



31 January 2011

**Science, Technology and Education News from Taiwan  
Number 01 — January 2011**

**Introduction**

The ministers of science and technology of Taiwan and China reached a consensus to establish a regular platform for science exchanges. The two (the first time on this level between the two sides) exchanged views on the prospects of cross-strait cooperation in the fields of neo-energy, disaster prevention, bio-resources and biomedical sciences. In terms of science park management, the National Science Council in Taiwan will try to improve exchanges between Taiwan's Hsinchu Science Park and China's 84 high-technology parks. Members of the Taiwan delegation at the cross-Taiwan Strait forum in Beijing on 13-14 January participated in four panel sessions on science resources, management of the science industry, neo-energy, and bio-resources and biomedical sciences.

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A pioneering technique to protect printed materials from copyright infringement (making digital watermarks with hybrid halftone dots) has been developed – the Industrial Technology Research Institute (ITRI) partners with US-file-sharing provider BitTorrent – scientists developed a grouper fish vaccine – Taiwan's first zero-carbon building was completed – Taiwan's first heavy particle radiation therapy equipment for cancer treatment is to be introduced – the National Health Research Institute transfers enterovirus vaccine technology – Researchers identified a number of key factors governing protein aggregation, a process thought to play an important role in the onset and progression of neurodegenerative diseases – the National Taiwan University unveiled a portable device capable of detecting cancer in 12 minutes – the National University Hospital and GlaxoSmithKline partner with a new cancer research project – the National Taipei University of Technology unveiled software for gesture recognition – Computer students design a surveillance drone – Specialists found micorRNA-141 was key in regulating EV-71, a breakthrough in the understanding of the enteroviral infection model – Researchers developed the island's fastest supercomputer to be used for a range of scientific and academic projects including climate studies and biotechnology – Researchers made significant progress in creating an all-optical waveform synthesizer that can be used for the further development in nanoelectronics, nanomaterials and terahertz electronics – German medical scientist Juergen Hennig won the 2010 Tsungming Tu Award – the National Cheng Kung University unveiled a world-leading cancer treatment technology and device that combines the use of nano-magnetic particles and antibodies to identify tumors and kill cancer cells using heat technology – Intel and the National Taiwan University establish a M2M research center – two other Taiwanese universities team up with US research centers in the fields of molecular, cellular and integrative bioengineering

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### 1. New technology promises to curb piracy

(Taiwan Today, 05 01 2010)

A local research team has developed a pioneering technique that can greatly protect printed materials from copyright infringement. The research laboratory of Wang Hsi-chun, a professor at the Department of Graphic Arts Communication at the Taipei-based National Taiwan Normal University, unveiled 4 Jan an innovative method of making digital watermarks with hybrid halftone dots. According to the researcher, although such hidden watermarks cannot be perceived beyond a certain distance by the human eye, they will become visible when printed materials embedded with such patterns are scanned or duplicated using a copy machine. The new technology can be applied to print anti-counterfeiting documents or materials. It can also be used to produce serial numbers or specially designed barcodes for other applications, such as displaying animations and audio effects on the computer. The new invention has been granted patents in Taiwan and the United States. It also won a gold medal at the 2010 iENA International Trade Fair in Nuremberg and the 2010 Taipei International Invention Show and Technomart.

<http://www.taiwantoday.tw/ct.asp?xItem=141857&ctNode=445>

[http://focustaiwan.tw/ShowNews/WebNews\\_Detail.aspx?Type=aSOC&ID=201101040024](http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aSOC&ID=201101040024)

### 2. ITRI forms partnership with U.S. file-sharing provider BitTorrent

(Central News Agency, 07 01 2010)

Taiwan's semi-official Industrial Technology Research Institute (ITRI) announced that it would partner with BitTorrent Inc., a U.S.-based file sharing service provider, to deploy new standards for consumer electronics device manufacturers. BitTorrent, which has amassed 100 million community users of its multimedia content on all forms of electronic devices, is promoting the "BitTorrent Certified" standard that ensures compatibility among software, devices and content within the ecosystem. Devices with the proof-of-concept standard, like a computer in shape of a flower vase, are being featured by ITRI and BitTorrent at the Jan. 6-9 Consumer Electronics Show (CES) in Las Vegas, ITRI said in an e-mail statement. ITRI will work with BitTorrent to promote the BT logo and industry standards, such as jointly developing next-generation peer-to-peer (P2P) and cloud computing technologies, making Taiwan's electronic products with the certification more competitive in the global market.

