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Headline News

State Councilor Emphasizes the Importance of Major R&D Project on Nuclear Power

During her inspection tour in Shandong Province, Liu Yandong, member of Politburo and state councilor, said that innovation-driven strategy as proposed by the 18th CPC National Congress should be implemented thoroughly and government-industry-academia collaboration enhanced in steadily pushing forward the R&D project on nuclear power, so as to provide strong S&T boost to the adjustment of energy mix and development of clean energy.

The project is the first high-temperature gas-cooled reactor demonstration power station independently developed by China, and the world's first modular, commercial demonstration of Generation-IV power station, Liu said. Combining research and commercial

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purposes, it is a big engineering achievement. Since its launch, the important phased progress has been scored in technology development, safety, equipment research, personnel training, and project construction. It shows that China has entered the rank of world advance in the technology.

(Source: Science and Technology Daily, January 14, 2013)

S&T Management Information

Bioindustry Development Plan Released by China

--By 2020, bioindustry will be developed into a pillar of the economy

China's recently issued *Bioindustry Development Plan* made clear the goal of developing the bioindustry into a pillar of the national economy by 2020.

According to *the Plan*, by 2015, China aims to double added value generated by the bioindustry as a percentage of GDP compared with 2010, and substantially increase its added value as a ratio of total industrial output value; develop its distinctive capacity, and significantly enhance its contribution to economic and social development, so as to gain an edge in global competition.

By 2020, China will achieve all-round development in key areas of the bioindustry and sound growth of new industry forms, develop their own features and dislocation of industries. and optimize industrial structure; form world-class industrial technology innovation system, markedly raise major enterprises' ratio of R&D investment in sales volume, dramatically increase the number of core technologies and overseas-granted patents, and ensure wide application of China's self-developed innovative products.

The Plan also pointed out that the bioindustry, an emerging industry of strategic importance to the nation, achieved a total output value of 2 trillion yuan in 2011, and biomedicine, bioagriculture, and bioenergy industries have already taken shape. In order to tackle increasingly serious aging, food security concerns, energy shortage and environmental degradation, it's urgent for China to develop new drugs, new crop varieties, green planting techniques, biofuel and biomass power generation, green biotech and bio-based products, and put them into widespread use.

(Source: Science and Technology Daily, January 7, 2013)

12th Five-year Plan for National High-tech Business Incubators

The Ministry of Science and Technology has compiled *the 12th Five-year Plan for National High-tech Business Incubators (the Plan),* based upon *National Medium- and Long-term Scientific and Technological Development Program* (2006-2020), *National Medium- and Long-term Talent Development Program, National 12th Five-year Plan for Scientific and Technological Development. The Plan* aims to promote sustained,

healthy development of high-tech business incubators (including high-tech start-up service centers, overseas returned scholars' business parks and international business incubators), raise their innovativeness and incubating capacity, foster high-tech SMEs and leading entrepreneurs, boost commercialization of research results and nurture strategic, emerging industries.

During the 12th Five-year Plan period, the incubators aim to improve high-tech innovation and entrepreneurship service system, raise the capacity in incubating high-tech businesses, particularly those engaged in strategic, emerging industries, develop high-level start-up teams. The ultimate goal is to create an enabling environment for innovation and entrepreneurship to flourish, so as to lay a solid basis for shifting China's economic growth pattern and building an innovative nation. By 2015, China aims to increase the total number of incubators nationwide to 1,500, among which 500 national-level ones, and exercise dynamic management and exit mechanisms over national-level incubators. By then, more than 30% of national-level incubators will have built business nurseries and accelerators; more than 50% can make angel investment and incubate as a stakeholder of the businesses under incubation; over 60% employees will have received training on incubators; 80% will have built public technology service platforms; and 90% will have established start-up mentor system.

(Source: Ministry of Science and Technology, January 11, 2013)

S&T Program for Public Wellbeing Rolled out by MOST

The Ministry of Science and Technology (MOST) has introduced *S&T Program for Public Wellbeing (the Program)*, and proposed *Management Regulations on the Program's Special Fund.* This aims to implement *National Medium- and Long-term Scientific and Technological Development Program* (2006-2020), standard the management of the Special Fund and raise the efficiency of the financial resources. The Special Fund, allocated by the central budget to the grassroots level, is designed to channel financial resources to the commercialization of advanced technologies, and integrated demonstration of advanced, applicable technologies, for the benefit of social development. The use of the Special Fund must follow the following principles:

1. Support key fields on the basis of merit. The Program will focus on its support on social management- and development-related fields, such as population and health, eco-environment, public safety, and gives priority to commercial use of advanced technologies, and integration and demonstration of advanced, applicable technologies in key fields, for the purpose of spurring sustainable development.

2. Diversify funding source with government as a driving force. The Program will be demand-driven, with the government playing a guiding role in its implementation. The role of the government, industry and academia will be brought into play, and diverse sources of funding will be sought.

