

Sci-tech Powers Fresher, Greener Beijing



High-quality Growth

By Staff Reporters

Beijing, a city that harmonizes ancient traditions with modern advancements, is witnessing continuous transformation with technological development.

Urban renewal enhances quality of life

A decade ago, the Beijing Zoo in Xicheng district had a bustling wholesale clothing market nearby, filled with small stalls and throngs of bargain hunters. They added to noise, traffic congestion and pollution.

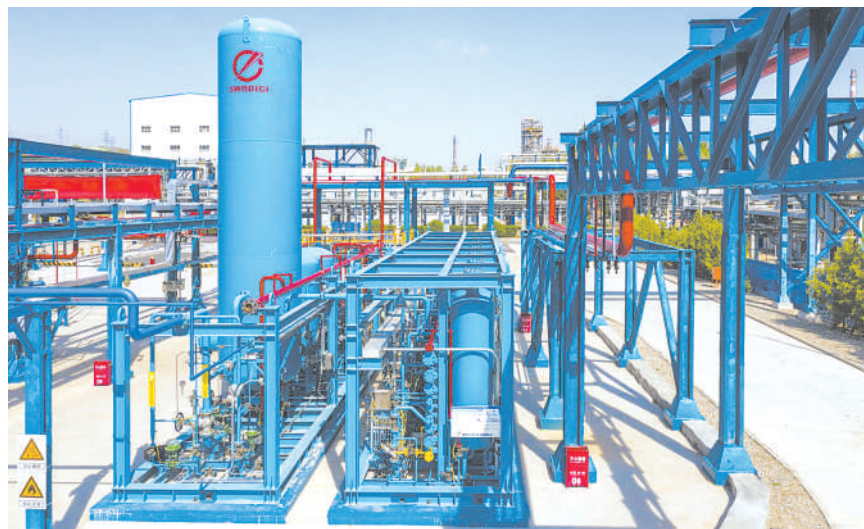
But today, as part of Beijing's strategic urban function transition, this area has become a national-level financial technology innovation demonstration zone.

The zone is a magnet for high-tech "little giant" and unicorn enterprises, along with professional financial service organizations, fostering a robust fintech industrial ecosystem.

As an influential sci-tech innovation hub, it is also enhancing international cooperation. Major international financial institutions and professional organizations such as SWIFT, MasterCard, Visa, and Modern Insurance have established a presence here.

Building No.8 at Huapichang Hutong in Xicheng is an impressive example of the renovation of a five-storied house in just three months.

Built in 1978, it lacked an elevator and faced numerous issues due to its age. It was chosen as the first pilot project



The hydrogen production facility in Yanshan Petrochemical in Beijing. (COURTESY PHOTO)

in Xicheng when derelict buildings started to be renovated.

Tao Yang, deputy general manager of China State Construction Hailong Technology Company that carried out the renovation, said the project used a modular concrete integrated building format with prefabricated components.

The building process was moved from the site to the factory, shortening construction time as well as pollution.

Tao added that compared to traditional building methods, modular construction reduces solid waste by 75 percent and shortens construction time by more than 60 percent.

Begun in October 2023, the project was completed in just three months. The residents have returned to a green, low-carbon, smart and safe home.

Hydrogen energy leading green development

Hypower, a hydrogen refueling station

in Beijing's Daxing International Hydrogen Energy Demonstration Zone, is Asia's largest hydrogen refueling station. It spans over 6,000 square meters and can refuel over 4 tons of hydrogen daily. On any given day, you can see trucks, small vehicles, and new energy buses forming a long queue, waiting to refuel.

The Sinopec Yanshan Petrochemical Company in Fangshan district is equally busy, with three forklifts being refueled with hydrogen. The hydrogen produced here was used to light the torch at the opening ceremony of the 2022 Beijing Winter Olympics and Paralympics.

Hydrogen is one of the cleanest energy sources, producing only water as a byproduct after burning. It has broad applications spanning steel production to electronics, transportation, and electricity generation.

Li Junliang, chief expert at Yanshan

Petrochemical, said hydrogen is now mostly used for fuel cell batteries. For wider and large-scale applications in other fields, more convenient methods have to be developed for hydrogen storage and transportation.

Currently, the hydrogen produced by Yanshan Petrochemical accounts for about 50 percent of Beijing's market supply. In March 2024, the company launched a project to enhance its hydrogen purification facility, which will contribute further to the city's green development initiatives.

Digitalization transforming floriculture

The Beijing Flower Trading Center in Fengtai district, combines flowers with technological innovations. It collects, organizes and analyzes both online and offline trading information, which is presented on a giant LED screen.

