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# CAST Newsletter



A composite image featuring a blue-tinted microscope in the upper right and a glowing green DNA double helix on the left. The background is a dark blue field with a network of white dots and lines, suggesting a molecular or data network.

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## Headlines

### Chinese scientist Gu Baojing wins inaugural Frontiers Planet Prize



Gu Baojing accepts the Frontiers Planet Prize.  
Photo credit: Official website of CAST

On the afternoon of April 27, 2023, the Frontier Research Foundation announced the winners of the inaugural Frontiers Planet Prize. Following a nomination by CAST, Professor Gu Baojing and his team from the College of Environmental and Resource Sciences of Zhejiang University were honored as International Champion.

Gu's research, titled "Abating ammonia is more cost-effective than nitrogen oxides for mitigating PM<sub>2.5</sub> air pollution," outlines a nitrogen contribution rate indicator system capable of quantifying the impact of nitrogen emissions on PM<sub>2.5</sub> pollution and its subsequent effects on health across various countries and regions. Moreover, it offers an assessment of the economic costs and benefits associated with reducing nitrogen emissions, thereby providing a solid scientific foundation for global PM<sub>2.5</sub> pollution control strategies.

Launched in 2022 by the Frontier Research Foundation, the Frontiers Planet Prize celebrates breakthroughs in sustainability science that show measurable potential to help humanity remain within the boundaries of the Earth's ecosystem. As the national representative for the Frontiers Planet Prize, CAST collaborates with the Chinese Geophysical Society (CGS) to assemble a committee charged with reviewing nominations from organizations nationwide. National candidates are selected based on journal impact, the journal citation indicator (JCI), paper citations, innovativeness, significance, and practical value of their research. Following meticulous preliminary and final evaluations, national nominees are ultimately chosen through voting.

(Source: Official website of CAST)

## 18th Chinese Young Women in Science Award winners announced



Ceremony for the 18th Chinese Young Women in Science Award  
Photo credit: Official WeChat account of the China Centre for International Science and Technology Exchange

On April 22, 2023, the winners of the 18th Chinese Young Women in Science Award were announced at a ceremony in Beijing. The event, co-organized by the All-China Women's Federation (ACWF), CAST, and the China National Commission for UNESCO, honored twenty individuals and five research teams for making notable strides in their respective fields.

This year's awards committee, composed of 33 experts including 22 members of the Chinese Academy of Sciences (CAS) and the Chinese Academy of Engineering (CAE), reviewed candidates based on innovative value, methodology, and impact of the research. Winners were selected for their groundbreaking innovations in fields like basic science, life science, computer and information and relentless pursuit of excellence in chip technology and information technology. Among the honorees, two were recipients of the prestigious National Science and Technology Progress Award while six others were awarded the national-level research grants. The record-breaking number of nominations and candidates hinted at growing recognition of the importance

of the Chinese Young Women in Science Award.

Established in 2004, the Chinese Young Women in Science Award is the only nationwide science award in China devoted exclusively to female scientists. Over the years, it has honored 184 female scientists, with nine elected to CAS and CAE and three conferred the L'Oréal-UNESCO for Women in Science Award.

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

## ISC-CHINA 2023 plenary meeting in Beijing

On April 12, 2023, the Chinese Committee of the International Science Council (ISC-CHINA) convened its annual plenary meeting at the China Hall of Science and Technology in Beijing. The event was attended by over 70



2023 plenary meeting of ISC-CHINA  
Photo credit: Official website of CAST

ISC-CHINA members, honorary members, and guest experts.

The meeting reviewed and ratified alterations to the ISC-CHINA committee members. The reshuffle included the appointment of three new vice presidents and induction of five new members to ISC-CHINA. Seven of the committee's honorary members transitioned into retirement.

