

CHINA RESEARCH SPOTLIGHT

A new series from East View that highlights Chinese research and resources on key topics.

Biotechnology Breakthroughs in China

Biotechnology discoveries have the capacity to shape human life from facial recognition to synthetic biology. In 2020 the NATO Science & Technology Organization identified biotechnology as a key disruptive technology because biotechnology advancements could facilitate genetic modification and could yield the discovery of new drugs. In 2019 McKinsey partner Franck Le Deu described China's biopharmaceuticals industry as a "Cambrian explosion."

Finding Biotechnology Discoveries in CNKI

The China National Knowledge Infrastructure (CNKI) is the foremost aggregator for academic and research publications, bridging natural and social sciences and humanities. CNKI aggregates nearly all of China's national STI and R&D academic output, including in the realm of biotechnology.



From China Academic Journals (CAJ): Diagram of gait planning and motion simulation. LIU Xuhiu et al. "Gait Planning and Motion Simulation of Lower Limb Prosthesis Based on CPG." *Machine Tool & Hydraulics*. 2021.

China Sci-Tech Achievements (SNAD), a CNKI database that allows researchers to browse abstract and indexing information openly, tracks officially registered scientific and technology achievements in China. **In the field of biotechnology, there are over 116,200 registered achievements.** Almost 9,200 of these are original inventions. These original inventions are comprised of environmental interventions, like using chemicals in soils to conserve water, biosynthesis of highly demanded drugs and vitamins, and agricultural developments, including the use of breeding technologies for shellfish, cattle, and sheep. Several of these inventions concerned computer software, including 3D printing software for molecular and tissue reconstruction as well as biometric software, including visual feature recognition.

For up-to-date breakthroughs in biotechnology from the private sector, researchers can make use of China Patents' (SCPD) over 32 million Chinese patents and over 74 million international patents. The database contains over 10,400 patents related to synthetic biology, patents like those for stress-resistant genes and recombinant repair, and over 53,700 patents related to bioinformatics, like pre-cancer screening systems and microorganism identification. For example, in 2021 researchers at Wannan Medical College filed a patent for a novel micropeptide for pre-cancer screenings and use in drugs preventing liver cancer.



Biotechnology findings have the capacity to shape our future through genetic modification, storage of biological data, predictive diagnostics, and synthetic biological inventions. As China's biotechnology industry develops at a breakneck pace, it is vital that researchers track Chinese research.

From CAJ: Diagram to increase the accuracy of gestures for amputees for bionic limbs. YAN Guangjun et al. "Research on Gesture Classification Methods in Amputee Subjects Based on Gray Theory Model." *Journal of Electronics & Information Technology*. 2021.

See the below links for further reading on biotechnology in China.

- **The next biotech superpower - Nature** <https://www.nature.com/articles/s41587-019-0316-7>
- **China's Role in the Global Biotechnology Sector and Implications for U.S. Policy - Brookings Institution** https://www.brookings.edu/wp-content/uploads/2020/04/FP_20200427_china_biotechnology_moore.pdf
- **China Adopts Biotechnology Regulation, Amid Authoritarianism Concerns - Center for Strategic & International Studies** <https://www.csis.org/blogs/technology-policy-blog/china-adopts-biotechnology-regulation-amid-authoritarianism-concerns>
- **China's Biotechnology Development: The Role of US and Other Foreign Engagement - U.S.-China Economic and Security Review Commission** <https://www.uscc.gov/sites/default/files/Research/US-China%20Biotech%20Report.pdf>
- **China's Biotech Boom Could Transform Lives—or Destroy Them - Foreign Policy** <https://foreignpolicy.com/2019/11/08/cloning-crispr-he-jiankui-china-biotech-boom-could-transform-lives-destroy-them/>