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# NEWSLETTER

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SPECIAL ISSUE

International Traditional Medicine Conference



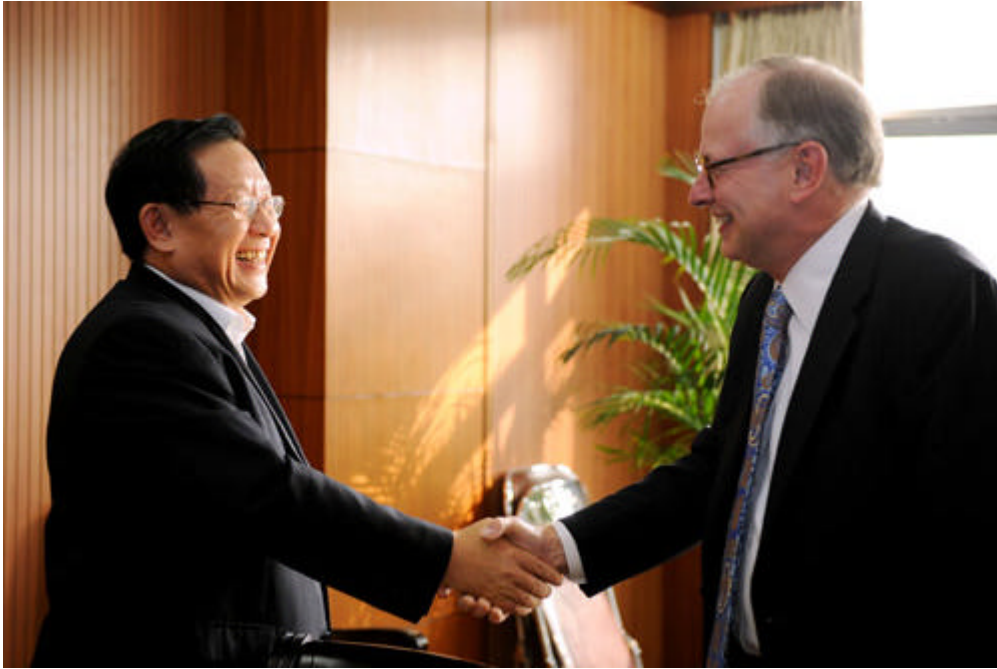
An international traditional medicine conference, co-sponsored by 14 government agencies, including the Ministry of Science and Technology and Ministry of Health, Guangdong Provincial Government, and the World Health Organization, lifted its curtain on November 9, 2009 in Guangzhou. An S&T trade fair was also staged for the purpose. WAN Gang, Chinese Minister of Science and Technology, and HUANG Huahua, Mayor of Guangdong Province were present at the event. Some 2,800 scientists, entrepreneurs, and government officials from 18 countries or regions attended the meeting.

WAN pointed out in his opening remarks that people have increased needs for medical protection under a globalized economy. We should work on multidisciplinary collaborations both at home and abroad, and address the scientific issues of traditional medicine development through introducing different philosophies, knowledge innovation, and technology innovation, allowing traditional medicine taking on a fast and sustained development road. WAN also briefed the meeting of the traditional Chinese medicine development outline for 2006-2020 published by 16 government agencies headed by the Ministry of Science and Technology, and the concrete measures that the Chinese government has adopted to encourage the development of traditional medicine.

In addition, WAN proposed to establish an international cooperation platform for joint traditional medicine studies. He pointed out that due to the fact that traditional medicine studies are not only necessary but are also sophisticated in nature, it is necessary to establish a multilateral cooperation mechanism, allowing research institutes and scientists from different countries to conduct an in-depth study of the application and development of traditional medicine through sharing the needed S&T resources. The Chinese government is willing to initiate an international cooperation program for the purpose, in collaboration with the governments and experts of other countries, based on an international traditional Chinese medicine cooperation plan published by the Ministry of Science and Technology.

INTERNATIONAL COOPERATION

WAN met with Ken Wilcox



WAN Gang, Chinese Minister of Science and Technology, met with Ken Wilcox, president and CEO of SVB Financial Group, and Mike Descheneaux, SVB Financial Group CFO on October 28, 2009. WAN and Wilcox had an in-depth discussion of a range of issues calling for financial support, including the development of small and medium tech businesses, S&T findings transfer, and associated commercial applications. He welcomes SVB Financial Group to make its presence in China. He also expressed that the Chinese Ministry of Science and Technology has attached great importance to the fund raising part of S&T activities, hoping that it works with financial communities both at home and abroad, taking advantage of their respective strength, and joint promotes the development of small and medium tech businesses in China.

