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# NTU



## NEWSLETTER

June 2013 / No. 36



## NTU Hospital Treats 1st Imported H7N9 Case

Student Philanthropist Helps Homeless  
Wireless Monitor to Advance Agriculture  
Lecture Series to Inspire Students

**Special Report**  
Enthusiastic Alumni





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## From the President's Office

I leave my position as NTU president this June. Looking back on my presidency, when I began my term, I proposed the goals of educational excellence, research excellence, and concern for society and trumpeted the slogan "entering the ranks of the world's top 100 universities." I am pleased that, owing to the combined efforts of all of the university's students and faculty members, we have already achieved the phases of our mission as scheduled.

The 21st century is the era of the knowledge economy and universities are the places with the densest concentration of knowledge. Therefore, after I became president I called for NTU to change its attitude—to transform from a follower to a leader.

Also, through my observations of student clubs and extracurricular activities, I have seen that NTU's students are indeed intelligent and creative. Still, creativity alone is insufficient—NTU's students should put their creativity into practice. I look forward to NTU's students applying their intelligence towards entrepreneurship and creating innovative, world-class businesses like Stanford's Google and Harvard's Facebook.

We are unable to predict the changes the future holds. When I was a student at NTU I learned the vacuum tubes. One year after my graduation, vacuum tubes had been nearly completely superseded by transistors. The reason I was able to survive was that, while at NTU, I laid a solid foundation that allowed me to learn new knowledge at any time. I hope to use this personal experience to encourage NTU's students to lay a strong foundation, and to always maintain a positive attitude in facing this ever-changing world while bravely following the road of innovation.

李嗣涔

President  
Dr. Si-chen Lee

# President Lee Heads Delegation to Elite Baltic Universities



President Si-Chen Lee and his NTU delegation enjoy a group photo with officials at Riga Technical University.

A delegation of NTU officials headed by NTU President Si-Chen Lee visited NTU's partner universities and other elite universities in the Baltic republics of Latvia, Lithuania and Finland for ten days in February and March. At the invitation of Ambassador Gary K.Y. Ko of the Taipei Mission in the Republic of Latvia, NTU arranged a top level delegation, including Dean for International Affairs Hsiao-Wei Yuan, Associate Dean of the College of Science Hongey Chen and Director of the Center for Condensed Matter Sciences Li-Chyong Chen.

The delegation's itinerary included visits to Vilnius University and the Kaunas University of Technology in Lithuania, the University of Latvia and Riga Technical University in Latvia and the University of Helsinki in Finland. The NTU officials also paid visits to the Lithuanian Academy of Sciences and the Latvian Academy of Sciences.

A special highlight of the trip was President Lee's speech at the opening ceremony of the new Taiwan Center at Vytautas Magnus University in Lithuania, the first such center to be established in Eastern Europe. President Lee's speech centered on the current state of higher education in Taiwan and the challenges it faces.

For many years, NTU has had successful student exchange programs and cooperated closely with

the University of Latvia and University of Helsinki, the premier universities of their home countries, Latvia and Finland. In visiting these two universities, the delegation aimed to strengthen the academic exchanges as well as to hold talks regarding ongoing cooperative research projects and ideas for future areas of cooperation with NTU.

CCMS Director Chen has obtained a subsidy from Taiwan's National Science Council for the promotion of scientific cooperation with Latvia and Lithuania, and is working closely with a team led by Prof. Baiba Berzina of the Institute of Solid State Physics at the University of Latvia. The two parties are considering setting up a future bilateral symposium for the purpose of supporting scientific research exchanges.

During the visit, the NTU delegation signed agreements on scholarly exchanges and collaboration with Vilnius University, the Kaunas University of Technology and Riga Technical University. It also established NTU's first student exchange program with the Kaunas University of Technology.

Resulting in the inking of four agreements, the delegation's trip to these three Baltic republics was highly fruitful, and the academic communities in the region considered the visit to be very important. The NTU officials not only opened up new opportunities for greater cooperation but enhanced Taiwan's visibility and academic status in the Baltic region.





# NTU HOSPITAL SUCCESSFULLY TREATS FIRST IMPORTED CASE OF H7N9



Ⓐ NTUH Deputy Superintendent Shan-Chwen Chang and Department of Surgery Chief Hong-Shiee Lai congratulate H7N9 patient Mr. Lee upon his release from NTU Hospital.

The first confirmed human cases of avian influenza A (H7N9) occurred in the region of Shanghai and Jiangsu Province in China in February and March 2013. As of May 23, China had reported 130 cases of human H7N9, and 36 subsequent deaths. The mortality rate for the virus stood at 27.7%.

People travel regularly between Taiwan and China for business and tourism. At present, Taiwan is the only country to confirm a case of H7N9 imported from China. The government confirmed on April 24 that a Mr. Lee, who had travelled to China for business, had been infected by the virus. Thanks to aggressive treatment by a team of doctors at NTU Hospital, the patient recovered from his critical illness and was released on May 24.

Mr. Lee had arrived in the city of Suzhou in Jiangsu Province on March 28 and returned to Taiwan on April 9. On April 12, he began to suffer fever, night sweats and fatigue, yet did not experience either respiratory or intestinal difficulties. On April 16, Mr. Lee sought medical treatment due to a high fever. He was admitted to a hospital and began treatment with the antiviral drug Tamiflu the same day.



Ⓐ NTUH Deputy Superintendent Shan-Chwen Chang leads the H7N9 medical team in cutting a birthday cake to celebrate Mr. Lee's birthday.

Unfortunately, the patient started to suffer rapid breathing on the night of April 19. The following day, a chest X-ray revealed that both lungs were filling with fluid, and his doctors had him transferred to NTU Hospital, where he was admitted to the intensive care unit. Due to Mr. Lee's lung failure, doctors inserted a breathing tube and placed him in a negative pressure isolation room.

The patient's breathing continued to deteriorate and, on April 22, his doctors decided to use extracorporeal membrane oxygenation (ECMO) to keep him alive. Mr. Lee was also transferred to the surgical intensive care unit. During this period, two tests proved negative for H7N9. However, on April 23, a sputum sample was delivered to the Center for Disease Control for reverse transcription polymerase chain reaction testing. The test results were positive, finally confirming that Mr. Lee was infected by the H7N9 virus.

