than U.S. firms, threatening a key pipeline for American start-ups to secure funding from downstream rivals that can carry a novel therapy to market.

### **China’s Midstream Investments Are Rapidly Maturing**

The sinews of the Chinese innovation ecosystem are also key in supporting the mid-stream segment of China’s biotechnology sector. Growing basic and applied research funding has fueled a rise in foreign investment seeking to develop drug candidates ready for early-stage trials at lower costs — a trend that Washington has struggled to fully reverse due to a lack of both investment and institutional stability at home.

China’s biotechnology sector has gained significant ground in the contract research and manufacturing market. Backed by harmonized state investments in both research and manufacturing, Chinese firms such as WuXi AppTec and WuXi Biologics have effectively formed vertically integrated monopolies, lowering costs while sustaining demand across every segment of their businesses.<sup>24</sup> Industry research conducted in 2025 suggested that nearly 80 percent of American biotechnology firms had ties to at least one Chinese contract development and manufacturing organization (CDMO), while nearly 10 percent have ties to 25 or more Chinese CDMOs.<sup>25</sup> These contracts range from initial research and development to raw material procurement to cell-line growth, showcasing the vast expanse of China’s biotech sector while

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<sup>22</sup> Jason Lye, “In the intellectual property race, China is catching up,” *Chemical and Engineering News*, May 4, 2026. (<https://cen.acs.org/policy/intellectual-property/intellectual-property-race-China-catching/104/web/2026/05>)

<sup>23</sup> Jack Burnham and Craig Singleton, “NIH Controlled-Access Data Policy and Proposed Revisions to NIH Genomic Data Sharing Policy,” *Foundation for Defense of Democracies*, March 18, 2026. (<https://www.fdd.org/analysis/2026/03/18/nih-controlled-access-data-policy-and-proposed-revisions-to-nih-genomic-data-sharing-policy>)

<sup>24</sup> Craig Singleton, “Biotech Battlefield: Weaponizing Innovation in the Age of Genomics,” *Foundation for Defense of Democracies*, January 15, 2025. (<https://www.fdd.org/analysis/2025/01/15/biotech-battlefield>)

<sup>25</sup> Angus Liu, “Industry’s sudden decoupling from Chinese CDMOs could harm millions of patients, BIO warns lawmakers,” *Fierce Pharma*, May 9, 2024. (<https://www.fiercepharma.com/manufacturing/bio-chinese-cdmo-survey-results-lawmakers-sudden-decoupling-could-harm-millions>)

raising significant dependency risks.<sup>26</sup> China also remains a leader in basic genomics research, with Beijing Genomics Institute (BGI) and one of its subsidiaries, MGI Tech, providing low-cost sequencing of entire genomes for both research and clinical use.<sup>27</sup>

The United States has taken steps to curb the use of Chinese CDMOs within the American market. The 2025 BIOSECURE Act prohibited federal agencies and federal funding recipients from using biotechnology equipment and services from biotech companies of concern associated with foreign adversaries, closing a key access point for major Chinese CDMOs and genetic sequencing firms.<sup>28</sup> Moreover, this law specifically targeted China's national champions, including WuXi AppTec, BGI, and MGI, without necessarily closing off other procurement pathways, providing an opening for American firms to benefit from Chinese investments without fueling the vanguard of Beijing's biotech ambitions.<sup>29</sup>

By contrast, the United States has struggled to counter China's increasingly advanced clinical trial infrastructure. Initially slow to invest in that infrastructure, Beijing has ramped up standards to improve trial quality and attract foreign investment.<sup>30</sup> These quality-control efforts increased following the arrest of Chinese scientist He Jiankui in 2018 for genetically editing human embryos to nominally prevent HIV/AIDS, an incident that produced international condemnation.<sup>31</sup> While still suffering from shortcomings — Chinese academic papers face far higher rates of retraction in comparison to their Western peers — Beijing has moved to copy certain aspects of the Food and Drug Administration's review practices, including a proposed 30-day window for fast-tracking trial approval.<sup>32</sup>

According to the World Health Organization's International Clinical Trials Registry Platform, China listed 7,100 clinical trials in 2024, in contrast to the roughly 6,000 in the United States

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<sup>26</sup> Ibid.

