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Science, Technology and Education News from Taiwan
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- Academia Sinica, the island's highest research institute, released a statement on 14 August, saying that Taiwan is faced with a brain drain crisis and should revise current laws and regulations immediately to prevent more talented individuals from leaving the nation. Endorsed by 18 leaders from the academic, business and arts sectors, the Academia Sinica statement said factors such as stiff regulations and institutional inflexibility have resulted in "a net exodus of Taiwanese talents." To retain talented individuals, Academia Sinica called on government officials to abolish the current wage system, according to which educators and researchers are treated in the same way as blue-collar workers. Taiwan's pay scale for academics and specialists, already far below international standards, discourages talented researchers from working in Taiwan, it said. In addition to changing laws and regulations, Taiwan should rethink its immigration policy and work to create a comprehensive knowledge economy "that will help support the long-term development of talents and education."
- To retain excellent talents, the cabinet passed draft revision of the "basic law for science and technology," greatly relaxing restrictions on cooperation between academicians or researchers at public institutions and domestic enterprises. According to the draft revision, professors at public universities or researchers at government-sponsored research organizations will be able to serve as directors or supervisors of domestic enterprises. In addition, they will be able to own more than 10% stake in domestic enterprises using their technologies for investment. Meanwhile, public universities and government-sponsored research organizations will be able to manage, dispose, or transfer their technologies and intellectual properties, free from the restrictions of "national property law." The draft revision is the largest reform of the "basic law for science and technology" since its enactment 12 years ago and has been made in response to the suggestion of a number of leading academic institutions, calling for the provision of flexibility to their talents for business ventures, so as to retain domestic scientific and technological talents. It is hoped that the removal on the restrictions on domestic talents and commercialization of R&D results will be indispensable for a new wave of startups and the development of emerging industries in Taiwan.
- National Taiwan University (NTU) ranked in the 102-150 category of the top universities in the world, according to the Academic Ranking of World University (ARWU), released by Shanghai Jiao Tong University. Other rankings of Taiwan universities: 201-300 category: National Cheng Kung University; 301-400 category: National Chiao Tung University, National Tsing Hua University; 401-500 category: National Central University; National Yang Ming University.

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1. Taiwan researcher elected ISC vice chairman

(Taiwan Today, 04 08 2011)

Taiwan is poised to play a more prominent role in international oceanic fishery following the election of Sun Chi-lu to the position of vice chairman of the International Scientific Committee for Tuna and Tuna-like Species (ISC), according to the Fisheries Agency. Sun, professor at National Taiwan University's Institute of Oceanography, has been an active participant in the ISC for many years and is a key member of its billfish working group, the agency said. According to Sun, in recent years "Taiwan has transformed itself from an exploiter of oceanic resources to a protector."

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2. Taiwan's compulsory education set to change in 2014

(Taiwan Today, 04 08 2011)

Junior high school students will not need to take the nationwide basic competence test starting 2014, according to the Ministry of Education. Taiwan's 12-year compulsory education plan will be implemented in 2014 as scheduled. "The aim is to encourage the development of diverse senior and vocational high school programs, and reduce the pressure for academic advancement on students," MOE said. The plan includes exam-free enrollment for 75 % of all students in 15 school districts around the nation, plus specialty admission for 25 % wishing to attend schools with a particularly strong program, such as mathematics and science, fine arts, sports, nursing, computer science or music.

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3. Taiwan institute, U.S. lab sign MOU on energy technology

(Central News Agency, 05 08 2011)

Taiwan's Industrial Technology Research Institute (ITRI) signed a memorandum of understanding (MOU) with the Lawrence Berkeley National Laboratory (LBNL) on 5 Aug to further develop photovoltaic energy, large electricity storage technology, nano materials to capture carbon dioxide, green buildings, and water-related technology. Since 2004, the ITRI and the Berkeley Lab -- a U.S. Department of Energy Office of Science national lab that brings science solutions to the world -- have been making joint efforts to develop energy and nano technologies.

