

N0.575

CHINA SCIENCE AND TECHNOLOGY

NEWSLETTER

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

N0.575

February 28, 2010

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SPECIAL ISSUE

Patent Information for Major Industries

A patent information platform, developed by State Intellectual Property Office, was inaugurated on February 25, 2010 to provide patent information search for major industries. The platform has the latest and most comprehensive patent information of public good industries, including steel, auto, ship, petrochemicals, textile, light industry, non-ferrous metals, electronics and information, and logistics.

The new platform has collected patent information from the United States, Japan, the UK, France, Germany, Switzerland, the Republic of Korea, Australia, the World Intellectual

Property Organization, European Patent Office, African Regional Intellectual Property Organization, in addition to the patent data on BRICs and emerging economies in Southeast Asia. The patent entries collected by the platform have reached 33.37 million in number, covering ten major industries.

The platform is equipped with a range of functions, including navigation, search, analysis, and online translation. Technical innovations are broken down into specific areas industry by industry. Search can be done in diverse modes, including navigation search, table search, and expression search, desirable for both domestic and international search. Eight analysis modes allow users to analyze patent information by trend, region, and technology. The system is also able to translate English patent information into Chinese in an automatic manner.

INTERNATIONAL COOPERATION

Large Animal DNA to Sequence

Chinese scientists kicked off on February 12, 2010 a project to sequence the DNAs of some large animals, including lions, tigers, and leopards. The project will produce the genome maps of those animals in about one year. The results derived from the efforts will be applied to study the animals' behavior and associated protection. The sequence will be jointly conducted by an array of institutions, including Beijing Genomics Institute (Shenzhen), Peking University, Heilongjiang Tiger Garden, CAS Kunming Institute of Zoology, and the Animal Protection Institute in San Diego.

2010 is a tiger year in China. In this context, big animals, including lions, tigers, and leopards, were chosen to be sequenced. Tiger has a genome similar to humans in size, at 3G. Tiger's genome information, when sequenced, will have a far-reaching implication on tiger studies, allowing people to have a deepened genetic and biological insight of tigers, and providing scientific evidences for artificial reproduction and going wild. In addition, the sequencing efforts will help scientists to accurately define the kinships of tiger families, understanding the interactions between environment and genetic factors in a both quantitative and qualitative manner. This year scientists will mainly work on the DNA sequence of northeast China tiger, south China tiger, Bangladesh tiger, Asia lion, African lion, *Neofelis nebulosa*, and snow leopard. The initiative will create a new platform for studying cat families' evolution and associated genome comparison.

Scientifically, the hybrid derived from tiger and lion makes a most desirable model for studying wildlife hybridizing. Once the lions' and tigers' DNA sequence is completed, Beijing Genomics Institute (Shenzhen) will embark on a study to sequence the DNA of tigon (the offspring of male tiger and female lion) and liger (the offspring of male lion and female tiger). Based on the genetic information of tigon and liger, scientists will be able to

re-interpret and redefine the meaning of hybrid and species at a DNA and chromosome level.

RESEARCH AND DEVELOPMENT

Bat's Dark Vision Unveiled

ZHANG Yaping, a Chinese Academy of Sciences academician at CAS Kunming Institute of Zoology, and his doctoral student SHEN Yongyi, found that Old World fruit bat, without an echo-location capability, has to look for food mainly through its eyes and nose, and that it has well developed "eyes". ZHANG and coworkers have recently cloned the rod cells that have a say to the formation of retina. The cloned cells regulate RH1, a dark vision receptor. They found that either the insect eating bats featured with a deteriorated vision capability, or Old World fruit bat with a well developed vision system, has RH1 expression in their rod cells, indicating that even insect eating bats with poor vision has kept a dark vision capability.

ZHANG and coworkers further found through genetic sequencing that RH1 has registered a convergent evolution between fruit bats and tomb bats, an insect eating bat that has kept its vision function, and a similar convergent evolution between long wing bats and horseshoe bats. The finding shows that the divided bat groups have developed different vision capabilities. The bat groups that are more dependent on vision have maintained 'good' eyes, while the one less dependent on vision suffered a deteriorated vision, which resulted in several rounds of convergent RH1 evolution in bat groups, and explained people's perception that a bat does not see.

Short Memory Not a Passive Decay

Prof. ZHONG Yi and coworkers, at Tsinghua University Dept. of Biological Sciences and Biotechnology, reported their findings on short memory in February 19, 2010 issue of *CELL*. Initially acquired memory dissipates rapidly if not consolidated. ZHONG and coworkers believe that such memory decay is interference-induced forgetting in *Drosophila*, for the purpose of sparing room for new memory. Researchers found that a small G protein Rac-dependent forgetting mechanism contributes to both passive memory decay and interference-induced forgetting in *Drosophila*. Inhibition of Rac activity leads to slower decay of early memory. Conversely, elevated Rac activity accelerates memory decay. The finding, also reported in *New York Times* and *Scientific American*, makes a challenge to the traditional perception that short memory in *Drosophila* is a passive decay.

Lunar Satellite's Laser Eye

It is reported from the Shanghai Institute of Technical Physics (SITP), part of the Chinese Academy of Sciences, that the new lunar satellite, or Chang'e II, to be launched late in the year, has been equipped with a proprietary laser altimeter. It means the new lunar satellite will be able to map out a detailed area where Chang'e III will land, along with a possible sitting location for the Moon Rover.

The laser altimeter is able to tell the direct distance between the satellite and the moon surface by vertically emitting laser beams to the targets on the moon surface from the above, and receiving the instant reflections. According to a briefing, the laser eye will screen several candidate areas on the moon surface, with an enhanced beaming frequency to 5 targets a second from the original one target a second, allowing a narrowed gap between the 'laser footprints'. The powerful laser ranging system is able to reach a 5m precision even when the satellite is 100km above.

