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SPECIAL ISSUES

Top-Notch Students Training Program

LIU Ju, Deputy Director of Ministry of Education Department of Higher Education, said recently that three government agencies, including the Ministry of Education, the CPC Central Committee Organization Department, and the Ministry of Finance, will jointly stage a pilot project to train the top-notch students in the area of basic research, establishing

national young talents centers in the advantageous disciplines at qualified research oriented universities, setting up a training mechanism aiming at top-notch students, and making them part of basic research activities and a future academic leader in the discipline.

LIU added that the top-notch students selection will be first made in the areas of mathematics, physics, chemistry, biology, and computer science at ten selected universities. The Ministry of Education has established an expert panel made up of renowned scientists from both home and abroad, to review the implementation plan, select the qualified universities, and provide guidance for the implementation. The interested students with desired potentials will be selected either through self-enrollment or through secondary screening, in line with the status quo of the universities. Experimental schools or classes will be created to train top-notch students under advanced teaching theories or models. Many schools have so far proposed to invite renowned and experienced scholars of international influence to be Chief Professor or project director for the top-notch students training programs, along with some concrete measures for allowing students to be part of research activities, and strengthening collaborations with world-class universities.

High Caliber Engineers Needed

The Chinese Ministry of Education recently issued a document to stage an education and training program for nurturing high caliber engineers. China will promote the high caliber engineers program at campus during the period of 2011-2020, building a contingent of high caliber engineers with strong innovation capability, in line with the needs of the economic and social development.

According to a briefing, the program, covering the areas involving both traditional and emerging strategic industries, will be implemented at three levels for undergraduates, postgraduates and doctoral students respectively, producing qualified field, design, and R&D engineers.

The program will be lasted from 2010 to 2020. Universities may apply for being part of the program. An expert panel will review universities' application and associated training courses arrangement. The Ministry of Education will determine if the applicant university is qualified to be part of the program. The university that has been endorsed as part of the program is asked to file course applications on an annual basis. The course application will be reviewed by industrial experts panels, and endorsed by the Ministry of Education. The Ministry of Education will publicize the list of university courses designed for the program.

Tianjin Wants More Returned Overseas Students

Tianjin kicked off on Feb. 25, 2011 a range of projects to attract overseas Chinese students and experts who returned from abroad, including a project to attract 10,000 returned overseas students, a high caliber talents gathering project, a specialists gathering project, and an "international master' recruitment project. The 5-year projects are designed to recruit 10,000 returned overseas students, and secure 100,000 person-time visits of overseas experts (including the visits of 1,000 top level specialists, and 25,000 person-time long term visits).

Tianjin has since 2003 staged some 100 initiatives to attract talented people from diverse sources, providing "green channel" services for the imported talents. Each year, the city adds RMB 150 million to a dedicated fund for personnel training and talents recruitment, enjoying a noticeably enhanced gathering effect of talented people.

INTERNATIONAL COOPERATION

China-IEA Energy Cooperation

A China-IEA (International Energy Agency) workshop on scientific and technological cooperation was held on February 18, 2011 in Beijing. Some 30 representatives from domestic research institutes that are part of IEA implementing agreements attended the meeting, discussing the progresses achieved and work plans in the next phase. CHEN Linhao, Deputy Director of MOST Dept. of International Cooperation, attended the meeting. At the meeting, CHEN pointed out that China's future scientific and technological cooperation with IEA will continue to work to combine domestic research resources and share international cooperation resources, in the principle of "China being a key player and a major user, steadily enhancing cooperation, and working for mutual benefits". China will make international cooperation, especially collaborations with IEA, part of the efforts to meet its major domestic needs. China will show to the world the accomplishments it has achieved in developing and promoting clean energy technologies, by being an active part of the IEA reporting system, in an attempt to seek more cooperation opportunities,. China will release the information of future collaborations with IEA through the Liaison Office and a dedicated website, promoting more substantive collaborations.

CHEN held talks with Ulrich Benterbusch, IEA Director of international cooperation on February 17, 2011. Both sides agreed to strengthen cooperation in the area of science and technology, including encouraging Chinese research institutions to be part of new

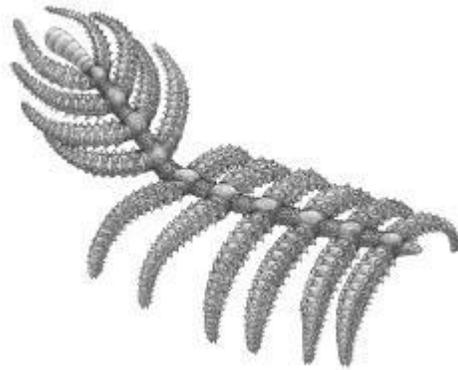
implementing agreements, and jointly sponsoring a range of international meetings, including international forum for electric vehicle demonstration cities, leaders forum for advanced vehicle, CCS and oil-gas technologies under WPF, round tables for accelerating energy technology innovations, and online energy experts meetings.

China-Germany Marine Research Center

A China-Germany Marine Research Center, enjoying the joint support of the Chinese Ministry of Education and the German Federal Ministry of Education and Research, was inaugurated on February 24, 2011 at the Ocean University of China. Backed by the Chinese and German governments, the new center, a high level research and education platform in the area of marine science, is jointly established by five Chinese and German universities and research institutes, including the Ocean University of China, University of Bremen, Kiel University, Leibniz Marine Institute, and Leibniz Tropical Ecology Center. The Centre will work to coordinate and promote the collaborations between Chinese and German research institutes and industry in the area of marine education and research.

