



31 March 2015

**Science, Technology and Education News from Taiwan
Number 03 — March 2015**

In the medical field, development has been made to fight against pancreatic cancer and an ancient medicine revealed to be efficient to prevent kidney failure for diabetics.

In Education, a new system was implemented to integrate a few students in college without the standard requirements; this new system should help students very strong in only one branch, students who studied abroad as well as students with big capacities but from poor family background to access university.

In the technological field, a new marine radar should help detecting tsunamis. The NARL released two new chips: a new 3D solar chip that could find multiple uses and a chip combining 3 sensors which will mainly be used for smartphones. A patented innovative process can refine solar energy waste into reusable raw materials.

Contents

Science	2
Team develops antibody to block pancreatic cancer metastasis.....	2
Taiwan assists in Micronesian coral pyramid study.....	2
NTUT professor launches bird-watching app.....	3
Ancient medicine found to help reduce chances of kidney failure for diabetics.....	3
Education	4
College admissions trial unearths Taiwan talents.....	4
University in HK offering scholarships to Taiwanese.....	4
Internationalization survey honors NCTU, TKU.....	5
Technology	5
Hitcon qualifies for Defcon finals in Las Vegas.....	5
New marine radar may improve Taiwan's tsunami detection: scientist.....	5
ITRI wins best practices, product innovation award.....	6
Paraplegic inventor shows creative process at seminar.....	7
HTC betting its future on virtual reality: executive.....	6
New Taipei entrepreneurs flex innovation muscle.....	7
NARL unveils 3D solar chip for IoT.....	8
TaiGen and Cellex to collaborate on Burixafor study.....	8
Taiwan unveils technique to combine sensors on a chip.....	9
New technology to turn solar industry waste for steel production.....	9



Science

Team develops antibody to block pancreatic cancer metastasis

(Central News Agency, 10 03 2015)

A Taiwanese research team has developed an antibody to block a protein that is associated with metastasis of pancreatic cancer to other organs, the team's leader reported. Lee Wen-Hwa, an academican at Academia Sinica and president of the China Medical University of Taiwan, said researchers have found a protein -- IL-17RB -- to be strongly associated with the migration of pancreatic cancer to other organs.

"Using an antibody against IL-17RB, the researchers were able to block tumor metastasis, or migration, and improve the survival rate of mice in experiments," Lee said. Pancreatic cancer has a high mortality rate, mainly because of a lack of early symptoms and its aggressive migration nature. The patients are often diagnosed at a late stage when metastasis has already occurred. These findings shed light on a key mechanism underlying the highly aggressive nature of pancreatic cancer and offer potential for therapy, Lee said.

The team's research was published in the U.S.-based Journal of Experimental Medicine March 3. The team's research confirmed the association of the IL-17RB receptor and its counterpart, ligand IL-17B, in the patients. A receptor is a protein molecule usually found embedded in the plasma membrane of a cell, and a ligand is a molecule usually binds to a receptor on the cell surface. When the two types of molecule unite, signals are produced that activate changes inside the cell.

In collaboration with National Taiwan University Hospital, the research team analyzed specimens from 111 pancreatic cancer patients. They found strong positive correlation between the large number of IL-17RB and tumor malignancy in the patients. They also proved that IL-17B binding to IL-17RB on the cancer cell surface activates the cells and induces cellular changes.

The team then developed an antibody to counteract IL-17RB in mice. The mice treated with the antibody had their life spans extended and tumor growth and migration to the lungs were also significantly suppressed. The research is based on Lee's previous research outcome dating back to 2011, which found a large number of IL-17 RB receptors on the surface of cancer cells in breast cancer patients.

<http://focustaiwan.tw/news/ast/201503100022.aspx>

Taiwan assists in Micronesian coral pyramid study

(Taiwan Today, 17 03 2015)

A group of National Taiwan University researchers using high-precision radiometric dating techniques have assisted an international team redefine the chronology of coral pyramid tombs on the Micronesian island of Kosrae.