The same day, doctors commenced intravenous

treatment with the antiviral drug Peramivir. Also, since the patient's kidney function continued to deteriorate, the doctors started dialysis on April 25. During this time, the hospital formed a team of physicians and surgeons to provide joint treatment. Mr. Lee's condition stabilized gradually and he was removed from ECMO on May 2. Chest X-rays and pulmonary function improved daily, and the patient's breathing tube was extracted on May 7. He was transferred to a regular hospital ward on May 9. Mr. Lee's breathing continued to improve and he gradually recovered kidney function and no longer required dialysis. As a result of the persistent efforts of the NTU Hospital team, Mr. Lee was released from the hospital in healthy condition on May 24.





# UIUC Chancellor Visits NTU to Expand Cooperation

The University of Illinois at Urbana-Champaign (UIUC) is a leading American university with which NTU enjoys close ties; it moreover ranks among the top choices of NTU students for conducting further studies overseas. On April 12, UIUC Chancellor Phyllis Wise and UIUC Associate Chancellor for Public Engagement Dr. Pradeep Khanna visited NTU to discuss new approaches to strengthen cooperation relations between NTU and UIUC with NTU officials.

Besides joining an agreement exchange ceremony for a student exchange program between NTU and UIUC, the UIUC officials participated in an exchange forum with NTU President Si-Chen Lee and representatives from many NTU departments to discuss existing cooperation programs and areas for expanded collaboration.

Chancellor Wise also serves as a Vice President of the University of Illinois system, and is a member of the National Academy of Sciences' Institute of Medicine. Chancellor Wise's research interests lie in women's health and gender-based biology. While at NTU, she met with NTU College of Medicine Dean Pan-Chyr Yang to discuss options for exchanges.

NTU and UIUC have initiated cooperation programs in a variety of areas and are presently implementing nine programs, including a student exchange program, 4+1 a joint dual degree and dual degree program and a library cooperation program. During Chancellor Wise's visit, discussions focused on seven cooperation programs ranging from inter-institution cooperation and a university library program to cooperation in electrical engineering and computer science, management, civil

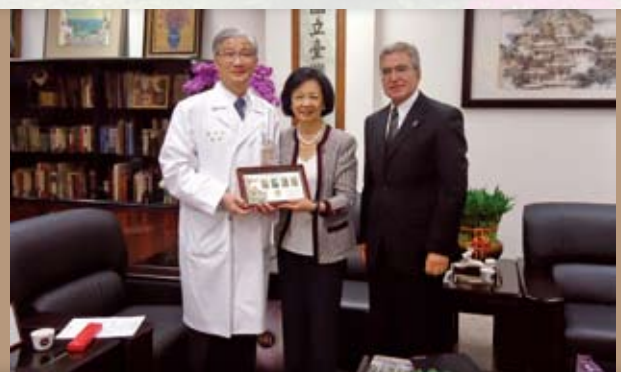
engineering, social work and landscape architecture. The forms of cooperation adopted for these programs include student, faculty and researcher exchanges as well as research collaboration.



NTU and UIUC also agreed to organize annual global higher education and research conferences to be held alternately in Taiwan and the United States. Conference themes will center on a single topic or research issue and scholars, researchers and administrative officials from the two universities will be invited to present keynote speeches.

Every academic year since 2004, NTU students have attended UIUC for overseas studies; students from the College of Engineering and College of Management have made up the largest portion of these students. Moreover, NTU has received an increasing number of UIUC exchange students over the last five years. It is noteworthy that as many as 69 NTU professors are UIUC alumni. Also, over 50 NTU students are presently enrolled in degree programs at UIUC.

To date, UIUC has been home to 13 professors and 11 alumni who are Nobel Prize laureates. Among the outstanding Taiwanese to attend UIUC are Academy Award-winning director Ang Lee, who earned his bachelor's degree in theater at UIUC in 1980, and former NTU President Szu-liang Chien, who earned his PhD at UIUC in 1934, graduating Phi Beta Kappa.





## NTU Alumni in Houston Kick off Donation Drive for Their Alma Mater



▲ Houston Alumni President Helen Weng presents a plaque in gratitude to renowned author and alumna Ruoxi Chen at the beginning of an NTU lectures series.

The NTU Alumni Association in the Greater Houston Area (NTUAAH) held its annual meeting on February 23. With Director-General Daniel Liao of the Taipei Economic and Cultural Office in Houston presiding, outgoing President Jane Deng welcomed this year's new president, Helen Weng, during the meeting.

The association's new board of directors was also announced. Besides these official matters, the event was an opportunity for old friends to get together for a festive night of singing, dancing and colorful skits.

NTUAAH President Weng recently stated that the association would start a new NTU donation drive to collect funds to help the university celebrate its 85th anniversary and reach its goal of entering the ranks of the world's leading 50 universities. In May, President Weng returned to Taiwan to meet with NTU President Si-Chen Lee and incoming NTU President Pan-Chyr Yang as well as to discuss the association's operations

and prepare for the university's anniversary events.

President Weng says the board of directors resolved to initiate the donation drive in response to calls made by President Lee in recent years for NTU alumni to organize annual donation drives to help the university achieve its development goals. President Lee declared that NTU would benefit greatly if each of the approximately 100,000 NTU alumni in the United States and Canada were to donate just UD\$100. During his term, President Lee worked tirelessly to boost NTU's international standing and build the university into an institution capable of creating a Taiwanese Nobel Prize laureate.

## 19th NTU Artfest Opens with Thrilling Indie Rock Concert

The 2013 NTU Artfest was held this May under the banner Art You Alive. From the opening day on May 3 to the finale on May 25, the 19th NTU Artfest spanned three weekends, offering a dazzling array of art exhibitions and performances. Whether it was innovative dance or performance art or a market fair in Luming Square, art exhibitions or displays of spatial design, Artfest provided something for everyone and revealed a fresh, creative side of NTU. The core themes of this year's NTU Artfest were public participation and intercommunity interaction, and it was aimed to inspire life as art and art as life.