RESEARCH AND DEVELOPMENT

500 Million Years Old Lobopodian Found



A new study, made by Dr. LIU Gianni and coworkers at Northwestern University Institute of Early Life, has led to the discovery of a lobopodian that could walk on the seafloor dated back to 500 million years ago, or *Diania cactiformis* for its name. The finding, published in the Feb. 24 issue of *Nature* magazine, is an effort to unveil the origin of arthropods.

Diania cactiformis, an 'armored' lobopodian unearthed from the Chengjiang fossil Lagerstätten in Yunnan, is remarkable for possessing robust and probably sclerotized appendages, with

what appear to be articulated elements, though without a distinct head in the fossil. The worm-like seafloor walking animal, undoubtedly, represents a key missing link telling the transition from the ancient lobopodians to arthropods, a solid evidence for understanding the earliest evolution of arthropods.

World's First Microscope GM Rabbits

The world's first transgenic rabbits bred out by the scientists of Guangxi University using fertilization ovulation microscope technology have recently made their debut to the public. Led by Dr. SHI Deshun, Dean of Guangxi University School of Animal Science and Technology, a team of scientists worked out the solutions to addressing a range of technical difficulties in the 2-odd-year study, including low integration of foreign genes and low pregnancy rate. In November 2010, scientists made an in-vitro combination of fat-1 gene and unfrozen rabbit sperms, and injected the combination into rabbit oocytes cells, before transplanting the transgenic embryos into surrogate rabbits. A month long pregnancy in two surrogate rabbits has led to the successful birth to seven baby rabbits with an averaged weight of 65 grams, or 15 grams heavier compared with ordinary rabbits. The GM rabbits conceived using fertilization ovulation microscope technology also witnessed a noticeably raised height.

Scientists have recently made a range of molecular biological evaluation of the five rabbits conceived using fertilization ovulation microscope technology and associated genetic expression tests. Results show that 4 rabbits have carried fat-1 genes. The enzymes encoded with fat-1 are able to turn ω -6 fatty acids into ω -3 polyunsaturated fatty acids, with a boosted efficiency by 3 times, compared with ordinary rabbits. ω -3 fatty acids have been proven effective in preventing and treating cardiovascular diseases, arthritis, and cancers.

New HIV-1 Manipulating Mechanism Found

Not long ago, a study, led by TANG Hong at CAS Institute of Biophysics, published online its findings in the journal of *Immunology*, discussing a new mechanism possessed by TBK1, a major signaling molecule in innate immune response, in manipulating the replication of immunodeficiency virus (HIV-1), a new technical line for both basic research and clinical treatment.

TANG and coworkers' finding has proved for the first time that TBK1, in collaboration with multiple vesicular bodies (MVB) that are responsible for intracellular protein transport, strictly controls the maturation of HIV-1 and eventual release into the extracellular budding process. In this context, TBK1 is not only able to activate the activities of interferon, but can also fight infections through manipulating the replication of viruses.

TANG and coworkers found that in the budding process of HIV-1, PTAP has to open a "lock" called ESCRT-I complex. TBK1, and other previously found proteins, including Tsg101, MVB12 and VPS37C, makes the core of the complex.

TBK1, in the ESCRT-I complex, does not affect MVBs' ultrastructures and normal physiological functions. However, the level of TBK1 and associated kinase activity is inversely proportional to the speed of HIV-1 budding. More interestingly, TBK1 regulates the virus budding process, though only targeting at the HIV-1 with PTAP, without touching MLV and EIAV.

More importantly, TBK1's control of HIV-1 budding is not dependent on the activation of antiviral signaling pathway, such as interferon, but rather through the specific phosphorylation of VPS37C. The finding reveals a brand new function possessed by TBK1 in the antiviral process, namely it can manipulate the viral replication cycle, in addition to the previously known function as an interferon producer.

NEWS BRIEFS

Three Gorges to Complete in 5 Years

During the 12th Five-year Plan period (2011-2015), the Three Gorges Corporation will complete the remaining two projects: an underground power station and a boat lift. By then, the eye catching Three Gorges Project will come to an official end.

The Three Gorges Project was basically completed in 2009, with two newly added projects for an underground power station and a boat lift proceeding smoothly. The 6 generation units at the underground power station have so far completed the transition from civil construction to installation, with 3 units entering the full-fledged installation. The boat lift tower has completed the concrete pouring process as planned, with a range of contracts signed for main equipment manufacturing, installation and joint commissioning. Rack and nut lifting column embedding have also been completed.

According to the plan, the first 3 units will be put into operation at the underground power station this year, before gearing into a full production in 2012. The boat lift will be put into a test operation at the end of 2014, and further into official operation in 2015.

The underground power station, sitting on the right bank of the hub, is designed to generate power using waste water, in an attempt to raise the water resources efficiency of

the Yangtze River. 6 units at the underground power station, plus the 26 power generating units at the left and right flanks of the dam, will raise the total installed capacity of Three Gorges power plants to 22.5 million kilowatts, with the largest annual capacity being at 100 billion kWh. The boat lift, standing on the left bank of the hub, will be built to be an elevator-like fast passing lane for large passenger boats, an effective addition to the existing staircase-like passing lane.

Dynamic Fatigue Testing Calibration

China National Institute of Metrology has recently rolled out a proprietary dynamic calibration device for fatigue testing machines. The device is made up of a resistance strain sensor and a dynamic strain signal data acquisition system, with a static precision reaching the level of 0.1. In the frequency range of 500Hz, the device has registered a normalized dynamic sensitivity larger than 1%. Desirable for high accuracy dynamic measurement, the internationally advanced device can be employed to test and calibrate fatigue testing machines in a dynamic manner.

The successful development of the device provides a metrologically standardized and scientifically rational device and process that can be applied to calibrate and validate a fatigue testing machine, a powerful technical support for securing the reliability and life of the materials used in aviation, space, automobile, shipbuilding, metallurgy, construction among others.

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