Employing cutting-edge uranium-thorium, or U-Th, techniques, the researchers placed the date for the three youngest structures at between 1311 and 1388, around 300 hundred years older than previously thought. This finding was a key plank in the team's study published March 13 in the journal Science Advances. Led by Shen Chuan-chou, a professor with NTU's Department of Geosciences, the researchers identified the use of biotic materials as a unique trait of the royal tombs. "A total of 15 percent employ scleractinian corals in their construction," Shen said. "This is in stark contrast to the abiotic resources used in most ancient burial structures."

Coral building materials are a defining feature of Leluh, the lagoon-based capital of the fabled Micronesian empire of Kosrae. The crypts studied by Shen's team employed a mixture of live and fossil corals, some dating from 4,000 to 6,000 years ago. Standing about 4-6 meters tall, the Leluh pyramids are shaped like frustums with the pointy tops truncated. One aspect of the tombs eluding researchers for many years also came to light during the study.

"These mortuary structures served as a temporary resting place for the Kosraen kings," Shen said. "After a maximum of three months, the bones would be exhumed and buried in the nearby reef, warranting the open-top structure of the Leluh pyramids." The NTU researchers joined the Western Australia Museum-led initiative three years ago, with the Ministry of Science and Technology and university providing grants to support the U-Th dating project.

<http://www.taiwantoday.tw/ct.asp?xItem=228369&CtNode=436>



NTUT professor launches bird-watching app

(Taiwan Today, 19 03 2015)

An app enabling bird-watchers to easily identify their observations was recently launched by a National Taipei University of Technology electrical engineering professor. “EEBirds features a database of 183 species and is free for download on Android and Apple iOS,” app creator Huang Yo-ping said. “It allows one to perform searches on the basis of body size, feet length, shades of feather colors, pictures and call recordings.”

According to Huang, he set up a bird database in 2006 as a way of assisting his students learn more about the species they saw on campus. “As additional data was accumulated, I decided to design an app and allow the public to discover the wonders of our feathery friends,” he said.

One impressive species, Huang said, is the Malaysian night heron. “The father and mother take two-hour shifts warming the eggs, with the feathers on the tops of their heads standing up straight when they are on the nest. This is a spectacular sight and not one to be missed.” Equally fascinating is the spotted-neck dove, Huang said. “In mating season, the males beat their wings at a high speed to attract females. It is amazing how much effort they put into finding a partner and producing offspring.” Huang said he will continue updating the app by loading more photos and sound files. “My passion is helping others experience the beauty of birds in Taiwan.”

<http://www.taiwantoday.tw/ct.asp?xItem=228523&CtNode=436>



Ancient medicine found to help reduce chances of kidney failure for diabetics

(Taipei Times, 22 03 2015)

A team of researchers in Taiwan said they have determined that an ancient Chinese medicinal compound, known as six-flavor tea pills, can help reduce the risk of kidney failure in patients with type 2 diabetes. In a study conducted among people with type 2 diabetes, it was found that the risk of kidney failure was 31 percent lower among those who had been taking the traditional Chinese medicine than those who had not been receiving such treatment, Lai Jung-Nien, head of the research team at the National Yang-Ming University Institute of Traditional Medicine in Taipei, said.

The study used data from the National Health Insurance Research Database and examined the treatment of type 2 diabetes among 40,163 patients in Taiwan between 1997 and 2008, Lai said at a Chinese Medical Association conference in Taipei. Among the 40,163 patients, 15,405 suffered kidney failure and 1,346 of them received dialysis over the 10-year period, Lai added.

The researchers found that patients who had been taking the traditional Chinese medicine prescription as well as Western medicine did not require dialysis until a year after the patients who had not been taking the formula, he said. In the case of patients who had been taking modern Western medicine along with traditional Chinese medicine that did not include six-flavor tea pills, dialysis was delayed for about six months, Lai said. He said that over the 10-year period, 90 percent of the type 2 diabetes patients in the study were treated with Western medicine, and those who visited traditional Chinese medicine practitioners were mostly prescribed the compound, a patented formula also known as liuwei dihuang wan.

