

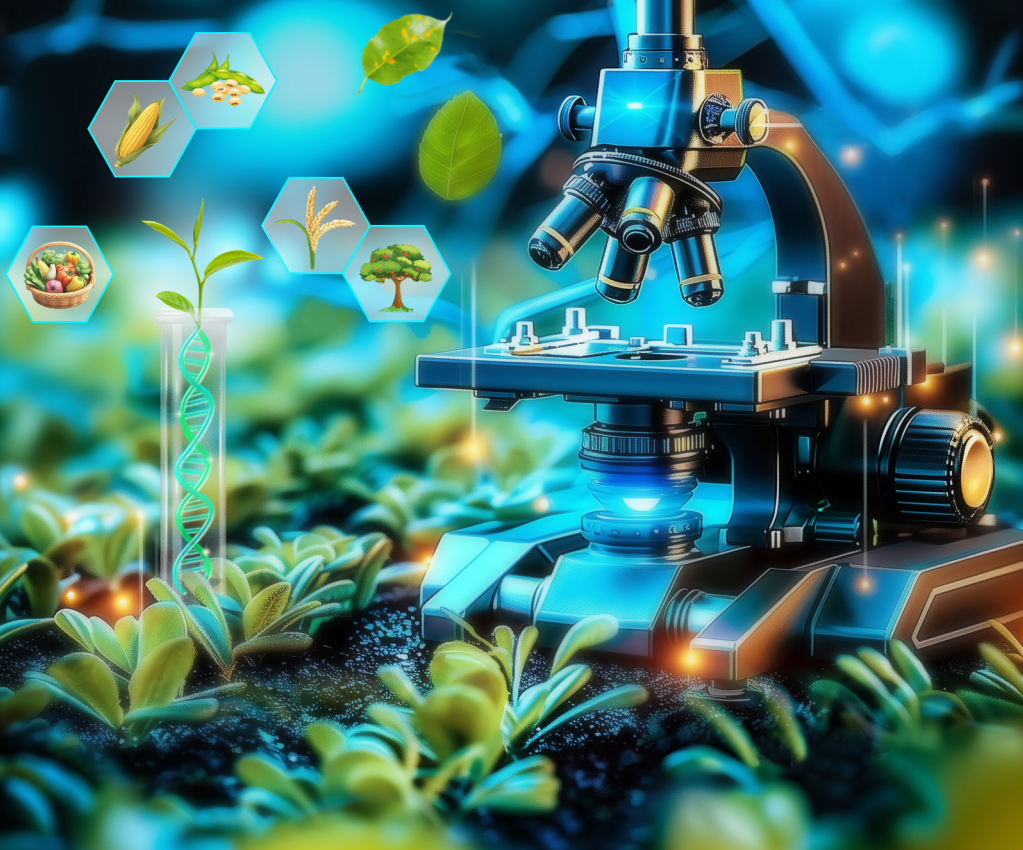


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CAST Newsletter

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Headlines

World Robot Conference 2024 takes place in Beijing



Opening ceremony of WRC 2024
Photo credit: *The Beijing News*

On August 21, the World Robot Conference 2024 (WRC 2024) kicked off in the Beijing Economic-Technological Development Area. CAST President Wan Gang attended. Themed “Co-Fostering New Quality Productive Forces for a Shared Intelligent Future,” the conference included a three-day main forum and 26 thematic forums focused on cutting-edge

technologies, industry trends, and innovative achievements. Participants conducted in-depth discussions on the emerging trends and opportunities brought by integration of artificial intelligence and robotics.

The opening ceremony featured speeches by Xin Guobin, Vice Minister of Industry and Information Technology of China, Jin Wei, Vice

Mayor of Beijing, Marina Bill, President of the International Federation of Robotics (IFR), and Alois C. Knoll, Professor at the Technical University of Munich. Qiao Hong, President of the World Robot Cooperation Organization (WRCO), presented a report outlining 10 trends of humanoid robots.

(Source: *The Beijing News*)

CAST Executive President He Junke meets with WFSW Co-Presidents Jean-Paul Lainé and Elies Molins



Group photo of He Junke and the WFSW delegation
Photo credit: CAST official website

On August 12, 2024, He Junke, Executive President of CAST, met with Jean-Paul Lainé and Elies Molins, Co-Presidents of the World Federation of Scientific Workers (WFSW), and several WFSW executive council members in Beijing. Luo Hui, Director General of the CAST Department of International Affairs, also attended the meeting.

He Junke welcomed WFSW's decision to hold its 96th Executive Council meeting in

China and expressed gratitude for WFSW's longstanding support for CAST. He emphasized CAST's commitment to strengthening ties with WFSW, promoting trust and openness within the global scientific community, and engaging in practical cooperation on initiatives such as launching international scientific programs and supporting the development of young and female scientists.

