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[Biomaterials Conference](#) in Taipei; with the participation of *Thomas J. Svoboda, CTI start-up coach in Switzerland*, presenting the case of Elanix (in Nyon) - Transwell Biotech Co. Ltd. (in Taipei) on developing and manufacturing advanced cell treatments for burn victims.



(left to right) *Heng Yong-chie, director-general of the ITRI's International Center, Lin Hau-chu, MOEA section chief, Hans Fortuin, Dutch representative to Taiwan and Jost Feer, Swiss representative to Taiwan*, take a break from exploring joint opportunities at a biomaterial conference May 2 in Taipei City. (Courtesy of ITRI)

Taiwan's biomaterial sector is set for significant growth on the back of increased cooperation between Taiwan and Europe, according to state-backed Industrial Technology Research Institute. A key component of this two-way commitment was on show at a conference for biomaterials in Taipei City, where government officials and business leaders from Taiwan and Europe shared experiences in promoting joint partnerships. Organized by Hsinchu-based ITRI, the event succeeded in bringing local firms up to

speed on global market developments. It also spotlighted Taiwan's need to fast-track R&D and product certification processes by leveraging cross-border collaboration and resource integration. According to the ITRI, Taiwan's biomaterial sector output is roughly NT\$80 billion per year, with the majority of participants being small and medium enterprises. "Taiwan and Europe are a perfect match given their respective advantages in innovation capability and technological expertise," said Heng Yong-chie, director-general of ITRI's International Center. Since 2008 the ITRI has helped promote 15 joint research projects between organizations from Taiwan and Europe, and assisted 20 local firms in tie-ups with their eurozone counterparts. Elanix and Transwell Biotech Co. Ltd., a Taipei-headquartered outfit, teamed up with the Swiss Commission for Technology and Innovation (CTI) on developing and manufacturing advanced cell treatments for burn victims. "These successful experiences have shifted local sector development into top gear while serving as multinational collaboration models for other emerging sectors around the island," Heng said. +link: "[Taipei tech show to have stronger Swiss presence](#)"; Want Want China Times;

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1. Chunghwa, Intel team up on cloud computing

(Taiwan Today, 03 05 2012)

Preliminary results from a joint research project suggest that electricity usage at cloud computing storage centers can be cut by as much as 15 percent, Lu Shyue-ching, chairman and chief executive officer of Chunghwa Telecom Co. Ltd., said May 2. Lu made the announcement at a news conference showcasing the fruits of a collaborative venture between Chunghwa, Taiwan's largest Internet operator, and U.S. chipmaker Intel Corp. "Our company began cooperating with Intel in October 2010. Over the past 18 months our partnership has proven fruitful, and we have made some major breakthroughs in the fields of energy conservation and data management," Lu said. According to the CEO, the two parties have set up a facility at a Chunghwa data center aimed at increasing processing capacity. A handful of experiments have been conducted to test the energy savings and heat dissipation capabilities of Intel's cloud computing technology. Chunghwa figures show that electricity usage rates at cloud computing centers can be reduced by between 5 percent and 15 percent. The technology being tested can also help to conserve energy at cloud computing centers in the case of a blackout, Lu said. Other joint projects on data verification and greener cloud data computing centers are being carried out as well, company officials said. Jason L. S. Chen, country manager for Intel Taiwan, also took part in the news conference, saying Intel was pleased with its partnership with Chunghwa. "In the future we expect to forge closer ties with Taiwan's information technology industry and to jointly pursue competitiveness in the global hardware and software service markets," he added. During the news conference Chunghwa also noted that it joined the Open Data Center Alliance in 2010. By becoming a Contributor Member of the ODCA, Chunghwa will be able to play a more significant role in shaping future cloud computing standards, Lu said.

<http://www.taiwantoday.tw/ct.asp?xItem=190086&ctNode=445>

2. Universities in Southern Taiwan Team Up to Explore Human Mind

(MEPO Forum, 03 05 2012)

Tainan-based National Cheng Kung University (NCKU) announced recently that the universities at southern Taiwan will team up to explore human mind and behavior with the help of functional magnetic resonance imaging (fMRI) technology. With the technology, which allows researchers to decode brain activity, scientists may one day be able to read and interpret the inclination of human behavior. The study of brain mapping with fMRI will be employed in humanities and social sciences from legal, economic, psychological, and political perspectives to explore the relationship between human mind and behavior, according to College of Social Sciences, NCKU. Dr. Chih-Chin HO, NCKU Vice President and Dean of College of Social Sciences, said MRI has never been applied to the behavioral science and NCKU College of Social Sciences has attempted to apply the technology to verify human behavior. Behavior analysis and experiments could be helpful in the formulation of public policy, HO added. By the application of fMRI, personal data will be collected, analyzed, evaluated and filed according to gender, age, educational level, personal work experience, and even blood type, calligraphy, as well as living habits more efficiently and precisely than ever, according to HO. The application of fMRI to human behavior analysis may be extended to investigate the differences of brain activities between tax payers and tax evaders and the findings may help policy makers to detect the inclinations of a tax evader, added Ho, former minister of finance and a renowned tax expert. In addition, the findings may not only assist the government in the design of fiscal policy and tax collection mechanism but also indirectly contribute to increasing national revenue. On the rise of brain and mind sciences, a research lineup among universities at southern Taiwan, including National Sun Yat-sen University, National Chung Hsing University, National Chung Cheng University, China Medical University, Kaohsiung Medical University and National Changhua University of Education granted by National Science Council, has set up the first Mind Research and Imaging Center (MRI Center) at NCKU to promote neuroscience research for social science researchers in southern Taiwan. A state-of-the-art 3 Tesla MRI scanner and fMRI devices will be set up by the summer of 2012 to conduct brain and mental science research, according to MRI Center.