### WAN met André Schneider

WAN Gang, Chinese Minister of Science and Technology, met with André Schneider, World Economic Forum Managing Director and Chief Operating Officer on November 4, 2009. Both sides exchanged views on strengthening the collaborations between the Chinese Ministry of Science and Technology and the World Economic Forum. Referring to the position and themes for the coming Summer Davos Annual Meeting, WAN proposed to make the forum a place where people can deepen the mutual understanding between the economic and S&T communities, and improve their understanding of the ties between science and sustainable growth and the development pattern of emerging green industries. Schneider shared the proposal. Both sides exchanged views on a range of other issues, including inviting national S&T ministers and high tech business representatives to be part of Summer Davos Annual Meeting, China recommending innovative Chinese businesses to be the candidates for Technology Pioneers Award, and inviting Summer Davos Annual

Meeting participants to visit the Shanghai Expo to be held next year.

## Chinese S&T Official Met with ESA Delegation

CAO Jianlin, Chinese Vice-Minister of Science and Technology, met with René Oosterlinck, ESA Director of the Galileo Program, and his party on October 30, 2009. Both parties had an in-depth and friendly discussion of China-EU collaborations in the Galileo Program, and a number of issues of common interest. CAO thought highly of the achievements made during IOV phase, and expressed that Chinese side will continue to promote the collaborations in line with the agreements signed between two sides. CAO also exchanged views with his counterparts on the compatibility between the Chinese Compass navigation system and the Galileo system. As a satellite navigation system designed to provide services to global clients, the Compass navigation system has made the compatibility with other systems a major mission to be accomplished. Both sides hoped that the compatibility issue would be solved through diverse channels.

## Tsinghua and Columbia Genome Collaborations



On October 29, 2009, an R&D center, jointly established by Tsinghua University and Columbia University in New York City to develop genome technologies, was inaugurated on the premises of Tsinghua University School of Medicine. Both sides agreed to develop genome technologies based on their own strength. The new center will work to meet the major demands derived from life sciences, diseases diagnosis, and new drug R&D, in an attempt to make it an internationally renowned R&D and innovation center for genome technologies. The center strives to achieve some breakthroughs in gene sequencing techniques as a near term target.

## Petaflop Supercomputer

Not long ago, the National University of Defense Technology rolled out China's first petaflop supercomputer named Tianhe I. The development makes China second country in the world able to manufacture a petaflop supercomputer next to the United States.

The new supercomputer has achieved a range of technical breakthroughs, including coordinated multiple-array parallel structure, high speed scalable interactive communication, insulation based security control, multi-tiered massive SFT, and integrated system power supply control among others. The system is able to perform 1206 trillion floating-point operations per second, configured with an internal memory of 98TB, a 40Gb point-to-point communication bandwidth, and a 1PB sharing hard disk, enjoying a range of merits, including high performance, high efficiency, high security, and easy operation. It may take some 160 years in a row for a regular personal computer to complete the calculation tasks completed by Tianhe I in one day. It has a storage capability to collect all the books stored in four China National Libraries, or to store 1.3 billion high definition pictures for the population. Thanks to the Chinese made operating system, the supercomputer enjoys the highest computer security (B2) defined by the national authorities. It can be easily operated as a personal computer.

The new supercomputer will find its home at a national supercomputer center jointly established by Tianjin Binhai New Area and the National University of Defense Technology. It will be open to the public, allowing computer resources sharing, and providing computation services for the clients both at home and abroad. It may find broad applications in the area of oil prospecting data processing, biopharmaceutical studies, aeronautic and space R&D, resources prospecting, satellite remote sensing data processing, weather forecast, climate prediction among others.

## Major Breakthrough in Quantum Computation

A study team, led by Professor DU Jiangfeng at the University of Science and Technology of China, in collaboration with Professor Liu Renbao with Chinese University of Hong Kong, has for the first time in the international community realized optimal dynamic decoupling, using electron spin resonance experimental technique, and through a solid-state system experiment. The improvement has greatly prolonged electron spin coherence time. A

paper introducing the findings was published in the October 29 issue of journal *Nature*.

After years of efforts, DU and his team established in April 2009 an experimental platform allowing manipulating electron and nuclear spin simultaneously, the first of its kind in the country. Researchers used a maximum of seven microwave pulses into a material called malonate where the electronic spin coherence time to be extended from less than  $1/20000000$  seconds to nearly  $1/30000$  seconds. The time has been able to meet a number of quantum computing tasks. Study shows that even under indoor temperatures, the scheme also works, which paved the way for developing a quantum computer that can work under an indoor temperature. Researchers believe that once people have a better understanding of the decoherence mechanisms under the real-solid system, high-precision coherent control would become much easier, and people are closer to the true application of a quantum computer.