One of the highlights of this

year's Artfest was a concert of four indie rock bands on opening night. Their throbbing sounds set the Cheng-Hsing Lawn ablaze in front of the main library. Mass Man kicked off the concert by building a powerful wall of sound that turned the audience into a writhing mass of bodies dancing and slamming into each other. Then, producing enthralling, playful robotic electronic music, The Girl and the Robots captivated and stimulated every sensory nerve in the audience.

Next up, Come On! BayBay!'s warm and melodious vibrations synchronized the pulses of everyone in attendance, making them race and calm in turn. The

headliners, Cotton Candy, closed the show. During their thrilling performance, they called on everyone to take part in NTU's art events in May by coming out under the radiant sun to express their youthful passions and make great memories together.



## EIGHT NTU SUBJECTS RANKED AMONG THE TOP 50 IN THE WORLD



NTU is pleased to report the university has been ranked in 26 subjects in the 2013 QS World University Rankings by Subject, which was released on May 8. The annual survey lists the 200 leading universities across 30 subjects. Subject ranking criteria are academic reputation, employer reputation, citations per paper and h-index. Quacquarelli Symonds evaluated 2,858 universities for this year's rankings.

Among the 26 subjects for which NTU was ranked this year, 24 stand among the top 100 institutions. Even more impressive, eight subjects rank in the top 50. These are Chemical Engineering (36th), Civil and Structural Engineering (32nd), Electrical and Electronic Engineering (24th), Mechanical, Aeronautical and Manufacturing Engineering (37th), Pharmacy and Pharmacology (38th), Chemistry (46th), Earth and Marine Sciences (49th) and Materials Sciences (34th).

In the 2012 rankings, 24 subjects at NTU made it into the top 200. The university's improvement

to the inclusion of 26 subjects this year demonstrates the steady advances NTU is making in all subjects as a result of the NT\$50 billion in funding provided over five years by the Ministry of Education.

NTU will continue to push forward a range of strategies aimed at boosting educational standards, recruiting exceptional teaching and research faculty, achieving balanced development across fields as well as breakthroughs in key areas, and promoting the internationalization of academics. These efforts will promote across-the-board improvements in all areas of education and research, enhance the university's international visibility in academics and propel NTU into the ranks of the world's 50 most elite universities.

Quacquarelli Symonds began compiling the QS World University Rankings by Subject in 2011. The company also publishes the QS World University Rankings, which together with the Times Higher Education World University Rankings and the Academic Ranking of World Universities, is considered one of the three most respected world university rankings.







📷 Photography Contest prize winner  
Chao-Yang Lo

The Office of International Affairs encourages NTU students to enroll in the university's overseas studies programs, and provides support for those wishing to study abroad. One important support activity is the annual pre-departure orientation meeting. This meeting is aimed at informing the students of the procedures and administrative matters to be handled before departure. Consequently, the students feel confident that they will not neglect any of the procedures.

2013/2014 NTU Outgoing Exchange/Visiting Students Pre-departure Orientation was held on May 1, and attracted nearly 400 exchange students, visiting students and European Union Program students. The orientation provided specific vital information about the students' study abroad. The OIA also handed out Student Ambassador packets containing NTU brochures and souvenirs for the departing students to share with their classmates overseas to entice foreign students at NTU's partner universities to study at NTU as exchange students.

That night, the OIA held another meeting which brought the outgoing students together with return NTU students who had studied overseas and visiting foreign students at NTU to share their overseas studies experiences. Learning from the experiences and

## OIA HOLDS PRE-DEPARTURE ORIENTATION FOR OUTGOING EXCHANGE STUDENTS



📷 The pre-departure orientation attracted nearly 400 exchange students, visiting students and European Union Program students.

advice of these students helped the outgoing students to make better preparations.

Besides these events, the OIA organized the 2011/2012 Exchange Student Experience Sharing, Website and Photography Contest. This three-in-one contest was aimed to encourage students who had studied abroad to share the knowledge and experiences they gained while overseas. After receiving the contest entries, the OIA first selected the most outstanding entries then determined the final winners by online voting on the NTU Community website, a "click like" activity on the OIA Facebook Fans page, and a team of OIA judges. First-, second- and third-place prizes were handed out in each category, and the OIA presented the winners with certificates and prize money at the May 1 orientation.

The winning entries in the Experience Sharing Contest were well written and depicted touching

details of the life of an overseas exchange student. Besides their expressions of inspiration, the winners stood out from the others in their attention to the details of campus and academic life as well as to interpersonal relationships and friendships.

The winners of the Website Contest were chosen for their website management, writing skills and the layout of their eye-catching photographs. As to content, no matter whether it recalled cherished overseas experiences or glimpses of everyday life, the winning entries were all fresh and informative.

The entries of the Photography Contest winners showed the fascinating aspects of life and culture, pride in Taiwan's national flag and memories of friends and campus life, which left the viewer spellbound.

The list of winners and their winning entries can be viewed on the OIA Facebook page.



## EXCHANGE STUDENTS BRING THE WORLD TO ELEMENTARY SCHOOL

NTU has enjoyed partner university relations and student exchange programs with the University of California and California State University systems for more than a decade. This spring semester, exchange students from the UC and CSU systems were offered the opportunity of teaching English-language demonstration classes at Taipei Municipal Long-An Elementary School, April 22 - May 17.

The international English teachers worked with 480 third- and fourth-year elementary school students from 16 classrooms, and in the process learned more about Taiwanese culture while making their contribution to local society. The teachers played classroom games and taught such subjects as American culture and world geography. They adopted a casual learning approach and used light materials to arouse the students' interest in English, encourage them

to speak English, and reduce their fear of learning English.

The participating exchange students came from different departments yet they were all passionate about Taiwan and the Taiwanese people and willing to use their free time to prepare their teaching curricula. Tiffany H., an International Business major from CSU, Fullerton, applied the curriculum design methods and communication techniques she learned in the Practical Children's English Teaching course she took at NTU last semester. The elementary school students and teachers alike were impressed by with her teaching skills. UC, Berkeley, Natural Resources major Ping W. responded to the emergence of the H7N9 influenza virus at the time by teaching the concept of washing one's hands thoroughly to eradicate viruses.