<http://web1.nsc.gov.tw/techwp.aspx?id=1010430012&ctunit=208&ctnode=287&mp=7>

3. Taiwan, France team up on robotics research project

(Central News Agency, 04 05 2012)

The National Taiwan University (NTU) and three of France's top research institutes have teamed up to develop intelligent robots over the next five years, university officials said. NTU President Lee Si-chen announced the plan at the inauguration ceremony for an international center for intelligent robotics and automation research, which was established by the two sides at the Taipei-based university. Explaining the reasons for setting up the center, Lee said universities should aim "not only to produce papers, but also to solve social problems" and cooperate with industries to carry out their creative ideas. The establishment of the center not only heralds a more integrated academic cooperation between Taiwan and the European Union, but also closer ties between universities and industries, Lee added at the event that was attended by Vice President Vincent Siew. The five-year project will be funded by NTU,



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Taiwan's National Science Council, the French National Center for Scientific Research, the French National Institute for Research in Computer Science and Control, and Universite Pierre et Marie Curie. Twenty five companies and local research institutes have also signed agreements to cooperate with the center to develop intelligent robots, and NTU hopes to expand the number to 50 by the end of the year, said project director Luo Ren-chuan. The project will focus on developing the various technologies required to build intelligent robots for manufacturing, medical care and services needs, Luo said. He said robots can also be used to perform highly dangerous or dirty jobs. He said the technologies will aim to strengthen the perceptive, cognitive, learning, adaptive, control and planning abilities of robots, as well as their ability to interact with human beings. Luo added that he hopes Taiwan can become an important center in the world for the design, making and use of intelligent robots by 2020. "It's really a major event. We are taking the relationship between France and Taiwan a big step forward," said Olivier Richard, director of the Bureau Francais de Taipei. "I hope this example will be followed not only for the sake of the advancement of human knowledge, but also to show that common laboratories between Taiwan and France, Taiwan and Europe are possible, feasible and also desirable," said Richard. Raja Chatila, deputy director of the Institute for Information Sciences and Technologies under the French National Center for Scientific Research, said he is optimistic about the future development of the center. Through the cooperation, Chatila said that he believes "this center will soon become one of the world's major centers for robotics," aiming toward novel scientific research and application. Meanwhile, Vice President Vincent Siew said the establishment of the center is not only good news for NTU, but also for Taiwanese companies. He said Taiwanese firms will have to upgrade their technologies if they wish to transform, therefore robotics and automation technologies could be important to these companies in the future.

http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aALL&ID=201205040017

<http://www.chinapost.com.tw/taiwan/national/national-news/2012/05/05/340080/Taiwan-France.htm>

<http://www.taipeitimes.com/News/taiwan/archives/2012/05/05/2003532055>

4. Researchers identify key protein causing premature aging syndrome

(Central News Agency, 08 05 2012)

Researchers from the United States, Singapore and Taiwan have identified a protein on the membrane of a cell's nucleus as a trigger of premature aging syndrome, shedding light on the century-old search for a cure for those who suffer from the rare genetic mutation. Chi Ya-hui, one of the Taiwanese researchers involved in the discovery, told CNA Monday that when the protein, known as Sun1, was disturbed during laboratory experiments on animals, the lifespan of mutant mice was 2.5 times longer than normal. Chi, an assistant researcher with Taiwan's National Health Research Institutes, explained that the lifespan of a normal laboratory mouse is around 24 months, but a mutant mouse suffering from premature aging syndrome can only live for about 41 days. But after inactivating Sun1 and reducing Sun1 levels in the mutant mice being tested, researchers found that their lifespans were prolonged to 104 days, she said. There were also signs of improvement in cardiovascular and bone problems that are common symptoms of the premature aging syndrome, called Hutchinson-Gilford progeria syndrome (HGPS), from which patients usually die in their early teens of a heart attack or stroke. Children who suffer from the syndrome, first discovered in 1886, have an average lifespan of 13 years, with the oldest HGPS sufferer known to the world having died before turning 26. According to Chi, there have been only 70-plus cases of the syndrome reported around the world, and none in Taiwan. U.S. scientists found in 2003 that premature aging syndrome results from the gene mutation of the protein lamin A found in the inner nuclear membrane. But the scientists at the U.S. National Human Genome Research Institute were unable to find out what triggers the mutation that leads to physical degeneration in children. The researchers in the latest study were the first to test if a link existed between Sun1 and lamin A, and Chi said the results of the study confirming the link could theoretically lead to new drugs being developed based on Sun1 characters to slow down the normal aging process in humans. The study's findings were published in the prestigious U.S. journal, Cell, on April 27.