3. Adopt hierarchical management and clearly define roles and responsibilities. Three levels of management, namely central, provincial/municipal/administrative region and grassroots (county/city/prefecture) levels, will be adopted.

4. The Special Fund is dedicated to *the Program* and must not be used for other purposes.

(Source: Ministry of Science and Technology, January 9, 2013)

Project Specialist System Launched by MOST

From December 11 to 12, 2012, Wan Gang, Minister of Science and Technology presented appointment certificates to 113 project specialists at the first appointment ceremony.

These project specialists are scholars or experts from sci-tech authorities, universities, enterprises or research institutes. They are specialized in basic research, high-tech, rural science and technology or social development. MOST has organized training programs for these specialists on reform of national S&T system and R&D programs, management rules on R&D programs, key fields and their job requirements.

Wan said that the project specialist system will boost management over R&D projects, enhance oversight over projects, and ensure their smooth implementation.

(Source: Ministry of Science and Technology, January 4, 2013)

973 Program Launches High-performance Phononic Functional Material Research

The launch ceremony of the "High-performance Phononic Functional Material Research and Its Technological Integration in High-end Ultrasonic Transducers" project, an effort of China's National Basic Research Program (also known as 973 Program), was held in Harbin recently. China has a massive industry of ultrasonic equipment manufacturing but the overall technological level is low, and high-end products are monopolized by developed countries. The root cause is that there is a significant gap between China and developed countries in ultrasonic transducer, a core component in ultrasonic equipment, which has become a bottleneck hindering the development of China's ultrasonic detection equipment industry. This project, designed to address China's major needs in medical diagnosis, industrial nondestructive testing and underwater communication, will focus on the factors influencing the electrical properties of relaxor-based ferroelectric single crystals under megavoltage, the control of manufacture of large-sized relaxor-based ferroelectric single crystals, the mechanism of broadband sound transmission and absorption in ultrasonic composite materials, and optimal structural coordination of three types of phononic functional materials. The project will lay a scientific foundation for the development of China's high-end ultrasonic detection systems.

(Source: Ministry of Science and Technology, January 18, 2013)

China's Generation II Space-worthy Composite Material Research Launched

Heavy-lift launch vehicles used for future manned moon landing and deep-space exploration should have a diameter roughly 2 to 3 times that of China's launch vehicles currently in use. To achieve high stiffness, light-weight and high reliability as required by super-large resin matrix composites, the material performance and molding techniques of large-size components must improve markedly upon the current level. Research on engineering application of key material system for composites, a key basic research project for national defense, was launched at the beginning of this month. The research results will be used for future spacecrafts.

This project is led by Aerospace Research Institute of Composite Materials & Processing Technology, together with Beijng Institute of Aerospace System Engineering, R&D Center of China Academy of Launch Vehicle Technology, Institute of Chemistry of Chinese Academy of Sciences. The research will focus on space-worthy materials, preparation of super-large light-weight components and structural design of composites, develop specifications, methods, standards and databases for manufacturing 2nd generation composite materials and components, and increase technology maturity, so as to meet the needs of future spacecrafts. Meanwhile, it aims to drive the development of related basic materials, such as high-performance carbon fiber and resin, and facilitate the application of 2nd generation composite materials in other industries.

(Source: Science and Technology Daily, January 8, 2013)

Chinese Scientists Find Key Genes Conferring Risk of Hepatitis B Virus-related Liver Cancer

The latest issue of the international influential journal Nature Genetics published a paper by a research team headed by Prof. Yu Long, of the Institute of Genetics and State Key Laboratory of Genetic Engineering of Fudan University, which identifies STAT4 and HLA-DQ as key genes conferring risk of hepatitis B virus-related hepatocellular carcinoma, or liver cancer. This finding paves the way for the screen of the population susceptible to liver cancer in the future, which is expected to cut the risk of liver cancer development.

It is reported that around 700,000 people worldwide die from liver cancer each year. In China, 350,000 to 400,000 people are diagnosed with liver cancer each year, accounting more than half of the world's total. A survey on medical history of the condition shows that more than 80% of Chinese liver cancer patients have a history of hepatitis B.

Not all hepatitis B virus carriers develop liver cancer. Why some do and others do not? The Fudan University research team has offered an answer.

The research team led by Prof. Yu Long, comprising 66 scholars from 30 Chinese and foreign research groups, performed a GWAS analysis on the blood DNA samples of a total of 11,799 hepatitis B patients. They successfully identified genetic susceptibility loci for hepatitis B virus-related liver cancer in STAT4 gene and HLA-DQ gene cluster. This is the first report of its kind in the academic community.