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4. Researchers at ITRI develop 'e-paper' that can be reused

(Taipei Times, 09 08 2011)

"i2R e-Paper" is paper, but not paper as we know it — not yet, anyway, its developers say. The product uses a thermal printer, the same kind as that used in fax machines. When the message is no longer needed, the paper can be erased with the flip of a switch — ready to be used up to 260 times. Researchers at the Industrial Technology Research Institute (ITRI), where the paper was developed, say it is the ideal replacement for the paper signs and posters that are now produced by the millions around the world. What makes the "i2R e-paper" stand out is its coating — a plastic film covered with cholestric liquid crystal, a type of liquid crystal structured similarly to cholesterol molecules. The compound does not require a backlight to print and can produce different colors. When connected to electricity, what's printed on the paper can be erased. There is also a modified printer that erases the paper by rolling it backwards. An A4-sized piece of the e-paper, which is already in production, costs about NT$60. Developers hope it will be available commercially within two years.

http://www.taipeitimes.com/News/taiwan/archives/2011/08/09/2003510314

5. Taiwan to host ground control for int'l space station experiment

(Central News Agency, 10 08 2011)

Taiwan will host the world's second, and Asia's first, ground control center of a cosmos research project called Alpha Magnetic Spectrometer (AMS-02) by June 2012. The AMS-02 project, launched by the U.S. Department of Energy in 1999 in cooperation with 15 other countries, is designed mainly to detect charged particles in cosmic rays to find anti-matter, dark matter and missing matter in the hope of answering the questions about the "big bang" and the

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formation of the universe.The module is attached to the International Space Station, but can be controlled from the ground.

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6. Taiwan-developed supersonic missile to go on display

(Central News Agency, 10 08 2011)

The Ministry of National Defense (MND) displayed its latest weaponry at the 2011 Taipei Aerospace and Defense Technology Exhibition (TADTE), 11-14 August. A total of 161 items either developed or newly procured were showcased. Hsiung-feng III (HF-3), or Brave Wind III, an anti-ship missile, was one of the many displayed items. It was wholly developed by the Chung-shan Institute of Science and Technology. The National Defense Pavilion, the largest pavilion, includes six major displays, including Weapons, Simulation Systems, R&D Achievements, the Military & Civilian Commonly Used Technology, Manufacturing and Repair of Military Products, and Recruitment.

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7. New variety of rice expected to revolutionize bread making

(Central News Agency, 10 08 2011)

The Tainan District Agricultural Research and Extension Station (Tainan DARES) unveiled a new variety of brown rice that was developed after seven years of research and cultivation. The embryo of the "Tainan 15" grain is three to five times bigger than in typical varieties of rice, which gives the new variety more gama amino butyric acid (GABA) content, the Tainan DARES said. GABA is believed to be a natural anti-oxidant that is beneficial to human health. The "Tainan 15" is also expected to revolutionize "rice bread," which is partially made from rice, the station said. Generally, rice flour can replace up to 30 % of wheat flour in bread, but with the "Tainan 15," up to 80 % of the mixture can be rice flour, according to Dennis Wang, head of the Tainan DARES. For pancakes, up to 85 % of wheat flour can be replaced with "Tainan 15" rice flour, he said.

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8. Academics collaborate with private sector to improve electric cars

(Central News Agency, 16 08 2011)

National Taiwan University's Department of Mechanical Engineering and Hua-chuang Automobile Information Technical Center Co. launched their cooperative research and development center for green electric cars. The center aims to integrate academic theories with actual development techniques to add more features to current electric cars, said Chang Shuo-Hung, professor of the department. Chang said the center will focus on installing an in-car PC system, which can integrate a navigation system with an entertainment set and synchronize with smartphones. It will also put effort into making cars more eco-friendly. At the launching ceremony, the center displayed an electric car prototype with a dashboard that shows the driver how much carbon dioxide the car reduced and how many polar bears were saved as a result. Professors from the department have come up with ideas such as pedestrian detection, collision warning system, and in-car temperature control, according to Chang. Chang said the future goal of the center is to realize those ideas and theories, making electric cars not only green but smart.

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9. Typhoon and flood research institute launched in Taichung City

(Taiwan Today, 18 08 2011)

The newly established Taiwan Typhoon and Flood Research Institute will develop better monitoring technologies and help government officials respond more effectively to weather-related natural disasters, according to its director, Lee Cheng-shang. TTFRI will serve as a platform between researchers and government agencies, and will initiate interdisciplinary projects on flood observation fieldwork, data collection and analysis. The institute is working with local universities and research institutes and the Central Weather Bureau to develop an integrated forecast system, together with core technology in meteorological and hydrological observation, numerical modeling, and hydrological analyses.