<http://www.taiwanheadlines.gov.tw/ct.asp?xItem=266219&CtNode=9>

5. National lab center aims to boost Taiwan's innovative research power

(Central News Agency, 08 05 2012)

Taiwan's National Applied Research Laboratories said it will play a key role in the country's transition to an innovative economy due to its cutting-edge research credentials. Chen Liang-gee, president of the state-run laboratories who took office on May 1, said that Taiwan has been good at creating low-cost and high-performance products based on its production efficiency. With the rapid progress of information technologies, however, Taiwan needs to transform itself into an "innovative economy" to catch up with the global changes, he said. "I say to my students that I am like a farmer who grows and places value on things on a technology farm, such as the research I did in the past on integrated circuit design," Chen said at a media briefing. "To some extent, our institute plays the role of being a technology farm," added Chen, who is also an electrical engineering professor at National Taiwan University. Chen



expected his institute would be able to compete against research teams in other countries in the field of cutting-edge technologies, as well as create technologies that would benefit Taiwan's society and domestic companies. Established in 2003, the laboratories are made up of 11 research centers covering nano devices, earthquake engineering, aerospace design, high-performance computing, chip implementation, instruments, technology policies, disaster reduction measures, and ocean, typhoon and flood projects.

<http://www.taiwanheadlines.gov.tw/ct.asp?xItem=266275&CtNode=9>

6. Student wins award for anti-cancer research

(Central News Agency, 10 05 2012)

Wan-Pei Su, a graduate student of Molecular Medicine at National Cheng Kung University (NCKU), southern Taiwan, has received a Graduate/Postdoctoral Travel Award from the American Society for Biochemistry and Molecular Biology (ASBMB) to attend the annual conference on Experimental Biology (EB) in San Diego in April 2012. NCKU President Hwung-Hweng Hwung congratulated Su and her advisor, Dr. Nan-Shan Chang, director of NCKU Institute of Molecular Medicine, for winning international recognition. "It is expected that the efforts put into the research will benefit the future clinical application," said Hwung. Prof. Chang has been devoted to the discovery and development of the tumor suppressor WW domain-containing oxidoreductase (designated WWOX, FOR or WOX1). Zfra is one of the proteins which interact with WOX1. Su has carried on Chang's research findings to anti-cancer mechanism. Su is awarded for her research paper titled "Self-polymerizing Zfra peptides elicit immune response for targeting cancer" where the function of Zfra in anti-cancer therapy is investigated. Zfra was first cloned by Dr. Chang's group at the Guthrie Research Institute, Sayre, PA, USA in 2005, according to Su, and the role of Zfra in tumor necrosis factor signal pathway has aroused attention since then. The most remarkable function of Zfra is its prevention of growth of skin cancer basal cell carcinoma, melanoma, prostate cancer, breast cancer and so on. "It is foreseeable that Zfra can be used as a vaccine against all kinds of cancers," said Su. Of all the 195 award recipients this year, mainly from North America and only 13 from Asia, 2 awardees come from Taiwan. The ASBMB, founded in 1906 and now based in Maryland, is a prestigious, nonprofit scientific and educational organization with over 12,000 members. Many of them are highly regarded scientists, including Nobel laureates. ASBMB manages the publication of premier journals such as Journal of Biological Chemistry, Molecular & Cellular Proteomics, and Journal of Lipid Research.

<http://www.taiwanheadlines.gov.tw/ct.asp?xItem=266532&CtNode=9>

7. Atomic-scale Visualization of Cooper Pairing in Iron Superconductors Supports Magnetic Pairing Theory: Academia Sinica

(MEPO Forum, 10 05 2012)