Traditional Chinese medicine practitioners frequently recommend that type 2 diabetes patients to regularly perform ba duan jin exercise — a form of medical qigong — and refrain from eating frozen foods, as extremely cold foods are believed to be harmful to the kidney. Lai said he hoped that the study would change bias against traditional Chinese medicine, as it proves that some chronic diseases can be effectively treated through the combined use of traditional Chinese and modern medicine. Liuwei dihuang wan, a compound made of six different herbs, is frequently prescribed by traditional Chinese medicine practitioners for the treatment of type 2 diabetes. The study was published in volume 156 of the Journal of Ethnopharmacology in October last year, Lai said.

<http://www.taipeitimes.com/News/taiwan/archives/2015/03/22/2003614142>



Education

College admissions trial unearths Taiwan talents

(Taiwan Today, 05 03 2015)

A total of 53 senior high scholars with special talents or skills are set to begin studies at 12 universities in Taiwan under a Ministry of Education trial program aimed at uncovering academic diamonds in the rough. The initiative assesses applicants on the basis of non-tested skillsets, extracurricular activities and interview performances rather than examination results. It is a supplement to such college entrance programs as Advanced Subjects Test, General Scholastic Ability Test and Multi-Star—a student selection program based on GSAT results.

According to the MOE, the program is best suited for students who excel in a single subject, possess experiences like studying abroad or come from disadvantaged backgrounds. The initiative also offers tertiary institutions an opportunity to recruit candidates matching their respective specialties and strengths. National Taiwan Normal University, for example, seeks students with strong artistic or language potential, while National Yang-Ming University canvasses those with an affinity for bio-medical science. Of the dozen participating colleges, only NYMU and National Tsing Hua University allow applicants admitted through the program to decide their majors later. The latter is the sole school to ignore test scores in its tailored admissions process.

Inspired by a similar undertaking at Stanford University, the three-stage NTHU Gleaning Project sees applications screened by several senior commissioners before being reviewed by a panel of more than 10 professors. The 30 finalists are then invited for interviews. The 10 successful project candidates include competition winners in aerobics, chess, geography, ice-skating, leadership and programming, as well as those with outstanding abilities in English, mathematics, physics and writing.

Tu Yi-ting, home-schooled since the second grade, was recommended by Professor Emeritus Liu Yuan-tsun of Soochow University's Department of Physics, while Guo Pei-jun, raised in a financially challenged family by her maternal grandmother, was admitted for strong scholastic performances and excellence in essay writing.

According to Chou Hwai-pwu, senior vice president of operations at NTHU, the project is of great benefit to the university and the students will be given every chance to succeed. "We have assigned advisors who will assist in selecting courses, majors and even help them entertain a wider range of possibilities when it comes to setting life goals," he said. "Promoting diversity is more than just a trend. It is an effective way of broadening student horizons, enhancing mutual respect and triggering innovative thinking."

<http://www.taiwantoday.tw/ct.asp?xItem=227963&CtNode=436>

University in HK offering scholarships to Taiwanese

(Taipei Times, 07 03 2015)

The City University of Hong Kong is soliciting applications from outstanding Taiwanese students by offering scholarships of up to NT\$2.56 million (US\$81,296) for a maximum of four years of study, a spokesman said.

In recent years, universities in Hong Kong have been recruiting Taiwanese students who have earned extremely high scores on their college entrance exam. The City University of Hong Kong has recruited about 100 Taiwanese students since it began the solicitation program in Taiwan in 2009, the spokesman said.

City University of Hong Kong president Kuo Way is Taiwanese. He said that 18 percent of high-school students in Hong Kong enroll in colleges and universities, so they have no difficulty getting students. However, to promote student exchanges between Hong Kong and Taiwan, his university took the initiative to recruit Taiwanese students, Kuo said, while praising the students' creativity and outstanding performance. The university has also established exchange agreements — primarily covering student exchanges — with 300 universities around the world. The deadline to apply for the scholarships is the middle of March.