<sup>27</sup> Craig Singleton, "Biotech Battlefield: Weaponizing Innovation in the Age of Genomics," *Foundation for Defense of Democracies*, January 15, 2025. (<https://www.fdd.org/analysis/2025/01/15/biotech-battlefield>); Amber Tong, "China's MGI Tech to Divest US Subsidiary Citing Geopolitics," *Bloomberg News*, February 24, 2026.

(<https://www.bloomberg.com/news/articles/2026-02-24/china-s-mgi-tech-to-divest-us-subsidiary-citing-geopolitics>)

<sup>28</sup> National Defense Authorization Act for Fiscal Year 2025, Pub. L. 118-159, 138 Stat. 1515.

<sup>29</sup> Ibid.

<sup>30</sup> Adriel Bettelheim and Maya Goldman, "China's biotech boom leaves U.S. playing catch-up," *Axios*, May 29, 2025. (<https://www.axios.com/2025/05/29/china-biotech-boom-us-drug-trials>); Jack Burnham and Craig Singleton, "NIH Controlled-Access Data Policy and Proposed Revisions to NIH Genomic Data Sharing Policy," *Foundation for Defense of Democracies*, March 18, 2026. (<https://www.fdd.org/analysis/2026/03/18/nih-controlled-access-data-policy-and-proposed-revisions-to-nih-genomic-data-sharing-policy>)

<sup>31</sup> Andrew Higgins, "China's 'Dr. Frankenstein' Thinks Time Is on His Side," *The New York Times*, January 13, 2026. (<https://www.nytimes.com/2026/01/13/world/asia/china-gene-edited-scientist-he-jiankui.html>)

<sup>32</sup> Benjamin Plackett, "How China seeks to solve its quality control conundrum," *Chemical and Engineering News*, September 5, 2025. (<https://cen.acs.org/articles/103/web/2025/09/China-seeks-solve-quality-control.html>); Angus Liu, "China proposes shorter clinical trial reviews in efforts to accelerate drug development," *Fierce Pharma*, June 16, 2025. (<https://www.fiercebiotech.com/biotech/accelerate-drug-development-china-proposes-shorten-clinical-trial-review-time>)

during the same period.<sup>33</sup> This gap has only grown over time as Western firms have pivoted toward running clinical trials in China due to lower labor costs and more lenient regulations.<sup>34</sup> This shift is in part a response to Western regulators being more open to accepting Chinese clinical data, opening an avenue for firms to shift later-stage large-scale human drug trials to China while still aiming to seek approval in the American and European markets.<sup>35</sup>

Faced with increasingly stiff competition, the United States clinical trial network suffers from high costs, significant disparities, and a limited workforce. While the FDA has sought to reform parts of its review process to spur more early-stage drug trials, American researchers struggle to clear institutional review hurdles, recruit a representative patient population, and manage an immense clinical nursing shortage.<sup>36</sup> However, these longstanding structural issues remain overshadowed by recent periods of institutional whiplash. The FDA's initial refusal to review safety data related to an mRNA flu vaccine made by Moderna, despite previously approving the shot for Phase III clinical trials, will likely have a chilling effect on drug development as firms refuse to invest millions without regulatory certainty.<sup>37</sup> The Department of Education's effort to restructure financial aid for certain nursing students may further compound already-persistent workforce shortages, turning a short-term gap into a long-term drag on productivity.<sup>38</sup>

### **China's Biotechnology Sector Threatens U.S. Biodefense Industrial Base**

China's rise as a major biotechnology power — along with Washington halting efforts to secure its own dominance — is poised to have significant U.S. national security implications. Without further action, Beijing will be increasingly capable of disrupting the underlying engine of American biotech innovation while potentially hindering the execution of the country's current biodefense strategy.

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<sup>33</sup> Adriel Bettelheim and Maya Goldman, "China's biotech boom leaves U.S. playing catch-up," *Axios*, May 29, 2025. (<https://www.axios.com/2025/05/29/china-biotech-boom-us-drug-trials>)

<sup>34</sup> Annalee Armstrong, "Clinical Trials Are Increasingly Going Global—With China a Main Beneficiary," *Bio Space*, February 2, 2026. (<https://www.biospace.com/drug-development/clinical-trials-are-increasingly-going-global-with-china-a-main-beneficiary>).