Scientists from an international team including Dr. Tien-Ming Chuang, Assistant Research Fellow at Academia Sinica's Institute of Physics have recently provided direct evidence supporting theories that magnetism holds the key to the ability of superconductors to carry current with no resistance, strengthening confidence that this type of theory may one day be used to design superconductors that operate at room temperatures. The findings were published in *Science* on May 4, 2012. High-temperature superconductors fascinate both scientists and engineers as they carry current with no loss at temperatures as high as -110° Celsius, close to the lowest temperature recorded on earth (-90° Celsius in Antarctica) hinting at possible applications in energy-saving technologies. Conventional superconductors must be chilled to near absolute zero (0 kelvin, or -273° Celsius). In superconductors, electrons form cooper pairs and move through the crystal lattice without resistance. By measuring how strongly cooper pairs are bound together in an iron-based superconductor, the scientists have provided direct evidence supporting theories that state magnetism holds the key to this material's ability to carry current with no resistance. The measurements take into account the directions in which the electrons are traveling, which was central to testing the theoretical predictions, thereby strengthening confidence that this type of theory may one day be used to identify or design new materials with improved properties - namely, superconductors operating at room temperature. The physics of high temperature superconductivity has confounded scientists over the last 30 years. It is generally believed that the magnetically mediated electron-electron interaction of these materials is the key. When iron-based superconductors were discovered in 2008, this idea received a big boost because their parent compounds exhibit similar magnetic properties as their copper-based counterparts. However, determining that role is a very complex problem. In each iron atom there are five magnetic electrons. In order to find out if the magnetic interactions between electrons are generating the superconductivity, it is necessary to measure what is called the anisotropic superconducting energy gap, which can tell scientists the binding strength of cooper pairs along different directions in momentum space. Many theorists have developed different versions of a theory predicting what the measurements should be if magnetism were the pairing mechanism for superconductivity. The researchers' method, multi-band Bogoliubov quasiparticle scattering interference, found the "signature" predicted by the theorists. "Although theorists predicted the existence of superconducting gap anisotropy, it's difficult to calculate how large this



effect is. Our measurements not only agree with the theoretical prediction but also provide theorists with crucial information towards a more quantified description." said Dr. Chuang. The next step is to use the same technique to determine whether the theory holds true for other iron superconductors. If those experiments show that the theory is indeed correct, the model could then be used to predict the properties of other elements and combinations - and ideally point the way toward engineering new materials and higher-temperature superconductors.

<http://web1.nsc.gov.tw/techwp.aspx?id=1010510002&ctunit=208&ctnode=287&mp=7>

8. Taiwan Makes Breakthrough on Substitute for Valuable Herbal Medicine

(Central News Agency, 14 05 2012)

A university in central Taiwan has developed a technology to cultivate a substitute for a valuable worm-like Chinese medicine that could have a NT\$600 million (US\$20.32 million) global market, according to a professor at the school. The substitute, called "cordyceps militaris," could be produced in large quantities using the technology to replace the rare Chinese worm-like medicine, known as "cordyceps sinensis," said Tai-hao Hsu, Head of the College of Biotechnology and Bioresources at Da-Yeh University in Changhua County. The fungus "cordyceps sinensis," called Tung Chung Hsia Tsao in Chinese, has long been used in traditional Chinese medicine and is quite rare because it is only naturally grown on highlands 3,000-5,000 meters above sea level. The yields of Tung Chung Hsia Tsao, which has a global market of NT\$60 billion, have dropped significantly since the worm-like fungus was dug up on a massive scale, leading to a substantial increase in its price, Hsu said. Hsu said at a press conference May 14 that cordyceps militaris was the most common substitute for cordyceps sinensis, and one of its ingredients has been used in medicine that treats cancers. He explained that the research team discovered an LED spectrum combination that was most suitable for growing the fungus substitute. The selling price of the substitute is lower than the traditional substance, and scientific records have proved its effectiveness, which should help it gradually take over the market of the traditional worm-like Chinese medicine, Hsu said.

<http://web1.nsc.gov.tw/techwp.aspx?id=1010515001&ctunit=208&ctnode=287&mp=7>

9. Tech universities unveil newest inventions

(Central News Agency, 15 05 2012)

A gas mask made with the use of nano-gold catalyst technology was among 12 new inventions unveiled by the Ministry of Education to highlight the results of research and development cooperation projects among nine technology colleges. The nano mask, which can convert a poisonous gas into a harmless one, was invented by a team led by Su Chao-chin, an associate professor at the National Taipei Technology University Department of Molecular Science and Engineering. Su said the nano gold catalyst used in the mask was obtained from gold wires in recycled electronic products and then processed into catalysts, which is known as nano-gold technology. The technology can transform poisonous carbon monoxide into carbon dioxide, which means the mask is suitable for use by motorcyclists on the road or by firefighters, Su explained at a press conference. The mask is patented and will be commercialized as a gas mask in the future, Su added. Other inventions include the nation's first air pollution detecting drone designed by a Fooyin University professor Char Jir-ming. The drone can detect particles in the air, including ozone or pollutants such as nitrogen dioxide, while in flight. Another invention showcased was Chienkuo Technology University's energy saving bicycle, which unlike most bikes can move forward even when the rider is back peddling. The bike which uses an energy saving device that stores energy from peddling can help cyclists save energy as it increases the bike's gradeability by 20 percent, said Jan Fu-she, assistant professor at the university's Department of Automation Engineering and Institute of Mechatronoptic Systems. The research team is already collaborating with manufacturers to have the bike mass produced by the end of this year, Jan said. An interactive rehabilitative grip device designed by Horng Mong-fong, an associate professor at National Kaohsiung University of Applied Sciences Department of Electric Engineering, was also displayed. Hung said the device is equipped with a wireless micro sensor that can control the grip of patients in rehabilitation. It is hoped that physical therapy centers in the future will be equipped with cloud technology, which will allow online viewing of patients rehab progress, Hung added.