Huang Chia-Yun, a Taiwanese student who graduated from the university and works at a foreign bank in Hong Kong earning annual pay of more than NT\$1 million, said she chose to study in Hong Kong because many international banks have a presence in the special administrative region, an Asian financial hub.

Lai Wen-Ping, another graduate from the university who works at a prestigious accounting firm in Taiwan, said that since all courses at the school are taught in English, that helped him greatly improve his language skills and he encouraged Taiwanese students wanting to enter business school to study in Hong Kong.

<http://www.taipetimes.com/News/taiwan/archives/2015/03/07/2003612984>



Internationalization survey honors NCTU, TKU

(Taiwan Today, 17 03 2015)

Taiwan's National Chiao Tung University and Tamkang University achieved the best internationalization ratings among 19 local universities in a Ministry of Education evaluation released March 16 in Taipei City.

NCTU and TKU earned special honors, while nine other schools passed the assessment without honors. Of the 19 educational institutions taking part in the evaluation launched last year, these 11 satisfied 75 compulsory criteria across five categories such as English curriculum and environment friendliness for foreign students.

"We applaud these universities for making overseas students feel at home in Taiwan," an official from the MOE Department of International and Cross-strait Education said. "It is important to build the country's reputation as a welcoming destination for enrollments from abroad."

MOE statistics revealed that the number of foreign nationals studying or conducting research in Taiwan is increasing each year, with 90,000-plus such students in 2014.

The ministry praised NCTU and TKU for prioritizing the implementation of facilities and services catering to the needs of foreigners.

"NCTU warrants special mention for establishing a prayer room, as well as faith-friendly kitchens and restroom facilities for Muslim students," the official said, adding that many were pleasantly surprised by the thoughtfulness of the Hsinchu City-based school.

"Equally creditworthy is TKU in New Taipei City and its overseas student club initiative offering a wide array of activities alleviating homesickness and enhancing cultural exchanges," the official said. "Its seven clubs make adapting to life in Taiwan easier for those from distant shores engaging in local academic pursuits."

The evaluation is on a trial basis but has proven extremely useful in helping the MOE and tertiary institutions enhance Taiwan's education environment, the official said. "We are committed to using all the tools at our disposal in transforming the country into a leading tertiary education destination going forward."

<http://www.taiwantoday.tw/ct.asp?xItem=228362&CtNode=436>

Technology

Hitcon qualifies for Defcon finals in Las Vegas

(Taiwan Today, 03 03 2015)

Hacks in Taiwan (Hitcon) claimed second in the Boston Key Party Capture the Flag competition March 1, securing a spot among the world's 15 best teams at the Defcon finals scheduled for August in Las Vegas. Squaring off against 828 outfits from around the globe, Hitcon amassed 6,145 points en route to completing the 31-challenge competition in 43 hours. They finished behind top spot-getter Carnegie Mellon University's Plaid Parliament of Pwning, which totaled 6,445 points and took 10 hours less. Third place went to U.S. outfit Samurai with 5,545 points.



The "Jeopardy" format competition was based on a metro map of Boston, with every station representing a challenge such as cryptography, leak analysis, reversing and software re-engineering. Participants were rewarded for applying creative solutions to web security and related application issues. This is the fourth time for Boston University to stage the competition organized by its internationally renowned Information Lab and Design Space. The result propelled the Taiwan team to eighth from 19th in the world rankings and is expected to boost member confidence as they gear up to take on defending Defcon champions PPP later this year.

According to Hitcon team leader Lee Lun-chuan, PPP's problem-solving capabilities are impressive and illustrate the benefits of Boston University's innovative, challenge-orientated learning environment. "Japan and South Korea also deserve praise for establishing cutting-edge hacker training programs," he said, adding that Taiwan should follow suit and build a better environment for cultivating the information security experts of tomorrow.

