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Science, Technology and Education News from Taiwan
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A total of 24,305 scientific research papers from Taiwan were listed in the Science Citation Index (SCI) in 2009, ranking 16th in the world and representing growth of 7.8 % over the previous year. Taiwan also published a total of 18,869 research papers that were cited by major engineering publications in 2009, a rise of 7.9 % from a year earlier and ranking 9th in terms of the global engineering index (EI), according to Directorate General of Budget, Accounting and Statistics (DGBAS) officials. Meanwhile, a total of 6,642 patent application cases filed by Taiwanese institutions or individuals in the United States were approved in 2009, making Taiwan the 5th-largest recipient of U.S patents for that year, according to the Intellectual Property Office (IPO). IPO officials said Taiwan ranked behind only the United States, Japan, Germany and South Korea in patent right claims in the United States in 2009, marking growth of 4.8 % over the previous year. The DGBAS officials said that research and development powers creativity and innovation technology and that the volume of scientific research papers published in Taiwan shows the country's concrete results in the field of research.

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1. Longan seeds found to have healing effect

(Central News Agency, 29 01 2011)

A Taiwan agriculture research institute has discovered the inedible seed of the longan fruit to have a healing effect. The seeds have been found to contain elements that can reduce inflammation and pain, which the researchers can extract, said Chang Chih-sheng, director of the Taichung District Agriculture Research and Extension Station. Longan, which means "dragon eye" in Chinese because the fruit resembles an eye balled when peeled, is mostly grown in Taiwan, China and Thailand. Taiwan produced 82,602 metric tons of the fruit in 2009, half of which was supplied fresh and the other half dried. Seeds of both products are discarded, creating tons of agricultural waste, noted Chang, who added that the researchers began studying ways to obtain seed extract to increase the fruit's economic value. Longan seeds contain chemicals that include ellagic acid and corilagin, which have been used since ancient times to treat stomach ache and burns. Their experiments proved that longan seed extract can limit bacterial growth in petri dishes and can also help with wound-healing. The station has also discovered ways to produce moisturizing lotion with the extract and has shared the technique with private businesses interested in finding commercial uses for the extract.

http://www.taiwanheadlines.gov.tw/ct.asp?xItem=215946&CtNode=9

2. Scientific finding aids anti-HCV therapy

(Central News Agency, 29 01 2011)

Taiwan's top research institute Academia Sinica announced new findings on the hepatitis C virus (HCV) that could help refine anti-HCV therapies in the future. The team, led by research fellow Steve Chen, found that autophagy, a condition in which cells digest themselves, plays an important role in HCV replication, a process linked to the spread of infection in the body. The study offers medical scientists a direction for seeking more effective drugs for hepatitis C sufferers, adding that drugs developed to suppress autophagy can be effective in stopping the virus from multiplying in the host body. The findings were published in the Jan. 4 issue of the Journal of Clinical Investigation. Although there are six major genotypes of HCV, only two drugs -- interferon and ribavirin -- are currently used for hepatitis C patients, who sometimes do not respond well to the drugs, Chen said.

http://www.taiwanheadlines.gov.tw/ct.asp?xItem=215927&CtNode=9

3. Taiwan to launch new supercomputer in July: scientists

(China Post, 06 02 2011)

A Taiwan-made supercomputer that is expected to be listed among the 100 fastest in the world will be operational in July as part of the Republic of China's centennial celebrations. The construction of the supercomputer is part of a science project initiated by the National Applied Research Laboratories (NARL) with the aim of expanding Taiwan's research capability in several fields. NARL's goals include setting up bio-medical research centers, developing autonomic space exploration systems, forming alliances for exchanges of nano-scale technologies and launching a large research ship, said NARL President Chen Wen-hwa. The new supercomputer, working at 170 trillion floating-point calculations per second, should rank between 51st and 55th among the world's most powerful computers when it comes online, said Chiang Kuo-ning, director of Taiwan's National Center for High-Performance Computing. Chiang added that he believed the new supercomputer will remain among the top 100 for the following two years. At a cost of NT$300 million, Acer Inc. is responsible for building the new supercomputer, creating a faster and more complex model that will provide a wider range of science computing services than the current supercomputer, which works at 20 trillion floating point calculations per second, Chiang said. The new supercomputer will consume NT$30-50million worth of electricity per year, he added. While 30 % of the top 100 supercomputers in the world are used for financial purposes, Chiang explained that the supercomputers in Taiwan have been used to boost research in scientific fields such as physics and chemistry. Meanwhile, a new 2,700-ton research vessel will be launched at Kaohsiung Harbor in May or June this year, announced Chen Kuo-hsing, deputy director of Taiwan Ocean Research Institute. It will be the first ocean research vessel of that size in Taiwan, he said, noting that the existing ships are around 300-890 tons. The new vessel is expected to substantially improve Taiwan's marine research and exploration capability and also help foster greater public awareness of ocean research.