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10. Tainan university signs technology transfer deal with Danish company

(Central News Agency, 15 05 2012)

National Cheng Kung University (NCKU) has signed a deal to provide technology related to a potential new osteoporosis drug to pharmaceutical company Novo Nordisk A/S for a payment of US\$13.3 million if the project is successfully completed. The amount was the highest ever for the transfer of technology developed by a Taiwanese



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academic institution, the university said. The signing ceremony, held in Taipei, was attended by Education Minister Chiang Wei-ning, NCKU President Hwung Hwung-hweng, the head of the research team, professor Chang Ming-shi, and representatives from the Danish company. Novo Nordisk said the new drug is now entering the latter part of phase two clinical trials, and phase three trials, involving more widespread testing on humans, will begin in two or three years. "If all goes well, chances are good that it will hit the market in five or six years at the earliest," a company representative said. The university said the new drug, if passes clinical trials, could dramatically improve the treatment of osteoporosis and reduce side effects. The new drug is based on the research team's discovery last year that a protein secreted by the immune system, called interleukin-20 (IL-20), can trigger osteoporosis if it overproduced. The team found that IL-20 stimulated the formation of bone cells called "osteoclasts," which promote a decrease in bone mass. In tests on mice showing symptoms of osteoporosis, the team found that giving the mice IL-20 antibodies protected the animals from osteoporosis and increased their bone density. The study was the first time a link between IL-20 and osteoporosis had been explored, and it drew a lot of attention in academia and the biotechnology industry when it was published in the Journal of Experimental Medicine last September. Should the drug prove effective, it would have a lucrative market. An estimated US\$8 billion per year is spent on medication to treat osteoporosis around the world, and the amount is expected to rise to US\$8.8 billion by 2015. Education Minister Chiang hailed the technology transfer, noting that it is rare for Taiwan to develop new drugs and saying it represented a major stride forward for research programs at Taiwan's major universities

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11. National Science Council establishes center for climate change research

(FTV Formosa News, 16 05 2012)

The National Science Council formally established its new Climate Change Lab on 16 May. The lab will analyze potential climate-related disasters, to serve as another disaster prevention tool in a time of increasing extreme weather events. Inspiration for the new Climate Change Lab comes from global warming and its effects on the weather. Scientists want to minimize damage. According to Chen Chien-jen, Academia Sinica, climate simulation (models) are already quite complex, but there is still room to improve. Countries around the world are establishing climate research centers and devoting significant resources to aid long-term development. Taiwan has little land and a large population with high mountains and water shortages. It also faces complex changes due to monsoon winds and typhoons. According to World Bank data, Taiwan is one of the places most affected by natural disasters. Taiwan has an island climate. Pacific currents pass, making it susceptible to climate change. The establishment of this climate change laboratory represents many years of cooperation between domestic and international meteorological agencies. It also allows for better data regarding the formation of typhoons and better prediction models regarding rainfall and the path of typhoons. Hsu Huang-hsiung, Center for Environmental Changes, said this model gives you the ability to create your own typhoon. Future typhoon-related features can then be simulated. The National Science Council's ability to simulate extreme weather could turn out to be useful in protecting life and property, as well as the people of Taiwan.

<http://englishnews.ftv.com.tw/read.aspx?sno=FD064D0015047B6FC52D7F298B446740>

12. ITRI inks green energy pact with Dutch center

(Taiwan Today, 17 05 2012)

The Industrial Technology Research Institute, one of Taiwan's leading scientific centers, has signed a memorandum of understanding with the Energy Research Center of the Netherlands to develop green energy applications. The document was inked May 10 in the Netherlands by Liu Chen-pang, deputy director-general of ITRI Green Energy and Environment Research Laboratories, and Harm Jeeninga, director of ECN Program Development. ITRI President Shyu Jyuo-min, Guus Broesterhuizen, director of the Netherlands Patent Office, and Wu Ming-ji, director-general of the Department of Industrial Technology under the ROC Ministry of Economic Affairs, also attended the ceremony. "Energy is urgently demanded by many areas in the world, especially Asia," ECN Managing Director Paul Korting said. "So we are glad to have this chance of working with ITRI to develop renewable energy." According to Tong Chiang-hsiung, director-general of ITRI laboratories, the two institutes will kick off several research projects on wind power, carbon capture and biomass energy. Another joint project will be for them to integrate resources to develop green applications, he added. "In addition, ITRI will initiate a researcher exchange and information sharing program with the ECN in the future, which will help build up the technological strength of both sides," he added. Officials from the MOEA said that ECN expects the relationship to offer a strategic entrance for European companies into Asia and foster their competitiveness in the region. In 2010 ITRI transferred a total of 423 technologies to 491 firms at home and abroad, the officials said.

