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# NEWSLETTER

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SPECIAL ISSUE

## WAN Attended Electric Vehicle Forum

An international forum was held April 20-22, 2011 in Shanghai to discuss electric vehicle demonstrations and associated industrial development. Co-sponsored by Chinese Ministry

of Science and Technology, International Energy Agency (IEA), and Shanghai Municipal Government, the forum has attracted the participation of government officials and representatives from Denmark, Finland, France, Germany, Japan, Portugal, South Africa, Spain, Sweden, the United Kingdom, the United States, Israel and international organizations. Some 500 participants, including the representatives from Chinese pilot cities and domestic and international electric vehicle makers, known experts and scholars, and representatives from the consulates in Shanghai, attended the forum. WAN Gang, Chinese Minister of Science and Technology, HAN Zheng, Mayor of Shanghai, and Nobuo Tanaka, Executive Director of International Energy Agency, were present at the event. Steven Chu, U.S. Energy Secretary, sent a congratulation message to the Forum. The forum is an enlarged meeting for the diffusion of electric vehicles in the urban areas. Participants discussed and exchanged views on a range of issues at the meeting, including government strategies, policies and regulations on the development of electric vehicles, national and municipal planning, development goals, demonstration experience, public and private sector partnerships (PPP), research cooperation between industry, universities and research institutes, new business models in demonstration, markets/investment/financing, infrastructures, including charging equipment, road systems, data collection, technical coordination, and standards. A Shanghai Declaration on International Electric Vehicle Pilot City was adopted at the Forum, showing the solidarity reached among the participants on strengthening the R&D of electric vehicle and associated demonstration and diffusion.



## INTERNATIONAL COOPERATION

### Innovative Design and Technology Transfer Centers



As part of the agenda for Premier WEN Jiabao's visit to Italy in October 2010, the Chinese and Italian governments jointly publicized a three-year action plan to strengthen the collaborations between the two countries. According to the action plan, three inter-governmental cooperation platforms will be created to take care of innovative design,

technology transfer, and e-government. At the invitation of WAN Gang, Chinese Minister of Science and Technology, Renato Brunetta, Italian Minister of Public Administration and Innovation, visited China April 21-25, 2011. During his visit, Brunetta and WAN attended the ceremonies to launch a China-Italy Innovative Design Center at Tongji University in Shanghai, and a China-Italy Technology Transfer Center at the International Hotel in Beijing.

China-Italy Innovative Design Center found its home at Shanghai International Design Park. The new design center expects to open up a range of branches in Shanghai, Hunan, and other cities, working on innovative design, industrial design, heritage protection design, and fashion design. The new center will collaborate with other institutions, including Tongji University, Hunan Industrial Design Association, Dong Hua University, and China (Shenzhen) Design Park to achieve desired objectives. At the launch ceremony, six parties, including the Chinese Ministry of Science and Technology Department of International Cooperation, Tongji University, Hunan Industrial Design Association, Italian Innovation Promotion Agency, Italian Value Foundation, and Italian Association for Industrial Design, jointly inked a Framework Agreement on China-Italy Innovative Design Center.

Physically located in Beijing, China-Italy Technology Transfer Center is established to promote cross-border transfer of innovative technologies, allowing innovative elements, including research findings, personnel, funds, and projects, to be exchanged and configured in an optimized manner. The Technology Transfer Center will initially cover the high-tech parks in Beijing, Shanghai, Tianjin, Jiangsu, Zhejiang and Hunan. In the coming three years, the new center will complete the construction of information sharing platform, innovative resources platform, technology transfer platform, and business innovation incubators, focusing on modern agriculture, machinery and equipment, biotechnology and pharmaceuticals, energy saving and emission reduction, environmental protection among others.

## **IDG Donation to Tsinghua University for Human Brain Study**

Not long ago, International Data Group (IDG) and Tsinghua University jointly inked an accord, allowing IDG to donate USD 10 million to establish an IDG/McGovern Institute for Brain Research at Tsinghua University. In addition, IDG China and the Management Team of IDG Capital Partners will set up an IDG China Foundation and a Harmony Foundation to render long-term support and financial aid to the institute.

Tsinghua University has established research groups to study human brains, including

neurobiology, neural engineering, artificial intelligence, cognitive science, and clinical medical researches on cranial nerve diseases, taking advantage of its own strength in the area. The cooperation with IDG symbolizes a new step of cooperation between a world renowned business and a first-class research institution in the area of human brains study.

## RESEARCH AND DEVELOPMENT

### Optimal Algorithm for Molecular Evolution Study

A study team at Huazhong Agriculture University has made progresses in molecular evolution studies. The finding, derived from the study and published in the April 26 online issue of PNAS, will facilitate the use of evolution models.

Researchers proposed an optimal branch-specific model. The algorithm is developed to fix the optimal result on a branch, before fixing more branches using the same technique. Study shows that a simple n2 computation is able to search the most probable optimal branch-specific models in a practically feasible computational time. Researchers reanalyzed 50 cases in 40 previously published studies, and proved that the vast majority (47/50) are better than the conventional hypothesis models.

To the researchers who are not good at functional genetics in the area of molecular evolution, the new method is able to help him or her infer the possible gene functions. Researchers have published the algorithm on a web site (<http://obsm.ncpgr.cn>), allowing more people to use it. The program is easy to operate, and calculation is technically acceptable. The algorithm facilitates in-depth study of genetic functions and associated information.