While NTU encourages local students to study abroad, it also



UC, Berkeley, exchange student Ping W. taught proper hand washing techniques to his students during the H7N9 outbreak.

invites students from overseas to study here. For international students who are interested in service as well as learning while at NTU, opportunities such as teaching English-language demonstration classes allow them to use their professional knowledge to get deeply involved in local society and help others. Moreover, by interacting with international students, local students can get acquainted with other cultural perspectives.

## NTU OPENCOURSEWARE BRINGS HIGHER EDUCATION TO THE PUBLIC

In line with the global trend of bringing higher education to the public at large, NTU has actively promoted and developed its NTU OpenCourseWare website since 2011. The website provides the general public free access to videos of many of the university's most informative and fascinating courses. To date, the website has built a collection of videos for over 100 NTU courses, and has attracted over 1 million visits.



of NTU OpenCourseWare and make these valuable educational resources accessible to even more people.

## Portuguese Violin Joins Taiwanese Pipa to Meld East and West



On May 10, world-renowned Portuguese violinist Carlos Zingaro joined Taiwanese pipa master Luo Chao-yun at the College of Liberal Arts for a performance titled, "A New Chinese and Western Legend." The two musical improvisers delivered a sterling performance that explored intertwined layers of Western music and traditional Taiwanese folk melodies.

Zingaro is a classically trained violinist who is famous for his violin improvisations accompanying electronic music. He has also made a name for himself as a composer of film scores and visual artist and for his collaborations with dance troupes. This marked his first return to Taiwan after visiting once over a decade ago. He said he was deeply moved by the intense creativity he achieved with Luo by melding Eastern and Western music. Zingaro also presented the lecture "My Music, My Listeners" at the Graduate Institute of Musicology.

Luo is known for her solo classical performances as well as her improvised and experimental collaborations with international artists.

## Department Chairs Meet to Discuss Student Affairs and Internationalization

The Office of Student Affairs and Office of International Affairs teamed up to organize the Meeting with Department Chairs held on April 11 of this year. The meeting served to bring the heads of all NTU departments and graduate institutes together to discuss student affairs and internationalization efforts at NTU. One-hundred twenty people participated in the meeting.

The OSA and OIA introduced their respective priority projects at the meeting. First, Dean for Academic Affairs Bau-Ruei Duh stressed the importance of the OSA's suicide prevention efforts for students and explained the rationale for changes made to the student financial aid program. Associate Dean for Academic Affairs Hsi-Mei Lai and the heads of each class-two OSA division then briefed the meeting on their principal projects. Dean Duh discussed NTU Community, an online community established for members of the NTU family two years ago. The OSA believed this face-to-face meeting and the Student Counseling Resources Handbook, which the office handed out during the meeting, would serve to help the chairs and faculty of each department and institute take better care of their students.

Dean for International Affairs Hsiao-Wei Yuan discussed the OIA's organization and budget allocations, the university's reception of international professors and researchers, overseas exchanges conducted by NTU professors as well as the current status of and challenges facing international students at NTU and NTU students who study abroad. The OIA expected the briefing to help each department and institute promote its internationalization efforts.

The Department of Chinese Literature briefed the meeting on the growth of its Bachelor's program for international students during the past six years and expressed concern that measures instituted in neighboring countries to attract outstanding international students could lead to a relative decline in NTU's competitiveness. The Department of Political Science stated that a culture of studying overseas has already emerged within the department.





# METHODOLOGY FOR FORECASTING FISH POPULATION SIZES PUBLISHED IN *PNAS*

The findings of a study conducted by Prof. Chih-Hao Hsieh along with an international team of scientists were published in the prestigious *Proceedings of the National Academy of Sciences* (April 17, 2013). The article, "Predicting climate effects on Pacific sardine," presents a new analysis methodology for forecasting the influence of the associations between such non-linear variables as fishing, climate and ecological systems on fish populations. Prof. Chen conducts research at the Institute of Oceanography and the Institute of Ecology and Evolutionary Biology.

An urgent task involved in the effective operation and management of fisheries is to understand how the interactive effects between fishing and climate influence fish population sizes. Despite the large sums of money

problem has remained unsettled for decades is that scientists in the past researched the influences of only single variables, such as fishing activities and climate, separately on increases and decreases in fish populations, and that this created a major blind spot in their analyses. For instance, during the 1990s, research showed that increases in ocean temperatures led to rapid growth in sardine populations. However, the latest research from 2010 demonstrates that temperatures are not a major factor affecting population numbers and that the extrapolations of previous research were in fact incorrect or single-faceted misinterpretations.

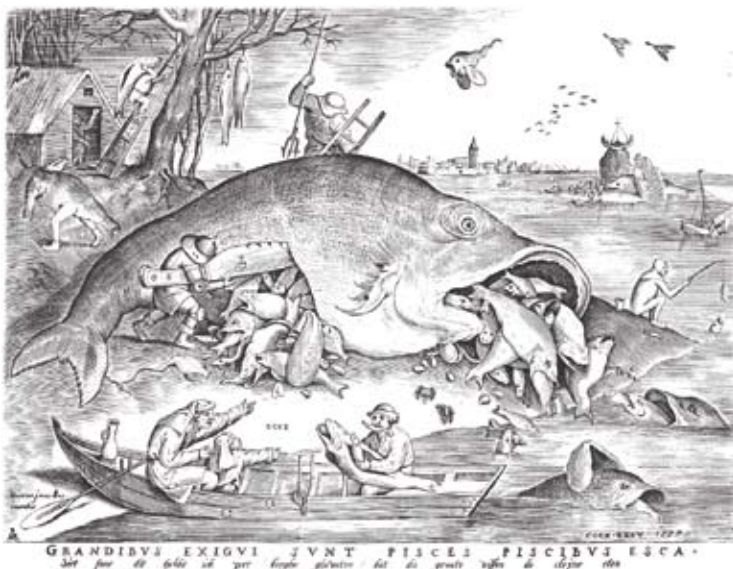
The shortcomings of previous research stemmed from a failure to realize that associations between different variables emerge or dissolve spontaneously, sometimes producing positive effects and



or modeling. It turns out that the impact of temperature on sardine populations can be positive and it can be negative; this depends on the interactive association between fish population conditions and the species.

