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SPECIAL ISSUES

Enhanced S&T Support for Diseases Prevention & Control

According to an action plan published by the Chinese Ministry of Science and Technology for advancing diseases prevention and control through enhanced S&T efforts, China will, during the 11th Five-Year Plan period (2006-2010), establish and build up a technical system for HIV vaccines and new drugs, and associated commercial applications, in an attempt to raise the level and capability of AIDS prevention and control, and establish basic immune strategies for preventing hepatitis B epidemics.

During the 11th Five-Year Plan period, China will initiate a range of HIV / AIDS related R&D efforts, covering the natural evolution of HIV / AIDS, pathogenicity, immune protection mechanism, antivirus therapies, immunity reconstruction, new HIV vaccines, innovative HIV monitoring and earlier warning techniques, and HIV diagnosis and prevention techniques, in a move to provide key technologies and products for HIV test, monitoring, prevention, and control.

The action plan has lined up concrete objectives as follows: develop 3-5 HIV test agents; one HIV vaccine into phase III clinical trials; establish a preliminary system made up of effective therapeutic and immunity reconstruction techniques tailored to Chinese AIDS patients, with one-year therapeutic effectiveness reaching 50%; work out virus, immunity and other molecular targets that are closely associated with the infection and pathogenicity of AIDS diseases, raising the test-out rate of HIV infection and AIDS diseases to 50%; establish and perfect 3-5 pilot projects for AIDS vaccines and drugs; establish 1-2 quadrumana based HIV vaccine and new drug testing centers; and establish 2-3 clinical HIV vaccine and new drug research centers. These efforts will enhance the capacity building of China' s AIDS prevention and control, cutting down new HIV infections and AIDS mortality by 50% on the current basis, curbing the spread of AIDS epidemics, and bringing down the number of the infected.

During the 11th Five-Year Plan period, China will also launch an array of R&D projects concerning hepatitis B, including the natural history of hepatitis B infection and pathogenicity, immune strategies of hepatitis B vaccine, innovative hepatitis B vaccine, clinical hepatitis B therapies, innovative immunotherapy for hepatitis B, innovative hepatitis B diagnosing techniques and products, and combined or multivalent vaccines for different hepatitis.

The action plan also proposes that during the 11th Five-Year Plan period, China shall strive to establish preliminary immune strategies tailored to the hepatitis B epidemics in China; develop 1-2 novel hepatitis B vaccines; improve the understanding of chronic and advancing process of hepatitis B;

define the key immunity indicators for clinical diagnosis, therapeutic effects, and disease prediction; establish 1-2 technical processes for clinical immunity test and study; develop novel test agents, specific new drugs, and immunotherapy; and work out optimized clinical antivirus therapies that can be applied in a demonstration manner, in an effort to raise China' s capacity of hepatitis prevention and control.

China' s Online Geological Database

According to a briefing issued recently by the Ministry of Land and Resources, China has accelerated the socialized service of its geological data, and achieved positive results. A national online system has been created to provide geological data service, in an attempt to raise the utilization of geological data stored in the physical library. Up to date, all provinces, municipalities, and autonomous regions, except Tibet, have launched their own website to provide geological data management and service. As a result, a nationwide online geological data service system has been established. Statistics show that the geological data catalog issued by the portal website of the Ministry of Land and Resources has contained some 220,000 entries, and 2,079 full geological charts provided by geology libraries across the country. The geological data can either be viewed online or downloaded.

In 2006, geology libraries at both ministerial and provincial levels have provided data services for some 35,000 people, with 127,000 data documents being utilized. In the same year, geology libraries across the country have received 2,371 person/time, and provided 18,960 geological documents, with a respective increase of 1.2-fold and 1.5-fold, compared with 2005. Meanwhile, some 27,789 people have visited geology websites across the country.

INTERNATIONAL COOPERATION

International Science and Technology Cooperation Award for 2006

A conferring ceremony was held on May 9, 2007 in Beijing to honor the recipients of International Science and Technology Cooperation Award for 2006. WAN Gang, Chinese Minister of Science and Technology, presented the medals and certificates to Dr. Martin Atkins, a British expert in chemical engineering, and Dr. Ingemar Ernberg, a Swedish biomedical scientist.