<http://www.taiwantoday.tw/ct.asp?xItem=190746&CtNode=419>



13. Taiwan unveils new orchid species for use as Chinese medicine

(Central News Agency, 23 05 2012)

The Council of Agriculture (COA) on Wednesday unveiled a new orchid species for use in traditional Chinese medicine, saying it took eight years to breed and contains high levels of polysaccharides that are good for people in chemotherapy. The Golden Emperor No. 1, a crossbreed between dendrobium tosaense and dendrobium stem, contains more polysaccharides than the premium orchid species dendrobium huoshanense that originated in China's Anhui Province, the council said. Polysaccharides play a role in stimulating the immune system and can aid the recovery of patients in chemotherapy, said Wen Chi-luan, a research assistant at the council's Taiwan Seed Improvement and Propagation Station. Patients recovering from eye surgery can also benefit from polysaccharides, as they activate the retinal cell layers, Wen said. Golden Emperor No. 1, to be mass produced soon, will take only two years to grow and will yield 8 to 12 grams of dried polysaccharides annually, he said. In other words, the new species matures in half the time as the premium orchid species dendrobium houshanense and its yield is five times higher, Wen added. One of the most expensive types of orchids in Chinese medicine, 600 grams of dried dendrobium huoshanense herbal medicine can cost NT\$8,900 (US\$300). Dendrobium orchids are recorded as a high class Chinese medicine, similar to ginseng, in the traditional Chinese medical journal "the Divine Farmer's Herb-Root Classic," which was written by legendary ruler Shengnong some 5,000 years ago, Wen noted. Some medical uses of dendrobium orchids recorded in the journal include a cure for dryness, thirst and inflammation, protection of the stomach, cleansing of the liver, and improvement of eyesight, Wen said.

http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aALL&ID=201205230047

14. Taiwanese scientist wins Nikkei Asia Prize

(Central News Agency, 23 05 2012)

Academia Sinica President Chi-Huey Wong, a world leader in carbohydrate chemistry, was awarded the Nikkei Asia Prize for his research in glycochemistry, which will help with the development of new vaccinations and medication against various diseases, including cancer. Wong won in the science, technology and innovation category of the prize, which was established by Nikkei Inc., a leading Japanese media group specializing in business news. The award carries a prize of NT\$1.11 million (US\$37,565). The 63-year-old, who has been studying glycochemistry for over 30 years, was honored for his discovery of new ways to synthesize glycoproteins and complex carbohydrates that will have applications in biology and medicine. Wong said he discovered that carbohydrate molecules on the surface of cells are associated with various diseases, particularly cancer, infectious diseases and immune disorders. He said knowledge of the differences between the molecules in healthy and diseased conditions can help develop new vaccinations and medication against these diseases. One cancer vaccine, developed using the synthesizing technique developed by his research team, is currently in the final stages of clinical trials in the United States, South Korea, Hong Kong and Singapore, Wong said. The vaccine will be first used to treat breast cancer and later applied to eight different types of cancer, Wong said at the award ceremony in Tokyo. Wong was the sixth Taiwanese to win the Nikkei Asia Prize. "It's comforting to know that Taiwan's technology-related research has won recognition, but researchers still have to think harder about how their work will contribute to society or the economy," he said. Wong has received the International Carbohydrate award, the American Chemical Society Claude S. Hudson Award, among others, and was elected to the U.S. National Academy of Sciences in 2002. Tomoya Ogawa, an internationally recognized leader in the field of chemical synthesis of oligosaccharides and glycoconjugates, lauded Wong's achievement as one of the best in the world. "Wong has won many awards. I'm afraid the only award that Wong has not received is the Nobel Prize," said the director of the Wako Institute at RIKEN, a large natural sciences research institute in Japan. The Nikkei Asia Prize, which honors non-Japanese Asians who have contributed to enhancing the welfare of the people in the region, has two other categories--regional growth and culture. The winner of the first category this year was Yang Yong of China for his work on the country's ecosystems and environmental conservation, while Sri Lankan Sybil Wettasinghe won in the second category for her children's books on the country's cultural diversity and natural beauty.

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15. Sniffer dogs successfully detect sick trees

(Central News Agency, 23 05 2012)

Sniffer dogs trained by a university in southern Taiwan successfully sniffed out brown root rot disease in trees Wednesday, a feat that the trainer described as unprecedented anywhere else in the world. Brown root rot disease, caused by *phellinus noxius*, was reported to be affecting trees in Chung Shan Park, Pingtung County, in the south of the country. The park officials then asked National Pingtung University of Science and Technology to use its trained dogs to help find out exactly how many trees were infected. Chi Wei-lien, the dogs' trainer, brought two beagles to the park that morning and led them around each tree. When the dogs detected a sick tree, they would sit down on the



infected roots and wait for Chi to give them food treats as a reward. "Within only six seconds, the dogs were able to sniff out the location of the brown root rot," Chi said, adding that there have been no reported cases from abroad of using sniffer dogs to detect brown root rot disease. He explained that the idea came from the dogs used by truffle hunters to sniff out the valuable underground fungus. From this, he correctly inferred that every type of fungi, including *phellinus noxius*, has a distinct scent. He then started training three beagle bitches aged around five, using *phellinus noxius* grown in the lab. Vigor and a fondness for eating are the basic requirements for selecting dogs suitable for the task, he said. With over 1,000 trees in the park, Chi said he expected to take about three days to finish examining all the trees. Pingtung Magistrate Tsao Chi-hung also went to the park to find out how many trees were infected with the disease. He noted that the sick trees must be brought down in case they collapse suddenly upon people using the park. Officials from the county's Public Works Department expressed hope that the dogs will help them find out which trees are infected before the disease runs rampant in the park.

