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NEWSLETTER

The Ministry of Science and Technology
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IN THIS ISSUE

SPECIAL ISSUE

WAN Met with UNCTAD SG

WAN Gang, Chinese Minister of Science and Technology, met with Supachai Panitchpakdi, Secretary-General of UNCTAD and his party on June 19, 2010. WAN told his guests that the Expo is traditionally a place to demonstrate the latest science and technology findings. When preparing for the Shanghai Expo, Chinese Ministry of Science and Technology staged an Expo S&T Action, in collaboration with other government agencies and local authorities, in an attempt to make the Expo more attractive. A range of new technologies and products that have

found large scale applications are shown to the public at the Shanghai Expo, including new energy autos, renewable energy, semiconductor illumination, ecological structures, comprehensive utilization of water resources, wastes management, intelligent traffic system, radio frequency identification technology, refined meteorological services, next generation broadcast and TV network, multimedia display among others. In the course of urbanization, China had to take up the challenges in the area of energy, resources, environment, health, and public security. China will enhance the diffusion of said new technologies and products after the Expo, allowing them to benefit more people. Supachai Panitchpakdi thought highly of the actions taken by the Chinese government in implementing the sustainable development strategy, and the accomplishments made in demonstrating and diffusing new technologies and products at the Expo. He hopes to strengthen cooperation with China under the framework of UNCSTD, creating more investment opportunities and promoting technology transfer for developing countries in the area of energy efficiency, emission reduction, and ecological environment.

INTERNATIONAL COOPERATION

New Progresses for 1000 Genomes'

The coordination panel of 1000 Genomes', an international genome project jointly sponsored by Beijing Genomics Institute (Shenzhen), Sanger Institute (UK), and National Human Genome Research Institute (USA), announced on June 21, 2010 that the project has completed 3 pilot projects in phase I, and that all the data derived from the efforts have been stored in a public database for people to acquire or review for free. The database has included all the DNA information of 2,500 individuals in 27 ethnic groups across the world. Phase I project has produced a data volume worth 50 TB, containing 8 trillion DNA base pairs.

According to a briefing, the three pilot projects were made to confirm if the frequency to pick out genetic polymorphism from the populations in East Asia, Europe, and Africa can be less than 1%, a much larger percentage compared with the 5%-10% recorded by the HapMap project.

Joint Research Center for Theoretical Computer Science

A theoretical computer science center, jointly sponsored by Tsinghua University, the Massachusetts Institute of Technology, and the Chinese University of Hong Kong, was inaugurated on June 21, 2010. The new center will initially work on algorithms design, sophistication analysis, computing safety, and quantum computation, before stretching to the topics involving people's livelihood, such as computational biology and machine learning. The center will also work to have more international cooperation and exchanges, widening teachers'

and students 'horizon in the area, and enhancing their research capability.

Tsinghua University ITCS, the Massachusetts Institute of Technology CSAIL, and the Chinese University of Hong Kong ITCSC are the institutions implementing the aforesaid missions. Prof. YAO Qizhi at Tsinghua University and Prof. Silvio Micali of the Massachusetts Institute of Technology are the co-chairs of the new center. YAO told reporters that the center will be operated under extensive international cooperation, including exchange of students and faculties, and joint research, taking advantage of applicable education resources in the world, and raising China's international position and influence in the area of computer science.

RESEARCH AND DEVELOPMENT

Innovative Lunar Satellite

According to OUYANG Zhiyuan, a Chinese Academy of Sciences academician and the lead scientist of China's moon circling project, the Chang'e III satellite, a lunar satellite to be launched in 2013, will be designed with the functions of soft landing, unmanned probe, and lunar night survival.

Instead of using the multiple-orbit shifting approach, the Chang è III satellite will directly fly to the Moon. Unlike the surface of Earth or Mars covered by atmosphere, which allows a parachute landing, the vacuumed lunar surface only allows a soft landing by reducing the speed, taking advantage of a retrorocket ś reverse push. According to OUYANG, the Chang è III satellite will be dropped to the lunar surface in the following manner: a retrorocket will be started when the satellite is 15 kilometers away from the moon. The satellite will be in a suspension state for the time being, when 100m from the moon, free from the ground control. The highly intelligent satellite will automatically select a flat site for landing. It will shut off its propeller when 4m away from the lunar surface. Then, the satellite will take a "free fall "like soft landing.

The lunar satellite will be aboard with a rover for lunar surface probe. The moon rover enjoys the highest intelligence so far a Chinese made robot can have. It navigates on its own, avoiding obstacles, selecting a desired route, choosing a site to be probed, and using the desired instrument. Equipped with a radar unit on top, the rover can detect the variations of inner lunar structures. Of the 7 instruments aboard the rover, there is an astronomic telescope, rare in a moon landing rover. The satellite will also have to survive the long lunar night that is 180℃ below zero cold.

China ś moon probe project is set to implement in three phases: circling, landing, and returning. The project will embark on the last step: returning to the earth, once step II, or landing on the moon, is completed. The rover will be instructed to drill into the lunar surface to take samples. The sample collected will be stored in a re-entry capsule, which departs from the moon on its own rocket. The re-entry capsule will enter the space circling the moon, and get geared to leave the moon orbit, before flying back to the earth under the ground control. When entering the atmosphere, the re-entry capsule will drop all the samples to the ground using parachutes for the sake of safety.