[http://focustaiwan.tw/ShowNews/WebNews\\_Detail.aspx?Type=aECO&ID=201101070027](http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aECO&ID=201101070027)

### 3. Grouper fish vaccine developed in Taiwan

(United Daily News, 07 01 2010)

Taiwan scientists have successfully developed a vaccine against grouper fish iridovirus, Council of Agriculture Minister Chen Wu-hsiung said. The vaccinated grouper fry has seen its survival rate grow dramatically, from 30-70 %. Relevant government agencies are expected to approve mass production of the vaccine by the end of this year, according to Chen. "With this vaccination at hand, the annual turnover of Taiwan's grouper aquaculture industry can be increased from the current NT\$3.8 billion (US\$129.5 million) to NT\$8.8 billion," Chen said. According to COA, iridovirus infects at least 17 species of farm fish, including sea bream, bass and red snapper. The new vaccine, developed by COA's Animal Health Research Institute, can be used on popular breeds such as banded grouper and king grouper.

<http://www.taiwantoday.tw/ct.asp?xItem=142427&ctNode=445>

### 4. NCKU completes Taiwan's first zero-carbon building

(Taiwan Today, 07 01 2010)

Taiwan's first zero-carbon building, the Y. S. Sun Green Building Research Center at National Cheng Kung University, was inaugurated on 12 January. The center, also known as the Magic School of Green Technology, is the world's first green educational center, with the most energy-efficient structure, to have been built in the subtropical region. "The center's annual energy usage intensity is 43 kilowatt-hour per square meter, which helps cut back on energy usage by 65 percent per year," said Lin Hsien-te, an architecture professor at NCKU and leader of the construction team. Lin noted that standard office buildings in Taiwan have a yearly EUI of 125 kwh/m<sup>2</sup>, while those in Hong Kong, Japan, Singapore, the U.K. and the U.S. measure at 304, 105, 217, 404 and 390, respectively. "Besides saving electricity costs, the building also uses 50 percent less water than standard office buildings," Lin stressed. The center uses five natural ventilation energy-saving methods, two equipment reduction processes and five energy-saving and renewable energy technologies. In spite of its advanced features, the 4,800-square-meter



center was built at a relatively low cost of NT\$26,363 (US\$909) per square meter, Lin said. The building has already won the highest green building certificate from Taiwan's Ecology, Energy Saving, Waste Reduction and Health rating system and is currently being reviewed for certificates by the U.S. Leadership in Energy and Environmental Design rating system, Lin said.

<http://www.taiwantoday.tw/ct.asp?xItem=142419&ctNode=445>

## **5. E United Group to introduce advanced cancer-treatment equipment**

(Central News Agency, 09 01 2010)

E United Group said that it plans to introduce Taiwan's first heavy particle radiation therapy equipment for cancer treatment in two year's time. The equipment will be part of a particle center at the group's new cancer hospital that will open in January 2013, said the group's chairman Lin Yi-shou at a ground-breaking ceremony for the hospital.

[http://focustaiwan.tw/ShowNews/WebNews\\_Detail.aspx?Type=aLIV&ID=201101090014](http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aLIV&ID=201101090014)

## **6. Enterovirus vaccine technology to be transferred**

(Central News Agency, 10 01 2010)

Taiwan's National Health Research Institute plans to transfer the technology for producing a self-developed enterovirus vaccine to local companies, after it releases the results from initial experiments conducted with the vaccine in the first half of this year. The government-run research body said that it has conducted the first-stage experiment of the vaccine that can help prevent Enterovirus 71 (EV71) on 100 adults after obtaining approval from the health authorities in October last year. After the second-stage experiment is completed, the institute will transfer the vaccine technology -- in which Adimmune Corp. and Medigen Biotechnology Corp. have expressed interest -- for the third-stage experiment.