"These publicly available data include transaction volumes, prices and trends, aiding government management and policy-making," said Lin Qiaoling, chair of Beijing Huaxiang Flower and Tree Group.

In 2023, Fengtai introduced a three-year action plan for high-quality development of the flower industry, aiming for a well-developed industry cluster by 2026. This will contribute to building Beijing into a "garden city."

The district is also transforming traditional flower planting and wholesale into a comprehensive ecosystem encompassing research, production, sales, tourism, and service.

This is a boost to rural revitalization through entrepreneurial and community benefits from floriculture.

Serving Scientists and Scientific Development

Founded in 1990 by the Center for Excellence in Molecular Cell Science, the Chinese Academy of Sciences and the Chinese Society for Cell Biology, *Cell Research* (CR) is a monthly scholarly journal that publishes peer-reviewed research articles, authoritative reviews, letters, and research highlights in the life sciences.

Over the past 34 years, CR has adhered to the ethos of "serving scientists, serving scientific development," and evolved to become the premier international journal in the field of life sciences.

Holding scientific merit as the sole metric for manuscript evaluation, CR is committed to unraveling mysteries in molecular biology, embracing breakthroughs in biotechnology, and promoting translational value from bench to bedside. The mission of CR is to disseminate the knowledge of urgent and long-standing predicaments in life sciences to drive biomedical development.

The path of scientific advancement is meandering, with numerous innovative discoveries proving unexpected, particularly when they challenge the orthodox theories. In terms of these original innovations, CR steadfastly upholds a discerning outlook and an attitude of open-mindedness and inclusivity.

For example, in 2014, Professor Yu Li from Tsinghua University discovered a new organelle called migrasome. This novel finding faced rejection from a top-tier international journal due to a reviewer's skepticism. Upon redirection to our journal, a comprehensive evaluation prompted us to acknowledge the profound significance of this discovery, leading us to solicit expert commentaries and decisively publish it expeditiously.

The publication in CR pioneered a new chapter of research and established a robust foundation for the subsequent two inclusions in *Nature Cell Biology*, with one featured on the cover.

In addition, CR continues to promote scientific advancement by showcasing discoveries on the formation mechanism, function, and applications of migrasomes.

This contributes to garnering attention and recognition for migrasomes globally, ultimately culminating in the triumph of Beijing Mageson Biotechnology Co., Ltd., with Yu, the founder,



The July issue of *Cell Research*. (COURTESY PHOTO)

announcing the completion of multi-million RMB angel financing in 2023.

Aside from disseminating the transformative impact of scientific achievements and stimulating the translational values in industrial layout, CR also persists in fostering a supportive environment for scientists. The professional editorial team of CR closely engages with the frontline researchers and drives global collaboration among them.

Since 2018, CR has been dedicated to establishing the internationally renowned academic journal brand conference — Cell Research Symposia on Molecular Cell Science. This symposium aims to be at the forefront of research in molecular cell science, promote significant discoveries, facilitate exchanges and collaborations between domestic and foreign scientists, and empower China's burgeoning cohort of researchers to access the global academic arena.

Moving forward, CR will foster greater inclusiveness, transparency and innovation to illuminate the trajectory of human scientific progress in the era of big data through collaborations with other premier international journals.

Concurrently, we will endeavor to strengthen the reputation of CR as a paragon of international scholarship, thereby bolstering China's scientific and cultural prowess on the global stage.

The article is provided by the *Cell Research* editorial team.

National Data Standard Set for 2026

Policy

By CHEN Chunyou

A national guideline for building a data standards system was jointly released on October 8, by six government bodies, including the National Development and Reform Commission, the National Data Administration, the Office of the Central Cyberspace Affairs Commission, and the Ministry of Industry and Information Technology.

The aim is to create a data-driven digital economy, positioning data as a critical resource and innovation driver for future growth.

The guideline sets a clear goal: by the end of 2026, China will largely have established a national data standards system.

This system will encompass more than 30 fundamental and universal na-

tional standards in various key areas of the data field, such as data circulation infrastructure, data management, data services, training datasets, public data authorization and operations, data rights confirmation, data resource pricing, and corporate data transaction models.

According to the construction framework outlined in the guideline, the data standards system is divided into seven key sections: foundational universal standards, data infrastructure, data resources, data technology, data circulation, integrated applications, and security assurance.