<sup>35</sup> Ashleigh Furlong, "UK to Accept More China Clinical Trial Data as Power Shifts," *Bloomberg*, April 29, 2026. (<https://www.bloomberg.com/news/articles/2026-04-29/uk-to-accept-more-chinese-clinical-trial-data-as-power-shifts>)

<sup>36</sup> Annika Kim Constantino, "FDA chief warns U.S. is losing ground to China in early drug development, calls for faster trial approvals," *CNBC*, February 18, 2026. (<https://www.cnbc.com/2026/02/18/fda-chief-warns-us-is-losing-ground-to-china-in-early-drug-trials.html>); Jack Burnham, "Reimagining and Improving Student Education," *Foundation for Defense of Democracies*, March 2, 2026. (<https://www.fdd.org/analysis/2026/03/02/reimagining-and-improving-student-education>)

<sup>37</sup> Claire Cameron, "FDA agrees to review Moderna mRNA flu vaccine in dramatic reversal," *Scientific American*, February 18, 2026. (<https://www.scientificamerican.com/article/fda-agrees-to-review-moderna-mrna-flu-vaccine-in-dramatic-reversal>)

<sup>38</sup> Jack Burnham, "Reimagining and Improving Student Education," *Foundation for Defense of Democracies*, March 2, 2026. (<https://www.fdd.org/analysis/2026/03/02/reimagining-and-improving-student-education>)

The U.S. biotech sector is predicated on a foundation of self-reinforcing institutions that funnel novel discoveries into mass-market pharmaceuticals, the core of which remains small- and medium-sized firms. These small, research-intensive biotech start-ups produce an outsized share of biotech innovation — their business model overwhelmingly relies on burning through investor capital attempting to transfer federally funded basic research into plausible drug candidates.<sup>39</sup> Of the few businesses that do identify plausible candidates, the majority license their discoveries to more established firms that have the financial and institutional depth to carry a candidate to market, a process that can cost up to \$1.3 billion for a single drug.<sup>40</sup> This cycle produces an effective mechanism to diffuse innovation across the American pharmaceutical sector, with small- and medium-sized firms providing significant productivity gains to more established market players, increasing their global competitiveness.<sup>41</sup>

However, China's rise has threatened to dismantle this pipeline, outsourcing the primary engine of American innovation. Supported by the state, Chinese firms can offer substantially lower prices for novel compounds, allowing major Western firms to bypass American start-ups in search of subsidized discounts overseas. This development has partially driven a surge in licensing agreements for emerging drug candidates — nearly three quarters of the 60 licensing deals signed between American and Chinese firms in 2025 involved pre-clinical or Phase I drugs, signaling the rise of Chinese firms as major sources of innovation.<sup>42</sup> This issue is compounded by Beijing's rising spending on basic research, ensuring that Chinese firms can benefit from the country's burgeoning network of universities, even as U.S. federal research spending has fallen in real terms.<sup>43</sup>

China's emerging biotechnology sector also poses a threat to the current execution of U.S. biodefense strategy. The United States depends on a combination of pre-positioned stockpiles and rapid delivery networks to rush medical and pharmaceutical countermeasures in the event of

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<sup>39</sup> Trelysa Long, "Preserving US Biopharma Leadership: Why Small, Research-Intensive Firms Matter in the US Innovation Ecosystem," *Information Technology and Innovation Foundation*, August 21, 2023. (<https://itif.org/publications/2023/08/21/preserving-us-biopharma-leadership-why-small-research-intensive-firms-matter>)

<sup>40</sup> Andrew Mulcahy, Stephanie Rennane, Daniel Schwam, Reid Dickerson, Lawrence Baker, Kanaka Shetty, "Use of Clinical Trial Characteristics to Estimate Costs of New Drug Development," *The Journal of the American Medical Association Network*, January 6, 2025. (<https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2828689>)

<sup>41</sup> Trelysa Long, "Preserving US Biopharma Leadership: Why Small, Research-Intensive Firms Matter in the US Innovation Ecosystem," *Information Technology and Innovation Foundation*, August 21, 2023. (<https://itif.org/publications/2023/08/21/preserving-us-biopharma-leadership-why-small-research-intensive-firms-matter>)