WAN said at the ceremony that the Chinese government has long placed great importance on international S&T exchanges, in an attempt to absorb the essence of technological innovations from such exchanges and cooperation. The practice of reform and opening up proves that such cooperation has forcefully spurred up China to strive for a leaping development in the economic and social areas, fostering an increasingly enhanced proprietary innovation capacity. We will continue to support broad international cooperation and exchanges in the area of basic research, cutting edge technologies, and commercial applications of high tech findings. We will initiate more collaborations in the key areas that are closely associated with human survival and development, including energy utilization, life and health, and climate and environment, and expect more innovative results from the efforts.

WU Qidi, Chinese Vice-Minister of Education, senior leaders from the Chinese Academy of Sciences, and officials from the British Embassy in Beijing, Embassy of Sweden in Beijing, and Asia Research Center of Sweden, were present at the event.

RESEARCH AND DEVELOPMENT

China Has Both Genotype III and I Encephalitis B

A large scale molecular study of encephalitis B epidemics reveals that China has both genotype III and I encephalitis B viruses, announced recently China CDC. The newly isolated viruses have not shown large variations compared with the amino acids structures of live attenuated JEV vaccine currently applied in the country. That means the home made vaccines are in a good position to curb the spread of encephalitis B viruses across China.

According to a briefing, researchers have classified the epidemic areas and non-epidemic areas of encephalitis B viruses under a rating system, during the period of 1990—2000, and collected specimens of mosquito, and encephalitis B individuals' serum and cerebrospinal fluid from different epidemic areas, for 6 years in a row from 2001 to 2006. They captured some 100,000 mosquito, and collected human specimens from a dozen of provinces and autonomous regions. Study found that the proportion of the mosquito carrying encephalitis B viruses is closely associated with the

species type of mosquito. For example, Culex mosquito is the ablest carrier of such viruses, with Culex tritaeniorhynchus being the mainstream. A controlled study revealed that Culex tritaeniorhynchus in high epidemic areas carries more encephalitis B viruses, compared with the one in low epidemic areas.

Researchers have separated some 80 new encephalitis B virus strains, and had them all sequenced. Molecular study of a hundred encephalitis B virus strains separated by Chinese researchers has confirmed the fact that China has both genotype III and I encephalitis B viruses, with genotype III prevailing in Heilongjiang, Beijing, Shaan' xi, Guizhou, and Fujian, genotype I in Henan and Guangxi, and mixed genotype III and I in Liaoning, Sichuan, Shanghai, and Yunnan.

More Progresses for GaN-LD

Not long ago, the Institute of Semiconductors, part of the Chinese Academy of Sciences, has landed a key breakthrough in developing GaN-LD, with a continuous lasing under indoor temperature. The development constitutes another major progress since the Institute realized the pulse lasing on November 16, 2004. It marks a key and solid stride made by China in the direction of commercial application of GaN-LD technology.

Researchers observed in February 2007 a continuous lasing under a low temperature environment. With a range of improvements made to the laser device, including coating, heat sink design and preparation, face down, and testing, researchers finally made GaN-LD emit the first continuous and stable blue light beams on April 30, 2007.

World First Photovoltaic Mobile Phone

Henjiweiye S&T Co. Ltd., in Beihai, Guangxi rolled out on May 8, 2007 an S116 solar mobile phone, the first of its kind in the world. The new toy is designed to automatically charge itself, when sunshine is there. 40-minute direct exposure to sunshine supports a 20-25-minute operation.

According to a briefing, equipped with the state-of-the-art solar technology, the novel mobile phone is covered with solar cells allover, allowing its lithium cells being charged all the time. A thin monocrystalline silicon photoelectric converter is attached to the back of lithium cells, to produce electric current from solar sources. As a matter of fact, it can be charged not only through direct exposure to sunshine, but also through exposure to the light in cloudy and overcast days, or even to candle light.

Sand Data Back Up Sand Break

Researchers at the Gansu Provincial Institute of Sand Control have recently obtained the data that reveals the movement of near-ground sand and dust storms, through repeated scientific experiments and real-time observations. Using the observing system developed by themselves, they made observations of 19 sand and dust storms occurred in 2006 across the Minle County, Gansu Province, a key sand and dust source in the country, and analyzed the impacts of artificial sand breaks on the storms, and the characteristics and movement of sand and dust origins and transport. Observational data show that the existing greenery sand break in the county has played a noticeable role in blocking the attack of sand and dust. For example, on a section 50m above the ground, the 19 sand and dust storms occurred in 2006 have a reduced sand and dust volume by 76%, after passing though an eight kilometer long greenery break.