[http://focustaiwan.tw/ShowNews/WebNews\\_Detail.aspx?Type=aALL&ID=201101100009](http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aALL&ID=201101100009)

## **7. Taiwan discovery could produce cure for Parkinson's**

(Taiwan Today, 05 01 2010)

Hu Chin-kun, an Academia Sinica research fellow, and his overseas collaborators made a discovery that could lead to a cure for Parkinson's. The researchers have identified a number of key factors governing protein aggregation, a process thought to play an important role in the onset and progression of neurodegenerative diseases, the institution explained. Hu Chin-kun, a research fellow at Academia Sinica's Laboratory of Statistical and Computational Physics, made his finding together with researchers from Poland, the United States and Vietnam. The group's results have been published in Physical Review Letters, an international peer-reviewed journal. Hu has also worked with Ma Wen-jong, professor of applied physics at National Chengchi University, on a similar topic. The two have jointly published four articles in Journal of the Physical Society of Japan.

<http://www.taiwantoday.tw/ct.asp?xItem=143508&ctNode=445>

[http://focustaiwan.tw/ShowNews/WebNews\\_Detail.aspx?Type=aLIV&ID=201101120023](http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aLIV&ID=201101120023)

## **8. NTU-invented device capable of detecting cancer in 12 minutes**

(Central News Agency, 18 01 2010)

National Taiwan University (NTU) unveiled a portable device it has invented that is capable of detecting cancer and viral infections in just 12 minutes. The device, called VensorNTU, has proven to be highly sensitive and accurate in detecting liver, lung and cervical cancers, enterovirus 71, influenzas and sepsis during a year of clinical testing, said Yang Pan-chyr, dean of NTU's College of Medicine. He said that traditional detection of those diseases involves the application of optics technology to examine affected cells after they are dyed, but the process is time-consuming and expensive, with low accuracy. The new device, with NTU's exclusive electronic antibody detection technology, allows patients to use it easily and safely at home, and find out the results in 12 minutes.

[http://focustaiwan.tw/ShowNews/WebNews\\_Detail.aspx?Type=aALL&ID=201101180032](http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aALL&ID=201101180032)

<http://www.taiwantoday.tw/ct.asp?xItem=145150&ctNode=445>



### 9. NTUH, GSK announce new joint cancer research project

(China Post, 15 01 2010)

National Taiwan University Hospital (NTUH) and pharmaceutical firm GlaxoSmithKline (GSK) recently strengthened their partnership with a new cancer research project. Three years ago, the two jointly set up the NTUH-GSK Clinical Trial Center as part of their effort to promote Taiwan-developed drugs on the international stage and improve the quality of life for patients. During the three years, the two have conducted 75 types of research, of which 26 are still going on, covering such illnesses as cervical cancer, bird flu and herpes.

The two have now turned their attention to antigen-specific cancer immunotherapy, or ASCI, which triggers an immune response upon detection of cancer-affected cells. GSK hopes to work with NTUH to develop new ASCI drugs to help cancer patients, especially those suffering from breast and lung cancers.

GSK is currently conducting clinical trials for NSCLC, with initial results showing the chance of relapse has been reduced significantly for patients receiving the MAGE-A3 ASCI treatment.

MAGE-A3 is specifically for stage one to three cancer patients. The treatment is for relapse prevention for patients, once their tumors are removed through surgery. Worldwide, the treatment has been applied to 2,270 patients, including 25 in Taiwan.

