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SPECIAL ISSUE

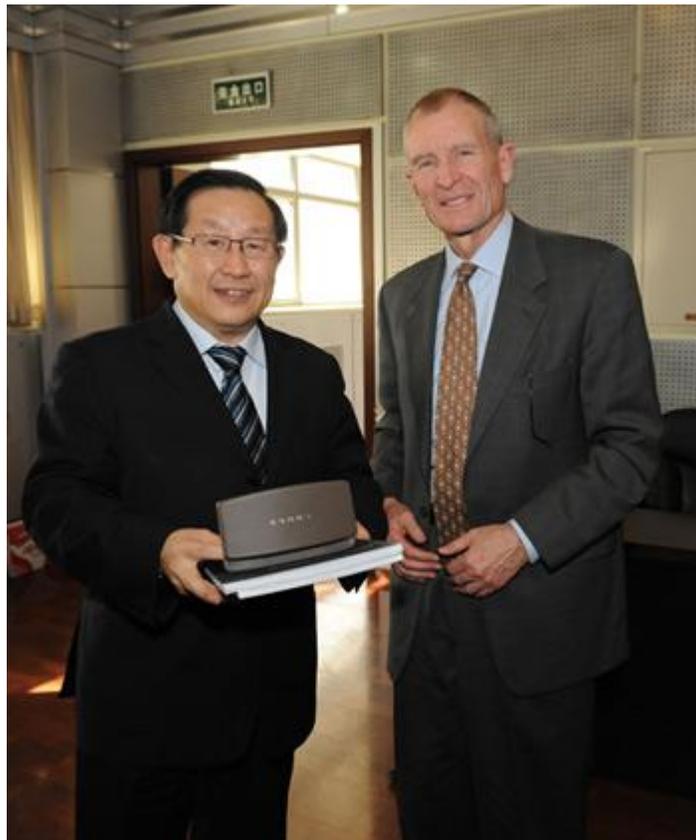
Returned Students Supported for Business

Not long ago, the CPC Central Committee Organization Department and the Ministry of Human Resources and Social Security jointly issued a by-law to support returned overseas students launching their own business, the first of its kind in the country. At this point, a policy system designed to encourage overseas Chinese students to return, to serving the country, and to launch their own business in the country has taken shape.

According to the by-law, the returned overseas Chinese students launching their own business in the country is defined as the returned overseas Chinese students establish their own business with patents, S&T findings, or proprietary technologies. Such business shall either be headed by the returned overseas Chinese student as the legal representative, or financed by the student's proprietary fund (including technology shares) or by overseas venture capital at a sum of no less than 30% as a proportion of the total stock holding.

INTERNATIONAL COOPERATION

WAN Met with American Guests



March 16, 2011, WAN Gang, Chinese Minister of Science and Technology met with an "America's future energy" delegation headed by the former U.S. Pacific Command in Chief Admiral Dennis Blair and the former United States Secretary of Energy Samuel Bodman. WAN briefed the delegation on the development of new energy vehicles and associated demonstration/application in China. The two sides exchanged views on promoting the bilateral collaborations in the areas of electric vehicle and clean coal.

Xi'an Jiaotong University Collaborates with Nestle

Xi'an Jiaotong University and the Nestlé Group jointly inaugurated on March 4, 2011 a nutrition and health lab in Xi'an.

Nestle has a high-level researchers contingent and the world's most sophisticated instruments and equipment for nutritional products development and food safety test. Xi'an Jiaotong University School of Life Sciences is an earlier domestic institution embarking on the study of the metabolism of nutritional factors at the molecular and cellular level. The two parties reached an accord last year to establish a Nestle-Xi'an Jiaotong University Laboratory. Nestle will support Xi'an Jiaotong University's study of nutritional foods and metabolic diseases, and will expand the scope and scale of the collaboration in line with the progress that has been made.

Xi'an Jiaotong University will establish a world renowned discipline of nutritional food science with the combined strength of industry, universities and research institutes, taking advantage of Nestle's influence and support, traditional Chinese health culture, and modern biological sciences, making it a major brand enjoyed by Xi'an Jiaotong University.

RESEARCH AND DEVELOPMENT

First Medicinal Flower Sequenced

At an international forum on biomedicine and biotechnology held on March 18, 2011 in Hong Kong, a joint team made up of the scientists from Shanghai BioAsia and the Hong Kong University of Science and Technology announced that thanks to more than one year study, it has completed the sequence and assembly of the genome map of *Cordyceps sobolifera*, a rare Chinese medicinal flower, and will publish the genome it has sequenced. The development marks the successful sequence of the first genome of medicinal entomogenous fungi, in addition to the first genetic map for *Cordyceps sobolifera*.

