



中国科学技术协会
China Association for Science and Technology

NO.19

CAST Newsletter





Headlines

CAST President Wan Gang meets with German / 01
Ambassador to China Patricia Flor

WFEO-CHINA holds 2023 General Assembly in / 03
Beijing

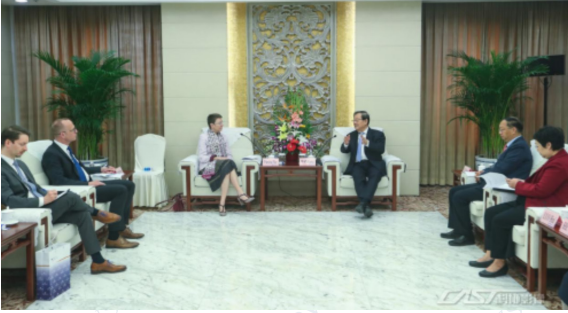
13th Beijing International Film Festival Science & / 06
Technology Section & CSTM Popular Science
Film Panorama opens

Chinese scientist Kang Le re-elected Vice / 07
President of IUBS

Chen Guoqiang's unconventional path to shaping / 08
biotech's future

Headlines

CAST President Wan Gang meets with German Ambassador to China Patricia Flor



CAST President Wan Gang meeting with German Ambassador to China Patricia Flor
Photo credit: Official website of CAST

On April 6, 2023, Wan Gang, President of the China Association for Science and Technology (CAST), met with Patricia Flor, the German Ambassador to China, and her colleagues in Beijing. The conversation centered on areas of mutual interest, with a strong emphasis on advancing scientific and cultural exchange.

Wan sought increased cooperation between China and Germany in several areas including climate change, biodiversity, renewable energy, and agricultural digitization. He also expressed a desire for both countries to engage in dialogue and exchange on topics such as the dual-system higher education and population aging. He emphasized the importance of promoting scientific and cultural exchange, strengthening mutually beneficial cooperation, and achieving win-win cooperation between China, Germany, and Europe, with the aim of contributing to the United Nations Sustainable Development Goals (SDGs).

Patricia Flor articulated her aspirations for sustained

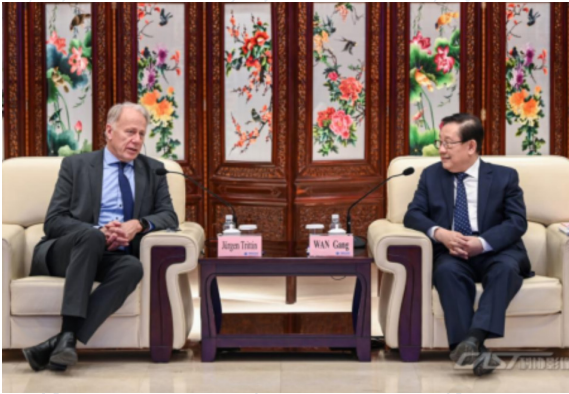
and enhanced scientific and cultural exchange and collaboration between China and Germany. She stressed the value of direct communication between the scientific communities of both countries and called for deeper cooperation in areas such as climate change, marine technology, polar exploration, and digital transformation. Additionally, she expressed hope for mutual support among scientists from China, Germany and the EU on joint research initiatives and focus on diverse and interdisciplinary scientific research. This approach would ultimately promote the integration of natural and social sciences for the betterment of social and economic development.

(Source: Official website of CAST)

CAST President Wan Gang meets delegation led by German federal councilor Jürgen Trittin

On March 23, 2023,

Wan Gang, President of CAST, met with Jürgen Trittin, German federal councilor and spokesperson for Foreign Policy of Alliance 90/The Greens Parliamentary Group, in the German Bundestag in Beijing. During the meeting, they discussed various topics such as climate change, renewable energy development, biodiversity protection, policies for the new energy vehicle (NEV) industry, and ways to promote bilateral exchange and cooperation.



CAST President Wan Gang meeting with German federal councilor Jürgen Trittin
Photo credit: Official website of CAST

Trittin expressed hope that both sides would enhance collaboration on tackling climate change and exploring diverse paths for the energy industry. As a prominent automobile manufacturer, Germany is keen on cooperating with China on development of NEVs. Trittin also expressed hope that both parties would engage in discussions about the potential of fuel cell vehicles, exchange information on policies for the new energy vehicle industry, examine the deployment of charging stations and hydrogen refueling stations, optimize the energy development plan, and continually facilitate application of scientific and technological advancements to secure a sustainable, eco-friendly transformation of social and economic

growth.

