N0.496

CHINA SCIENCE AND TECHNOLOGY
NEWSLETTER
The Ministry of Science and Technology
People's Republic of China

N0.496 December 20,2007

IN THIS ISSUE

*Phase Results for Medical Cooperation
*Expedition to East African Great Rift Valley
*World First GM Rabbit
*Massive Dinosaur Footprints Found
* China 's Proprietary Artificial Skin into Clinical Trials
*New LED Saves 60% Energy

INTERNATIONAL COOPERATION

Phase Results for Medical Cooperation

Under the sponsorship and support of the Chinese Ministry of Science and Technology, Shanghai TCM Innovation Center and a Finland investment banking firm inked a cooperation accord on December 7, 2007 in Zhangjiang, Shanghai. Both parties will work on a new drug for treating depression, including overseas clinical trials and marketing.
According to the accord, Shanghai TCM Innovation Center will establish a joint venture with the Finland investment banking firm in Hong Kong, using its proprietary new drug as an investment. Shanghai party will be responsible for the post-study and marketing of the new drug, and Finland party will take care of fund raising and market in Europe. A sum of EUR 3.2 million will be raised for the phase one project, of which EUR 1 million will be delivered to Shanghai Center as a compensation for its pre-phase study. The project will head for European, Asia Pacific, and American market in due time.

S111 is a TCM new drug, which has applied for clinical trials and international patents in early 2006. Clinical trials have shown that the new drug presents a therapeutic effect similar to that of Fluoxetine, but without side effects. A preliminary pharmacological study shows that the new drug works on a path different from Fluoxetine.

Expedition to East African Great Rift Valley

At the invitation of Addis Ababa University, an expedition team made up of scientists from Institute of Geology and Geophysics, Institute of Geographic Sciences and Resource Research, and Institute of Vertebrate Paleontology and Paleoanthropology, all under the Chinese Academy of Sciences, embarked on December 8, 2007 an expedition for East African Great Rift Valley in both Ethiopia and Kenya. The expedition, scheduled for 20 days, will investigate the physical, chemical, geological, and tectonic aspects of the valley. Scientists will also study the impacts of future changes of the valley on humans, including the impacts of volcanic eruption, mudslides, and floods on global climate change, the variations of ecological environment of the valley, and human origins among others. They will also discuss future cooperation with their African counterparts.

RESEARCH AND DEVELOPMENT

World First GM Rabbit

Cloned rabbit (left) and conceiving rabbit (right).

Xinhua Hospital affiliated to Shanghai Jiaotong University, in collaboration with the Domestic Animal Genetic Breeding Center under the Chinese Academy of Agricultural Sciences, has produced the world first GM rabbit that has been survived for three month as of December 14, 2007. A biological test recently made in Shanghai shows that the

as of December 14, 2007. A biological test recently made in Shanghai shows that the cloned rabbit is of exogenous green fluorescent protein (GFP), a signature of GM rabbit.

Thanks to their nearly one-year efforts, researchers of Xinhua Hospital have worked out solutions to an array of difficulties, including gene transfection, establishing GM cell system, and cloning GM cells. The world first GM rabbit was born on September 14, 2007. The cloned rabbit carries exogenous green fluorescent proteins. The effort creates a ground for establishing large scale GM rabbit models in the future. Researchers will soon start to work on the consolidation of exogenous genes, and on the GM operation of functional genes.

Massive Dinosaur Footprints Found

Scientists of Institute of Geology, part of Chinese Academy of Geological Sciences, have not long ago discovered massive dinosaur footprints over Jiaguanzu in Qijiang County Chongqing. The dinosaur footprint array, believed to be the one left in the mid-Cretaceous Period, is of some 300 footprints, distributed in an area of 140m^2. Researchers believe that the footprints belonging to thyreophora, ornithopoda, and theropoda genre. Combining the findings on other four types of dinosaur footprints and one aquatic bird footprint previously discovered over the Emei Mountains nearby, researchers assume that there should be a large community of dinosaurs in Jiaguanzu, including ornithopoda, theropoda, thyreophora , and ancient bird species. The new discovery provides solid evidences for unearthing the fossilized dinosaurs in the layers of Cretaceous Period in the future.