Lainé and Molins reaffirmed WFSW's commit-

ment to promoting the abilities of science and technology to drive world peace and development. They expressed hope that through WFSW's efforts, science would be harnessed for the betterment of humanity. WFSW remains committed to building bridges for scientists around the world and promoting exchange and collaboration among scientific communities in different countries.

(Source: Official website of CAST)

CAST Director General of International Affairs Luo Hui meets with Indonesia's Deputy Coordinating Minister for Maritime and Investment Affairs

On August 13, 2024, Luo Hui, Director General of the CAST Department of International Affairs, met with Mochamad Firman Hidayat, Indonesia's Deputy Coordinating Minister for Maritime and Investment Affairs, and his delegation in Beijing. The two sides conducted in-depth discussions on effective implementation of Indonesia's National Maritime AI Platform Project and the establishment of long-term, close cooperation.

In July 2022, CAST and Indonesia's Coordinating Ministry for Maritime and Investment Affairs signed a *Letter of Intent on Cooperation in Marine Science and Technology*, commencing development of Indone-

sia's National Maritime AI Platform. This project was later included as an outcome of the 2nd meeting of the China-Indonesia High-Level Dialogue and Cooperation Mechanism, enriching the scope of maritime cooperation between the two countries.

(Source: Official website of CAST)

CAST Director General of International Affairs Luo Hui meets with WFEO President-Elect Seng Chuan Tan

On August 23, 2024, Luo Hui, Director General of the CAST Department of International Affairs, met with Seng Chuan Tan, President-Elect of the World Federation of Engineering Organizations (WFEO), in Beijing. The two sides conducted in-depth discussions on strengthening collaboration between WFEO and CAST in areas

such as climate change, engineering science and technology, engineering capacity building, emerging technologies, continuing professional development of engineers, and preparations for the WFEO General Assembly in 2025.

Both parties agreed that addressing global challenges like climate change and AI ethics requires extensive international cooperation within the engineering sector and a consistent global approach to industry standards and technical regulations. They expressed mutual commitment to cooperation on publishing international engineering journals and implementing continuing professional development (CPD) activities. They also reaffirmed a commitment to advancing preparations for the WFEO General Assembly in 2025.

(Source: Official website of CAST)

Academic Exchange

7th Asian Conference on Plant Pathology held in Changchun



Opening ceremony of ACPP 2024
Photo credit: Xinhua News Agency

From August 3 to 6, 2024, the 7th Asian Conference on Plant Pathology (ACPP 2024), hosted by the Chinese Society for Plant Pathology (CSPP), took place in Changchun, Jilin Province. The conference attracted over 700 plant pathology experts and scientists from 24 countries and regions including Japan, Australia, the United States, France, the United Kingdom, and Canada.

Participants discussed the latest advances and challenges in plant pathology research. Key topics included diseases caused by fungi, oomycetes, viruses, bacteria, and nematodes that affect major crops such as rice, corn, soybean, vegetables, and fruit trees. They addressed critical scientific and technical issues including the molecular mechanisms of pathogen virulence, host-patho-

gen interactions, and disease epidemiology. In-depth discussions also covered the molecular mechanisms of plant resistance, innovative approaches to breeding disease-resistant crops, and the development of key technologies for biological, chemical, and integrated control of plant diseases.

(Sources: Official website of CAST and people.cn)

2024 Green Low-Carbon Innovation Conference held in Huzhou



Opening Ceremony of the 2024 Green Low-Carbon Innovation Conference
Photo credit: China Youth Daily

On August 15, the 2024 Green Low-Carbon Innovation Conference was held in Huzhou, Zhejiang Province. Shu Wei, Executive Vice President of CAST, attended the opening ceremony and delivered a keynote speech. The event brought nearly 300 participants including scientists, entrepreneurs, and venture capitalists together from international scientific organizations, renowned universities, national associations, green and low-carbon technology

companies, and investment firms.

The conference, themed “Green Low-Carbon Innovation: Driving the Engine for a Sustainable Future and Promoting Energy Transition for a Cleaner and More Beautiful World,” focused on practical efforts in areas such as green technology innovation, clean energy transition, developing low-carbon talent, and promoting ecological science popularization. During the opening ceremony, several key

reports were released including China’s Top 10 S&T Innovations in Carbon Peaking and Carbon Neutrality in 2023, the *Huzhou Green and Low-Carbon Life Index Report (2024)*, and the *Huzhou Biodiversity Green City Index*.