Using this new methodology, Chen's research team discovered that changes in sardine populations were influenced by the combined pressures of fishing, climate and variations in the ecological system. Prof. Chen and his partners conclude that investigators should not use single variables to infer their associations with population increases or decreases.

This new method avoids producing the abovementioned problem of single-sided explanations because it registers the dynamic relationships between all variables, not simply statistical correlations between pairs of variables. The team's methodology can be utilized as a framework for researching variations in fish population sizes to understand the influences of the interactive associations between fishing activities, climate, ecological systems and species on the population of any single species.



invested into research on this topic in the past, investigators had failed to come up with a reliable explanation.

Prof. Hsieh and his research partners believe the reason this

sometimes negative. That is to say, since a great variety of elements impact fish populations, we are unable to understand the problems confronting the sardine industry by using simply correlation analysis

# STUDY EXPLAINING DIVERSITY OF COLOR PATTERNS IN FEATHERS PUBLISHED IN *SCIENCE*



- 1** Prof. Shiou-Hwa Jee of the Department of Dermatology participated in this research project.
- 2** Institute of Biomedical Engineering Prof. Sung-Jan Lin published his team's breakthrough findings on melanocyte stem cells in *Science*.
- 3** Prof. Sung-Jan Lin explains the mechanisms underlying the diversity of pigment patterning in bird plumage.

**B**irds, with their beautiful and varied plumage, are a class of animal that comprises one of the largest numbers of species. Yet, scientists have long been unable to explain the reason birds were able to evolve such an endless variety of color patterns in their feathers.

Using the black-feathered Taiwan Country Chicken as a subject, an interdisciplinary team of NTU researchers discovered that melanocyte stem cells are concealed at the base of a feather. They also found that these stem cells have a horizontally-distributed, ring-like arrangement that allows for the flexible regulation of pigment patterns both temporally and spatially. This research finally explains the reason behind the wondrous diversity of pigment patterning in bird plumage and how feathers achieve pattern variations from the tip to the base and from left to right.

The team's outstanding findings were published in the article, "Topology of Feather Melanocyte Progenitor Niche Allows Complex Pigment Patterns to Emerge," in the world-renowned journal *Science* this past April.

One of the authors of this study, Prof. Sung-Jan Lin of the Institute

of Biomedical Engineering, pointed out that the evolution of feathers commenced during the Jurassic period and that it was dinosaurs that evolved the first feathers before going on to evolve gradually into modern-day birds. We know now that dinosaurs already displayed a diversity of color patterns in their plumage during the Jurassic period, but what was the crucial transformation that allowed later feathers to develop the beautiful variety of colors and patterns we see today?

This study was conducted by researchers from the NTU Research Center for Developmental Biology and Regenerative Medicine under the leadership of Honorary Director Cheng-Ming Chuong. Scientists at the University of Southern California and Indiana University School of Medicine as well as independent research scholars in the United States also cooperated on the project. National Chung Hsing University played a vital role, as well, by providing its special breed of Taiwanese chicken.

Many scientists attempted to answer this question during the previous century, however none of them succeeded in arriving at an acceptable conclusion. This failure was primarily due to the

fact that melanocyte stem cells in feathers lack pigment. This means that common biopsies cannot be used to identify these stem cells or their stem cell niche.

Prof. Lin and his research team used methods derived from the study of stem cells and molecular biology to develop molecular probes and markers that permitted them to find evidence of melanocyte stem cells in the black-feathered Taiwan Country Chicken. The investigators discovered that melanocyte stem cells are hidden in non-pigmented epidermis at the base of a feather. This was a finding that overturned the old concepts that scholars had held during the last century. Moreover, the team's discovery revealed the importance of topobiology for the regulation of stem cells.



**▲** Bird feathers exhibit a multitude of colors and come in myriad forms.



# BBC NEWS REPORTS ON NTU'S ADVANCED AGRICULTURE MONITORING SYSTEMS

Two advanced agriculture monitoring systems developed by Prof. Joe-Air Jiang of the Department of Bio-Industrial Mechatronics Engineering were highlighted in a March 29 BBC News article on high-tech innovations that are benefiting Taiwan's agricultural sector. Prof. Jiang's new technologies are a wireless dynamic monitoring system for harmful fruit flies and moths and a fully-automated monitoring system for orchid hothouses.



▲ BBC reporter Katia Moskvitch poses with Prof. Joe-Air Jiang, guava farmers Mr. and Mrs. Zai-lang Jiang and other participants during their interview.

In her report, "Black eggs and ripe guava lead Taiwan's tech revolution," BBC technology reporter Katia Moskvitch detailed how the innovations integrate advanced telecommunications technologies and praised them as being at the forefront of an agricultural revolution in Taiwan.

Prof. Jiang has gradually turned his ideas for his pest monitoring system into operational products by relying on an interdisciplinary and inter-institutional R&D team, which he formed back in 2006. The team includes Prof. Fu-Ming Lu, also of the Department of Bio-Industrial Mechatronics Engineering and Prof. En-Cheng Yang of the NTU Department of Entomology as well as Prof. Chwan-Lu Tseng and Prof. Yung-Chung Wang of the Department of Electrical Engineering at National Taipei University of Technology. Research funding for



the project was provided by the National Science Council and the Council of Agriculture.

The initial targets of Prof. Jiang's monitoring system are the oriental fruit fly (*Bactrocera dorsalis* (Hendel)) and oriental leafworm moth (*Spodoptera litura* (Fabricius)), two pests that pose a major threat to crops in Taiwan. The R&D team first developed traps that use infrared lasers to detect flies that have entered and automatically count their numbers. They then expanded from this simple spot-detection system by integrating it with a wireless sensor network.

Prof. Jiang has already set up 27 monitoring networks around Taiwan. The networks, which rely on solar panels for power, record weather conditions and pest counts every 30 minutes and transmit this data back to servers in Taipei via a combination of telecommunications technologies, including ZigBee, GSM, GPRS and 3G.