The study found that the medicinal flower has a genome size that is 1/80 of humans, containing some 16,000 candidate genes, or half of the number of human genes. Study shows that the medicinal flower is of a stable genetic structure, with less than 1% of the genes having become mutated, a much lower mutation rate compared with *Cordyceps sinensis* that has a mutation rate approaching 10%.

Plant LED Technology

Plant LED light source technology and associated application, a project led by YANG Qichang, a research fellow at the Chinese Academy of Agricultural Sciences Institute of Environment and Sustainable Development, recently passed an approval check. In the past 8 years, YANG and fellow researchers have worked hard to apply LED light in seedling breeding, growing leafy vegetables and medicinal plants, vegetable quality control, and greenhouse supplemental lighting, and developed an optimized light environment indicator system able to raise plants' light utilization efficiency. The finding provides important theoretical evidence for LED application in growing plants.

Researchers have so far rolled out series LED light sources, including soft LED light, lamp, and lamp board featured with red-blue LED as the main spectra, light environment adjustable, and easy installation. Researchers have for the first time in the world introduced LED light sources in factory or home based plant breeding activities, expanded the scope of LED light applications. They have also developed a tissue culture container equipped with LED light source, solved the lid shading problem commonly seen in a traditional tissue culture container, and significantly raised the plants' photosynthetic efficiency in the container, with an energy saving up to 80% or more. Plant LED light source and key supporting technologies have been applied in an area of more than 200,000 square meters.

Growing Salt Tolerant Plants in Deserts

CAS Institute of Oceanology announced on March 23, 2011 that its researchers have landed a major breakthrough in growing plants in saline and alkaline soils, including deserts. XING Junwu, a research fellow at the Institute, developed a range of techniques to grow halophytes in the extremely dry inland environment featured with high salinity and alkalinity, and established a farming system able to improve the ecological environment. The finding has won the patent grant issued by the State Intellectual Property Office.

The invention is designed to curb desertification and saline-alkali dust storms by growing halophytes vegetations, and to establish a halophytes growing industry, improving the saline and alkaline environment in the northwest, northeast, north, central, and coastal part of the country, which is strategically important for addressing the shortage of arable land and freshwater resources, and for raising China's food and energy supply capacity.

World's First Grouper Genome Map

Zhongshan University and Beijing Genomics Institute (Shenzhen) said on March 18, 2011 that Chinese scientists have completed the sequence of grouper's genome map. This is the

third fish genome wide sequence completed by Chinese scientists, or the world's first genome map for Perciformes Serranidae family. The efforts will eventually spot important trait genes and molecular markers, valuable for developing new gender control technology and revealing the evolution of gender determination mechanism in vertebrates.

Chinese Made Small Robot Plane



A robot plane.

A small robot plane, developed by the CAS Shenyang Institute of Automation, is the only robot that can fly in the sky. With a 3-meter wide wingspan and a 3-meter long body, the small robot plane is able to reach a flight speed up to 70 km/hour, allowing a super low level flight up to 10 meters above the ground. It can be readjusted for desired flying height and speed in line with the terrains. It consumes #93 gasoline, and can be employed to collect information on disasters. For example, it can feed the disaster relief authorities with the disaster information within the radius of a dozen kilometers.

Comparing to the fixed-wing aircraft, the robot plane can fly at a very slow speed, or hovering over a very low altitude. It can hover over a school in the disaster stricken area, taking photographs, before sending them to the ground relief authorities for dispatching rescue workers.

Large Continuous Flat Press for Artificial Wood Board

Foma Machinery Group Co., Ltd., in collaboration with the Chinese Academy of Forestry, has recently rolled out a proprietary large continuous flat press for making artificial wood

board.

Researchers worked on a range of technologies to secure the online precision control, fluid powered high-frequency response to the thickness, roller-type chain blanket making, adaptive load synchronization, and full surface adaptation, and mastered the core technologies that make entry angle readjustment and chain blanket synchronization possible. Researchers also found solutions to addressing the adaptation to different slab thickness, and a range of precision manufacturing issues concerning high-precision, high temperature resistance, and wear proof, allowing a quick monitoring and control response at the milliseconds level. Researchers developed the proprietary PLC continuous flat press control system and technologies, and the hydraulic servo press control system. So far they have completed the prototype test of the large continuous flat press with an annual capacity of 150,000 m³. Derived from the efforts are 1 European invention patent, and 6 Chinese invention patents.