(Source: Official website of CAST)

CAST International Affairs Director General Luo Hui meets with Chair of George H.W. Bush Foundation for U.S.-China Relations

On April 6, 2023, Luo Hui, Director General of the Department of International Affairs of CAST, held a meeting with Neil Bush, Chair of the George H. W. Bush Foundation for U.S.-China Relations, in Beijing. They discussed ways to promote the International Symposium on the Peaceful Use of Space Technology (IPSPACE) and possibilities for further cooperation.

During the meeting, Luo emphasized CAST's commitment to promoting scientific and cultural exchange and cooperation with countries worldwide. She highlighted the significance

of establishing high-level, broad-ranging and diversified communication and dialogue platforms. Luo also highlighted CAST's support for the Chinese Society of Astronautics (CSA) hosting IPSPACE and expressed hope for strengthened cooperation with the George H. W. Bush Foundation for U.S.-China Relations. This would foster stable and long-lasting scientific and cultural exchange between China and the United States and create more open international communication platforms.

Neil Bush conveyed his appreciation for CAST's unwavering support for IPSPACE and expressed desire for greater collaboration between China and the United States on tackling worldwide issues such as climate change, healthcare and agricultural growth. He underscored the significance of generating more business opportunities for young people and enhancing worldwide scientific and

cultural exchange while promoting a diverse and inclusive cultural environment that fosters thriving humanity as well as social and economic development.

(Source: Official website of CAST)

WFEO-CHINA holds 2023 General Assembly in Beijing



The 2023 WFEO-CHINA General Assembly group photo
Photo credit: Official website of CAST

On April 10, 2023, the Chinese committee of the World Federation of Engineering Organizations (WFEO-CHINA) convened its 2023 General Assembly in Beijing. The meeting covered updates on nominations for WFEO's special committees and recent work by the Chinese Society of Engineers (CSE). Attending committee members also shared ideas on how to advance key initiatives for the year.

In his speech, Gong Ke, former WFEO President and current Chairman of WFEO-CHINA, emphasized that WFEO-CHINA must follow the guiding principle of using engineering to accelerate delivery of the Sustainable Development Goals (SDGs). He called for close cooperation with the United Nations, relevant international organizations, and WFEO member organizations while upholding humanity's shared

values and making more efforts to achieve the UN 2030 Sustainable Development Goals (SDGs).

Luo Hui, CAST International Affairs Director General and Vice President and Joint Secretary General of CSE, affirmed CAST's full support for Chinese scientists, engineers, young people and teenagers engaging in international cooperation. Luo emphasized CAST's commitment to forward-looking planning, global scientific and technological governance, and efforts to improve trust and cooperation in the international scientific and technological community.

WFEO is the world's largest non-governmental engineering organization established with the support of UNESCO. It serves as an A-level advisory body for UNESCO and advises other organizations such as the United Nations Industrial Development Organization (UNIDO) and the United Nations Economic and

Social Council (ECOSOC).

(Source: Official website of CAST)

WHTC 2023 holds first press briefing in Beijing



Photo credit: Screenshot of the official website of the 2023 World Hydrogen Technologies Convention (WHTC 2023)

On March 28, 2023, the 10th World Hydrogen Technologies Convention (WHTC 2023) held its first press conference in Beijing. The organizers, which include CAST, the China Machinery Industry Federation (CMIF), and the International Association for Hydrogen Energy (IAHE), briefed the media on the convention's preparations and took questions.

WHTC 2023 will be held in Foshan, Guangdong Province, from May 22 to 26, 2023, under the theme "Hydrogen energy and the dual-carbon strategy: Now to the future." The event will gather global experts from academia and industry to discuss the latest products, technologies and equipment in the field, as well as application of hydrogen energy in transportation, chemical engineering, metallurgy and construction, all within the context of carbon neutrality and carbon peaking strategy.

As a high-level international conference hosted

by IAHE, WHTC has been held for nine consecutive sessions and serves as an important platform for experts in hydrogen energy to cooperate and exchange ideas both domestically and internationally. The convention will effectively promote international exchange and cooperation on hydrogen energy technology and contribute to the goal of creating an international exchange and cooperation platform covering the entire industry chain.