<http://www.chinapost.com.tw/taiwan-business/2011/01/15/287685/NTUH-GSK.htm>

### 10. NTUT unveils software for gesture recognition

(China Post, 17 01 2010)

A team at the National Taipei University of Technology (NTUT) unveiled a hand gesture recognition system by which electronic devices can be turned on or off by a simple hand movement. Lin Yu-hung, a member of the team, said the system may be incorporated into various electronic devices, such as digital TV and multimedia players, supported with a camera lens as well as other hardware products. Once the system is set up, a waving of the hand will turn the TV on. Sliding the hand to the right or left will change the volume, while moving the hand up or down will change the channels. Wave the hand again and the TV will be turned off.

<http://www.chinapost.com.tw/taiwan/national/national-news/2011/01/17/287923/NTUT-unveils.htm>

### 11. Computer students design surveillance drone

(Liberty Times, 20 01 2010)

Three students in the Department of Computer Application Engineering at Tainan's Far East University have successfully designed an unmanned remote control surveillance airplane, despite not studying aeronautics.

<http://www.taiwantoday.tw/ct.asp?xItem=145378&ctNode=445>

### 12. Breakthrough achieved in developing enterovirus treatment

(Central News Agency, 21 01 2010)

A Taiwanese medical team unveiled the mechanism by which enterovirus 71 (EV-71) develops into a disease, the first step in developing an effective cure for diseases caused by various enteroviral infections, the researchers said. After three years of research, a team composed of specialists from various fields found microRNA-141 was key in regulating EV-71, a breakthrough in the understanding of the enteroviral infection model. The finding was published in *Cell Host & Microbe*, a popular journal in the medical biology field on 20 January.

[http://focustaiwan.tw/ShowNews/WebNews\\_Detail.aspx?Type=aSOC&ID=201101210031](http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aSOC&ID=201101210031)

### 13. Taiwan's top supercomputer, a research aid, due in July

(IDG News, 25 01 2010)

Government-backed researchers in Taiwan have developed the island's fastest supercomputer to be used from July for a range of scientific and academic projects including climate studies and biotechnology. The cluster that works at 170 trillion floating point calculations per second should rank between 50 and 55 on the TOP500 list of the world's most powerful computers, National Center for High Performance Computing designer Wu Chou-ching said. The



cluster of 25,600 computing cores took six months to build, and answers government demand for a faster machine after earlier models became outdated around 2007, Wu said.

The high-performance computing center will house the machine, making it available to government agencies and public universities. In turn, outside researchers are expected to use the supercomputer's power and resources for climate study, a priority for officials weary of deadly typhoons that hit Taiwan almost every year, and for the study of biotechnology, a top economic development priority for the island.

<http://news.idg.no/cw/art.cfm?id=5D14C882-1A64-67EA-E47C31A1E511FBC5>

#### **14. Taiwan makes breakthrough in optical light-field control**

(Taiwan Today, 26 01 2010)

Taiwanese researchers have made significant progress in creating an all-optical waveform synthesizer, which can be used for the further development in nanoelectronics, nanomaterials and terahertz electronics. "The new method allows optical light fields to be controlled in a way similar to microwaves and radio waves," said Andy Kung, research fellow at Academia Sinica's Institute of Atomic and Molecular Sciences and "in addition, it can help control chemical reactions through manipulating the movement of electrons in atoms and molecules." Academia Sinica's research was published 20 January on the website of the international journal Science.

<http://www.taiwantoday.tw/ct.asp?xItem=147269&ctNode=445>

#### **15. German scientist awarded Taiwan's top academic prize**

(Taiwan Today, 26 01 2010)

German medical scientist Juergen Hennig has won the 2010 Tsungming Tu Award, the highest academic honor bestowed on foreign scientists by the Taiwan government. A leading researcher in magnetic resonance imaging, Hennig (medical physics professor in the Department of Radiology at University Hospital Freiburg and winner of the 2003 Max Planck Research Award) has tutored three Taiwanese doctoral students at his German laboratory, the NSC said. Since 2007, Taiwan has presented the Tsungming Tu Award, named after the first Taiwanese to become a medical doctor, in 1922, to four German scientists, who have also engaged in collaborative research with Taiwanese scholars. In turn, Germany has given the Humboldt Research Award, after the 19th-century Prussian scientist and philosopher, to three Taiwanese researchers.