Researchers started their observation of sand and dust storms in 2000, and developed a near-ground sand and dust storm observing system at the end of 2005. The observing system, physically located at the rim of greeneries, is made up of three 50m tall observing towers. Equipped with proprietary horizontal and vertical sand and dust collector, gradient wind direction and speed monitor, and real-time sand flux monitor, the observing system has collected a large amount of reliable data. Now scientists are able to answer the question: how much artificial measures, such as wind breaks and sand fixation, can do to reduce the impacts of sand and dust storms, using collected data. These data also provide scientific evidences for sand and dust storm prediction, earlier warning, and comprehensive control.

Intelligent Vessel Traffic System

A proprietary intelligent vessel traffic system (VTC), jointly developed by Shaoxing Tongdao Electronic System Co. Ltd. and Shanghai Maritime University, was put into operation on April 2007 at Shanghai Harbor, along with an intelligent harbor control system. The development makes China one of a few countries in the world, including the UK, Germany, and the Netherlands, possessing an intelligent vessel traffic system that can monitor and navigate vessels in a real-time manner.

In 2006, Tongdao Electronic System Co. Ltd. organized researchers from

Beijing, Xian, and Wuhan to work on the key technologies that would produce electronic sea charts, in collaboration with Shanghai Maritime University, based on its many-year research efforts. The research team eventually rolled out a digital vessel traffic system enjoying numerous innovations, including advanced digital modules; and AIS technology, which allows both dynamic and static vessel information being fed into the management system in a real-time manner, and digital information replacing raster images. The combination of AIS technology in VTS, and upgraded functions, has produced a novel system.

Phalaenopsis Cloning Mastered

A team of researchers at the Institute of Horticulture, part of the Heilongjiang Academy of Agricultural Sciences, announced recently that it has mastered the core techniques for cloning Phalaenopsis, and developed an annual industrial capacity of a million Phalaenopsis seedlings.

Based on the systematic lab study of the regeneration system of Phalaenopsis, researchers have successfully bred out Phalaenopsis seedlings. In the meantime, researchers began to improve the breeding process of regenerated seedlings. The first batch of 30,000 Phalaenopsis seedlings has been sent to the greenhouse for further domestication, after 11-month breeding. The Institute plans to roll out 200,000 Phalaenopsis seedlings in 2008.

In addition, the team has worked out the regeneration system and associated production flow for a number other flower species, including Oncidiums, Cymbidium, strawberry, and Nepbrolepis auriculata. The Lab expects to produce 60,000 Oncidiums and Cymbidium seedlings in 2007.

NEWS BRIEF

China' s First Megawatt Wind Power Project

A ground breaking ceremony was held on April 29, 2007 for China' s first megawatt wind power project in Zhangbei County, Hebei Province. The Danjinghe project, designed to work on a 200-megawatt wind turbine with a special permit from the central government, is contracted to a joint bidder made up of both China Energy Conservation Investment Corporation (CECIC) and HKC (holdings) Limited.

Shanjinghe Wind Mill is physically located in the southwest part of Zhangbei County, a place enjoying rich wind energy with an annual mean wind speed of 7.64m/s at a height of 65m, and an average wind power density reaching 378.6 w/m^2. The project, granted with a special permit from the central government, will have an installed capacity of 200 megawatts. With a total investment worth RMB 1.6 billion, the grid price expects to sit at RMB 0.5/kilowatt hours of electricity.

According to a briefing, the wind turbine, upon the completion of construction, will produce 440 million kilowatt hours of electricity a year. Compared with coal firing power generation, it will save 166,000 tons of coal equivalent a year, or 233.000 tons of raw coal, and a reduced sulphur dioxide emission by 7454 tons, nitric oxide 2115 tons, carbon dioxide 395.000 tons, and carbon monoxide 53.6 tons. In addition, it will enjoy a reduced residue discharge by 40,000 tons, and water saved by at least 10,000 tons.

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