http://www.chinapost.com.tw/taiwan/national/national-news/2011/02/06/290168/Taiwan-to.htm

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4. Nobel laureate Lee Yuan-tseh awarded science prize

(Taipei Times 31 01 2011)

Nobel laureate Lee Yuan-tseh was awarded the Italian Science for Peace prize for his efforts to promote science in the international community.

http://www.taipeitimes.com/News/taiwan/archives/2011/01/31/2003494873

5. Taiwanese academician receives Humboldt Research Award

(Central News Agency, 11 02 2011)

Dr. Kopin Liu, a chemistry researcher at Academia Sinica, has been granted Germany's Humboldt Research Award in recognition of his lifetime accomplishments in research and teaching. Liu is the third Academia Sinica research fellow to receive the research award from the government-funded Alexander von Humbolt Foundation. Liu's research interests are mode-specific and bond-selective chemistry, state-to-state chemical dynamics and correlation and coherence in bimolecular/unimolecualr reactions. In addition to his post at the Institute of Atomic and Molecular Sciences at Academic Sinica, he has been a faculty member at University of Toronto, University of Minnesota, Georgia Institute of Technology, and the U.S. Argonne National Laboratory. Liu has won many awards in his academic career, which spans more than 30 years.

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6. French aeronautics students to visit Taiwan for exchange program

(Central News Agency, 16 02 2011)

A group of 30 graduate students majoring in aeronautical and space science from the Institut Polytechnique des Sciences Avancees (IPSA) , a five-year graduate school in Paris specializing in aeronautical and space studies, will travel to Taiwan at the end of February for a 4-month exchange program at Tainan-based National Cheng Kung University (NCKU). This year's group will be the largest his school has organized for an exchange program with NCKU since it first sent students to Taiwan in 2007. Two IPSA graduates have earned double degrees from IPSA and NCKU since then. In contrast to the enthusiasm of French students for overseas study, only one NCKU student has taken advantage of the exchange program to study in France.

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7. Eye drops shown to be effective treatment for cataracts

(Central News Agency, 16 02 2011)

Scientists from Taiwan's top research institution have been able to isolate the scientific chain reaction explaining why a commonly used eye drop helps cataract sufferers. A study by an Academia Sinica research team showed that a remedy used for nearly 60 years, eye drops containing pirenoxine (PRX), was effective in reducing opacity in cataracts. A cataract is cloudiness in the natural lens and often leads to vision impairment, especially among the elderly. The study found that PRX reduces opacity by binding to calcium and selenite, two minerals whose increased concentrations result in the loss of eye transparency. "The finding not only gives scientific support to the use of PRX in cataract treatment and but serves as a reference for biological studies," said Wu Shih-hsiung, the team leader and a distinguished research fellow at the institute. Taiwan has an estimated 120,000 cataract patients per year, and surgery is the most popular treatment in recovering blurry vision, but the researchers said the study could pave the way for the further use of PRX as a bona fide treatment for the condition. The study was published in the online edition of Inorganic Chemistry, one of the journals published by the American Chemical Society, on 7 December 2010.

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8. 15 Taiwan universities on German top 100 list for design

(Central News Agency, 16 02 2011)

15 Taiwanese universities have been ranked among the world's top 100 design schools by the Hanover-based International Forum Design (iF) , including the National Taiwan University of Science and Technology (NTUST),

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which grabbed the No. 2 spot. The ranking is based on student results from the iF concept awards over the past three years. The 2011 award drew close to 11,000 applications, 8,007 of which were admitted to compete for the coveted award. The contestants can win 20 points for their schools for each award-winning project. On the updated list, 26 are German schools, 25 are South Korean, 15 are Taiwanese, 15 are Chinese and the 19 others are from the United States, the United Kingdom, Canada, Switzerland, Denmark, Italy, Brazil and Indonesia. Besides NTUST, which won 340 points, the other Taiwanese schools to make the list include National Cheng Kung University (No. 11 with 100 points) , Shu-Te University (also No. 11 with 100 points) and National Taipei University of Technology (No. 15 with 80 points). Ming-Chi University of Technology and Shih Chien University were both ranked 22nd with 60 points each. Art Center College of Design, National Kaohsiung Normal University, National Taiwan Normal University, National Yunlin University of Science and Technology share 31st place with 40 points. Chaoyang University of Technology, Ling-Tung University, Ming Chuan University, National Chengchi University and National Chiao Tung University share 56th place with 20 points.

