

**CHINA SCIENCE AND TECHNOLOGY**

# **NEWSLETTER**

**The Ministry of Science and Technology  
People's Republic of China**

**NO.476**

May 30,2007

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**INTERNATIONAL  
COOPERATION**

### **Biodiversity Cooperation between EU and China**

Chief Technical Advisor of China-Europe Biodiversity Program announced on May 21, 2007 in Beijing that the EU has approved 19 Chinese biodiversity projects, out of 99 applications submitted to the EU. 5 of the approved biodiversity projects have found EU partners. It is believed that the rest of applications will be approved before the end of the year.

The bilateral program is a joint initiative sponsored by

the EU, UNDP, the Chinese Ministry of Commerce, and the State Environmental Protection Administration, in a move to protect biodiversity. With a budget worth EUR 50 million, the initiative will cover the northern, middle, and west parts of the country. Local projects to be financed will include pilot projects, policy studies, and awareness campaigns. The project will develop, implement, and diffuse a range of innovative approaches to address the depletion of biodiversity, through concerted efforts of both domestic and international groups. It will also establish a monitoring system to track the performance of the project, and foster a link between the monitoring results and policy making.

Officials from China-Europe Program Office and Chinese experts on biodiversity visited Sichuan and Yun'nan, in an attempt to collect information and needs from the localities, and enhance people's knowledge of the importance of local biodiversity protection.

### Therapeutic HIV Vaccine

Not long ago, a signing ceremony was held in Shenzhen to launch a China-Japan collaboration on therapeutic HIV vaccines. According to a briefing, the project, physically located in Shenzhen, will work on Sendai virus—Gag recombinant, using Gag genes. Animal experiments have shown that the recombinant is able to induce an extremely active immune response to AIDS viruses, which makes it a most promising AIDS vaccine.

According to the accord, Japan DNAMEC, China CDC, and Beijing University of Technology will transfer to Shenzhen SIBIONO all needed technologies, patented techniques, and relevant information developed in the pre-phase study of Sendai virus—Gag recombinant. SIBIONO will work on the following processes from clinical trials, to commercial applications, and further to marketing and sales. At the same time, the three parties will work together in project promotion and

training, in an attempt to establish an enhanced alliance between research institutes and high tech businesses. It is believed that the project will take advantage of the strength of collaborating parties in R&D, clinical trials, and industrialized production.



### Chinese Made Mass Spectrometer

R&D of mass spectrometer, a project initiated by the key scientific instruments R&D program in the 10th Five-Year period ( 2001-2005 ), has recently passed an approval review. The proprietary high performance linear liquid chromatograph mass spectrometer, and gas chromatograph mass spectrometer, for quantum well applications, marks a great success in the area.

A range of research institutes, including National Institute of Metrology, Fudan University, and Tsinghua University, have jointly worked on mass spectrometers since 2004. Thanks to their painstaking efforts, researchers have achieved a string of innovative results. All the key components, except turbo pump and electronic multiplier, are independently developed, designed, and manufactured by the study team, with key components and instruments themselves reaching an advanced level.

Experts, who are part of the review process, believe that the instruments, including GC—MS, GC—MS, and LC—ESI—MS, and key technologies and components developed, herald a fine beginning for the research and commercial applications of mass spectrometer and associated technologies in the country. It will open up more opportunities for China's mass spectrometer industry.

### PACT is Found Regulating Cancer Genes

Researchers of the Chinese Academy of Military Medical Sciences have spotted a PACT that regulates p53 controlled network of genes, and unveiled its essential role in regulating the growth cycle of a cell and associated embryonic development. The finding, published in a recent issue of the *Proceedings of the National Academy of Sciences*, has produced a new target for cancer prevention and control.

Chinese researchers found that PACT, at a molecular level, regulates the protein level of p53 gene, allowing the latter to interact with negative regulator Hdm2 to enhance ubiquitination and degradation of p53. Meanwhile, researchers have worked out same results from animal experiments.

The finding was jointly produced by HE Fuchu, an academician of the Chinese Academy of Sciences, and YANG Xiao, a research fellow. HE discovered PACT, an important protein that regulates the protein level of p53 gene, in establishing a human embryonic liver based genetic expression chart and massive new gene mining. The finding is important for further study of the role of p53 in embryonic development. YANG is a domestic pioneer in creating a technical platform for knocking out genes.

A commentary accompanying the findings points out that the p53 gene is essential for regulating the growth cycle of a cell and also for triggering cell death. Therapeutic targeting PACT may lead to new strategies for controlling tumor growth and development.

### Medicinal Miniature Cloned

On May 24, 2007, six pigs, cloned by researchers from China Agriculture University, Beijing Jipulin Biotechniques, Tianjin Baodi Agriculture S&T Corp, and Tianjin Academy of Agricultural Sciences, were born at the Zudai Pig Breed Farm in Baodi, Tianjin. Two Gottingen Miniatures survived the birth, with one Gottingen Miniature died 12 hours after birth, one

Gottingen Miniature died right after the birth, and 2 Changbai breeds with green fluorescent proteins died right after the birth.

According to Prof. LI Ning with China Agriculture University, the successful birth and survival of two Gottingen Miniatures cloned using somatic cells creates a new source for medicinal miniatures, and makes a new approach for producing medicinal miniatures accepted internationally. It also lays a solid ground for Xenotransplantation study, and for establishing new drug screening models that can be internationally competitive.

According to a briefing, the result also makes the world first instance of mixed fetus transplanting in the same receptor. LI said the experiment remains on the run, and a string of piglets cloned for different medicinal functions will be born at the end of July.