The event also featured parallel sessions on topics such as the green energy transition and the role of digitalization in driving the green and low-carbon transformation of advanced equipment. A series of Nation-

al Ecology Day events were held in conjunction with the conference.

International Symposium on Green and Low-Carbon Development and Responsibility of Scientists launches Green and Low-Carbon Development Initiative

In conjunction with the 2024 Green Low-Carbon Innovation Conference, the 96th meeting of the Executive Council of the World Federation of Scientific Workers (WFSW) hosted an International Symposium on Green and Low-Carbon Development and Responsibility of Scientists. Experts from around the world offered in-depth analyses of the serious challenges humanity faces on the path to sustainable development and explored potential solutions.

The symposium launched an Initiative on Green

and Low-Carbon Development, calling on scientists worldwide to transcend national and disciplinary boundaries and enhance openness, communication, and cooperation in the face of urgent climate change and sustainable development challenges. The initiative emphasized that high-level scientific research and technological innovation are essential to seize the opportunity to save the planet and build a more united, peaceful, green, and prosperous world.

(Source: Official website of the Zhejiang Association for Science and Technology)

International Awards

CAAI Fellow Zhang Xuegong elected Vice President of International Society for Computational Biology

On August 20, 2024, the



Photo of Zhang Xuegong
Photo credit: Official website of CAAI

International Society for Computational Biology (ISCB) announced that Zhang Xuegong, Fellow of the Chinese Association for Artificial Intelligence (CAAI) and Professor in the Department of Automation at Tsinghua University, had been elected Vice President of ISCB.

Zhang was named an ISCB Fellow in 2020 in recognition of his significant academic achievements and contributions to the field of computational biology. In July 2024 during the 32nd ISMB Conference (ISMB 2024) in Montre-

al, Canada, ISCB leadership elections took place. With strong support from bioinformatics colleagues in China and internationally, Professor Zhang was elected Vice President of ISCB.

Professor Zhang expressed gratitude for the global support and trust of his colleagues. He pledged to use the ISCB platform to strengthen academic ties between China's bioinformatics community and international peers, promote collaboration across computational biology, bioinformatics, artificial intelligence, and related fields, and enhance ISCB's role in serving both academia and industry. He also aimed to increase ISCB's appeal and career support for young students to take ISCB's impact to a new level.

(Source: Official website of CAAI)

University of Chinese Academy of Sciences Professor Zhou Wu receives 2024 Burton Medal from Microscopy Society of America



Announcement of Zhou Wu's award of the 2024 Burton Medal
Photo credit: chinanews.com

On August 26, 2024, Professor Zhou Wu of the School of Physical Sciences at the University of Chinese Academy of Sciences (UCAS) was awarded

the 2024 Burton Medal by the Microscopy Society of America (MSA). This prestigious award recognizes his outstanding contributions to single-atom resolution electron microscopy techniques and his pioneering achievements in materials science research.

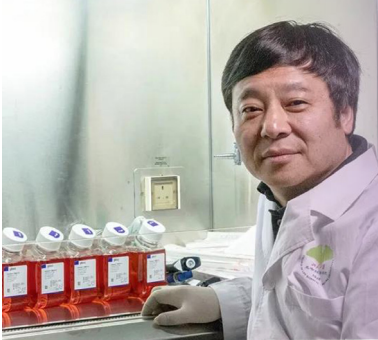
Professor Zhou has opened new avenues in the study of two-dimensional materials and devices, quantum materials, and energy-catalyst materials at the single-atom level and has made significant contributions to the development of novel two-dimensional electronic devices and energy materials.

Established in 1975, the Burton Medal is awarded annually to a scientist under age 40 who has made exceptional contributions to the fields of electron microscopy and microanalysis.

(Source: chinanews.com)

Scientist Profile

Deng Hongkui: Pushing limits of life through stem cell magic



Born in Beijing, China, in 1963, Deng Hongkui is a Boya Chair Professor at Peking University, Director of the Peking University Stem Cell Research Center, and Senior Fellow at the Center for Life Sciences jointly established by Tsinghua University and Peking University. His research focuses on regenerative medicine, cell fate regulation, and somatic cell reprogramming.

Photo of Deng Hongkui
Photo credit: Science China Press

On August 16, 2024, the winners of the 2024 Future Science Prize were announced, and Professor Deng received the Life Sciences Prize. Often referred to as a “magician in the field of stem cells,” Deng’s work holds the potential to repair damaged, diseased, or aging cells, offering hope for extending human health and life expectancy. He has always maintained that “the true value of research must be reflected in the actual treatment or cure of diseases.”