The STAT4 gene, located at human chromosome 2, may play an important "pre-warning" role in antiviral, anti-tumor and immune response. This gene controls inflammation development and tumor growth in the human body. The HLA-DQ cluster, located at human chromosome 6, comprises such genes as HLA-DQA1, HLA-DQB1, HLA-DQA2 and HLA-DQB2. The proteins encoded by the HLA-DQ gene cluster participate in immunoregulation to keep a well-functioning immune system and maintain human health.

The first author of the pater is Dr. Jiang Deke of the Institute of Genetics of Fudan University.

(Source: *Ministry of Science and Technology*, September 13, 2012)

Micro IT Enterprise Incubator Launched in Chongqing

China's first IT-themed micro-business incubator was recently formally put into operation. The IT Micro-Enterprise Incubation Park, advantageously located in the core area of the IT & Digital Port in Shiqiaopu in Chongqing High-tech Industrial Development Zone, is surrounded by more than 2,000 IT enterprises engaging in R&D, production, sales and related services of the IT industry. The park specializes in electronic information and high-tech services, with the focus on computer-related software and hardware development, animation design, video & audio production, website design, graphic design, digital media, digital publishing, e-commerce, cloud computing, and Internet of Things, with a series of supporting intermediary and service agencies in training, consulting, accounting and business registration. The project, developed in two phases with a total investment of RMB50 million and a planned area of 15,000 square meters, can host no less than 200 medium, small and micro-sized enterprises.

(Source: *Science and Technology Daily*, January 5, 2013)

Free-Licensed E-Car

The license for an electric vehicle is issued to a Shanghai citizen on January 23, marking the beginning of the free license plate system for new energy vehicles. New energy auto owners in Shanghai can apply for a free one.

(Source: Beijing review,2013)

China Joins in Efforts to Build the World's Largest Radio Telescope

The Square Kilometre Array (SKA), a major collaboration among international astronomers, is the world's largest radio telescope in development which presents a great opportunity for the humankind to gain a better understanding of the universe. As one of the founding members of the project, China has made wide-ranging contributions to the project in such aspects as project launch, conceptualization, site selection, international collaboration advancement, and the design of high-performance antenna. After multiple demonstrations, the State Council approved the participation of the Ministry of Science and Technology in the preparatory stage of the project on behalf of China. The SKA project, which involves a great number of fields of basic and high-tech research, is the second large-scale international collaboration joined by China following the International Thermonuclear Experimental Reactor (ITER) project.

In order to advance the effort, the Ministry of Science and Technology, along with relevant domestic institutions, has set up the SKA China Coordination Group and the SKA China Expert Committee and designated the National Remote Sensing Center of China under the Ministry of Science and Technology as the office of the SKA China Coordination Group. The SKA China Coordination Group will orchestrate China's participation in the preparatory stage of the construction of the SKA. On December 11, 2012, the first meeting of the SKA China Coordination Group, the first meeting of the SKA China Expert Committee and the SKA China Promotion Fair took place in Beijing. Cao Jianlin, Vice Minister of Science and Technology, Zhan Wenlong, Vice President of the Chinese Academy of Sciences, and Hu Aimin, Deputy General Manager of China Electronics Technology Corporation, attended and spoke at the first meeting of the SKA China Coordination Group.

The successful convening of the SKA series of meetings marks the all-round launch of China's participation in the preparatory stage of the construction of the SKA and has laid a solid foundation for subsequent work. The Ministry of Science and Technology will mobilize relevant Chinese enterprises, universities and research institutes to join efforts to promote China's innovation in high technologies and basic research, drive industrial development, and serve China's strategic need of integrating science, technology and economy and building an innovation-oriented country.

(Source:Ministry of Science and Technology,

December 28, 2012)

Chinese and American Scientists Unveil New Mechanism of Neural Signal Transmission

The latest research by Huazhong University of Science and Technology professor Ma Cong provided clues to further unlocking the secrets in the brain. His findings were published by the international prestigious journal *Science* under the title of *Reconstitution of the Vital Functions of Munc18 and Munc13 in Neurotransmitter Release*. This study was completed by a research team headed by Prof. Ma Cong and Prof. Josep Rizo at the University of Texas Southwestern Medical Center, US.

Using biophysical means and in vitro artificial membrane reconstruction, the researchers afford for the first time a comprehensive interpretation to the molecular pathway of membrane fusion mediated by key proteins and phospholipid molecules that are involved in neurotransmitter release. The findings of the research have re-shaped our understanding of the neurotransmitter release mechanism and challenged the traditional membrane fusion and secretion mechanism.

According to Ma Cong, the research is a very basic and crucial study in neurobiology and will advance our understanding of how the brain learns, remembers and thinks at the molecular level. Further studies are needed to test whether the pathway for neurotransmitter release identified by the research is universally present and whether two membrane fusion pathways, one low-efficient and the other high efficient, coexist.

(Source: *Science and Technology Daily*, December 25, 2012)

(Editor's Note: All news in the issue are translated from Chinese texts for your reference. They are subject to checks and changes against official release of original Chinese or English texts.)