<http://www.taiwantoday.tw/ct.asp?xItem=227862&CtNode=436>

New marine radar may improve Taiwan's tsunami detection: scientist

(Central News Agency, 10 03 2015)

Taiwan's National Applied Research Laboratories (NARLabs) has completed the installation of an ocean radar system that may allow better detection of tsunamis and speed up rescue work at sea, a researcher said. Over the



past six years, NARLabs has spent NT\$200 million (US\$6.34 million) installing the Taiwan Ocean Radar Observing System at 17 locations along the coast of Taiwan, said Lai Jian-wu, an assistant researcher at NARLabs' Taiwan Ocean Research Institute.

The work was completed in January with the installation of the 17th radar inside a fishing harbor in New Taipei, he said. The radar system collects information about surface ocean currents over an area of approximately 190,000 square kilometers, about 5.4 times the size Taiwan's land mass, Lai said. The ocean current data can help rescue workers locate victims of sea accidents faster than before, Lai said. The radar data will also help researchers track the movements of fish and observe their spawning cycles, useful information that can be passed on to fishermen, he said.

NARLabs also plans to develop a tsunami warning system that will utilize the radar technology, possibly working with Taiwan Power Co. to provide tsunami warnings, as Taiwan's nuclear power plants are located near the coast, according to Lai. In April, Lai said, a group of researchers will head to Kenting in southern Taiwan to observe coral reef spawning and will use the radar system in their reef conservation work.

<http://focustaiwan.tw/news/ast/201503100031.aspx>

ITRI wins best practices, product innovation award

(Taiwan Today, 12 03 2015)

Hsinchu County-based Industrial Technology Research Institute recently won a Best Practices New Product Innovation Award presented by U.S.-headquartered market research firm Frost and Sullivan. ITRI was recognized for its In-Line Compact Thermal Analyzer, an advanced shipping inspection technique used for LED, or light-emitting diode, manufacturing to reduce thermal-induced stress in semiconductor devices.

Kao Ming-Jer, deputy director-general of ITRI Electronics and Optoelectronics Research Laboratories, said that the institute's first-ever Frost and Sullivan award represents a strong vote of confidence in the innovation and market-driven applied research approach championed by the state-run outfit. "The analyzer enhances production line efficiency by rapidly identifying defective LEDs that exhibit less-than-ideal thermal resistance," Kao said. "As thermal performance has always been the primary factor impacting the life and light quality of LEDs, the analyzer will prove an extremely important tool in global LED production numbering over 100 billion annually." According to Kao, ITRI has successfully integrated the technology to create the world's first automatic thermal analyzer, with a measurement speed of 12,000 LEDs per hour, or a rate of just 0.3 second per component. "This is 2,000 times faster than the traditional approach conducted in the lab," he added.

Rajender Thusu, Frost and Sullivan's industry principal, said most existing equipment is complex and time-consuming, and allows for testing only in the lab at the product design or post-production stage. "ITRI rightly identified the need for a high-performing in-line thermal testing device. "It will improve production performance, extend product lifespan and enable faster analysis. In addition, the distinct capability of the technology to enable high-precision thermal structure analysis during the production process is highly commendable."

<http://www.taiwantoday.tw/ct.asp?xItem=228167&CtNode=436>

HTC betting its future on virtual reality: executive

(Central News Agency, 15 03 2015)

Taiwanese smartphone maker HTC Corp. is putting its hopes in the development of virtual reality as a driver for success, starting with its first virtual reality headset, which was unveiled at the Mobile World Congress show.

HTC North Asia President Jack Tong told CNA in an interview that the headset technology, which allows the user a 360-degree panoramic view, is a relatively new field for the company. "VR is the hope of our future," Tong said, noting that virtual reality is still in the early stages of development. Speaking on the sidelines of the Taiwan launch of the flagship HTC One M9 smartphone, he declined to confirm whether the company is developing virtual reality-based applications for smartphones but said it is aiming "to connect all smart devices to each other."