By analyzing data collected by the monitoring networks over the years, Prof' Jiang's team has indentified relationships between pest counts and weather conditions, and used them to develop a pest alert system. This system is able to forecast a possible infestation seven days in

advance and notify farmers and government agencies automatically so that the proper precautions can be taken.

Prof. Jiang's automated monitoring system for orchid hothouses was developed with support from the Intel-NTU Connected Context Computing Center. When the system is fully developed, he aims to get it into the hands of the nation's orchid farmers by transferring the technology to industry. By providing accurate and energy-efficient environmental



control, the system will boost efficiency, quality and profits for Taiwan's orchid farmers who have made Taiwan the largest exporter of orchids by producing one third of the world's orchids.

The original article can be accessed on the BBC website at <http://www.bbc.co.uk/news/technology-21929307>.





# Student's Facebook Page Collects Bonus Points to Feed Homeless People



While many people use social media to share their lives, one young person at NTU has been putting this emerging technology to work with the goal of helping others. When Teng-ju Ku, a student at the Graduate Institute of Social Work, learned that students overseas had started a drive to collect meal cards for distribution to homeless people, he decided to set up a Facebook page called Help Homeless People Eat, which he has used to run a charity drive that collects convenience store bonus points in order to feed homeless people. For over a year now, Ku has collected bonus points and exchanged them for foods, such as sweetened soy milk and instant noodles, that he provides to people who sleep on the streets.

Since starting his campaign in March 2013, Ku has exchanged bonus points for 3,300 packaged bowls of instant noodles, and his Facebook page has gained more than 3,200 fans. He has already held six rounds of the charity drive, and intends to press on. Ku says, "The momentum of the sixth round has not waned from that of the last few rounds. Our large fan base and renown mean we are able to get the word out without needing to go through the mainstream media.

Ku makes weekly postings of the number of bonus points collected in order to ensure the campaign remains transparent for the generous people that make donations. He also designs electronic fliers for each round that state the principles behind the drive and provide important information. Each time Ku posts a poster to the campaign's Facebook page, two to three hundred

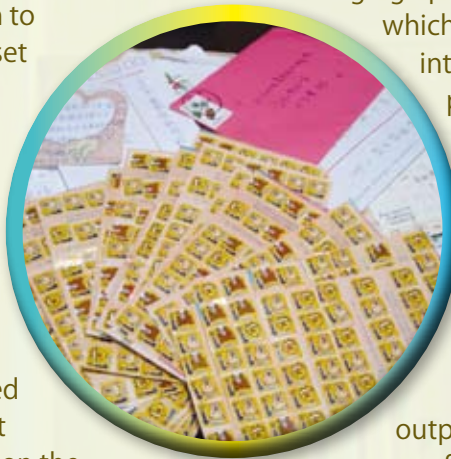
people share it on their own Facebook pages.

The Help Homeless People Eat page reads, "Want to help others, but feel the power of one person is too small? Want to take part in the community, but find it difficult to make the time? When you get 7-Eleven bonus points, doesn't it seem like you haven't really collected that many?" It is the sincerity of Ku's message that evokes people's compassion.

Ku takes time each day to respond to the wide-ranging opinions expressed on the page, which include even discriminatory and intolerant remarks about homeless people. Nonetheless, he approaches these difficulties as a challenge. The way he sees it: "Giving people with differing viewpoints the opportunity to engage in discussion on this platform is a way to build consensus."

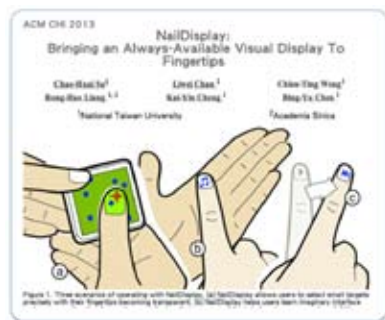
Still, Ku has witnessed an outpouring of kindness from every corner of society. One female student even donated 700 points at one time. Another person felt his or her points were too few and so donated NT\$2,000 and two NT\$100 gift certificates. Some students even set up their own collection boxes.

Now, Ku, feeling his own power insufficient, wants to organize a club to bring people together and help even more homeless people.





# Winning Paper Introduces Fingertip Display and Controller for Touch Screens



A research group led by Prof. Bing-Yu Chen of the Department of Information Management won the Best Paper Award at the 2013 ACM Conference on Human Factors in Computing Systems (CHI), which is considered the premier conference in the field of human-computer interaction. Despite competing against the over 2,000 papers submitted to the conference, the group's paper, "NailDisplay: Bringing Always-Available Visual Display to Fingertips," managed to stand out from all the others. In addition to being honored at the conference, the paper was also widely reported on in international media outlets, including Reuters news agency and *New Scientist* magazine.

ACM CHI is an annual conference organized by the ACM SIGCHI (Special Interest Group on Computer Human Interaction). This year's conference was held in Paris, France, April 27 - May 2.

The group's winning paper introduces an innovative device called NailDisplay. NailDisplay is a small fingertip display that is worn like a ring. The prototype model consists of a 0.96-inch OLED display that is five millimeters thick, an ATmega32U4 microprocessor, sensors and a vibrator.



The NailDisplay team (from left to right): Prof. Bing-Yu Chen of the Department of Information Management, Graduate Institute of Networking and Multimedia PhD student Kai-Yin Cheng, Department of Information Management Master's student Chao-Huai Su, Graduate Institute of Networking and Multimedia PhD student Rong-Hao Liang and Dr. Li-Wei Chan of the Academia Sinica Research Center for Information Technology Innovation.

The group designed it to augment the use of finger on touch screens as well as information and telecommunications devices without displays. This novel fingernail display provides not only visual feedback but also integrates with the device being operated to allow for user-input touch controls.