## Draft Genome Sequence for Cucumber

An international cucumber genome project led by Chinese scientists has achieved laudable results. The project, initiated by the Institute of Vegetables and Flower, part of the Chinese Academy of Agricultural Sciences, was assigned to Beijing Genomics Institute (Shenzhen) for genome sequence and assembly. The sequence findings were published in November 1 online issue of *Nature Genetics*.

Cucumber genome has some 350 million base pairs. Scientists mapped out cucumber genome using new sequencing techniques and a brand new sequence mosaic program, in an attempt to cut down sequence costs. Up to date, 26,682 genes have been sorted out in the genome. Scientists have worked out a high density genetic chart containing 1800 molecular markers, allowing more than 20,000 genes shown on chromosomes, which facilitates the cloning of the genes having high economic values. So far, scientists have found more than 300 candidate genes involved in the yield, quality, and diseases resistance, and cloned out the genes that determine genders, produce bitter taste, and fight *Cladosporium cucumerinum*. The efforts have resulted in the tools for breeding out the species enjoying improved properties in a fast and accurate manner.

Study establishes that five of the cucumber's seven chromosomes arose from the fusions of ten of *Cucumis melo*'s twelve chromosomes. The finding provides an answer to the evolution of Calabash Gourd chromosome. Study also shows that cucumber has a 95% resemblance to *Cucumis melo* and a 90% resemblance to water melon in genetic compositions. Scientists also unveiled some 800 genes working on vascular bundle functions, and found an enhanced expression of these genes in the evolutionary process from a lower plant to a higher one.

## Intelligent Plant Factory

An intelligent plant factory, established by the Institute of Environment and Sustainable Development in Agriculture, part of the Chinese Academy of Agricultural Sciences, was recently put into operation at an agricultural park in Changchun. The intelligent plant factory, the first of its kind in the country, is made up of a seedling component and a vegetables component. The new factory stimulates the growth of plants using energy efficiency lamps and LED illumination sources. It is supported by 13 sub-systems, including two-way temperature and humidity control for both heating and cooling, coupled sunshine and carbon dioxide photosynthesis regulator, online nutrients (EC, pH, DO among others) test and control, environmental data collection, and automated control. The factory has secured the automated control of a range of elements, including temperature, humidity, sunshine, CO<sub>2</sub> concentration, and nutrients. It is lined up with five-level breeding racks in two rows, where stout and healthy seedlings are grown. The plant factory produces an effective seedling rate 40 times the regular breeding beds. In the factory, vegetables are grown on a 5-level breeding bed. It takes only 16-18 days for people to harvest lettuce there, or 40% less time compared with conventional growing modes. It has registered a unit area yield 25 times higher, compared with open land growing modes. In addition, the agricultural products grown out here are contamination free with high added values.

### Nutritional Moisture Retaining Agent

A nutritional moisture retaining agent, developed by CAS Changchun Institute of Applied Chemistry for farming application, has recently been granted with a national patent. The pollution free moisture retaining agent is able to retain and release moisture and fertilizer, desirable for the development of green agriculture. The novel moisture retaining agent is designed with a greatly boosted water absorption capability for 100-500 times for regular water moisture and 20-65 times for physiological saline water. Comparing with traditional moisture retaining formula, the new agent is added with a range of nutritional elements needed for crop growth and *pH* value regulation. It is, therefore, not only able to absorb and release moisture, but also able to nourish the soils.

In addition, bentonite was added in the agent, in an attempt to reduce the cost and enhance the condensation. Bentonite is a type of soil. The addition of bentonite in the agent accelerates the blending and absorption, desirable for environmental protection.

NEWS BRIEF

### Submarine Robot Found Seafloor Black Chimney

It is reported from the State Oceanography Bureau that Ocean I, a Chinese scientific

expedition vessel, found on October 23, 2009 through an onboard submarine robot a huge "black chimney" 28 m tall and 4.5 m across in the ridge expansion center near the tropical Pacific Ocean. The multiple-function mechanic arm collected 7kg of sulfides samples from the mouth of the chimney, and placed them into a sample basket for further investigation. According to a briefing, the scientific expedition vessel, 3.8m tall and 1.8 m for both width and length, is designed to pick up an object up to 250 kg. It is the most sophisticated equipment employed for seafloor investigation in a high temperature and complex seafloor terrain environment at a depth of 3500m.

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Comments or inquiries on editorial matters or Newsletter content should be directed to:

Department of International Cooperation, MOST 15B, Fuxing Road , Beijing 100862, PR China E-mail:[hzs\\_dyzdc@most.cn](mailto:hzs_dyzdc@most.cn) Fax: (8610) 58881364

<http://www.most.gov.cn>