The guideline also provides a detailed breakdown of the content within the national data standards system. Specifically:

- Data infrastructure standards cover storage and computing facilities, network infrastructure, and circulation and utilization facilities.
- Data resource standards focus on

foundational resources, development and utilization, data subjects, data governance, and training datasets.

- Data technology standards encompass data aggregation, processing, circulation, application, operation, and destruction technologies.

- Data circulation standards include data products, data rights confirmation, data resource pricing, and data circulation and transactions.

For example, the standards for network infrastructure, particularly for 5G data transmission, regulate the access, transmission, and management of 5G network data, including 5G network data management, access requirements, transmission quality control, protocols, functionality testing, and performance testing.

Regarding training datasets, the standards focus on the collection and processing of datasets used for large-scale model training, covering aspects such as dataset format requirements,

classification and grading, collection performance, analysis and monitoring, and quality requirements.

To promote compliant data circulation and trading, the guideline encourages the exploration of diversified methods for data circulation and trading, and supports mutual recognition and interconnection among data trading institutions and data circulation and trading platforms.

In respect of core technologies, the guideline proposes promoting the coordinated development of cloud-edge-terminal computing technologies to form computing service capabilities that accommodate large-scale data aggregation, real-time analysis, and intelligent applications.

It also emphasizes strengthening R&D in trustworthy storage technologies to support large-scale, real-time cross-domain data storage and flow, thereby increasing the proportion of intelligent storage utilization.

Shenzhen, China's AI Pioneer

By LUO Yunpeng & CHEN Chunyou

A total of 22 measures across six areas have been identified to build Shenzhen city, in Guangdong province, south China, into an AI leader.

These include full-stack innovation, intelligent products, cross-border data flow, scenario applications, and smart driving technologies, according to an action plan recently released by the Industry and Information Technology Bureau of Shenzhen Municipality.

To establish an intelligent computing power system, the action plan stresses developing advanced computing infrastructure in the city, particularly the "Pengcheng Cloud Brain III" project, which will be connected with resources nationwide to create a central hub.

Moreover, it encourages the construction of the Shenzhen Open AI Computing Center, scheduled to be completed

and operational by 2024, with a computing power capacity reaching 4000 PFlops.

In terms of advancing innovation in core technologies, the action plan proposes bolstering basic research and technological innovation. Breakthroughs are expected in computing architecture, model evaluation, and intelligent sensors.

To foster a fully self-developed large model technology ecosystem, the action plan encourages advancements in deep learning frameworks, large model architectures, efficient training and inference algorithms, and the development of super-intelligent and highly aligned large models.

To support the layout of AI research platforms, the action plan encourages the Guangdong-Hong Kong-Macao Greater Bay Area International Digital Economy Academy to establish joint laboratories with related enterprises, concentrating on embodied AI research. This collaboration aims to develop new models and algorithms for general AI and address fundamental mathematical challenges.

Focusing on building a domestic AI innovation center, the action plan calls for configuring domestic computing power and algorithms, operator libraries, databases, toolchains, and model libraries. The goal is to develop two industries

specific large models, empowering 50 enterprises to create typical application scenarios.

According to the action plan, Shenzhen will implement a series of measures to strengthen the innovation layout of intelligent products, accelerate the establishment of the Guangdong Embodied AI Robotics Innovation Center, and focus on developing a cross-border data flow hub and an intelligent driving product matrix.



A drone is being used for transporting blood in Shenzhen. (PHOTO: XINHUA)

Journal Review

Over the last three decades, *Cell Research* has advanced alongside the rapid growth of China's fundamental scientific research, particularly in life sciences. This mirrors the swift progress of the internationally renowned journal *Cell*, which capitalized on the wave of molecular biology at the time.

The continued investment by the state in life sciences, the return of a large number of outstanding scientists from overseas, and the unwavering support provided by organizations like the China Association for Science and Technology and the Chinese Academy of Sciences have together laid a solid foundation for the growth of *Cell Research*.

The accomplishments of *Cell Research* and other excellent journals in recent years reflect the growing maturity of China's scientific community

and its increasing presence on the global stage.

Cell Research has always upheld the pursuit of excellence. Over the last 20 years, it has raised its academic standards to a level on par with renowned international journals, demonstrating resilience in its pursuit of progress. The journal is always focusing on the intrinsic originality and scholarly value of research.

I believe *Cell Research* will continue to contribute to creating a more balanced and fair academic publishing environment, promoting the healthy development of both scientific research and scholarly publications.

— Pei Gang, an academican of the Chinese Academy of Sciences, and principal investigator at the Center for Excellence in Molecular Cell Science, Chinese Academy of Sciences.