The paper describes three display and user-control applications of this technology that can benefit people. For starters, NailDisplay displays the part of a touch screen covered by the user's finger, making the fingertip in effect transparent. This allows the user to not only view the screen in full but also to conveniently and precisely select small user input elements on the screen. In another application, NailDisplay complements a screenless device that uses an imaginary interface. It helps users learn an imaginary interface—for instance, invisible virtual buttons positioned in line along the arm—and allows them to reconfirm the interface when the user's memory of it becomes unclear. Finally, NailDisplay can be used as an independent device that is controlled with rich finger interactions, such as

swiping in the air. As a mobile phone, it permits the user to view information and make phone calls with the wag of a finger.

NailDisplay is not simply a novel piece of technology, it represents a conceptual breakthrough. While touch screens have always been all about "you get what you see," NailDisplay upends this concept by emphasizing "you see what you touch" and integrating touch control with visual display. Prof. Chen's group looks forward to creating a world in which there is no place without touch control by taking this technology out of the laboratory and into peoples' daily lives.



## Mechanical Engineering Postgrads Win Big at the 9th Hiwin Thesis Awards



**N**TU mechanical engineering postgraduate students and their advisors won several major awards at the ceremony of the 9th Hiwin Thesis Awards on March 23.

Postgraduate student Yu-Ju Liu and Prof. An-Bang Wang of the Institute of Applied Mechanics took home the event's top prize for Liu's thesis, "Development of a novel slot die coater manufacturing technology and its application in multilayer ceramic capacitor (MLCC)." For this thesis, they were awarded the Gold Prize and NT\$1 million. This is the second time Prof. An-Bang Wang has claimed this award.

Besides this, postgraduate student Chih-Hsiung Wang and Prof. Kuang-Chao Fan of the Graduate Institute of Mechanical Engineering took the Silver Prize for Wang's thesis, "Development of an abbé error compensator for 3-axis NC machine tools." They were awarded a cash prize of NT\$300,000.

Two other NTU student-professor pairs from the Graduate Institute of Mechanical Engineering won the Excellence Prize and NT\$100,000 for their outstanding theses. Postgraduate student Jing-Yi Chen and Prof. Pei-Chun Lin were awarded for Chen's thesis, "Development of turning gait and force-feedback walking gait for a biped robot," and postgraduate student Cheng-Wei Lin and Prof. Sen-Yeu Yang received awards for Lin's thesis, "Development of micro/nano-structures on optical glass by roller hot embossing."

The Institute of Applied Mechanics strongly encourages its outstanding students to join the Hiwin Thesis Award competition and vie for the recognition and monetary prizes. Furthermore, the competition organizer, Hiwin Technologies Corp., a Taiwanese precision machinery component manufacturer, arranges a trip to Japan for the award winners to attend the biannual Japan International Machine Tool Fair (JIMITOF) and visit some of Japan's most advanced factories. Hiwin hopes the visit to Japan will broaden the award winners' global outlook and expose them to advanced international precision machinery research and technology.

## STUDENT CONTEST PROMOTES ENERGY CONSERVATION

**T**he Office of General Affairs held a student creativity contest aimed at not only improving energy conservation and carbon reduction on campus but also developing students' innovative thinking. The



OGA energy conservation task force will consider developing the winning entry proposal into practical measures to achieve energy conservation on campus.

The first-place team was called E-watch. The six team members were students from NTU's Graduate Institute of Bioenvironmental Systems Engineering, Graduate Institute of Physics, Department of Drama and Theater, Department of Materials Science and Engineering and Department of Political Science.

The Emperor's Harem is Really Environmentally-Friendly, the second-place team, included eight students from the Department of Business Administration. The third-place team, Undefeatable Pumpkin Ball, was two students from the Department of Mechanical Engineering.



## NTU Athletes Take Fifth in Medals Count at Intercollegiate Games



The 2013 National Intercollegiate Athletic Games were held at National Ilan University, April 27-May 1. 278 NTU athletes competed in the games. In all, NTU earned 13 gold medals, 20 silver medals and 23 bronze medals to rank fifth overall among the 163 institutions competing in the games.

At the opening ceremony, Prof. Kuo-En Huang of the Department of Athletics led 32 enthusiastic students and faculty members in taking a ceremonial lap around the track. Some tennis and taekwondo competitions were held on April 26 due to scheduling reasons. The NTU tennis team claimed a bronze medal in the women's open doubles competition, winning NTU's first medal of the games.

Swimming is one of the sports on which NTU has focused training and resources. This investment paid off at this year's games, with NTU's swimming team taking away nine gold medals, 13 silver medals and 14 bronze medals. And, in the track and field events on April 28, our athletes grabbed two gold medals, one silver medal and three bronze medals.

Tennis, badminton and table tennis drew the largest numbers of athletes, and the competition was intense. NTU's mixed doubles team fell by a slight margin to a team from National Tsing Hua University to win silver medals in the finals. In badminton, our men's doubles team won gold medals and the women's doubles team earned silver medals. As for table tennis, NTU placed sixth in the women's open doubles competition, and claimed a bronze medal in the men's regular doubles and a silver medal in the women's regular doubles.

## WikiUrSchool Helps High School Students to Choose University Departments

Despite the wide availability of online social networks and search engines like Google, many high school seniors have difficulty accessing reliable information to guide them in deciding which university department to enter. Faced with all of the departments at the various universities in Taiwan, the overwhelmed students often make their choices rashly, and many of them start to realize that their initial choices were not suitable by the end of their first year,



Two NTU students, Yi-Ling Huang of the Department of Business Administration and Ruei-Ci Wang of the Graduate School of Finance, teamed up with students from other universities in Taiwan to address this serious information gap. They set up a Wiki-style website to help high school students make informed decisions concerning which university departments are most suitable for their needs, so they can avoid making regrettable decisions.

Called WikiUrSchool, the website invites students at universities around Taiwan to write about their experiences at and impressions of their departments so that high school students can obtain first-hand, reliable information. As with Wikipedia, their website relies on crowd-sourcing, meaning it can be edited by each of the participating university students. The website has amassed 195 pages and 832,041 hits since its establishment.

The students also set up a WikiUrSchool Facebook page to create opportunities for networking and open dialogue. In a sign that WikiUrSchool has satisfied a true need for information concerning university departments among high school seniors, the Facebook page has already attracted more than 10,000 members.