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9. NTUST clinches No. 1 iF Design ranking

(Taiwan Today, 17 02 2011)

NTUST's water battery-powered electric fan, blew the judges away at the iF concept awards. National Taiwan University of Science and Technology has clinched top spot in the latest academic institution rankings by Hannover-based International Forum Design. NTUST garnered 380 points to finish equal with South Korea's Samsung Art & Design Institute. The result is based on student iF concept award tallies over the past three years.
In addition, the university dominated the latest iF concept awards, bagging 14 of the 100 prizes on offer. Taiwan turned in an outstanding performance at the event, with 31 submissions winning recognition from a global field of 8,007, the most among 52 participating countries. Chen Shi-shuenn, NTUST president, said the university has represented Taiwan with aplomb at a number of international design competitions and will continue this trend by offering cultural and creative programs. A total of 14 NTUST submissions claimed prizes at this year's iF concept awards. Award-winning NTUST submissions include a crutch that always remains upright; a nest-shape magnetic paper clip repository; a water battery-powered personal fan; and a ruler that performs measurement conversions.
According to iF Design, 13 other Taiwanese universities ranked among its top 100 academic institutions. National Cheng Kung University, which finished 8th in the standings, won recognition for a pen-ruler combo that allows users to measure irregular curves.

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10. Taiwan research team wins top award at electronic design conference

(Central News Agency, 16 02 2011)

A Taiwanese research team has won the best design award with its invention of a dual-mode video decoder chip at the 16th Asia and South Pacific Design Automation Conference, held 25-28 Jan. 25-28 in Yokohama, Japan. The team, composed of professors and students from National Chung Cheng University and a professor from Feng Chia University, competed against 26 submissions from five countries, including Japan, China and South Korea, to win the top prize. The video decoder chip, which provides high-definition images, can decode and play any videos in H.264 and MPEG-2 format on high-resolution digital TV players, blue-ray DVD players, and online video streams. The decoder chip can also be used in smartphones to give mobile users a high quality audio-visual entertainment experience.

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11. Taiwan shows top-notch nanotech research at Japan exhibition

(Central News Agency, 16 02 2011)

Taiwan's achievements in nano-technology research were on display at the 10th International Nanotechnology Exhibition and Conference in Tokyo's Big Sight exhibition center. A 55-member group, led by physicist Wu Mow-kuen who is the head of a national nanotech research program, showcased 24 research results. The Taiwan pavilion has five sections introducing the Industrial Technology Research Institute, researcher training programs, and research in biology and medicine. On display at the Taiwan pavilion include organic nano fertilizers, nano materials capable of blocking electromagnetic waves, and aqua fuel cells. Also at the exhibition, scientists and researchers from Taiwan's leading research institute Academia Sinica, National Cheng Kung University and Tsing

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Hua University exchanged ideas with their counterparts from other countries.

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12. TSMC, NTU unveil 3-D TV chip breakthrough

(Taiwan Today, 17 02 2011)

The world's first 3-D TV chip produced using 40-nanometer process technology was announced 16 Feb by makers Taiwan Semiconductor Manufacturing Co. Ltd. and National Taiwan University. "The chip allows viewers, regardless of their position, to look at the image of an object from various angles, as if it is right in front of them," TSMC said. According to the company, current 3-D imaging techniques simulate what the human eye sees from different angles, but can only present images from fixed angles. This chip also has traditional high-definition and 3-D TV functions. Hsinchu-based TSMC, the largest contract chip-maker in the world, said NTU, Taiwan's leading university, is the first academic institution anywhere to be given access to its 40-nanometer process technology.

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13. Taiwanese scholar gains international computer education award

(Central News Agency, 23 02 2011)

Chen Wen-Tsuen, former president of National Tsing Hua University, has been named for an education award from a global organization of computer professionals. The information and communications technology scientist has become the first Taiwanese and the second ethnic Chinese to be granted the Taylor L. Booth Education Award by the IEEE Computer Society since 1989. The 62-year-old professor earned the award "for contributions to computer science education in Taiwan and worldwide, and for promoting computer networking education at all levels, " according to the IEEE website. In 1982, he designed the Taiwan Academic Network (TANet) , the first of its kind in Taiwan, paving the way for its public and commercial Internet use, the IEEE said. According to the IEEE, he has also made a great contribution to the popularization of ICT education in schools nationwide.

http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aALL&ID=201102230016

14. Taiwan unveils earthquake early warning system

(Taiwan Today, 23 02 2011)

A 2-story simulator in Taipei City is one of several facilities around Taiwan where the NCREE is testing its new earthquake early warning system. Taiwan's first on-site earthquake detection system that can issue warnings 7-27 seconds before a temblor strikes was unveiled 22 Feb by the National Center for Research on Earthquake Engineering. The new system, which boasts an 80 % accuracy rate in preliminary testing, uses generally harmless seismic energy waves generated during the initial stages of an earthquake to estimate the magnitude and arrival time of the event's destructive forces. NCREE Deputy Director C.C. Hsu said the system enables more timely warnings to be issued for those 30-50 km from the epicenter of a temblor. "We envisage this initiative will be incorporated into existing emergency evacuation procedures," he added. According to Hsu, the NCREE is continuing to evaluate the system and expects it will become operational after ascertaining long-term reliability rates.