HTC expanded into the nascent virtual reality market on March 1 with the launch of its the HTC Vive, a virtual reality headset that was developed jointly with Valve, an American video game company whose online marketplace Steam has 120 million active accounts and more than 9 million concurrent users. Equipped with tracked controllers, the Vive headset allows wearers to inspect objects from every angle and interact with their surroundings, according to HTC.



HTC has been working on the beta version of the Vive headset with the world's leading game developers, including Vertigo Games, Bossa, Barry-Fireproof, Dovetail Games, Wemo Labs, Google, Steel Wool Games and Owlchemy, to expand its entertainment offerings. The developer edition of the headset will be available this spring, while the consumer edition will hit the market by the end of 2015, HTC said.

It said it also plans to work with famous international content providers like Google, HBO, Lionsgate and Taiwan's National Palace Museum to explore other applications. The consumer virtual reality market, including hardware and software, is forecast to be worth US\$5.2 billion worldwide by 2018, according to Kzero, a U.K.-based analyst firm. In particular, sales of virtual reality hardware devices are estimated to grow from 200,000 units in 2014 to 5.7 million units in 2015 and 23.8 million units in 2018, Kzero said. Tong did not give a timetable about his company's market share plan in this sector.

<http://focustaiwan.tw/news/ast/201503150008.aspx>

Paraplegic inventor shows creative process at seminar

(China Post, 16 03 2015)

Last year, local paraplegic inventor Hong Cheng-chin took home a gold medal for his invention, the "Sherpa Electric Power Trike for Wheelchair" at the Geneva International Exhibition of Inventions.

According to a report by the Central News Agency, Hong spent a lot of time on his invention; from getting the idea, to gaining recognition for his work and then making the trike a business for himself. Hong's invention itself is the front of a trike, which can be easily assembled and disassembled for use with a wheelchair. The head itself weighs 11 kilograms, and is reportedly suitable to be attached on all brands of wheelchairs. Hong's trike head can now be found on sale around the world. The product provides convenience for those who need the assistance of wheelchairs, as it helps them move around without having to worry about obstacles such as slopes and the need to go in reverse.

According to sources, Hong incorporated the aid of computer design and engineering software with the recent advancement in 3D printing to design and construct his product. In hopes of using Hong as an inspirational example to others, the Development Center for the Spinal Cord Injured asked the inventor to lead a seminar recently, using computer-aided design software that was donated to the organization. The inventor demonstrated his creative process during the seminar, and encouraged others to continue learning and to develop technical skills to utilize creativity and to return to work.

CEO of the DCSCI Lin Chin Hsing told local press that the center has been providing paraplegic patients with career rebuilding training services through learning about new ways to adopt technology. The center has helped close to 1,000 individuals to return to work, Lin said, with the potential of 3D printing currently serving as the most popular subject of interest within the organization.

<http://www.chinapost.com.tw/taiwan/national/national-news/2015/03/16/431190/Paraplegic-inventor.htm>

New Taipei entrepreneurs flex innovation muscle

(Taiwan Today, 17 03 2015)

An Apple Inc. MFi-certified multimedia storage device created by a New Taipei City tech startup with the support of crowdfunding looks set to take the market by storm and reaffirm Taiwan's reputation as an island of innovation.

Launched earlier this month by Maktar Inc., Piconizer notched up pre-orders of 8,000 units totaling NT\$22 million (US\$693,744) in one week. This builds upon the early promise indicated by pledges of US\$65,000 during the device's November and December 2014 offering via U.S.-based Kickstarter Inc.



Maktar co-founder Mactaris Chen said Piconizer is 30 percent cheaper than its competitors and boasts a faster transmission speed and friendlier user interface. "Most data storage devices are basically USB flash drives only working on a computer. Our device is different in that it functions independently and can free memory space in a handset right away." According to Chen, a software developer with 20 years' experience, the device is Maktar's first commercial product and the majority of profits are to be pumped back into the company to finance further development projects.