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16. Taiwan professors become correspondent members of Russian academy

(Central News Agency, 24 05 2012)

Two professors from National Taiwan University of Science and Technology (NTUST) were recently selected as correspondent members of Russia's International Academy of Engineering, according to a university press release published. Lin Chyi-yeu, professor with the university's Department of Mechanical Engineering, and Liaw Der-jang, professor with the Department of Chemical Engineering, were chosen by the academy at an annual general meeting last month in Moscow. Samuel Yin, president of the Taiwan Chapter of the International Academy of Engineering, led a Taiwanese delegation to the meeting. The International Academy of Engineering and the Russian Academy of Engineering were formerly collectively known as the Soviet Union Academy of Engineering, which was ranked with the United States' Academy of Engineering and China's Academy of Engineering the world's top three engineering organizations, stated the NTUST press release. Internationally renowned academic Boris Vladimirovich Gusev currently heads both Russian academies. The Russian academies are known globally as applied science research institutions with a similar standard to other well-known international organizations, such as the United States' academy and the United Kingdom's Royal Academy of Engineering. The International Academy of Engineering plans to strengthen regional development in the future, especially in East Asia, Eastern Europe and Central Asia, stated the university press release, which added that Taiwan will be the academy's main cooperation partner in East Asia. The statement also noted that the international academy plans to promote interactions with Taiwan's engineering industry

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17. Taiwan-developed robotic English teacher makes its debut

(Central News Agency, 25 05 2012)

A locally developed and manufactured robot that has been programmed to teach English made its debut on the opening day of the 15th International CALL Research Conference at Providence University in Taichung. The robotic English teacher has a "large doll head" and arms and a body that are able to make movements based on the dialogues being taught in an English class. Vivian Wu, one of the robot's designers and an associate professor of English language, literature and linguistics at Providence University, said the robot's appearance can be modified based on the nature of the language program it is being used for. The robot's current design caters to interactive dialogues with elementary school students, Wu said. Programmed to teach English in coordination with textbooks, the robot is aimed at allowing young students to learn to speak English in a stressless environment and in a fun way, she added. The robot has already been used to teach at remote elementary schools in Yunlin County, and the results were promising, she said. The robotic English teacher -- the first of its kind in Taiwan -- was developed and manufactured in cooperation with National Formosa University in Yunlin County, Wu said. The biennial international conference on research in computer assisted language learning (CALL), which was being held in Taiwan for the first time, attracted the participation of more than 200 domestic and foreign scholars and experts.

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18. NCKU Research Center to Promote Organic Crops

(MEPO Forum, 25 05 2012)

A Refined Agriculture and Biological Resources Research Center was set up at National Cheng Kung University (NCKU), southern Tainan, on May 14th for the certification of plant molecular varieties and the promotion of organic cultivation. NCKU President Hwung-Hweng Hwung pointed out that with the establishment of the center in accordance with the agricultural policy of Tainan city government, NCKU will take the social responsibility to work with the local government to promote the examination system for organic vegetables and provide safe and non-toxic



organic products to the public. According to professor Tzen-Yuh Chiang, Chairperson of NCKU Department of Life Sciences, Taiwan's agronomic technology is competitive in the world but a lack of origin certification and variety rights is confining the products to the domestic market. The mission of the center is to promote trilateral cooperation among the industry, the government and the academic, Chiang noted, adding the alliance will make efforts to apply Life Science to refined agriculture and to exploit biological resources. The center, equipped with a molecular laboratory for analyzing products to grant certification, has applied molecular genetic tools to identify the plant species and confirm the characteristics of the target crop, Chiang added. The center with industry-academic collaboration has set an SOP of safe agriculture which will help Tainan area farmers who are engaged in low-pesticide farming. Chiang said Cheng-Kung No.1, a brand-new rose species collaboratively cultivated by NCKU and a local gardening company, had been certified and identified by NCKU and is ready for marketing. In addition, the R & D of the center will include a plant factory in which temperature control and LED lights are utilized to cultivate high-value crops like lily, ginseng and Gastrodia. Workshops will be held in May to introduce ecological agricultural concepts to farmers, according to Department of Life Sciences, NCKU.