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15. NCKU builds Taiwan's 1st futuristic classroom

(Taiwan Today, 23 02 2011)

National Cheng Kung University in Tainan City has built Taiwan's first futuristic classroom at a cost of NT$1.5 million. "The classroom is a creative space, a film studio and an information station," Wu Tien-yu, a member of the design team and a doctoral candidate at NCKU's Department of Architecture. "It was inspired by American architect Louis Kahn's notion that 'Schools began with a man under a tree.'" Named iStudio, the classroom is equipped with a real-time tagging system, which can record the lecture in class and immediately show the clip on the iStudio website. This allows students to add tags under the lecture or have other instant interactions with the instructor via the Internet, similar to Facebook functions. Other features of the classroom include multidirection furniture that can be moved freely for different instructional purposes and transformable smart whiteboards embedded with touch screens and sensors. iStudio measures about 39.66 m2 and can accommodate a maximum of 16 to 18 students.

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16. ITRI claims success in developing homegrown anti-cancer drug

(Taiwan Today, 23 02 2011)

The Industrial Technology Research Institute and Taipei Municipal Wan Fang Hospital's Department of Hematology and Oncology have developed the first domestically produced anti-cancer drug candidate, called ITRI-260. The know-how has already been transferred to Taipei-based TWi Biotechnology Inc. for eventual commercial production. Shau Yio-wha, general director of ITRI's Biomedical Technology and Device Research Laboratories, that this is the first time local researchers have been able to develop a new drug to treat acute myeloid leukemia from the design and synthesis of a series of chemical compounds. Hwang Chrong-shiong, head of the project, said there are currently no effective target drugs for AML, adding that the recurrence rate among AML patients who undergo traditional chemotherapy treatment is rather high. ITRI-260, on the other hand, has been shown to be highly effective against AML, Hwang said, noting that the drug should be available on the market within seven years.

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17. CMU researchers shed light on Kawasaki disease

(Taiwan Today, 24 02 2011)

Taiwan researchers have identified three gene regions that are likely linked with susceptibility to Kawasaki disease. The first KD genome-wide association study on an ethnic Han Chinese population was jointly carried out by Taichung-based China Medical University and a research team from Academia Sinica. Tsai Fuu-jen, head of the university's research institute, said that the team's findings could prove valuable in developing new drugs to treat the disease. KD is an acute systemic vasculitis syndrome that primarily affects children under the age of five. Symptoms include fever, rash, swelling and inflammation. Taiwan has the third-highest incidence rate in Asia, behind Japan and Korea.

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18. UK tech firm sets up research lab in Taiwan

(Taiwan Today, 24 02 2011)

Oxford Instruments PLC, a U.K.-based high-tech tool systems company, has partnered with Taiwan's Industrial Technology Research Institute in setting up a research center for light-emitting diodes. The joint lab will focus on wafer-level packaging processes and integrated micro-structure technologies for high-brightness LEDs.

http://www.taiwantoday.tw/ct.asp?xItem=153557&ctNode=445

19. Researchers discover fire ants origins

(China Post, 26 02 2011)

The National Taiwan University (NTU), in a collaborative study with U.S. and Australian researchers, announced a breakthrough in the history and spread of red imported fire ants (RIFA) as well as creating extensive files that help other countries invaded by the aggressive ants determine their origin. The study, supported by the U.S. Department of Agriculture, Taiwan Council of Agriculture and National Science Council of Taiwan, collecting 2,144 RIFA colonies at 75 geographic sites, was able to sequence the complete genome of the RIFA earlier this year and determine its origin. For the first time, the research team was able to map out the migration and invasion of the aggressive ants that was published in the latest copy of the journal "Science." According to Wu Wen-che, a professor at the NTU Department of Entomology, the aggressive ants originated from South America and by 1930s, had gotten a foothold in the southern areas of the U.S. By 1997, it had invaded the nation before the strong colony made its way to China, Taiwan, Australia and New Zealand. The tests showed that the ants arrived from the U.S. rather than South America, which makes the America a "springboard" for the spread of the pests. That discovery could help prevent further migration of RIFA as that origin allows biological controls to be more focused, shedding light on the monitoring of source areas or key transportation routes. The extensive genetic files allow newly discovered red imported fire ants in a previously RIFA-free country, a blueprint for comparison to determine where and to which colony they belong.

http://www.chinapost.com.tw/taiwan/national/national-news/2011/02/26/292536/Researchers-discover.htm