### New Mode for Regulating Innate Immune Response

CAO Xuetao, an academician of Chinese Academy of Engineering, and head of State Key Laboratory for Medical Immunology, and coworkers from the Second Military Medical University Institute of Immunology, Zhejiang University School of Immunology, and Chinese Academy of Medical Sciences, published their findings in the April 21 issue of *Nature Immunology* as a cover story. Researchers reported that intracellular MHC class II molecules promote TLR-triggered innate immune responses by maintaining activation of the kinase Btk.

CAO and coworkers believe that the molecular mechanisms involved in the full activation of innate immunity achieved through Toll-like receptors (TLRs) remain to be fully elucidated. In addition to their classical antigen-presenting function, major histocompatibility complex (MHC) class II molecules might mediate reverse signaling. Researchers found that deficiency in MHC class II attenuated the TLR-triggered production of proinflammatory cytokines and type I interferon in macrophages and dendritic cells, which protected mice from endotoxin shock. Intracellular MHC class II molecules interacted with the tyrosine kinase Btk via the costimulatory molecule CD40 and maintained Btk activation, but cell surface MHC class II molecules did not. Then, Btk interacted with the adaptor molecules MyD88 and TRIF and thereby promoted TLR signaling. Therefore, intracellular MHC class II molecules can act as adaptors, promoting full activation of TLR-triggered innate immune responses.

## Image Based Vehicle Safety System

School of Computer Science and Technology, part of Nanjing University of Science and Technology, has successfully developed a visual information based active vehicle safety technology. According to a briefing, the School has been working with Hong Kong Productivity Council on ACAS and ILAS vehicle safety projects, starting from June 2009. Researchers have so far completed the test of the technologies and products developed. ACAS, or advanced collision avoidance system, is designed mainly to install camera and millimeter-wave radar around the vehicle, detecting possible obstacles in front of the vehicle in the process of moving, issuing warnings about possible collision, and allowing the driver to take appropriate measures to avoid rear collision and side scratch. ILAS, or the lane tracking and tangent system, is mainly used to acquire the information outside of the vehicle, especially on the 80-degree area in front of the vehicle and the 60-degree area in the flanks. It is able to warn the driver when the vehicle deviates from the lane, or runs collision risks in shifting between the lanes.

## Supercomputing Environment

Supercomputing environment and associated application, a project undertaken by Chinese Academy of Sciences, passed an acceptance check on April 22, 2011. CHI Xuebin, project leader, and a research fellow at Chinese Academy of Sciences Computer Network Information Center, told reporters that the supercomputing environment allows CAS to extend its supercomputing capacity and associated applications to the entire country. In

addition to the Headquarters in Beijing, CAS will build 8 branches in Kunming, Dalian, Qingdao and other cities, covering bioinformatics, materials science, climate modeling among others.

Meanwhile, the project has attracted the participation of 17 institutional centers, including CAS Purple Mountain Observatory, CAS Shanghai Astronomical Observatory, CAS Institute of Ecology and Geography in Xinjiang, and CAS Institute of Matter Structures in Fujian. A supercomputing environment with a three-tiered grid architecture has been created to link the Headquarters, branches, and institutional centers.

The supercomputing environment is able to aggregate general-purpose CPU computing power for more than 300 trillion times, or aggregate GPU computing power for nearly 3,000 trillion times. Its overall aggregated computing power ranks first in the country.

According to a briefing, the project has developed 197 application programs, covering earth, life, information, aviation, physics, chemistry, materials, astronomy among others. CAS Computer Network Information Center, in collaboration with CAS Institute of Computing Technology, has developed a proprietary network program SCE, and applied for an international patent.

Up to date, CAS supercomputing environment has provided 68 applications to the users in the areas of computational physics, computational chemistry, materials science, fluid mechanics, engineering computation among others. The grid assignments submitted to the Environment has reached more than 50,000 in number, with a combined walltime for more than 6 million CPU hours.

## Self Loading Device for Temperature and Humidity Test

China National Institute of Metrology has recently rolled out an automated loading and unloading device for large weighing device test under a temperature and humidity environment. According to WANG Jian, head of the Mass Density Lab under the Institute, the experts approved device is made up of a proprietary automated loading and unloading system, a temperature and humidity test chamber, and an electric mover.

With the help of the robot loading and unloading system, it takes only 12 minutes to complete a temperature or wet spot return test in a class 10 loading process. Without entering the test chamber, a tester is able to complete the whole weighing test under different temperature and humidity conditions, greatly shortened the time to test a large weighing device. Meanwhile, both the driver and electrical components are installed

outside of the temperature and humidity test chamber, avoiding the stability and reliability of the equipment being compromised by the hot and humid conditions.

Compared with the similar devices developed at home and abroad, the new device is designed to be a mechatronic integration, enjoying numerous merits, including a new hardware structure, sophisticated combination code design, rational configuration, and full functional programs. The system has been running smoothly, accommodating weighing performance test, repetition test, and husk test for large (300-3,000 kg), special, and irregular shaped weighing devices in a temperature and humidity environment. The system has registered a relative uncertainty better than  $5 \times 10^{-6}$ .

## NEWS BRIEF

### China's Space Station Solicits Name

A name solicitation event, sponsored by China Manned Space Project Office, was held on April 25 at the Great Hall of People in Beijing. Starting from April 26, 2011, Chinese all over the world can submit their proposals to the website of China Manned Space project or to the website of China Space Network. One may also submit his or her proposal by e-mail, or send the proposal by regular mail in the form of CD-ROM or written materials. According to a briefing, China's manned space station will be completed of construction around 2020. By then, the winner name and logo will be flying in space along with the space station.

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