(Source: Official website of CAST)

Local Updates

6th China (Lianyungang) International Conference on Medical Technology and 2023 Annual Conference of the China Quality Association for Pharmaceuticals



6th China (Lianyungang) International Conference on Medical Technology and the 2023 Annual Conference of the China Quality Association for Pharmaceuticals
Photo credit: Official website of CAST

On April 1, 2023, the 6th China (Lianyungang) International Conference on Medical Technology and the 2023 Annual Conference of the China Quality Association for Pharmaceuticals opened in Lianyungang,

Jiangsu Province. Hosted by the Lianyungang Municipal Government and the Jiangsu Association for Science and Technology (JAST), the event gathered over 400 experts and industry leaders from China and abroad to discuss medical innovation and industry development.

Under the theme “Inheritance, innovation, integration, sharing, and quality-oriented development to promote construction of a Healthy China,” the conference aimed to promote the high-quality development of China’s pharmaceutical industry, explore ways to improve the quality of China’s medical products, and advance innovations in China’s medical industry. At the opening ceremony, the top ten academic achievements in traditional Chinese medicine for 2022 were honored, and enterprises certified with quality assurance of sterile pharmaceutical products were announced. And contracts for eight

pharmaceutical projects with a total investment of 3.65 billion yuan were signed at the ceremony.

The conference included the Summit on Pharmaceutical Innovation, the Hospital President Forum, and the Sino-European Life Science Forum as well as the 2023 Annual Conference of the China Quality Association for Pharmaceuticals.

Lianyungang is one of the six key biopharmaceutical industry bases in Jiangsu Province and a well-known “pharmaceutical port.” It is also a pilot city for the development of innovative drugs in China. The China (Lianyungang) International Conference on Medical Technology has been held five times, pooling innovative talent, building a technology transfer platform, and fostering international exchange on medical technology innovation and industry development.

(Source: Official website of CAST)

13th Beijing International Film Festival Science & Technology Section & CSTM Popular Science Film Panorama opens

On April 5, 2023, the 13th Beijing International



Poster for the 13th Beijing International Film Festival Science & Technology Section & CSTM Popular Science Film Panorama

Photo credit: gmw.cn

Film Festival Science & Technology Section & CSTM Popular Science Film Panorama kicked off in Beijing. The event is set to feature films from 11 countries including Australia, Belgium, Canada, China and the United States. The films will run through May 5 at the special effects cinema within the China Science and Technology Museum.

Under the theme “Share the Screen, Shape the Future,” the event covers a diverse lineup of 37 films including 23 science popularization special effects films, 8 celebrating the spirit of scientists, 3 science documentaries, and 3 sci-fi films.

Throughout the festival, the China Science and Technology Museum arranged various science popularization and educational activities including film premieres, children’s science clubs and astronomy courses. Additional industry exchange events such as the Special Effects Cinema Development

Forum, Film and Equipment Exhibition, and other related activities are coming to foster popularization of scientific knowledge and advance the science and technology film industry.

(Source: xinhuanet.com)

Academic Exchange

Chinese scientist Kang Le re-elected Vice president of IUBS



Group photo of the executive committee members of IUBS
Photo credit: Official website of CAST

From March 9 to 13, 2023, the 34th General Assembly of the International Union of Biological Sciences (IUBS) was held in Tokyo, Japan. A team of Chinese scientists headed by Kang Le, President of the Chinese

National Committee for the International Union of Biological Sciences (CCIUBS) and a member of the Chinese Academy of Sciences (CAS), participated in the conference. At the assembly, Kang Le was re-elected Vice President of IUBS for the 2023-2026 term.

At the meeting, delegates engaged in discussions on crucial topics such as zoonotic diseases and sustainable development. Experts from CAS delivered presentations on their research related to international biodiversity, big data in healthcare and animal disease. They subsequently obtained ongoing financial support for their research.

Kang Le's re-election as Vice President of IUBS, an important international organization in the realm of biological science, is poised to foster increased contributions from Chinese scientists to enhancing global governance within this vital field.

(Source: Official website of CAST)

Academic Salon on Quality Standards and Evaluation Systems of English Journals of Traditional Chinese Medicine in Hangzhou



Group photo of the salon participants
Photo credit: Official WeChat account of China Association of Chinese Medicine

On March 24, 2023, the China Association of Chinese Medicine (CACM) hosted an academic salon on quality standards and evaluation systems for English journals of traditional Chinese medicine in Hangzhou, Zhejiang Province. The event gathered nearly 50 experts from the field to share insights on building world-class English journals focused on traditional Chinese medicine. The

salon provided guidance for the development of these journals and tips to foster growth in the new era.