Resetting cellular development clock

Historically, there have been three methods to “reset” a cell’s developmental clock, turning a fully developed cell back into a pluripotent stem cell. Two of these methods have been awarded Nobel Prizes. One involves transferring the genetic material of a mature cell into an egg cell that has had its own genetic material removed. The other involves introducing four transcription factors into a somatic

cell and reprogramming it into a stem cell state.

Deng discovered a groundbreaking method: By taking a somatic cell from the body, such as a skin cell, and adding a few small chemical molecules in vitro, it can be reprogrammed into a pluripotent stem cell. These pluripotent stem cells can then differentiate into almost any type of functional cells in the body.

Explaining “cellular reprogramming,” Deng said, “The human body consists of hundreds of

different types of cells—such as skin cells, nerve cells, and blood cells—but their genomes are identical. Cellular reprogramming is like reformatting a cell without changing its genetic code.”

For the past 20 years, Deng and his team have remained dedicated to reprogramming cells into seed cells or pluripotent stem cells and using them to generate different types of functional cells in vitro to treat various diseases.

Three defining moments

Deng Hongkui’s journey in cellular reprogramming research has been full of challenges. He shared three pivotal moments from the past 20 years that left a lasting impact on him:

First, in the early stages of his research, many considered his work an “impossible task.” Undaunted, his

team adopted a strategy of breaking the ultimate goal into smaller, manageable steps. The initial experiments focused on mouse cells. A breakthrough came when they observed pluripotent stem cells emerging from a cluster of intermediate-stage mouse cells, marked by a green fluorescent glow. This discovery not only highlighted the incredible plasticity and reversibility of cells but also dispelled all doubts about their approach.

Then, while the principles were the same, the transition from mice to humans proved extraordinarily difficult. Human cells are more stable and require a much more complex regulatory mechanism to control their state. After relentless effort, the team made a surprising discovery: In lower animals such as salamanders, cells have a strong regenerative capacity, with a natural

physiological process of cellular reprogramming. This process shares the same basic logic and pathways as human cell regeneration.

Finally, in 2006, Japanese scientist Shinya Yamanaka’s groundbreaking discovery ushered in a new era of regenerative medicine. However, his method struggled with the precise control of reprogramming outcomes. Deng’s team used chemical reprogramming to fine-tune the process. They were able to adjust the timing and dosage more flexibly, simulating the regeneration pathways of lower animals in a safer and more efficient way. After 20 years of efforts, the team successfully mass-produced reprogrammed cells and demonstrated their effectiveness and safety in large animal models. This treatment is now in clinical trials and has shown promising therapeutic results.

Pursuing bolder and more original work

Looking ahead, Deng Hongkui and his team are optimizing third-generation reprogramming technology to make it safer, more efficient, and easier to use.

“We also want to use this technology to create

specific functional cells to treat specific diseases,” he added. “For example, we could use differentiated liver cells to treat patients with liver failure or differentiated nerve cells to treat neurodegenerative diseases.”

On the wall of Deng’s lab at Peking University was a photo of man’s first

footprint on the moon. “The greatest appeal of science is to achieve something that has never been done before. The challenge and disruptive nature of the moon landing reminds us to pursue bolder, more original work and set more ambitious goals.”

(Source: *The Beijing News*)

Upcoming Conferences



World New Energy Vehicle Congress 2024 (WNEVC 2024)



Dates: September 27-29, 2024



Location: Haikou, Hainan Province, China



Hosts: The China Association for Science and Technology (CAST), Hainan Provincial Government, Ministry of Science and Technology of China



The congress, themed “Low-Carbon Transition and Global Cooperation,” aims to bring stakeholders from the global automotive industry together to jointly promote the sustainable and healthy development of new energy vehicles (NEVs) and strengthen international cooperation to achieve carbon neutrality. The congress will address key issues such as the “NEV50@2035” global target outlined in the Boao Consensus from the first WNEVC as well as topics related to globalization, collaboration, and competition. A series of forums, technical exhi-

bitions, technology awards, science outreach events, and concurrent activities will be organized.



For more information, check out: <http://www.wnevc.org.cn/EN/Home/>.



16th China-Japan-Korea Joint Conference on Geography



Dates: October 11-14, 2024



Location: Jilin Province, China



Hosts: The Geographical Society of China (GSC), the Association of Japanese Geographers (AJG), and the Korean Geographical Society (KGS)



The theme of this conference is “Regional Cooperation and Sustainable Development in Northeast Asia.” As globalization progresses, the diverse local cultures, regional characteristics, societies, and traditions of Asian countries are being naturally integrated into the global landscape. This conference will provide a platform for scientists from China, Japan, and the Republic of Korea to engage in meaningful academic discussions, foster cultural exchange, and strengthen friendship as they contribute to the progress and prosperity of human civilization.



For more information, check out: <https://cjk2024.casconf.cn>.



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