Echoing Chen's remarks, Tahan Lin—a local crowdfunding specialist who helped organize Maktar's presale promotion—said the beauty of Piconizer is in its ease of operation. "Just plug it in to an iPhone and a corresponding app will launch automatically and download selected photos or videos to the gadget or a computer,



freeing up precious space on the handset.” Lin said the device is locally developed and all production will remain in Taiwan. “This should be a strong selling point when Maktar ramps up marketing activity in East Asia later this year.”

Although Maktar has only been in existence for 12 months, co-founder Milton Tsai said the outfit looks to have avoided the majority of teething problems affecting similar firms. He cites support of incubation consultants Garage Plus in Taipei City, as well the contributions of his eclectic team of designers, software developers and hardware engineers, as playing an invaluable role in the process. “We are a passionate bunch focused on creating cool, innovative hardware and software impacting how consumers use technology.”

<http://www.taiwantoday.tw/ct.asp?xItem=228361&CtNode=436>

NARL unveils 3D solar chip for IoT

(Taipei Times, 18 03 2015)

The National Applied Research Laboratories (NARL) unveiled a compact three-dimensional integrated circuit (3D IC) that functions as a solar cell, which researchers said can be used in a wide range of applications for the Internet of Things.

The next-generation chip differs from conventional ones in that it is built in layers, rather than having different parts assembled laterally, transforming the structure of integrated circuits from 2D into 3D, project leader Shen Chang-hung said. The design reduces the length of a conduit electric currents must travel by 1,000 times, from millimeters to micrometers, thereby minimizing attenuation, Shen said. Comprising two circuits and a thin silicon dioxide film for photovoltaic energy harvesting, the chip is capable of storing photovoltaic energy it absorbs from the environments in which it is employed, which can then be used to power electronic devices such as watches, smoke detectors, brain wave meters and glass break meters, he said.

It also opens up possibilities for applications in the Internet of things, he said. It can be installed on building facades to power air quality monitors, or bridges or reservoirs to test the structures’ seismic response, he said. Other possible applications include installing the chip in wearable devices to monitor people’s biometric data or on vehicles of food companies to ensure the freshness of foods during delivery, he said.

The chip measures less than 1cm³ and can generate up to 1 volt, and more layers can be added to power devices that command higher outputs, with each additional layer providing 0.5 more volts while adding just 0.5 microns to the chips’ thickness. With an estimated lifespan of 10 to 20 years, it greatly reduces the need for changing batteries, making it more eco-friendly than conventional cells, Shen said. Asked what advantage the device has over its Chinese-made counterparts, Shen said that Taiwanese chips are more compact. Furthermore, the NARL was the first institute in the world to successfully integrate IC with thin film photovoltaic cells, and the invention is currently under review for a patent, he added. The NARL is in talks with local manufacturers to discuss possibilities for collaboration, he added.

<http://www.taipeitimes.com/News/taiwan/archives/2015/03/18/2003613833>

TaiGen and Cellex to collaborate on Burixafor study

(China Post, 19 03 2015)

Taiwan’s TaiGen Biotechnology Company and German firm Cellex GmbH announced a collaborative agreement in clinical trial usage of Burixafor. The Carl Gustav Carus University Hospital will also participate in the study titled “Burixafor in allogeneic poor mobilizers,” which looks at the effect of a single dose of Burixafor. The test, a Phase 2 open label study, will target up to 37 healthy patients with poor stem cell mobilization.

Chairman and CEO of TaiGen Hsu Ming-chu stated that “with Cellex as our partner we have access to a larger donor population and can study its effect on donors who failed G-CSF.” Hsu also noted the prominent performance of Burixafor in mobilizing stem cells and progenitor cells from the bone marrow into the rest of the body. In 70 cases, Burixafor showed minimal side effects in healthy patients, patients with Hodgkin’s lymphoma, and those with multiple myeloma.