Luo Hui, Director General of the Department of International Affairs of CAST, commended the ISC for its pivotal role within the United Nations' multilateral mechanisms. As a comprehensive international scientific body, ISC is renowned for its broad reach and disciplinary diversity. Luo Hui encouraged all committee members to align their efforts with the United Nations Sustainable Development Goals. She emphasized the importance of engaging in scientific and cultural dialogue, sharing resources effectively, and fostering relationships with the global scientific and technological community. This will pave the way for a globally competitive, open innovation ecosystem, she said.

Guo Huadong, ISC-CHINA's president and a

member of the Chinese Academy of Sciences, underscored the need for the committee to refine its operational framework, foster cohesion, and collectively address global challenges. He also expressed hope that ISC-CHINA will make greater contributions to achieving the Sustainable Development Goals.

(Source: Official website of CAST)

### **Chinese scientist Lyu Yonglong nominated to UNEP's Multidisciplinary Expert Scientific Advisory Group (MESAG)**

On April 14, 2023, the United Nations Environment Programme (UNEP) appointed three experts to its Multidisciplinary Expert Scientific Advisory Group (MESAG). Recommended by the International Science Council (ISC), Chinese scientist Lyu Yonglong, currently

President of the Pacific Science Association (PSA), made the roster. He will join Dr. Monica Moraes from the Bolivian National Academy of Sciences and Dr. Ervin Balázs from Hungary's Centre for Agricultural Research to advise on the scientific credibility of the seventh edition of the Global Environment Outlook (GEO-7).

This appointment came on the heels of a resolution passed by United Nations member states in March 2022 on the future trajectory of the Global Environment Outlook (GEO). With the resolution in place, work on the forthcoming edition is now proceeding smoothly.

The Global Environment Outlook is a series of reports that review the global environmental conditions and trends. A worldwide initiative led by UNEP, the report assesses the current environmental conditions at regional, national, and local levels. It also

evaluates the effectiveness of policies and actions on environmental issues and forecasts future environmental trends.

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

## Chinese scientist Jiang Yunzhong recruited to write the policy brief for the UN 2023 Water Conference



### POLICY BRIEF: UN 2023 WATER CONFERENCE

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Cover of Policy Brief: UN 2023 Water Conference

Photo credit: Screenshot from the official website of ISC

Chinese scientist Jiang Yunzhong was recently recruited to draft the policy brief of the International Science Council (ISC) for the UN 2023 Water Conference that ended on March 24. Jiang is director of the Department of Water Resources (DWR) at the China Institute of Water Resources and Hydropower Research (IWHR). His appointment was recommended by the Chinese Committee of the International Science Council (ISC-CHINA).

The policy brief highlights the importance of science and actionable knowledge to respond to global water crises as well as emerging and future challenges. It groups the numerous water challenges into four main categories and provides associated examples and focal areas that demand different scientific responses.

The brief aims to efficiently engage with policy- and decision-makers and other stakeholders at UN- and member

states-level to translate scientific insights into tangible improvements and support the water-related Sustainable Development Goals (SDGs) and the achievement of the 2030 Agenda.

Drawing on the expertise of its broad-based membership in natural and social sciences as well as technology, ISC provides integrated, independent, and evidence-based advisory support to UN-Water and relevant organizations in the UN system and seeks to help member states achieve the SDGs.

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

### Local Updates

## 20th Guangxi Adolescent Robotics Competition and ASEAN Countries Adolescent Robotics Invitational Tournament open in Hezhou



Online introduction of contestants from ASEAN countries  
Photo credit: Official website of CAST

On April 14, 2023, the 20th Guangxi Adolescent Robotics Competition and ASEAN Countries Adolescent Robotics Invitational Tournament offi-

cially opened in Hezhou, Guangxi. The event was hosted by the Guangxi Zhuang Autonomous Region Association for Science and Technology.

At the opening ceremony, representatives from different teams and referees pledged commitment before online introductions of contestants from ASEAN countries. Then, an amazing drone choreography show was presented at Hezhou Garden Expo Park, showcasing an incredible combination of robotics and technology.