<http://www.taiwantoday.tw/ct.asp?xItem=147133&ctNode=445>

#### **16. NCKU develops new cancer treatment**

(Taiwan Today, 26 01 2010)

National Cheng Kung University unveiled a world-leading cancer treatment technology and device that combines the use of nano-magnetic particles and antibodies to identify tumors and then kill cancer cells using heat technology. Team leader Young Ming-shing, a professor at the university's Department of Electrical Engineering, said the technology employs a Frequency-Adjustable High Frequency Inductor Heating Machine. According to Young, the method allows for cancer cells to be located and then destroyed by applying heat at a temperature of between 41.5 and 46 degrees Celsius without harming the surrounding healthy cells. "We are able to adjust both the wavelength and temperature, which is rare in heat technology using nano-magnetic particles," Young said. He pointed out that the technology has the advantage of not producing any of the negative aftereffects that are experienced by patients who are treated with chemotherapy or target drugs. The team also unveiled a 3-D Magnetically Guiding Endoscope System capable of lateral, horizontal and twisting movements. It allows for accurate positioning in narrow organ space, according to the team.

<http://www.taiwantoday.tw/ct.asp?xItem=147202&ctNode=445>

#### **17. Intel, NTU jointly establish M2M research center**

(Central News Agency, 26 01 2010)

Intel Corp. said it has set up its first research center on machine-to-machine (M2M) communication technology at National Taiwan University to promote knowledge innovation. The Intel-NTU Connected Context Computing Center, aimed at providing end to end solutions for various kinds of devices, will receive funding of up to NT\$750 million



(US\$25.8 million) over the next three to five years from three co-sponsors -- Intel, NTU and the National Science Council. The center, which will recruit 14-16 senior researchers from Intel Labs in the United States, is expected to deliver breakthrough technologies to fuel Intel's growth as well as to increase the rate of M2M adoption across multiple vertical markets. The center will take on research in four challenging areas -- green sensing platform, autonomous reconfigurable connectivity, context analysis and management, and smart sensing and applications, said Intel Principal Engineer Chen Yen-kuang, who also is also deputy director of the new center. "We will not apply for patents for our research work at the center, therefore, other companies in the industry will be able use them without having to pay license fees, " Chen said. "We hope our research will be open and shared, which would transform it into a force to improve the development of science in Taiwan."

[http://focustaiwan.tw/ShowNews/WebNews\\_Detail.aspx?Type=aECO&ID=201101260038](http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aECO&ID=201101260038)

### **18. Joint Taiwan-US research centers launched**

(Taiwan Today, 27 01 2010)

Taiwanese universities have launched three joint research centers with U.S. schools and enterprises, including Harvard Medical School and Intel Corp., the National Science Council. Over the next five years, the National Science Council, Taiwanese universities and their U.S. counterparts will pump NT\$1.5 billion worth of funding, equipment and personnel into the project. The Intel-NTU Connected Context Computing Center set up by chipmaker Intel and National Taiwan University will focus on machine-to-machine communication technologies. National Central University's Research Center for Adaptive Data Analysis and the Margret & H. A. Rey Institute for Nonlinear Dynamics in Medicine, a laboratory affiliated with Harvard Medical School, have established the Center for Dynamical Biomarkers and Translational Medicine to develop biosignal data analysis methods.

In addition, a biomedical engineering research center run jointly by the University System of Taiwan (UST) and the University of California, San Diego will center its research on molecular, cellular and integrative bioengineering. The UST consists of NCU, National Chiao Tung University, National Tsing Hua University and National Yang-Ming University. These U.S. and Taiwanese institutions are expected to exchange at least 30 researchers and train postdoctoral students over the next five years, according to the NSC.

<http://www.taiwantoday.tw/ct.asp?xItem=147544&ctNode=445>