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# NEWSLETTER

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## SPECIAL ISSUES

### 450 Million for Life Study

Beijing Institute of Life Sciences, a start-up academic body founded three years ago, has produced 5 papers published in *Nature*, *Science*, and the Proceedings of the *National Academy of Sciences* in 2006. The Institute, made up of 18 labs, has attracted the return of 20 overseas Chinese students. The Institute has so far published 17 papers in renowned international journals. At the Institute, lab directors are recruited under a 5-year contract, subject to the assessment of a scientific steering panel made up of famous international experts.

The Institute is running under a management and operation system in line with international norms, including the directorship under the supervision of executive council. WANG Xiaodong, Director of the Institute, is an academician of US National Academy of Sciences, and expert in cancer apoptosis therapy. The Institute has gathered up an array of high caliber personnel. The scientific steering panel is made up of 24 renowned domestic and overseas experts, including 10 Noble Prize winners.

WANG Hongguang, Director of China Biological Development Center, part of the Ministry of Science and Technology, told reporters that RMB 450 million has been invested in infrastructure construction of the Institute in 3 years, with RMB 300 million for procuring large instruments. The Institute has an annual R&D and operation budget worth RMB 50 million.

### China's Nano Paper World First

According to an article published in the maiden issue of Cutting-edge Science, China has made remarkable progresses in nano studies, during the 10th Five-Year period (2001-2005).

Authors of the article, BAI Chunlin, academician of the Chinese Academy of Sciences, and QIU Xiaohui, research fellow of China National Nanoscience Center, reported that Chinese papers on nano studies have increased in number, enjoying an annual growth of 30%. Statistics published by *SCI* shows that China's nano papers have come first place in the world in number. Many of these papers have been seen in world renowned journals such as *Science* and *Nature*, though their innovations and influence remain limited, compared with the papers from the developed countries. According to incomplete figures, some 50 universities, 20 CAS institutes, and 300 enterprises in China have been engaged in nano studies, with a research contingent of more than 3000 people.

Authors also highlighted an array of major progresses achieved by Chinese researchers in the area, including nanomaterials, nanostructure testing and characterizing, nano-components and processing, and nano-biotechnological effects.

### China's Red Paper for Plant Species

China will enhance its efforts to protect endangered plant species, said JIA Jiansheng, Deputy Director of Wildlife of State Forestry Bureau, at the 3rd World Botanic Garden Conference held on April 19, 2007. To establish an assessment system for endangered plant species in line with China's situation, China will update its Red Paper on the topic before 2010.

The Chinese government has long attached great importance to the protection of endangered plant species. In the 1990s, efforts have been made to preliminarily assess selected endangered plant species in the country. Derived from the efforts are the Volume I of China Red Book of Plants, and Volume I of China Red Catalog for Plant Species, with more than 380 species collected in the former, and 4,408 in the latter. China also published the name list of wild plants for a weighted protection, in which some 1,900 wild plants are included. A database for China's rare and endangered plant species is also established to illustrate the resources and survival of 189 wild plants under protection. In November 2006, an endangered plant species survey meeting was sponsored by Species Survival Commission in China, which accelerated the establishment of China's own plant protection and assessment system.

China has so far completed the preparation of China Strategy for Plants Protection. According to the plan, China will soon establish a system to assess the survival of wild plants on its land. A dynamic watch will also be launched to monitor the in-situ protection of wild plants, on a regular basis. Updates will be made to the China Red Catalog for Plant Species before 2010, based on the monitoring results.

## More Marine Satellites for China

China will deploy five marine satellites of three series in the future, disclosed SUN Zhihui, Administrator of China State Oceanography Bureau on April 11, 2007, at the Taiyuan Satellite Launch Center.

According to a development plan, China's space based marine observing system will be made up of satellites working on ocean color, marine dynamic environment, and marine watch. China will deploy an array of marine satellites in space, starting from Marine-IB, an ocean color satellite blasted off on April 11, 2007. Marine-II, a satellite watching marine dynamic environment, will be launched in 2009. Marine-III, a marine watch satellite, has entered a pre-phase study for collecting requirements from clients.

SUN told reporters that China is striving to narrow down its gaps with advanced countries, in development, launch, control, and ground applications, and be in a leading position in selected areas, around 2015.

In addition, the State Oceanography Bureau will establish new ground stations in Mudanjiang and Beijing, and enlarge the existing ground station in Sanya. China will also construct a number of other application infrastructures, including satellite playback data receiving stations at both northern and southern poles, and sea-based telemetering satellite radiation correction and testing sites, in an attempt to support the launch and application of marine satellites.

RESEARCH AND  
DEVELOPMENT

## Key Progress for Rice Functional Genes

A research team, led by LIN Hongxuan of CAS Shanghai Institute of Plant Physiology and Ecology, has made breakthrough progresses in genetic and gene functional analysis of important agronomic traits. Researchers have successfully cloned a gene underlying quantitative trait locus (QTL) that controls grain weight and yield in rice. The finding has been reported online on April 8, 2007 by *Nature Genetics*.

Thanks to their many-year efforts, LIN and his colleagues have obtained GW2, a new QTL that controls rice grain width and weight. They discovered that GW2 encodes a previously unknown RING-type protein with E3 ubiquitin ligase activity, which is known to function in the degradation by the ubiquitin-proteasome pathway. Loss of GW2 function increases cell numbers, leading to a larger spikelet hull, and it accelerates the grain milk filling rate, resulting in enhanced grain width, weight and yield.