Cellex founder Prof. Gerhard Ehniger added that it was discovered during an American Society of Hematology meeting in 2013 that “approximately 5 percent of allogeneic donors fail to mobilize enough CD 34+ cells to reach an optimal dose for transplantation using G-CSF.” Stem cell mobilization using Burixafor would increase CD 34+ cells in donors with poor mobilization. Test results from healthy patients have shown that enough CD 34+ cells were produced after one day of using Burixafor. Patients with multiple myeloma were able to produce enough transplantable cells in two days.



CD34+ cells can be injected to treat various diseases, including liver cirrhosis, spinal cord injury and peripheral vascular disease. If the clinical trials are successful, TaiGen will apply to have the drug certified as a so-called "orphan drug" in the U.S. and European Union. Orphan drugs are specifically developed to treat rare medical conditions. Marketing approval within the U.S. and European Union is easier with orphan drugs, working as an incentive for pharmaceutical companies to develop drugs that may not have a suitable profit margin. Examples include cystic fibrosis and Wilson's disease, diseases that are present throughout a patient's entire life.

TaiGen is a Taiwan based biotechnology company that has developed drugs against cancer, diabetes and other infectious diseases. It markets Nemonoxacina, an anti-infection drug for pneumonia. Cellax houses the largest stem cell collection center in Germany, and is among the largest in Europe. Its two sites in Cologne and Dresden have performed over 3,000 stem cell collections in 2014.

<http://www.chinapost.com.tw/taiwan/business/2015/03/19/431422/TaiGen-and.htm>

Taiwan unveils technique to combine sensors on a chip

(Central News Agency, 24 03 2015)

Taiwanese researchers have developed a technique to integrate different sensors on a single chip, making it smaller and more energy-efficient than the chips currently used in wearable devices.

The National Applied Research Laboratories unveiled the technique on the 24th of March, saying it allows for the inclusion of three major categories of sensors on one chip. One type of sensors registers temperature, humidity, pressure and other weather data, while another measures the user's heartbeat, blood pressure, blood sugar, and the third type records the user's speed of movement and other physical factors. Currently, the three different kinds of sensors are run by independent chips and the data is integrated with chips designed for calculations and communications in wearable devices.

The new technology will help save energy and costs for makers of smart phones and wearables by packing various sensors and other functions into one system-on-chip, that is half the size of a rice grain, the institute said. The use of sensor chips has been increasing with the growing popularity of the Internet of Things and wearable devices. French market researcher Yole Development (Yole) has predicted that the annual production value of sensor chips will reach US\$24 billion by 2019. Taiwan manufactures 60 percent of the chips in the world and designs 12 percent of them, but designs less than 1 percent of sensor chips globally.

http://www.etaiwannews.com/etn/news_content.php?id=2709192&lang=eng_news&cate_rss=TAIWAN_eng

New technology to turn solar industry waste for steel production

(Central News Agency, 26 03 2015)

National Cheng Kung University announced that its innovative process that refines solar industry waste into raw materials for steel has been awarded with a patent. NCKU said that the sludge waste created by the solar industry must be processed by the waste disposal companies specializing in either liquid or solid form. While ethylene glycol can be extracted from the liquid portion and sold as fuel, solid waste materials often have no other disposal methods than being buried at landfills.

Chen Wei-sheng, an assistant professor at NCKU's Department of Resources Engineering who led the development effort said that the process involves the use of physical, chemical or diversified treatment methods to extract reusable silicon and carbonized silicon from waste sludge. NCKU said that as conventional solid waste processing is extremely costly and technically complex, it has been abandoned by the majority of waste disposal and reprocessing companies.

Chen said that the new process can reduce the impacts of the glut of sludge waste produced by Taiwan's booming solar power industry. Chen noted that while the reclaimed materials may become the additives in producing ceramics, glass and other fire-resistant products, and mostly importantly, steel. NCKU said that it has transferred the technology to a local waste disposal company, effectively "turning silicon sludge into gold."

<http://focustaiwan.tw/news/ast/201503260033.aspx>