Integrated Forest Resources Monitoring System

Not long ago, an experts panel established by the Chinese Ministry of Science and Technology reviewed and endorsed the results stemmed from a project to establish an integrated forest resource monitoring system, launched under the National S&T Infrastructure Program during the 11th Five-year Plan period (2006-2010). The system is an integration of modern information technology and traditional investigation techniques, combining the monitoring efforts from a variety of sources, including air, space, land, point, line, surface, resources, projects, and disasters. A study team made up of some 300 researchers from 27 research institutes, universities, and high-tech businesses in 14 provinces (municipalities and autonomous regions) worked together to achieve the following laudable accomplishments in the 5-year study.

First, researchers established a comprehensive forest resources monitoring indicator and technical system, integrated with multi-source remote sensing data based forest vegetation information extraction technology, non-woody forest resources monitoring technology, variable individual timber growth modeling, individual tree diameter distribution modeling, annual forest growth coupled modeling, multi-sourced forest resources collection system, and the technical part of the forest resource monitoring.

Second, researchers developed a range of theories and techniques for the purpose, including the wetlands information extraction technology built on the rough set theory, hybrid intelligent model, and decision tree algorithms, CA based wetland resources spatial prediction model, wetland monitoring and management system, air and space based multi-sourced information network, forest pest and fire early warning and prediction model, quick remote sensing information extraction technology for major national forestry

projects, dynamic monitoring of the quality and accomplishments derived from major national forestry projects, and integrated forestry project monitoring and evaluation system.

Third, researchers have rolled out an array of standards for the integrated forest resources monitoring, including a computer program platform with GIS and remote sensing image processing capability, making the effective integration of forest resources monitoring technologies and systems possible. The project has produced 4 patent applications with 3 patent grants, 23 software copyright registrations, and 12 special technical standards for forest resources monitoring. The findings stemmed from the project have found demonstrations and applications in 20 cities and counties. Professionals and technical personnel received training on demand in the project.

The implementation of the project has solved a range of technical difficulties that contributed to the low efficiency and difficult information sharing encountered by China's forest resource monitoring system in the past 50 years, including individual monitoring projects detached from one another, incomplete content input, and low monitoring level. It has noticeably enhanced China's forest resources, wetlands, and disaster monitoring and management capability and information collection capacity, provided the needed technical support for the sustainable forest management, and raised the overall capacity of national forest resources monitoring and early warning.

NEWS BRIEFS

WAN Met with S&T Ambassador Club Members

An S&T Ambassador Club meeting was convened March 18-20, 2011 in Beijing and Baoding. In the evening of March 18, WAN Gang, Vice-Chairman of Chinese People's Political Consultative Conference and Chinese Minister of Science and Technology, met with the club members of former Chinese ambassadors to the United States, Russia, France, Britain, Germany, Egypt among others. WAN briefed the club members of the latest science and technology development in China, the implementation of special S&T projects, the accomplishments made during the 11th Five-year Plan period, and China's future S&T development in the 12th Five-year Plan period.

Proposed by WAN Gang, Chinese Minister of Science and Technology, the S&T Ambassador Club was founded in March 2009 to be a platform for the former Chinese ambassadors communicating with industry, research institutions, and universities, contributing their dues to raising the international S&T cooperation level in the locality.

JIN Xiaoming, Director of MOST Dept. of International Cooperation, XU Chaoqian, Deputy Director of MOST Dept. of International Cooperation, and WANG Baoqing, Chairman of the Chinese Association for International S&T Cooperation, were present at the meeting.

China Part of Largest Microbial Genome Project

Beijing Genomics Institute (Shenzhen) announced recently that Chinese scientists will become part of the largest microbial genome project in the world. Chinese scientists will work to sequence the environmental DNA or metagenome of 200, 000 samples, establishing a world wide genome map for the purpose. The project is designed to study the functionalities of microbial communities and associated evolutionary diversity in a comprehensive and systematic manner, making them beneficial to the human society.

The project will study a variety of targets, including microbial communities in soil, air, freshwater, in addition to the one in the marine and human environment. Chinese scientists will collect and identify all the samples in Asia, providing computing resources for DNA extraction, amplification, database creating, metagenome sequence, and bioinformatic analysis. The informatics based analysis will create a framework for analyzing the massive data derived from the study.

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