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SPECIAL ISSUES

TCM Development Strategy Established

Traditional Chinese medicine and its development strategies, a major project under the National Key Technology Program in the 10th Five-year period (2001-2005), passed on February 29, 2008 an approval check jointly organized by the Chinese Ministry of Science and Technology, and the State Administration of Chinese Traditional Medicine. Covering a range of areas, including clinical research, TCM industry, basic research, standards and regulations, innovation system, international cooperation, and personnel training, the study has lined up major missions for the said areas, with needed legal protection and policies. The study has produced a range of major results, including an outline for TCM innovative development (2006-2020), jointly issued by 16 government departments to guide the development of traditional Chinese medicine in the future 15 years, an outline for international cooperation in the area (2006-2020), and a development plan for TCM standardization (2006-2010), jointly published by the Ministry of Science and Technology and the State Administration of Chinese Traditional Medicine.

9.07 Million Kilowatts Installed Nuclear Capacity

As of the end of 2007, mainland China has 11 nuclear generators in operation, with an installed capacity of 9.07 million kilowatts. The 11 nuclear generators, built mainly with pressurized water reactor technology, include 3 home made generators, two imported from Russia, 4 from France, and 2 from Canada (heavy water reactor), distributed over Qinshan in Zhejiang, Dayawan and Ling'ao in Guangdong, and Tianwan in Jiangsu. In 2007, China's nuclear power stations have produced 62.862 billion kilowatt hours of electricity, and dispatched 59.263 billion kilowatt hours of electricity to power grids, with a respective growth of 14.61% and 14.39%.

In the same year, China has registered 3277.7 billion kilowatt hours of electricity generated, with an installed capacity worth 700 million kilowatts, with only 1.9% and 1.27% respectively for nuclear power. According to China's medium and long term plan for nuclear power, China shall add 40 million kilowatt hours of electricity derived from nuclear power generation. Currently, an installed capacity of nuclear power generation worth some 18 million kilowatt hours of electricity is under construction. By then, nuclear power will take 4% of the nation's total installed capacity.

INTERNATIONAL COOPERATION

International Study of Panda's Gene

An international study of panda's gene, initiated by Chinese scientists with the participation of scientists from Canada, the UK, the United States, and Denmark, was officially kicked off on March 6, 2008. According to a brief released by Beijing Genomics Institute (Shenzhen), scientists will produce panda's genome framework in half a year. The genetic information it produces will be of a far reaching significance to other related studies, including ecology, evolution, and sequencing. The project will create a genetic and biological basis for further study of panda, unveiling molecular mechanisms of its environment adaptation and associated evolution.

Scientists explain that panda has a genome that is basically similar to that of humans in

Scientists explain that panda has a genome that is basically similar to that of humans in size, or 3GB, containing 20,000 to 30,000 genes. In addition to working out a high flux genome, scientists are also supposed to investigate genetic variations of panda species. After establishing a genome framework, they will work on a refined map and transcriptomics, in an attempt to produce more data for studying panda' s past and current history, including the community size in the past, kinship, accurate calculation of gene flows, and interconnections between different panda species.

GE Collaborates with Shanghai Jiaotong University

A Jiaotong-GE automobile research center was officially established on March 4, 2008. According to a plan, General Motor will invest USD 4 million in the Center in the coming 5 years, in an attempt to turn out more high caliber auto designers and developers in collaboration with Shanghai Jiaotong University. Both parties agree to make the new center a platform for auto research, technology sharing, and personnel training, taking full advantage of the strength of both parties.

On the same day, both parties established a joint lab, the first of its kind created by GE in China, or the 12th joint lab GE established in the world, to develop advanced technology for auto making and light duty materials.

LI Jiancong, Deputy Director of S&T Development Center, part of Ministry of Education, said that so far 26 Chinese universities and 7 national key labs have worked with GE under 112 joint projects.

RESEARCH AND DEVELOPMENT

Seawater Aquaculture Using BLUP

Chinese scientists have achieved important breakthroughs in seawater based aquaculture using BLUP technique. They broke up the technological monopoly and blockade imposed by some developed countries possessing advanced aquatic breeding technologies, and established China' s own proprietary BLUP breeding system for seawater based aquaculture. Rolled out from the project are an aquatic creature breeding analysis and management system, and a shell fish breeding evaluation and analysis system. Under the novel system, people can complete the whole breeding process from species screening, to diffusion, and further to tracking down the results on a standardized and electronic basis. They can also be helped with an automatic process for measuring species' performance, calculating genetic parameters/breeding values, and creating breeding combinations.

Combined application of BLUP technique, molecular breeding, and cellular engineering, has sped up the breeding process of Platichthys stellatus Pallas, ensuring the sound and sustainable development of seawater based aquaculture. With the help of BLUP technique, scientists are able to determine Platichthys stellatus Pallas' genetic parameters in different developmental phases. They have worked out three breeding models that can be used to guide the fast breeding of Platichthys stellatus Pallas. The effort has noticeably improved the growth and adversity resistance of the fish, with an increased growth by 21%, compared with the control group, and a raised survival rate to 60%, or 33% up against the internationally advanced level of 17%.

Chinese scientists also developed BLUP and REML based screening software, the first of its kind in the world, allowing a sizable technical improvement for fish breeding. China has become a world leader in molecular marker based seawater breeding, and secured 90% of the microsatellite markers of Chlamys farreri so far registered in the world. The first generation SSR genetic chain map for Chlamys farreri, created by Chinese scientists, is one of the two complete shellfish genetic chain maps in the world. It enjoys a doubled number of sites, compared with the SSR map developed by American scientists for oyster.