### SH-Compound: New AIDS Drug

SH-Compound, a new AIDS drug developed by a research team headed by LUO Shide, a research fellow with the Kunming Institute of Botany, part of the Chinese Academy of Sciences, recently passed an expert review.

Based on an extended study, LUO and his colleagues have screened the anti-HIV activity of some 1000 medical herbs, using MTT approaches developed by NCI, from which more than 100 herbs are identified with anti-HIV activity, and 20 of them are believed to possess stronger activity. Researchers finally screened out 5 medical herbs from the candidates to be a SH-Compound, made under the principle of traditional Chinese medicinal theory.

The Chinese Ministry of Health inked in May 1997 a Memorandum of Understanding with the Ministry of Health of Thailand for collaborations in the area of health and medicine. Under the framework, Department of Medical Science, part of the Ministry of

Health of Thailand further signed in July 1999 a collaborating contract with Kunming Institute of Botany. As a result, the research team headed by LUO, Department of Medical Science, and Yunnan Siate Pharmaceuticals have worked together to roll out the SH-Compound in May 2003. The new drug is the world first AIDS drug made up of natural herb extracts, and approved by the Ministry of Health of Thailand, after a complete range of clinical trials.

### Digital Pipe Welding Test

An innovative digital test and evaluation system for pipeline welding made its debut on May 26, 2007 at the Institute of Applied Electronics, part of China Academy of Engineering Physics. The Institute started to work on the new system in December 2005. It took one and half a years for the Institute to roll out a brand new RDEES for pipeline welding. The new system was field tested with satisfactory results in the beginning of 2007 at the premises of a pipeline maker.

Experts believe that the new system, the first of its kind in the country, is able to meet operational needs of digital no-injury test of pipeline welding, using combined technologies of no-injury test, automatic control, and programming. It has completed technical lines, engineering design, integrated test, and trial operation. Using an array of advanced technologies, including digital imaging, programming, and database evaluation, the new system provides a digital no-injury test of pipeline welding in a real term, with a raising speed and reliability for data collection. Its computer aided evaluation sub-system allows an easy and safe data analysis, storage, and search, easing the manual labor. Test results have met the mandatory technical standards. It ensures an objective, complete, accurate, and efficient test. Meanwhile, it reduces radiation dosages and associated affected areas, desirable for protecting the environment, with noticeable economic and social benefits.

### China's Third Antarctic Station

It is reported at an international seminar on Antarctic Dome A, sponsored by Shanghai Polar Research Center, that China will complete the construction of a summer station on Dome A in 2009, which will become the third Antarctic stations established by China, following the Great Wall Station, and Zhongshan Station. It is also the first Chinese station built on Dome A. Some 60 representatives from 10 countries and regions, including the United States, the UK, Japan, Germany, and Russia, attended the meeting.

According to a briefing, Dome A is a hot area for scientific expedition in the International Polar Year running from 2007 to 2008. A number of international projects, including China's PANDA project, have been approved by the Joint Committee of International Polar Year as core projects. The meeting was designed to coordinate the implementation of these scientific projects.

Dome A has long been deemed as a most desirable place for studying the formation and evolutions of ice shelves in the Antarctica, as it has a unique terrain shape resembling an arch. It is also a place where a 1.5 million year old ice core may possibly be collected. The investigation of the Grigoriy Gamburtsev mountain range under ice may lead to new theories for mountain building movement and continental tectonics. To astronomers, Dome A makes a best site for deep space observation, for its desirable atmospheric tranquility.

The new station will become a scientific path leading to the Zhongshan Station, for diverse scientific expeditions. China will continue to be a lead scientific force on Dome A.

### Pilot Project for Bioremediation

It was reported from an international workshop on bioremediation held not long ago in Beijing, that the pilot project of bioremediation implemented in the Mentougou District, Beijing has recovered the ecosystems over an area of more than 1 million square meters. The project has been honored by the Chinese Ministry of Science and Technology as the first bioremediation demonstration base in the country.

Mentougou has an area of 1455 square kilometers, of which 98.5% are hilly areas, with a forest coverage of 76%. As a sole pilot project for bioremediation in Beijing, the area is made an ecological recovery site. Starting from 2005, local authorities has invested RMB 160 million to restore the ecosystems in the area, in collaboration with 13 universities and research institutes, including the Chinese Academy of Sciences and Tsinghua University. Efforts have been mainly devoted to recovering ecological environments of deserted coal mines, stone pits, kilns, sand pits, slopes, and wetlands, with a total recovered area exceeding 1 million square meters.

### Marine Glacier Study

An observing station was put into operation on May 27, 2007 to study glaciers and environment surrounding the Yulong Snow Mountain in Lijiang. It is China's first observing station designed to study modern marine glaciers.

The Tourism Committee of the Yulong Snow Mountain area reached an accord in 2006 with Cold and Arid Regions Environmental and Engineering Research Institute, part of the Chinese Academy of Sciences, for establishing an observing station in the mountain area. Started from June of the same year, people have erected 2 field observing spots near the observing station. The station is currently working on a number of investigations, including 3-D simulation of the Yulong Snow Mountain area, glacier evolutions of the Yulong Snow Mountain, geological disasters, water resources, urban effects, and human impacts on the glaciers in



the area.

### Localized Excitation System

A project for key excitation technologies, contracted to NENGDA Corporation, has recently passed an approval review. NENGDA has improved the technologies transferred from Siemens, using proven control technologies developed both domestically and internationally for large excitation systems, and worked out innovative excitation systems tailored to the needs of home made power generators, in collaboration with universities. The new system can be applied in diverse medium and large synchronous motors, including self-parallel-excitation, self-compound excitation, and separated excitation. It can be the first choice among many other excitation systems, for its high performance and low cost.

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