<sup>42</sup> Ben Fidler, "China's edge in early-stage drugmaking 'likely to persist,' Pitchbook says," *BioPharmaDive*, January 26, 2026. (<https://www.biopharmadive.com/news/china-biotech-drug-licensing-trends-pitchbook-cell-gene-therapy/810478>)

<sup>43</sup> Jack Burnham, Dr. Georgianna Shea, RADM (Ret.) Mark Montgomery, and Craig Singleton, "Accelerating the American Scientific Enterprise," *Foundation for Defense of Democracies*, December 22, 2025. (<https://www.fdd.org/analysis/2025/12/22/accelerating-the-american-scientific-enterprise>)

a crisis, allowing first responders to isolate, treat, and eliminate highly infectious diseases.<sup>44</sup> This system also relies on the continuous development of new countermeasures under the auspices of the Biomedical Advanced Research and Development Authority, the same agency responsible for the success of Operation Warp Speed in 2020.<sup>45</sup>

These countermeasures, however, often rely on Chinese components, particularly KSMS and APIs. China is a major producer of the key ingredients used to treat Category A and B bioterrorism agents, including first- and second-line treatments for plague, anthrax, and tularemia while also a key supplier for promising treatments for influenza and hemorrhagic fever viruses.<sup>46</sup> Chinese firms have also poured investment into the foundations for the next generation of countermeasures, particularly the production of nucleotides, used to synthesize mRNA, the most promising platform for rapidly scaling up vaccines against novel viral infections.<sup>47</sup> In the event of an emergency that overwhelms the Strategic National Stockpile of countermeasures, a growing possibility given its weaknesses during the COVID-19 pandemic, the United States will be reliant on its greatest geopolitical adversary to provide essential medications, offering unprecedented leverage in the depths of a possible crisis.

## Conclusion

The greatest fractures to occur during Xi's tenure as China's paramount leader emerged during the latter stages of the pandemic. Incapable of producing a successful vaccine at scale, the CCP maintained a crippling lock-down, a measure that caused dissent to surge and forced the Party to relent.

Those months of 2022 place Beijing's biotech ambitions into their most fitting context. Following decades of careful investment, China could not accomplish the same feats that the United States managed to achieve during that period — the rapid production of a state-of-the-art vaccine produced at scale that saved hundreds of thousands of lives.

But Beijing's failure will not necessarily author its future. Since the pandemic receded, China has only increased its spending on research, development, manufacturing, and military affairs,

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<sup>44</sup> Bipartisan Commission on Biodefense “The National Blueprint for Biodefense,” April 2024.

([https://biodefensecommission.org/wp-content/uploads/2024/05/National-Blueprint-for-Biodefense-2024\\_final\\_.pdf](https://biodefensecommission.org/wp-content/uploads/2024/05/National-Blueprint-for-Biodefense-2024_final_.pdf))

<sup>45</sup> Nikki Teran, “Why BARDA Deserves More Funding,” *Institute for Progress*, March 30, 2022.

(<https://ifp.org/why-barda-deserves-more-funding>)

<sup>46</sup> Yanzhong Huang, “U.S. Dependence on Pharmaceutical Products From China,” *Council on Foreign Relations*, August 14, 2019. (<https://www.cfr.org/articles/us-dependence-pharmaceutical-products-china>); Ryan C. Maves and Catherine M. Berjohn, “Zoonotic Infections and Biowarfare Agents in Critical Care: Anthrax, Plague, and Tularemia,” *Highly Infectious Diseases in Critical Care*, January 2020.

(<https://pmc.ncbi.nlm.nih.gov/articles/PMC7122055>)

<sup>47</sup> Jeff Coller, “America is handing its mRNA lead to China—and RFK Jr. is to blame,” *Fortune*, March 26, 2026.

(<https://fortune.com/2026/03/26/america-losing-to-china-on-mrna-robert-f-kennedy-to-blame>)

seeking to carve out market dominance and gain a military advantage. Its emergence ensures that the United States cannot retreat from a field that so deeply underpins its national security.

Thank you for the invitation to testify. I look forward to your questions.