<http://web1.nsc.gov.tw/techwp.aspx?id=1010521005&ctunit=208&ctnode=287&mp=7>

19. NCHU Researchers Identify Key Gene Relating with Cancer Metastasis

(MEPO Forum, 29 05 2012)

Metastasis is the most problematic issue in cancer treatment, and it is highly relevant to the capacity of cancer cell invasion; if the ways to suppress the invasion of cancer cells are found, more effective treatment to reduce the incidence of metastasis will be provided. A research team led by Dean of the College of Life Sciences, National Chung Hsing University, Professor Hong-Chen Chen has identified FAK (focal adhesion kinase, a type of tyrosine kinase) as the key molecule controlling the capacity of cancer cell's invasion. The findings have been published in noted international journal, *Journal of Cell Biology* on October 3, 2011. The research is conducted by a PhD student supervised by Professor Hong-Chen Chen, Yi-Ru Pan (the first author) and a postdoctoral research fellow Chien-Lin Chen. The team explained, the invasiveness of cancer cells is dependent on their motility and its effect causing extracellular matrix degradation that allows them to invade tissues. To this end, cancer cells need to form certain structure that helps them. The structure is named "podosome," or "invadopodia." Surprisingly, in highly invasive cells, they are often found to assemble into large rosettelike structures, which are called "podosome rosette," with which the invasion capacity is largely enhanced. Until now, however, the key molecule controlling the assembly has not been identified. The team discovered, the expression of focal adhesion kinase (FAK) controls the assembly. In highly invasive cells, the suppression of FAK's expression or activity stops the formation of podosome rosette, lowering the invasiveness in tissues. Besides, the team also determined that it is the intermediate filaments that FAK decomposed inducing the assembly of podosome rosette. Hong-Chen Chen said, the understanding of the mechanism of cancer cells' tissue invasion enriches the understanding of the mechanism of metastasis, and these can help with making treatment policies against cancer metastasis. The findings not only unveil the critical role of FAK in the assembly of podosome rosette but also give proof for FAK as one of the major therapeutic targets for cancer treatment. Besides, CHEN also noted, since podosome rosette is necessary for osteoclast's eroding bones as well, drugs suppressing FAK may also help with osteoporosis treatment.

<http://web1.nsc.gov.tw/techwp.aspx?id=1010525007&ctunit=208&ctnode=287&mp=7>

20. Research and License agreements between National Cheng Kung University and Novo Nordisk A/S

(MEPO Forum, 29 05 2012)

A southern Taiwan-based National Cheng Kung University (NCKU) research team led by Ming-Shi Chang, NCKU Professor of the Department of Biochemistry and Molecular Biology, has discovered an anti-interleukin-20 (anti-IL-20) antibody, a potential new anti-osteoporosis and anti-rheumatoid arthritis drug, and agrees to license selected intellectual property and transfer certain technology to Novo Nordisk A/S, a Danish-based pharmaceutical company for a total payment of US\$ 13.3 million in case of a successful completion of the project. In addition, Professor Ming-Shi Chang and Novo Nordisk A/S have established a 2-year research collaboration to further strengthen and possible expand the usages of an IL-20 antibody. Speaking at the joint conference on May 15th, Minister Wei-Ling Chiang of the Cabinet-level Ministry of Education (MOE) noted that it's an inspiring moment for Taiwan's higher education and the success in technology transfer shows great turnout for the special funding of five year NT\$50 billion allocated by MOE to boost academic research at domestic universities. NCKU President Hwung-Hweng Hwung hailed the groundbreaking discovery of anti-interleukin-20 antibody: "The findings not only mark a milestone in global healthcare, but also raise the visibility of Taiwan's academic research." This medical discovery was published in the *Journal of Experimental Medicine (JEM)* and has drawn huge attention in the academic world and the biotechnology industry as well. IL-20 has a key role in osteoclast differentiation, and blockading this cytokine could represent a novel therapeutic approach for osteoporosis, according to data from the NCKU medical team. The chief editor of *Nature Reviews* wrote a research highlight in the September issue of *Nature Reviews Rheumatology*



commenting on this finding, while Science-Business eXchange (SciBX) published a cover story reporting on the discovery in the same month. The study not only signifies groundbreaking findings in the pathogenesis of osteoporosis, but could lead to the innovation of new drugs to treat osteoporosis and rheumatoid arthritis.

<http://web1.nsc.gov.tw/techwp.aspx?id=1010524003&ctunit=208&ctnode=287&mp=7>
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21. Taiwan unveils new technique for green caviar farming

(Central News Agency, 30 05 2012)

The Tungkang Biotechnology Research Center under the Council of Agriculture said Wednesday that it has developed a new technique for farming sea grapes, a species of seaweed with high economic value, after nearly five years of research. The research team has overcome limitations such as water quality, temperature and light to set up a farming model for culturing the seaweed, which is also known as green caviar, said Su Huei-mei, who is in charge of the project. The team uses caulerpa microphysa, a type of local algae, to develop the seaweed, which can grow up to 30 cm in length in 30 days, Su said. Sea grapes, which taste a bit like caviar, is a very popular ingredient in Japan, where it is known as umibido, Su said. It is rich in polyunsaturated fatty acid, vitamins B2 and E, and various minerals. The farming technique in Japan only allows the sea grapes' stem to grow to 10 cm, Su noted, adding that the growth cycle takes 25 days in summer and 50 days in winter. However, Su said it will take another year before the Taiwan-grown sea grapes will reach store shelves as mass production trials are still underway.

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