The thyreophora footprints unearthed in Qijiang is the first of its kind in China. In this context, researchers named the newly found footprints "China Qijiang Footprints" , making it a new genre. Thyreophora dinosaur, also nicknamed tank dinosaur, is a species known for its large and flat head, small teeth, wide and flat body, and short limbs.

China 's Proprietary Artificial Skin into Clinical Trials

Artificial skin on display.

One can produce active skin without the limit of number, using artificial skin tissues of a nail size. The artificial skin, designed for mass production, contains live cells, with both dermis and epidermis, quite a natural proxy for color, texture, and biological compatibility. The artificial skin can be used to treat burns and ulcers, before being eventually replaced by the natural skins of patients. Prof. JIN Yan displayed on December 17, 2007 the proprietary tissue engineering product in Xi 'an. With the approval of the State Food and Drug Administration, the product has bee put into industrialized production.

The State Food and Drug Administration has organized four rounds of experts review of the product for its safety in human applications, and issued a product registration certificate for the artificial skin on November 13, 2007.

Anti-bacteria Stainless Steel

Not long ago, Changzhou Daping Novel Stainless Steel Products Co Ltd. has made the debut of its newly developed anti-bacteria stainless steel and associated processing technique. The new technique, approved by authoritative experts, baths stainless steel in a silver based acid solution under a special current in 40~50℃ for 6 to 10 minutes. The process adds a large molecule based oxidized film with a thickness ranging from 200 to 300 nm onto the surface of processing materials.

Comparing with the coated anti-bacteria stainless steel technique, the oxidized anti-bacteria stainless steel technique enjoys a better processing performance, able to stand up a twist or stretch at an angle of 180 degrees for molding and processing sheets, plates and wires in different sizes, without restrictions of materials nor the restrictions of sizes and shapes, allowing a broadened scope for applications.

A test made by Nanjing CDC shows that the anti-bacteria product is able to produce a bacteria inhibition as high as 96% in 6 hours. Another test made by CAS Technical Institute of Physics and Chemistry shows that the anti-bacteria stainless steel is 99% effective in blocking Escherichia coli, and 92% in inhibiting Staphylococcus aureus, with a class I mode resistance. The milk cup, chopsticks, and washing basin made of the anti-bacteria stainless steel will not change its color after use for two to three years.

Advanced Algorithms for Packet Classification

Not long ago, CHEN Haipeng, and Chen Zheng, graduate students of the University of Science and Technology of China have found successful solutions to addressing a classification algorithm that can be efficiently implemented on a multi-core architecture with or without cache, ensuring separated data packets for network based household multimedia system. Their paper *Scalable Packet Classification Using Interpreting—A Cross-platform Multi-core Solution* has been accepted by the International Conference on Parallel Processing.

The Conference is the summit in the area of computer parallel processing. Statistics show that in the period from 1988 to 2007, the papers aired by a country or a region at the conference has not exceeded 6 in number, with USA an exception. The 2007 Conference accepted 25 papers from 102 candidates for official presentation. The paper submitted by the University of Science and Technology of China is the only one with Chinese research institute as the lead author.

Powerful Electronic Irradiation Accelerator

China 's first high-voltage electronic irradiation accelerator passed its approval check on December 8, 2007. The accelerator, with the highest power and voltage in the country, is of broad applications in the area of fresh food keeping, medical disinfection, and quarantine.

ZHOU Whenzhen, chief engineer of Atom High Tech, part of China Institute of Atomic Energy, told reporters that that the accelerator leaves no radiation in the things that go through it. As a result, it can not only be used for medical disinfection, but also be used for mails and parcels disinfection, fresh food keeping, and quarantine of agrifoods and seafoods.

A high voltage electronic irradiation accelerator produces remarkable returns. An accelerator running for 5000 hours a year is equivalent to a 60co irradiation device of a capacity of 1 million to 1.5 million Ci. It can process some 30,000 tons of products a year, with a possible annual revenue worth RMB 20 million.