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10. Taiwanese researchers make nanotechnology breakthrough

(Central News Agency, 18 08 2011)

Researchers from National Tsing Hua University have made a discovery in nanotechnology that could advance techniques in preserving human stem cells, tissue and other biological samples, the leader of the team that conducted the research said. Team leader Chiang Yun-wei, an assistant professor of chemistry at the university, said the group discovered that mesoporous materials used as a chemical catalyst provide a better environment for the study of protein structures at extremely low temperatures than traditional materials. With the use of an advanced electron spin resonance (ESR) technique, the researchers found that biomolecular or protein structures are better preserved and more clearly observed in mesoporous materials than in traditional materials, said Chiang.They arrived at their conclusion after adding powder-form mesoporous materials into water in which proteins were being observed, and studying the interaction between the proteins and water molecules in the mixture. Even if the temperature is brought down to minus 223 degrees Celsius, the resulting water mixture remains in liquid form, leaving the protein structures undamaged, Chiang told. Protein structures and the interaction between proteins and water molecules are best observed at very low temperatures as they slow down molecular movements. Chiang said mesoporous material could be used in the future to improve techniques for preserving human tissue, including stem cells, or other biological samples, and help scientists preserve the samples for longer periods.
The research, conducted by Chiang and three of his graduate students, was published online 15 Aug on the website of the Proceedings of the National Academy of Sciences of the United States of America.

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11. Taiwan scientist observes species relocation with climate change

(Taiwan Today, 19 08 2011)

A Taiwanese scientist working with a U.K.-based research team has discovered that global warming has prompted animals and plants to shift habitats at a rate faster than previously predicted, Academic Sinica said. “Species are shifting to higher elevations at an average rate of 12.2 meters per decade, and to higher latitudes at a rate of 17.6 kilometers per decade,” said Chen I-ching, a postdoctoral researcher at the institute’s Biodiversity Research Center. The shift rate Chen has observed is much faster than that found in a 2003 study, which predicted an elevation shift of 6.1 meters and a latitudinal change of 6.1 kilometers per decade, she said. Using data collected over the past five years, Chen’s team reviewed habitat change data on more than 1,500 species in Europe, Southeast Asia and the Americas. The study also pointed out while 75 percent of the species show a tendency to relocate to cooler places, 25 percent have moved to areas of lower latitude or elevation. “This might have been the result of fierce competition or a response to drastic changes in rainfall,” she said. Results of the study were published online 19 Aug in the international journal Science.

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12. Taiwan develops roll-to-roll photovoltaic sputtering machine

(Taiwan Today, 22 08 2011)

Taiwan chalked up a significant breakthrough in solar cell manufacturing, following the unveiling of its first homegrown roll-to-roll sputtering machine, according to the Ministry of Economic Affairs. “The prototype will slash manufacturing costs by a third while satisfying international environmental protection standards,” MOEA officials said. According to the ministry, environmentally friendly roll-to-roll vacuum deposition systems are utilized worldwide by major manufacturers to apply photovoltaic coatings in a low-cost and efficient manner. The technology is rarely used in Taiwan due to the exorbitant cost of the machine and manufacturing process. MOEA officials estimate that the locally made device will cost NT$30 million and NT$80 per sputtered square meter; this compares to NT$600 million and NT$240 for comparable machines from abroad. Developed under a public-private sector program overseen by the MOEA, the roll-to-roll sputtering machine represents ongoing efforts to bolster Taiwan’s solar energy industry in the global market, officials said.

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13. Taiwan, US fast track patent application process

(Taiwan Today, 23 08 2011)

A Patent Prosecution Highway (PPH) agreement between Taiwan and the U.S. will take effect 1 Sept., enabling applicants to spend less time passing the other country’s patent examination procedures, according to the

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Intellectual Property Office (TIPO). TIPO officials said that under the PPH, applicants who have received a ruling of at least one patentable claim from either the U.S. Patent and Trademark Office or TIPO can request that the other office fast track examination of corresponding claims. According to TIPO statistics, the office received 78,425 patent applications in 2009. By nationality, Taiwan is the fourth largest patent claimant in the U.S., filing about 18,000 applications in 2008.
The PPH considers patent claims only when they are identical to or more restricted than what has been permitted by the patent authority in the other country. This stricter requirement means that the review process will be faster than under TIPO's current Accelerated Examination Program, with the time required expected to be slashed to under 80 days. Firms in information and communication technology and semiconductors are likely to benefit the most. TIPO pointed out, however, that an applicant receiving its or USPTO patent issuance under this project will not necessarily receive the corresponding patent from the other authority. The U.S. piloted a PPH project with Japan in 2006. The PPH with Taiwan is the 19th such agreement the U.S. has signed.