## Inspiring Life Success Lectures Published in Book Series



The Center for General Education organizes these Lectures for General Education. The NTU Lectures on Intellectual and Spiritual Pilgrimages are aimed to create a space outside of classes in which students can contemplate life. This lecture series invites exemplary individuals who have achieved great success in life to share the inspiring stories of their personal and professional development.

Since the series' establishment in 1997, more than 90 luminaries have come to NTU to speak on their exceptional life journeys. This year alone, the CGE has invited former National Science Council Minister Lou-Chuang Lee, Beijing opera star Hai-Ming Wei, Control Yuan President Chien-Shien Wang, venerated Taiwanese mountaineer Nan-Jun Yang, Taiwanese opera star and national treasure Prof. Chiung-Chih Liao and former National Health Research Institute President Kenneth Kun-Yu Wu.

To share these inspiring lectures with a wider audience, the CGE has worked with NTU Press to compile a book series. To date, the publisher has released six books in the series.

## Junior and Senior High School Lesson Plan Awards Held at NTU

The NTU Center for Teacher Education held the 9th Dialogue on Educational Theory and Practice: The 12-Year Compulsory Education Activation Courses and Teaching Symposium on April 26. The symposium showcased NTU's resources as a comprehensive university and gave the participating junior and senior high school teachers the opportunity to pursue continuing education and present their teaching achievements.

This year's symposium included experts and scholars, model teachers, and outstanding junior and senior high school administrative and teaching teams to explore and discuss in depth the impact the implementation, teaching directives and courses of the 12-year compulsory education program will have on the classroom. The Taiwan government plans to implement the mandatory 12-year plan in 2014. It will replace the current 9-year compulsory education program.

The awards ceremony for the 6th Super Lesson Plan Awards was held in coordination with the symposium. The competition drew 70 innovative lesson plans, 37 in the teacher category and 33 in the student category. First-, second- and third-place prizes, as well as four excellence awards, were awarded in each category. Poster presentations for the winning lesson plans were displayed during the symposium.

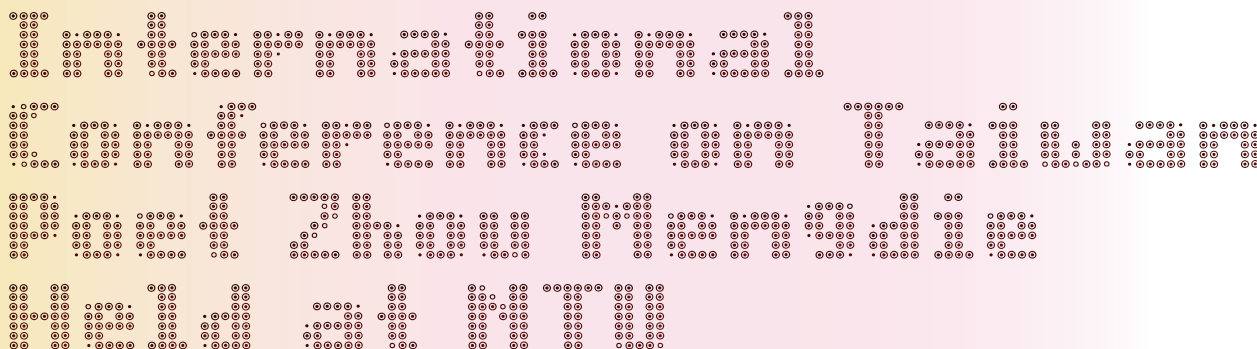
The first-place lesson plan in the teacher category was, "Learn How to be a Warm Person." It integrated literary classics and life education to encourage students to reflect on their lives and consider effective ways to deal with frustration. This moving lesson plan garnered high praise.

The first-place lesson plan in the student category was titled, "The Journey of Machines." This plan explored Chinese and Western history to raise the students' awareness of the relationships between human beings and machines, and remind them that machines are invented in response to human needs.





# NTU at a Glance



"Poetically He Dwells"—An International Conference on Zhou Mengdie: Manuscripts, Literary Works, Religious Thoughts and the Arts (ICZMD) was an ambitious, multidisciplinary research conference on the prominent Taiwanese poet Zhou Mengdie. Jointly organized by NTU's Graduate Institute of Taiwan Literature, the Department of English of National Central University and the Department of Chinese of National Kaohsiung Normal University, the conference was held at NTU, March 23-24. ICZMD provided the occasion for presenting and discussing Zhou Mengdie's poems from a wide range of perspectives, and included an extraordinary exhibition of Zhou's manuscripts.

The organizers invited notable scholars of Taiwan literature, domestic from around Taiwan and overseas from the United States, Germany, the Netherlands, Austria and Hong Kong, to share their academic insights and reflections. Conference highlights included presentations on Zhou's poetic language form, poetic style, emotions and religious reflections, manuscript studies, and new interpretations from different translations.

Zhou Mengdie and another important Taiwan poet, Yu Guangzhong, made personal appearances at ICZMD, drawing dozens of honored guests and devoted readers. Yu delivered a keynote speech moderated by Prof. Horng Shu-Ling, Chairman of GITL. Also, an open forum was held to discuss *The Coming of Tulku*, a documentary film on Zhou Mengdie that offers profound and enlightening views on this well-known poet.







## NTU Ranked 14th in Asia

NTU garnered a 14th-place ranking in the 2013 Times Higher Education Asia University Rankings, released on April 11. This is the first year that THE compiled this list, which ranks the 100 universities assessed to be the best in Asia. While Japan leads the region with 22 universities in the rankings, Taiwan is not far behind at 17. NTU's ranking is the highest of any university in Taiwan.

As with the Times Higher Education World University Rankings, this regional ranking for Asia is calculated based on 13 performance indicators that are grouped into five areas: teaching (30% of the overall score), research (30%), citations (30%), industry income (2.5%) and international outlook (7.5%). This methodology aims to take into consideration each institution's teaching, research, knowledge transfer and international outlook.

The Ministry of Education's Aim for the Top University Project is helping NTU make improvements across the board as it strives to join the ranks of the world's top 50 universities.



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