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New Quality Productive Forces

Upsurge in China's Innovative Drugs

By LIANG Yilian

China is modernizing its pharmaceutical industry and developing new quality productive forces at a faster pace. During this year's Two Sessions, developing innovative drugs was written into the 2024 Government Work Report for the first time, indicating a greater boost for China's domestic innovative drug industry.

Rapid R&D growth

In February, a report released by National Medical Products Administration said 40 innovative drugs were approved in 2023, compared with 12 in 2019. They cover drugs for major diseases such as tumors and autoimmunity, as well as sleep disorders, reducing blood lipids and other treatment areas for which social demand has increased in recent years. In the past five years, 138 innovative drugs were approved, showing sustained growth.

Boosted by supportive programs such as the National Science and Technology Major Projects and reforms, there has been a surge in new drug R&D enterprises. Established players like Qilu Pharmaceutical, CSPC Pharmaceutical Group and other traditional pharmaceutical companies are accelerating their transformation, committed to the R&D of new drugs and improving their independent innovation capabilities.

"The rapid development of domestic innovative drugs has not only greatly improved the access to drugs for patients, but also significantly reduced the [financial] burden for patients," said Cheng Zengjiang, vice president of China Food and Drug Corporation Quality and Safety Promotion Association.

Global expansion of innovation

In November 2023, a new anti-tumor drug developed by Chinese pharmaceutical company HUTCHMED was approved by the U.S. Food and Drug Administration and prescribed in the U.S. within 48 hours of its approval.

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Expedition

The Shenzhou-18 crewed spaceship is launched from the Jiuquan Satellite Launch Center in northwest China on April 25. Chinese astronauts Ye Guangfu (C), Li Cong (R) and Li Guangsu carry out the Shenzhou-18 crewed spaceflight mission, and Ye is the commander. (PHOTO: XINHUA)

Editor's Pick

Steady High Magnetic Field Facility Breaks Records

By HONG Jingpu, WU Changfeng, LIANG Yilian

Researchers have taken a giant leap forward in their high magnetic fields research. Made possible by a recent collaboration between the High Magnetic Field Laboratory, Hefei Institutes of Physical Science (HFIPS), under the Chinese Academy of Sciences, and the University of Science and Technology of China, the research relied heavily on China's Steady High Magnetic Field Facility (SHMFF). The researchers proposed the concept of Topological Kerr Effect, and the results were published online on April 4, 2024 in *Nature Physics*.

This accomplishment stands as another testament to the capabilities of SHMFF. But what exactly is SHMFF, and what challenges did it confront during

its construction?

Cutting-edge research platform

A high magnetic field is an essential extreme experimental condition for frontier scientific research. When a substance is in a high magnetic field, its internal structure may change, thus showing new physical and chemical characteristics. The application of a high magnetic field covers material science, physics, chemistry, and life science, etc.

Usually, the higher the magnetic field, the more the opportunities for new discoveries. According to its duration, the high magnetic field is divided into pulsed and steady-state high magnetic fields. The steady-state high magnetic field can be made to remain stable for the time and value needed by the scientific experiments.

SHMFF consists of 10 magnets, including five water-cooled magnets, four

superconducting magnets and one hybrid magnet. In August 2022, Chinese scientists produced a steady field of 452,200 gauss, or 45.22 Tesla, beating the previous world record set nearly 23 years ago to develop the highest steady magnetic field by a working magnet.

"As the fifth steady-state high magnetic field experimental device in the world, and the first in China, it provides a cutting-edge research platform for researchers," said Kuang Guangli, academic director of the laboratory.

Unique challenges

Constructing such a groundbreaking facility wasn't without its challenges. "The water-cooled magnets in SHMFF are made with specially designed 'bitter discs'," said Zhang Jun, deputy director of the science and technology department of the laboratory.

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China Releases World's First High-definition Lunar Geologic Atlas

By Staff Reporters

China released a geologic atlas set of the global moon on April 21. With a scale of 1:2.5 million, it is the first complete and highest-precision geological map of the moon in the world, providing basic map data for future lunar research and exploration.

Compiled by the Institute of Geochemistry under the Chinese Academy of Sciences (CAS), Jilin University, Shandong University and other institutions, the atlas set consists of the geologic atlas of the lunar globe and the map quadrangles of the geologic atlas of the moon.