This year's ASEAN Countries Adolescent Robotics Invitational Tournament also included the MakeX Spark Online Competition featuring 49 teams from countries including Indonesia, Malaysia, the Philippines, Singapore, and Thailand, among other ASEAN member states. The Guangxi Zhuang Autonomous Region Association for Science and Technology

has championed a longer global reach for science and technology educational activities over the years. Their efforts have played a pivotal role in fostering partnerships in science and technology education for young people in ASEAN countries.

(Source: Official website of CAST)

### *Academic Exchange*

## 2023 International Hydropower Development Conference



Xiang Haiping, chief engineer of China's National Energy Administration, delivers opening remarks at the conference

Photo credit: Official WeChat account of CSHE

On April 18, the 2023 International Hydropower Development Conference, organized by the China Society for Hydropower Engineering (CSHE), was held in Beijing under the theme “Pumped Storage—The Key Pillar of Future Energy System.” More than 230 experts and representatives from various sectors, both domestic and international, attended at the main venue in Beijing, with an additional 300 delegates participating virtually. Moreover, satellite events



were held at CSHE representative offices in Pakistan and Cambodia.

The event's keynote session started with a presentation titled "Status-quo and Outlook of Pumped Storage Technology" by Zhang Zongliang, a member of the Chinese Academy of Engineering. Richard Taylor, former CEO of the International Hydropower Association (IHA) and Deputy Chair of CSHE's Overseas Office, followed with a keynote address titled "Enhancing the Flexibility of Hydropower." On behalf of his organization, Roland Roesch, Acting Director of the Innovation and Technology Center of the International Renewable Energy Agency (IRENA), delivered a presentation titled "The Changing Role of Hydropower: Challenges and Opportunities."

At the panel discussion, eight experts from diverse domestic and international backgrounds conducted in-depth talks on the

topic "Promoting High Quality Development of Pumped Storage Hydropower" and related it to their respective fields of expertise.

(Source: Official WeChat account of CSHE)

## CASTE hosts the World Regional Science Academic Exchange Conference



Participants of the World Regional Science Academic Exchange Conference  
Photo credit: Official website of CAST

On April 11, 2023, the China Society of Territorial Economists (CASTE) hosted the World Regional Science Academic Exchange Conference under the theme "Current Trends and Development in World Regional Science Research." The conference sought to intensify global academic exchange, foster collaboration, and ignite meaningful dialogue among international high-level talent. Over 20 experts and scholars from China and abroad participated.

The conference convened as scholars around the globe have been increasingly turning their attention to enhancing urban governance and risk mitigation strategies to solve urban security challenges.

The highlight of the event was a joint presenta-

tion titled “The Blessing in Disguise Hypothesis in Natural Disaster Management” by Peter Nijkamp, a member of the Royal Netherlands Academy of Arts and Sciences and a distinguished visiting professor at Tsinghua University’s School of Public Policy and Management, and Associate Professor Karima Kourtit from the Open University of the Netherlands, who also serves as managing director of The Regional Science Academy (TRSA). Using well-documented case studies in natural disaster management, they outlined how cities can fortify against disasters, minimize losses, and strategize resources to recover swiftly.

(Source: Official website of CAST)

## 94-year-old Zhang Jinyuan receives the 2023 International Achievement Award



Photo credit: Xinhua News Agency

The International Council of Nurses (ICN) and the Florence Nightingale International Foundation (FNIF) recently honored Ms. Zhang Jinyuan of China with the prestigious 2023 International Achievement Award.

After a career in clinical nursing in Jiangxi Province

spanning over forty years, Ms. Zhang has remained a pillar of her community. Upon retirement in 1999, she established a community volunteer service system and expanded her professional nursing practice into the community. By 2023, her team, originally only 17 retired nurses, had grown to 19,251 volunteers. Their care and compassion have touched over 700,000 lives across more than 350 communities. The service model she pioneered has been adopted not only in 19 provinces, municipalities directly under the Central Government, and autonomous regions across China but also in countries such as the United States and Japan.