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14. Taiwan researchers discover protein that boosts cancer cell growth

(Central News Agency, 24 08 2011)

An Academia Sinica research team has identified a protein, called KLHL 20, that plays a key role in tumor progression, a discovery that could provide a new focus for future research into treating aggressive tumors. Research team leader Chen Ruey-hwa said the KLHL 20 protein was induced by a protein called HIF-1, a key target of cancer researchers. The link to HIF-1 is key, Chen said, because of KLHL 20's ability to form a complex with proteins Cullin 3 and Roc 1 that can cause degradation of the protein PML, a well-known tumor suppressor protein. "PML itself inhibits HIF-1. Thus, the HIF-1-induced PML degradation successfully relieves the inhibitory effect of PML on HIF-1," Chen explained. Tumor cells, Chen added, exploit this mechanism to amplify HiF-1 production in the early phase of hypoxia or low oxygen conditions, thereby aiding tumor progression. The study done by Chen's team has been published in the latest issue of leading cancer journal "Cancer Cell." The full article, called "A cullin3-KLHL20 ubiquitin ligase-dependent pathway targets PML to potentiate HIF-1 signaling and prostate cancer progression" can be found online at the Cancer Cell website at http://www.sciencedirect.com/science/article/pii/S1535610811002637

http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aLIV&ID=201108240008

15. Research station pioneers solar-powered insect traps

(Taipei Times, 25 08 2011)

A Council of Agriculture research station unveiled two new types of solar-powered insect trap that could help the agriculture sector. Lin Hsueh-shih, director of the council's Taitung District Agricultural Research and Extension Station (TDARES), displayed the traps at a press conference, during which the station's knowledge of the biological characteristics of insects and of agricultural machinery design were touted. Lin said the traps worked by generating electricity from a 20-watt solar panel on top of the device, adding that the electricity could be stored to power a light bulb at night. Because many insects tend to move toward a light source, different kinds of bulbs can attract the insects, Lin said. The two types of solar--powered traps differ in how they capture insects. The "drowning type" has a water sink under the light that drowns the insects and the "-suction type" sucks the insects into a net using a small fan.

http://www.taipeitimes.com/News/taiwan/archives/2011/08/25/2003511621

16. ITRI solar panel testing lab receives CEC accreditation

(Taiwan Today, 26 08 2011)

A photovoltaic testing laboratory in Taiwan is now fully accredited by the California Energy Commission, a milestone that would help Taiwan's solar panel manufacturers tap the North American market. "The Certification Body Testing Laboratory, which is run by the state-funded Industrial Technology Research Institute, became a one-stop domestic test and certification service provider that facilitates the process for Taiwanese solar panel manufacturers," the Ministry of Economic Affairs said. Taiwan is the world's second largest solar panel producer, behind only mainland China. The nation's solar energy companies generated NT$177 billion (US$6.1 billion) in revenues in 2010 with a total output of 3 gigawatts.

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17. Biotech Firms CBT and Maymufa Report Good News

(China Economic News Service, 31 08 2011)

Two Taiwanese biotech companies, Chunghwa Biomedical Technology Co., Ltd. (CBT) and Maymufa Company, Ltd., reported good news recently. CBT said that the European Medicines Agency (EMA) has completed its administrative validation for Ridaforolimus, an oral anti-cancer drug developed for metastatic soft-tissue or bone sarcomas in patients who respond favorably to chemotherapy. CBT supplies the API (Active Pharmaceutical Ingredients) of Ridaforolimus, which was developed by international pharmaceutical company Merck. The analysts pointed out that the market for the new drug is expected to reach US$350 million by 2015, and CBT will expand shipments of the new drug to Merck in 2012, with CBT to ship 20 to 50 kgs of the APIs to Merck by this year-end. CBT said that Merck also applied with the Food and Drug Administration (FDA) for Ridaforolimus validation, with the certification expected to be fast-tracked due to the new drug having proven very effective in clinical tests. The FDA validation should take two months and be completed by the end of this year, CBT said. To meet strong demand in China, Maymufa`s new shampoo factory in Taiwan recently became GMP/ISO 22716 certified to make cosmetics, with the new factory to multiply capacity by 10-fold to generate more business opportunities in China.

http://cens.com/cens/html/en/news/news_inner_37573.html