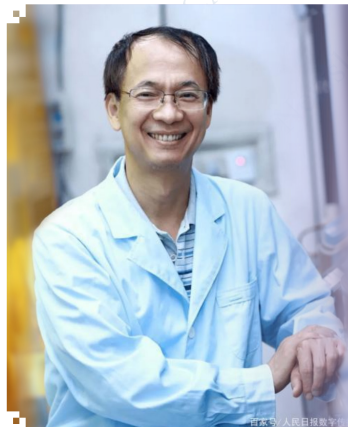
At the salon, six experts presented keynote speeches on a range of topics such as the indicator system for English scientific journals specializing in traditional Chinese medicine and the significance of cluster construction in bolstering the international dissem-

ination of these journals. During the Q&A session, attendees deliberated on publishing and editorial standards for English journals, explored evaluation criteria and systems for assessing journal impact, and examined development strategies and methods for the journals' continued success.

(Source: Official website of CAST)

Scientist Profile

Chen Guoqiang's unconventional path to shaping biotech's future



Chen Guoqiang is the Director of the Center for Synthetic and Systems Biology and a professor at the School of Life Sciences at Tsinghua University. He has more than 30 years of R&D experience in microbial physiology, microbial polyhydroxyalkanoates (PHA) production and its applications. He has published over 380 international peer-reviewed papers on microbiological technology and biomaterials in international academic journals such as *Chemical Reviews*, *Chemical Society Reviews*, and *Science*, with over 25,000 citations (H-Index 77) reported in Web of Science. Despite his achievements, he remains grounded and humble, seeing scientific research as an adventure and considering himself fortunate to have come this far.

Photo credit: *People's Daily*

First Chinese scientist to receive IMES Award

In March 2023, the International Metabolic Engineering Society (IMES) granted the 2023 IMES Award to Chen Guoqiang, acknowledging his exceptional achievements in developing next-generation industrial biotechnology (NGIB) based on halophilic bacteria. This prestigious recognition made him the first Chinese scientist to receive the award since its inception in 2000.

Discovery requires persistent efforts

In the 1990s, microbial polyhydroxyalkanoates (PHA) caught the industry's attention as an efficient way to combat white pollution. However, due to high costs and energy consumption involved in mass production, research into PHA quickly lost momentum. Some even claimed that PHA had no potential as a bulk mate-

rial. Nevertheless, Chen Guoqiang remained optimistic about its prospects, saying, "I believe that PHA is the way forward, and I will see it through."

The biomanufacturing of PHA requires a significant amount of fresh water and energy for the reaction process. To address this issue, Chen Guoqiang's team looked for alternative solutions. Initially, they considered substituting seawater for fresh water, but this posed a challenge because they needed to identify bacterial strains suitable for this purpose. After extensive consultation and numerous on-site soil screenings, the team finally discovered Halomonas, a highly adaptable microbial strain capable of thriving in a saltwater lake in Xinjiang, China. They employed synthetic biology and metabolic engineering techniques through the Design-Build-Test-Learn (DBTL) system to re-engineer the genes

of Halomonas, resulting in stronger and faster-growing strains suitable for NGIB use.

Navigating obstacles to drive disruptive change

Contrasting traditional microbial hosts used in conventional industrial biotechnology (CIB), halophilic bacteria-based NGIB does not require sterilization, allowing for an open and continuous production process that lowers energy and freshwater consumption. This, in turn, improves the competitiveness of bio-manufactured products by simplifying biological manufacturing and reducing equipment manufacturing costs. Chen's team estimates that the NGIB can cut energy consumption in traditional bio-manufacturing by half and significantly improve production efficiency.

Chen has devoted years of research to addressing bacterial contamination

issues when using traditional microbial hosts for mass production of PHA materials. To overcome this challenge, he conducted extensive research in metabolic engineering and synthetic biology transformation of halophilic bacteria to make them more suitable for large-scale bio-man-

ufacturing. Thanks to his efforts, the PHA materials he develops have gained widespread application in medical tissue engineering, functional materials, films, fibers and 3D printing. Additionally, the degradation products of these materials, such as 3-hydroxybutyrate and its derivatives, have shown

promising potential in research and treatment of osteoporosis and Alzheimer's disease.

(Source: Official WeChat account of the China Center for International Science and Technology Exchange)

Editor: Ying Wenqi
Proofreader: Wei Yumeng
Designer: Zhang Shan

CAST is the largest non-governmental organization of scientific and technological professionals in the world. Through its 215 member societies and local branches all over the country, CAST maintains close ties with millions of Chinese scientists, engineers, and other professionals working in fields of science and technology.

<http://english.cast.org.cn/>

newsletter@cast.org.cn