New Sand Fixation Technology

An expert panel, organized by the Qinghai Provincial S&T Department, made on March 6,2008 a review of the results derived from a project to restore cropland and grassland vegetations in the Chaidamu Basin. The project has produced a new sand fixation technology working as follows: sowing grass seeds and chemical fertilizers over a desert, before watering and applying a chemical agent over the wet desert surface. 20 seconds later, the desert surface would become hardened, and the sand would become fully fixed in 1 to 2 hours, allowing people to walk on it without compromising the effect of sand fixation. Grass would grow up from the fixed sand surface in some 15 days. According to a briefing, the chemical agent applied makes sands go together. Without any hazardous or adverse effects, the chemical agent would make sands a rubber like solid, allowing water penetration and moisture conservation. The chemical agent would be gradually decomposed in the course of grass growing. The grown grass would eventually replace sands, making the desert an oasis. The novel sand fixation technology is an approach enjoying numerous merits, including low cost, decomposable materials, easy operation, and fine sand fixation results.

At the same time, scientists have worked out irrigation models tailored to different desert and grazing types. They introduced 49 grass and tree species, and developed reproduction plans for 6 local shrub species, 9 external tree species, and 6 fine grass species. They also made some response strategies and suggestions for a range of related issues, including construction of forest break, and immigrant ecology in the basin.

Folic Acid Prevents Stomach Cancer

A study, led by Prof. FANG Jingyuan at Shanghai Jiaotong University Renji Hospital, reveals that folic acid can be used to treat chronic atrophic gastritis (CAG), and prevent the disease being progressed into stomach cancer. Researchers have studied the role of folic acid in preventing stomach cancer in a clinical environment, starting from 1992. They created an approach to test folic acid concentration in gastric mucosa, through which they found that folic acid is able to reduce the symptoms of CAG patients, and inhibit the abnormal growth in the stomach lining. They also found that the lower the DNA methylation level, the higher the activities of cancer genes. Fortunately, folic acid is

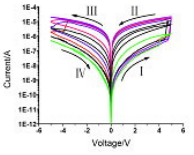
able to keep DNA methylation at a normal level, deactivating cancer genes, and hence preventing the formation of cancer.

In recent years, researchers have used folic acid as a main therapeutic means to treat some 40,000 CAG patients. FANG points out that folic acid only produces an effect when it is taken for a long time. Meanwhile, a diagnosed stomach cancer patient shall take folic acid under doctor's advice.

NEWS BRIEFS

China's first 256-bit molecular memory circuit

256 位分子存储器的原子力显微镜照片



分子存储器的电学性能

Memory circuit under atomic-force microscope Electric performance

Not long ago, the Institute of Microelectronics, part of the Chinese Academy of Sciences, has successfully rolled out the first 256-bit molecular memory circuit in the country.

Based on an in-depth study of dual stability materials of different electric resistance, researchers developed a proprietary lithography technology combining both primary electron beam and secondary X ray that eventually led to the nation's 256-bit molecular memory circuit. With a specific size reaching 250nm, the new circuit enjoys fine electric performance, without any damage to molecular layers.

Electric Automobile Advances

Electric automobiles for demonstration, a project implemented by Shanghai Power Grid, passed expert's verification check on March 7, 2008. Up to date, ten electric automobiles rolled out from the project have been running as part of bus line No. 825. The new electric bus will see an increased use in Shanghai.

According to a briefing, the new electric automobile runs with both super capacitors and lithium cells, taking advantage of super capacitor's merits of fast charging, no-memory discharging, durable cycling, and no secondary pollution, and lithium cells' strength of large volume and long storage time. The combined technology allows an extended mileage, fast charge, and durable cycling. With a full load, the electric automobile is able to run the distance of 100-300km, at a top speed from 80-100km. It takes three hours to get it fully charged. The new automobile has a power consumption of less than 1.6 kilowatt hours of electricity per kilometer. Tests show that the novel electric automobile can reduce the tail emission by 92%-98%, while saving energy cost by 70%~80%.

Mobile Dust Monitor in Operation

Mobile climate disaster monitor, developed by Lanzhou University, was put into operation on February 25, 2008 at a farm owned by the University in Jingtai County, Gansu Province. The new system successfully recorded a sand and dust storm process occurred on February 29, 2008. Consisting of a pulse laser radar, a multi-band solar photometer, an atmospheric components monitor, and an automatic weather station, the system is able to receive and handle data in a full automatic manner. As China's first mobile system for monitoring climate-related natural disasters, especially droughts and sand and dust storms, the system will enhance the watch of climate-related natural disasters across the northern arid and semi-arid areas in the country.

High Yield Glutinous Rice

Hainan Provincial Institute of Agriculture has developed an improved glutinous rice species based on the Shanlan rice grown by the LI ethnic group for a long time. Researchers have worked on the improvements starting from 2003. The multiple year efforts has led to the birth of the novel species: Haifengnuo I. Enjoying numerous merits, including high yield, diseases resistance, cold resistance, and resistance to lodging, the novel rice species has produced a yield as high as 450 kg a mu(1 mu= 0.0667 hectare), or 4 times that of the Shanlan rice. In addition, it enjoys a shortened growth period. Hainan is a place allowing two croppings, with early rice in December for 145 days, and late one in July for only 117 days. The new species is suitable for extensive growing in the middle region of the Province. The Institute has grown Haifengnuo I over 500 mu in Wuzhishan, Baisha, and Changjiang.

China's First Absorption Refrigerator

Beijing Guozhao S&T Co. Ltd. has recently rolled out China's first absorption refrigerator. The novel refrigerator works on the electricity it produces on its own, utilizing the differences between temperatures. With a reliable performance and reduced cost, the novel absorption refrigerator can be used in numerous areas, including civic, medical, vehicle, boat, industrial, stock breeding, field, and defense applications. It may also find applications in hotels, hospitals, apartment building, office building, and compact refrigeration.

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