The map is a comprehensive depiction of the lithofacies, lithology, geological structure, magmatic activity and mineral distribution on the surface of the lunar crust, which is the most intuitive

and most visible presentation of previous research results. It provides essential and basic data for carrying out lunar scientific research and exploration, building lunar bases and developing and utilizing lunar resources in the future.

"The widely used lunar geological lunar map was published during the Apollo era, with a scale of 1:5 million, which can no longer meet the needs of future scientific research and lunar exploration," said Ouyang Ziyuan, an academician of CAS and researcher of the CAS Institute of Geochemistry.

Subsequently, a team of scientists and cartographers from the Institute of Geochemistry and other research institutions started compiling the new atlas.

With a comprehensive and systematic understanding of the lunar origin and evolution process, the team compiled the

atlas based on the scientific exploration data of China's Chang'e lunar exploration program, and data and research results from all over the globe.

Compared with the Apollo era atlas, the newly released lunar map, based on the perspective of lunar dynamic evolution, has established an updated lunar geological time scale, objectively depicting the geological evolution of the moon, and clearly showing the characteristics of lunar tectonic and magmatic evolution.

"This geological atlas can not only provide basic information and scientific reference for the planning and implementation of lunar exploration projects, but also contributes to the study of the origin and evolution of the moon and even the evolution of the solar system," said Liu Jianzhong, a senior researcher from the Institute of Geochemistry.

Space Day Highlights Joint Exploration

International Cooperation

By LIANG Yilian

China celebrated the ninth Space Day on April 24, with a spectrum of events. The theme this year was "Look Afar to Cosmos and Join Together for Space".

The events, attended by about 1,200 guests from over 40 nations, included the China Space Conference, the International Deep Space Exploration Conference, and the China Space Culture and Art Forum.

The first space cooperation forum between China and Latin American and Caribbean countries was also part of the programs.

The forum, co-hosted by the China National Space Administration (CNSA), China's Ministry of Foreign Affairs and the Hubei provincial government from April 24 to 26, included sub-forums on the space infrastructure's contribution to sustainable social and economic development, deep space exploration and space science, innovative development of the space industry chain, and global governance and capacity building in outer space.

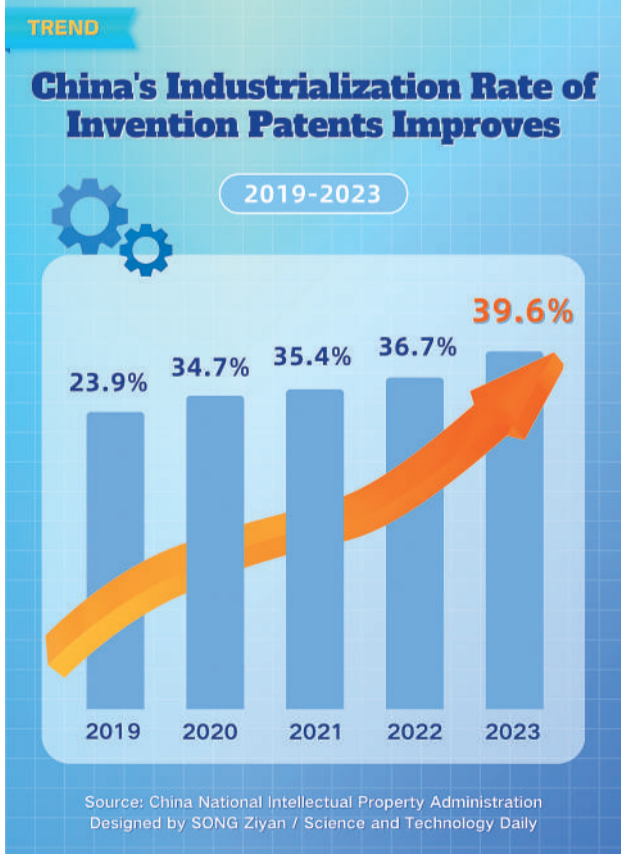
It was attended by nearly 90 delegates from 24 countries and eight international organizations. They included government officials as well as industry, research institution and private sector representatives.

China began to observe Space Day from 2016 to commemorate the launch of the first indigenous satellite, Dongfanghong-1, on April 24, 1970. It is a testament to the nation's space achievements and aspirations.

As Space Day continues to evolve, it is increasingly serving as a platform for international engagement, showcasing China's commitment to openness and cooperation in the exploration of space.

In early April, China and Thailand signed two memorandums of understanding for exploration and peaceful use of outer space and cooperation in the international lunar research station.

New Graphic



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