Tomato Ulcer Test

Financed by Chinese National Natural Science Foundation, a team, led by Prof. LI Jianqiang at China Agriculture University Dept. of Plant Pathology, has developed a molecular approach to quickly pick out tomato ulcer bacteria, making reliable evidences available for diagnosing the diseases in the fields.

Researchers established a quick and sensitive molecular method to test tomato ulcer bacteria, based on the optimized PCR reaction condition, sensitivity, and specificity. They developed the EMA-PCR techniques to tell the live and dead bacteria, and sorted out highly sensitive and specific primers to cover more than 100 bacteria strains employed in the study, which expands the applicable scope of the test, compared with the design made on plasmid.

Researchers also worked out the real-time EMA-PCR process able to tell the activity of pathogenic bacteria, making the test of affected seeds, especially live bacteria possible. Additionally, they applied for the first time the EMA-DNA dual chain dye in detecting plants '

pathogenic bacteria, and developed a nucleic acid based PCR test technique able to tell the activity of pathogenic bacteria.

Medicinal Plant ś Genome Framework

Guangzhou Pharmaceuticals and the Institute of Medicinal Plant Development under the Chinese Academy of Medical Sciences joint announced on June 20, 2010 at a briefing meeting that they have worked out first genome framework map for a medicinal plant. The development marks the study of traditional Chinese medicine has entered a genome era. The effort will make Radix Salviae Miltiorrhizae the first model medicinal plant, creating a ground for studying the life sciences of medicinal plants.

Chinese scientists obtained the full genome of Radix Salviae Miltiorrhizae using 2nd generation high flux sequencing technique. At present, the sequence has reached a depth 20 times the size of Radix Salviae Miltiorrhizae genome, and the sequence results has covered 92% of the genome and 96% of the coded area.

Traditional Medicine for Hepatitis B

Kuihua Shuangshen drop pill, a traditional Chinese medicine developed by Kuihua Pharmaceuticals to treat hepatitis B, has recently passed phase II clinical trials. The new drug has been tested in 146 patients in six hospitals, including PLA No. 302 Hospital, Beijing Ditan Hospital, and Youan Hospital. The data derived from the clinical trials shows a therapeutic effect equivalent to the interferon, a western medicine currently applied to treat hepatitis B, demonstrating the success of phase II clinical trials. The new drug is able to turn e antigens in patients 'body into negative, and treat the patients through regulating patients 'immune system. As a major breakthrough in developing new hepatitis B drugs, the drop pill enjoys numerous merits, including easy medication, small side effects, economic, safe and reliable, with fine application perspective. The new drug will be put into bulk production when its therapeutic effects are further confirmed in phase III clinical trials.

NEWS BRIEFS

"中国" Domain Name into Internet

According to the information disclosed at 38th International Public ICANN Meeting held in Brussels, "中国" (China) domain name has passed all the reviews for an international application, and was eventually endorsed by the ICANN Council. The development means "中国" has become an accredited international domain name. CNNIC has completed the technical

preparation for upgrading the domain name. Netizens will be able to directly access the website having a domain name of "**中国**", starting from August 2010. By then, netizens will be allowed to register a website in Chinese.

It is also reported that the domain name of "**中国**" has been endorsed by the ICANN Council in both traditional or simplified style, which means either "**北京大學.中國**" or "**北京大学.中国**" can be accessible to the website of the university. Meanwhile, the English punctuation "." is exchangeable with its Chinese counterpart "。", allowing both "**工业和信息化部。中国**" and "**工业和信息化部.中国**" to reach their destined website.

Up to date, 90% of Chinese government agencies, both at central and provincial levels, 95% of Chinese news media websites, 90% of major Chinese universities, more than 50% of the top 100 Chinese businesses, and more than 40% of the top 500 Chinese businesses have registered their domain names under "**中国**" in China.

Domestic Part of ITER 2010

Not long ago, a meeting, sponsored by Ministry of Science and Technology, was convened to launch 13 domestic projects under ITER, including HL-2A high spatial and temporal resolution plasma diagnosis. WAN Yuanxi, Chairman of ITER Consultation Committee and General Manager of EAST project, briefed the audiences of the construction, status, challenges, and future perspectives of ITER, and the progresses achieved in EAST experiment. LIU Yong, Dean of Southeast Institute of Physics, reported the latest progresses made on HL-2A device. Prof. ZHUANG Ge, Huazhong University of Science and Technology, spoke about the history, current status, and research orientations of J-TEXT.

ITER supports China to work on EAST and HL-2A and associated experiments and technology development, and to digest, absorb, and master the key ITER technologies in an innovative manner. Additionally, China will enhance the training of S&T personnel in the area.

Air-born Gas Leak Detector

Simulated gas leaks on the ground.

Equipment in operation.

An infrared radar unit able to tell the leakage of natural gas pipes, developed by the Shanghai Institute of Technical Physics, part of the Chinese Academy of Sciences, has recently made a

successful flying test in Shandong. The Chinese made oil leak detector, the first of its kind in the country, is designed with a sensitivity and performance that matches with its overseas counterparts, enjoying a noticeable technological strength. The developer is currently negotiating with China National Petroleum Corporation and China Petrochemical Corporation for possible collaborations, in an attempt to make the equipment smaller and practical for use

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