LIN and his team introduced the large grain GW2 gene into the species with smaller grains, and harvested 25 of them. A comparison shows that the new variety has a decreased number of grains in each rice spike. However, the overall yield increases, as the result of heavier grains. The finding comes up with a proprietary new gene of important application perspective, and provides a new insight of genetic regulation of crop yield and seeds development at the molecular level.

## Boer Goat Cloned from Somatic cell

China's first and world second Boer goat was born on April 9, 2007 at the Tianjin Veterinary Institute. The lamb, with a brown head and white body, carries typical features of a Boer goat. Its biological mother is a regular white goat.

The project was initiated in 2000 with the assistance of LIU Ling, a Chinese American. In 2003, researchers extracted somatic cells from the ear skin of a female

Boer goat imported from Australia, and collected mature eggs from regular goats. They conceived cloning fetus, through injecting the Boer goat somatic cells into the enucleated eggs. The fetus was then implanted in a local female receptor. The local female goat gave birth to the lamb on the 155th day, after being conceived. The female lamb weighed 5.5 kg, carrying typical Boer goat genes.

### Synthesis of Antimony Telluride Nanobelts

A Chinese research team, headed by ZHANG Hongjie, a research fellow at the Key Laboratory of Rare Earth Chemistry and Physics, under the CAS Changchun Institute of Applied Chemistry, has landed a key breakthrough in hydrothermal synthesis of single-crystalline antimony telluride nanobelts. The finding was published in the recent issue of *Journal of the American Society of Chemistry*.

The surfactant-assisted hydrothermal approach has widely been used in synthesizing nanomaterials, as it is of a super capability in preparing low-dimensional nanomaterials. Unfortunately, the approach has never found success in synthesizing antimony telluride. ZHANG Hongjie and his collaborators have transformed the approach, using a nitrogen protected antimony source, and an ionic surfactant AOT acted as the shape controller in the synthetic process. The novel approach creates a new technical means for producing low-dimensional antimony telluride nanostructures, with a better thermoelectric performance.

### Chinese Chip for Set-Top Boxes

Not long ago, Chinese private vendors have rolled out a Chinese information processor chip, named Dragon Type, for high definition TV set-top boxes. The new device will meet people's needs for viewing high definition TV programs.

According to CUI Wei, designer of the chip and

President of Shanghai GENITOP, the chip, applied with proprietary flexible flashover prevention technology, has found a solution to addressing unclear display of Chinese characters in small sizes, enriched digital TV text setting.

Designed with a number of patented technologies, including mini fonts, bitmap fonts, and Chinese characters entry, the proprietary chip makes an overall solution for digital TV set-top boxes. It also allows users to enter Chinese characters for interactive web surfing, using the set-top box, in addition to viewing TV programs.

### Compass Navigation Satellite Launched

At 04:11, April 14 2007, China blasted off a Compass navigation satellite aboard the CZ-3A launch vehicle from the Xi'chang Satellite Launch Center. The satellite was separated from the carrier rocket 14 minutes later. The Xi'an Satellite Control Center has confirmed the satellite' entry into the preset orbit, based on the data received.

As a part of China's Compass navigation system, the satellite works in an orbit of 21,500 km above the ground. The successful launch of the satellite marks a new development phase for China's proprietary navigation system.

According to a briefing, China will launch a series of Compass navigation satellites in the next few years, in an attempt to meet the navigation needs of China and its adjacent areas around 2008, gradually making it a global satellite navigation system. The navigation system will mainly serve for the nation's economic development, and provide efficient navigation and positioning services for a broad range of areas, including traffic and transportation, weather forecast, oil field, marine applications, forest fire fighting, disasters prediction, telecommunication, public security, and other special applications.

## China's Marine-IB Launched

Chinese scientists blasted off at 11:27, April 11, 2007 a Marine-IB satellite aboard the CZ-2C launch vehicle from the Taiyuan Satellite Launch Center. The satellite has accurately entered the preset orbit.

As an important part of China's 3-D marine watch system, Marine-IB satellite will be mainly used to collect ocean color and temperature data, providing service for the nation's marine bioresource development and utilization, harbor construction and control, marine pollution watch and control, offshore resources survey and development, and study of global environmental change.

Marine-IB, a satellite sitting in the solar synchronous near circular orbit, will be delivered to the National Center of Marine Satellite Applications, after the scheduled in-orbit test. Its predecessor, Marine-IA, was launched on May 15, 2002 from the same launch center, and was delivered to users in September of the year. The older satellite has collected huge amount of marine data during its operation.

## Novel Underwater Respirator

A novel underwater respirator, developed by FENG Wentao and LIU Yang who are studying at School of Civil Environment Engineering, part of Harbin Institute of Technology, will greatly improve underwater duration of human stay, using reduced pressure to collect oxygen from seawater. The invention has applied for a national patent.

The invention has found a solution to addressing diver's heavy payload and limited underwater duration. The novel underwater respirator collects oxygen from seawater, through a sealed pressure reducing device that enables the seawater flowing through it to have a reduced pressure. The change of cylinder volume will produce air under a reduced pressure. The air and

water will be separated through a special device, allowing air being purified for human breathing, or being stored in an air container.