At 94, Zhang remains active on the frontlines, with over 26,055 hours of voluntary service. She has been instrumental in developing a holistic healthcare model linking the community with hospitals, homes,

and volunteers. She also pioneered a seamless chain of service connecting patients, families, and nursing care through an intelligent elderly care service platform. By providing 72 services under her initiative, she has championed preventive healthcare, public health, health education, first aid training, support for the underprivileged and disabled, hospice

care, and care for left-behind women and children. Her commitment to providing these services free of charge has brought a renewed sense of health and well-being to thousands of households.

The International Achievement Award, established by the ICN and FNIF, is one of the highest global honors in the field of nursing and

healthcare. It is given biennially to a practicing nurse who has made remarkable contributions and made a significant impact in their field. Ms. Zhang Jinyuan, nominated by the Chinese Nursing Association (CNA), is a truly deserving recipient of this award.

(Source: Official WeChat account of CNA)

## Scientist Profile

### Six decades of dedication: Chinese scientist unlocks the secret to perfect hybrid canola



Fu Tingdong, born in Yunan, Guangdong Province, on September 9, 1938, is a renowned expert in crop genetics and breeding. He wears many hats as a member of both the Chinese Academy of Engineering and The World Academy of Sciences (TWAS) as well as a professor and doctoral supervisor at Huazhong Agricultural University and director of the National Engineering Research Center for Rapeseed. His mantra? “A researcher must wade into the thick of things to solve problems.”

Photo credit: thepaper.cn

In 1991, Fu received the Eminent Scientist Award from the Global Council for Innovation in Rapeseed and Canola (GCIRC). This recognition, considered the pinnacle achievement in the field of canola science, made him the second recipient worldwide and the sole recipient from Asia.

Fu's team has cultivated more than 80 canola varieties that are now thriving across a staggering 50 million acres of land. A trailblazer in hybrid canola research, Fu discovered the world's first male-sterile type of canola, known officially as Polima type cytoplasmic male sterility (CMS). Within its first ten years, this hybrid canola contributed to about 80% of the hybrid varieties produced worldwide.

## The Journey to Excellence

Despite a tradition of canola cultivation spanning over 2,000 years,

China has struggled to match the yield of advanced countries, averaging a mere 500 kilograms of rapeseed per hectare. This disparity has always bothered Fu Tingdong.

Scientists worldwide have been striving to harness the benefits of canola hybrids, discovering various types of cytoplasmic male sterility. However, these sterile types often lack compatible restorer lines or exhibited unstable sterility, rendering them ineffective for production. Fu Tingdong understood the necessity of a breakthrough in canola hybrids to bridge the global gap.

His eureka moment came in March 1972 when he spotted a canola plant with normal pistils but withered anthers in a Polima resource plot. A closer look revealed the absence of pollen, signaling a male-sterile mutant he'd been seeking. This led to the breakthrough discovery of Polima CMS in Bras-

sica napus, marking a new era in international research.

Today, this male-sterile variety has been introduced to other cruciferous vegetables like Chinese cabbage, pak choi, and flowering cabbage, significantly improving their hybrid advantages.

## Researchers must work the fields and get their hands dirty

Fu Tingdong firmly believes in learning from practice and insists his students join him in the fields every day. To him, research disconnected from practical production, particularly for agricultural students, is devoid of meaning.

After an arduous 16 years of research, Fu Tingdong's team successfully bred a type of cold-tolerant, frost-resistant edible canola shoots. These plants mature around 50 days after sowing and have a prolonged

harvest period of three months. Yielding about 30% more than similar varieties, they offer a rich harvest of 6,000 kilograms per acre. Not only are these plants aesthetically pleasing and easy to cultivate, but they

also boast impressive nutritional benefits and economic value.

“Research must serve the farmers!” Fu Tingdong staunchly proclaims regularly. To him, research is only valuable when it

meets production needs, earns endorsements from farmers, and positively impacts their lives.

(Source: Official WeChat account of KEXIE-GAIGEJINXINGSHI)

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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.

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