New LED Saves 60% Energy

A study team, headed by Prof. LUO Yi of Tsinghua University, has landed a major progress on novel LED optical system and heat conducting structure, with proprietary technologies for light efficiency and distribution. Test results show that the novel LED is able to save energy by at least 60%.

Guangdong Dongguan Qingshang Group, in collaboration with Tsinghua University, has successfully put the new technology into commercial applications. The novel LED products have found application in the Changping Township of Dongguan, Guangdong Provincial Science Center, and Tsinghua University Stadium for road illumination, with fine results. An estimate shows that the application saves energy of 15.8 million tons of coal equivalent, or an annual output of a number of very large coal mines.

NEWS BRIEFS

Continental Drilling Results Accepted

China continental drilling, a key project under the 9th Five-year Plan (1996-2000), passed an acceptance check on December 14, 2007. The project, made up of a range of subsystems, including drilling engineering, measuring, geophysics, analysis and test, data management, and information engineering, is located in the Donghai County, Jiangsu Province, a site of geoscience importance. Started in August 2001, the project completed its in-situ drilling on March 2005, up to a depth of 5158m, under a budget worth RMB 176 million.

Researchers have worked on multidisciplinary study of the solid and liquid samples collected from the drilling, exploring the survival mechanism of microbes under extreme conditions. They have made an array of major findings on the elements, structures, and evolution of earth crust. In addition, the project has facilitated the development of geological survey techniques, especially in the area of drilling, measuring, and testing, and rolled out a drilling system of an internationally advanced level. The effort has raised China' s international influence in earth study and survey.

China 's First Molecular Orthopedics Lab

China 's first molecular orthopedics lab was inaugurated on December 11, 2007 at the Institute of Trauma Orthopedics, part of Beijing Jishuitan Hospital. The establishment of the new lab will allow future bone related operation to be performed on a molecular basis, offering more alternatives for individualized treatment. The development will eventually result in improved therapeutic techniques for minor injury oriented operation and enhanced therapeutic effects.

The socalled molecular orthopedics is a new therapeutic technique, allowing clinical treatment at both genetic and protein basis. It is of a future trend to individualize patients treatment using genetic types, making genetic information a medical record to reflect the vulnerability to diseases, potentials for recovery, and possible reactions to treatment. It is a desirable technique for individualized diagnosis, diseases phasing, treatment, and prevention.

The new lab will mainly work on two core tasks: study the genome, transcriptomics, and proteomics associated with human bone diseases, and biological and pathological part of bone diseases, in an attempt to understand the physiological and pathological mechanisms of gene and proteins; and transfer research findings, making them effective means of prediction, diagnosis, prevention, and treatment, and raising therapeutic effects.

TCM Pharmacology Study

A project was kicked off on December 16, 2007 in Shandong to study the pharmacology of traditional Chinese medicine (TCM), under the national 973 program. The project will mainly work on the material basis and effects of traditional Chinese medicine in a systematic manner, using modern scientific terminologies to define the pharmacology of traditional Chinese medicine, in an attempt to establish standards for TCM pharmacology in line with modern cognitions and conceptions. The project, jointly undertaken by a range of research institutes, including Shandong TCM University, Guangxi TCM School, and Zhejiang TCM University, is financed with RMB 25 million for its missions.

The findings derived from the project will serve as a theoretical guidance for both clinical pharmacy and trials. It will facilitate the development and utilization of TCM resources, and becomes an important support and guarantee for maintaining the strength of TCM and raising its therapeutic effects.

Comments or inquiries on editorial matters or Newsletter content should be directed to:
Mr. Mao Zhongying, Department of International Cooperation, MOST 15B, Fuxing Road, Beijing 100862, PR China Tel: (8610)58881360 Fax: (8610) 58881364
http://www.most.gov.cn

Ministry of Science and Technology of the People's Republic of China
15B, Fuxing Road, Beijing, 100862, P.R. China
Sponsor: Executive office of MOST
Support: Information Centre of MOST