Solar Parabolic Trough Power System

Not long ago, Beijing Zhonghang Airport General Equipment rolled out a proprietary solar parabolic trough power generation system, a breakthrough of its kind achieved from scratch, making massive application of the technology in the country possible. A parabolic trough power generation system uses a curved, mirrored trough which reflects the direct solar radiation onto a glass tube containing a fluid running the length of the trough, positioned at the focal point of the reflectors. To address the unstable and uneven solar energy intake, researchers developed a system to store the surplus solar energy to compensate the deficiency, and achieved a stable power generation and the maximum utilization of solar energy.

NEWS BRIEFS

New Tide Station in Antarctic

In their 26th expedition to the Antarctic, Chinese scientists established a permanent real-time tide gauge station near the Antarctic Zhongshan Station, to watch sea level variation and provide dynamic evidences to climate change studies. The station is literally a sea floor tide gauge system, made up of sea level water level meter, data recorder/processor, and data transmission cables.

China built its first permanent tide gauge station near the Antarctic Zhongshan Station in 1999. Unfortunately, the old system had encountered data transmission problems, unable

to meet the data needs of tidal studies. The new station, designed with substantive improvements to allow a real-time data transmission via cables, will facilitate a dynamic watch of tidal and sea level variations across the Antarctic Ocean. It is also in a position to provide tidal wave forecasts for Chinese ice breakers missioned to ship logistic goods to the Zhongshan Station, ensuring their safe journeys.

Subsurface Buoys Recovered

Chinese scientists recovered, in their 26th expedition to the South Pole, a line of subsurface buoys near the RYDZ BAY, the third largest bay in the region. The subsurface buoys were deployed on December 6, 2009 along the way to the Zhongshan Station. As of the recovering day, the subsurface buoys have made observations for more than two consecutive months, collected desired data and samples. The recovered subsurface buoys are equipped onboard with a range of observing instruments, including temperature/salinity collector, sediment capturer, and sonic Doppler current cross-meter, designed for long term temperature, salinity, and current speed observation. The data they have collected will help people to understand the formation and maintenance of in-ice lakes over the RYDZ BAY, and the interactions between ocean, ice, and atmosphere across the South Pole.

Chinese scientists have harvested long term onsite observed data free from the interference of surface meteorological conditions, rendering a major addition to the ship based mobile observation. The data collected by subsurface buoys will help researchers investigate the long term water body variations and associated movement within the RYDZ BAY, and collect direct evidences for understanding if there are some water origins in the Bay that supply water to the Antarctic Ocean, and for further understanding the role played by the Antarctic Ocean in global ocean current circulations.

Sensor Network Park

A Sensor Network Park was inaugurated on February 25, 2010 at a high-tech park in Wuxi. The Park, the first of its kind in the country, is established to accommodate sensor network R&D efforts of universities, in an attempt to spur up commercial applications of sensor network through the combined efforts of government, industry, universities and research institutes. It is reported that the Park will have a constructed floor space reaching 600,000 square meters in 2015, allowing some 15 university research teams to work at the site. The Park will eventually become the home to 30 engineering centers or labs at the national and provincial levels. It is missioned to incubate some 200 small and medium-sized tech businesses and 30 large businesses for sensor network industry. A sensor technology and industry school, part of Beijing University of Posts and Telecommunications, was also inaugurated at the site on the same day, became the first university institute homed in the new Park.

Deep Water Drilling Platform

China National Offshore Oil Corp announced on February 26, 2010 that it has developed a semi-submarine (3000m) drilling platform. Equipped with a range of functionalities, including prospecting, drilling, completion, and repairing, the new platform is able to work at a water depth up to 30m, with a drilling depth down to 10,000m. The platform, designed in line with the rough sea conditions commonly seen over the South China Sea, can be put into operation in a deep water environment, including the South China Sea, and oceans in Southeast Asia and West Africa. With a designed work life for 30 years, the platform marks a greatly enhanced deep water prospecting and drilling capability and a raised level for manufacturing advanced large marine equipment.

Largest Tunnel to Build

An artificial tunnel, the largest of its kind in the country, will be built starting from the end of March 2010, with a total investment worth RMB 6.169 billion. The new tunnel, to be built under a Jiang-Ji-Han project, will run as long as 67.23 km, with an averaged long term water diversion volume reach 3.1 billion cubic meters, supplying 600 million cubic meters of water to the Dongjing River. With a design flow at 350m³/s, the project will produce a maximum diversion flow reaching 500 m³/s, and an additional flow of 100 m³/s to the Dongjing River, with an enhanced flow to 110 m³/s. The project will connect the Yangtze River with the Han River, diverting water from the Jing section of the Yangtze River to the Xinglong section of the Han River. As a major part of the middle section of the South-to-North Water Diversion, it is also the largest water diversion effort in Hubei Province.

Once completed, the downstream from the Xinglong section of the Han River will enjoy a restored water flow after being depleted as the result of South-to-North Water Diversion, desirable for the ecosystem restoration, irrigation, water supply, and shipping within the section, easing the impact brought by the South-to-North Water Diversion.

Medicinal Plant Museum

A World Medicinal Plant Museum had its ground breaking ceremony on February 25, 2010 at Guangxi Medicinal Botanic Garden, the largest medicinal botanic garden in the country. The Garden, upon the completion of construction, will become a site allowing people to understand and recognize medicinal plants. A RMB 498 million worth project to upgrade Guangxi Medicinal Botanic Garden was also heralded on the same day. The botanic garden, with a 40-year history, is the largest of its kind in the country, enjoying the largest medicinal plant collections in the world.

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