

NTU



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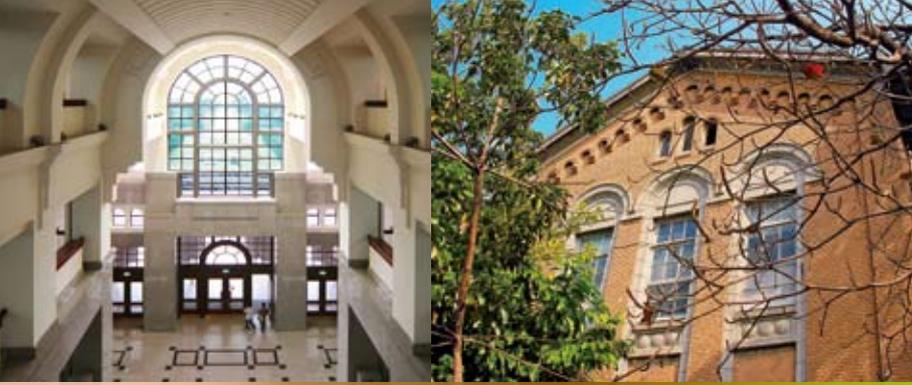
Honorary Doctorate for Composer

Students Start Free Campus Bicycle Sharing Service

New Imaging Method for Childhood Cancer

NTU Press Organizes University Publishers Exhibition

Special Report
Telemedicine R&D Center



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NTU AT A GLANCE

YouTube Channel Launched to Promote NTU's Outstanding Courses



From the President's Office

NTU YouTube EDU, a platform for sharing the university's audio/visual content with the world, went officially online on January 9. The platform provides learners in Taiwan and around the globe with a new way of learning that is accessible at anytime from anywhere. I am pleased to see it launched.

NTU YouTube EDU was established primarily out of a desire to use the Internet to market NTU to the world as well as present the university's world-class accomplishments and outstanding courses in all fields to a global audience. Viewers around the world can access our shared content under three main categories. One category presents campus activities and news in hopes of introducing NTU's spirit and values to the world. Another features the university's outstanding courses. In addition to spreading knowledge, these courses will serve to pique the interest of international students in studying at NTU. A category for special reports will highlight the university's outstanding achievements in education and social responsibility.

NTU stands among the world's most renowned universities, and indeed has a responsibility to provide solutions for the challenges facing humanity. I believe NTU YouTube EDU will become one of our best channels for fulfilling this responsibility. Yale, Harvard and Columbia all maintain such YouTube channels.

NTU YouTube EDU has uploaded nine open courses since its launch. These include such fascinating and popular courses as Sociology of Love, Aesthetics of Kun Opera and Dream of the Red Chamber. We invite the world to watch.

李嗣涇

President
Dr. Si-chen Lee

President Lee Tells Students Attitude Will Ensure Success



The following is an abridged version of the speech NTU President Si-chen Lee delivered at the Scholarship Presentation Ceremony for the fall semester of the 2012-2013 academic year.

First, I would like to congratulate each scholarship recipient, and of course I must also express my thanks to the organizations and individuals that provided the scholarships. We have 200 scholarships in all. I have especially selected seven scholarships among those presented today for brief introduction.

First is the Outstanding Performance Scholarship, which is an encouragement for students who display exceptional abilities in NTU student groups. Second is the Encouraging Education Scholarship, which is given primarily to outstanding students in financial need. Third is the International Graduate Student Scholarship. The university also presents scholarships to international students who demonstrate exceptional talent. Fourth is the Cho-chang Tsung Education Scholarship. Because Mr. Cho-chang Tsung grew up in a farming village, after he came to Taiwan from China in 1947 and created a successful business, he was able to give back to students.

Fifth is the Mo-sheng Chang Memorial Scholarship. Sixth is the Global Education Foundation Scholarship. This was jointly established by College of Management Class of 1960 alumni. Seventh is the Lam Research Academic Paper Scholarship. Lam Research presents scholarships primarily to graduate students conducting semiconductor research.

The basic condition for a student to receive a scholarship is excellent academic performance. NTU's students are the best in the nation, and they do not differ much in intellectual ability. Whether one is exceptional or not, from my decades of experience, one of the most important factors for a student to have is attitude.

This attitude is, in fact, one of the most important conditions for securing success in your future pursuits. Abundant knowledge is not enough. Do what you do well, devote your best effort to it, and you will be assured of success. In the future, after you graduate and enter society, you must also have a deliberate spirit. Wherever you are working, do the job well, and you will indeed be successful in the future.

NTU Students Urged to Develop Attitude at Scholarship Ceremony

Addressing the scholarship presentation ceremony for the first semester of the 2012 academic year on December 19, NTU President Si-chen Lee called on the students in attendance to work hard and live by the university motto. President Lee declared that attitude is the most crucial element for securing future success.



Next, Dean of the College of Engineering Jia-yush Yen addressed

the ceremony on behalf of the Cho-chang Tsung Foundation of Education. He declared that the foundation not only provides academic and financial-need scholarships but has also donated NT\$ 120 million for a new College of Engineering building, adding that it has donated several tens of millions of NT Dollars annually for the past ten years.

NTU Hospital and Quanta to Set up Telemedicine R&D Center



NTU Hospital and Quanta Computer Inc. announced they will jointly establish the NTU Hospital and Quanta Computer Medical Equipment Research and Development Center. The center will focus on the development of innovative telemedical devices and systems.

The aging of society has led to an increase in the demand for personalized telemedical services, which has in turn contributed to the emergence of the medical

electronics industry as a sector with growth potential in the high-technology industry. Such renowned institutions and companies as MIT, Stanford, Berkeley, UCLA, Medtronic, General Electric, IBM and Texas Instruments have all invested resources and highly trained personnel to medical electronics research and development.

The center will initiate four major projects. It will employ advanced algorithms for signal processing to permit medical personnel to rapidly determine a patient's physiological data. The center will integrate wireless technology into medical equipment so that the measurement, acquisition and storage of medical physiological data are not limited

by distance. The center will also combine biomedical sensors and integrated circuits on single microchips and insist on super-low power consumption and batteryless applications to develop low-cost, reliable biomedical sensor integrated circuits. It will also pursue clinical medicine applications and research for telemedical devices and systems.

The center plans to combine these technologies for the development of sensor devices that can be attached to the body to collect physiological data and transmit it via mobile phone to a cloud computing system where it can be accessed immediately by medical teams for the understanding and diagnosis of a patient's physical condition.

NTU Hospital Teams up with Global Clinical Trials Leader

NTU Hospital and PAREXEL International have signed a strategic alliance agreement that will provide world-class support for Taiwan's clinical trial services and further enhance the nation's research and development environment for early clinical trials. The signing ceremony for the agreement took place at NTU Hospital on November 26. The ceremony was attended by NTU Hospital Superintendent Ming-feng Chen, College of Medicine Dean Pan-chyr Yang, Director of NTU Hospital's National Clinical Trial and Research Center Wing-kai Chan, PAREXEL's Senior Vice President for Clinical Research Services Dr. Joseph Avellone, PAREXEL's Asia Pacific Vice Chairperson Albert Liou and PAREXEL's Asia Pacific Vice President Ruo-lei Chu.

NTU Hospital is an elite clinical trial and research center for new drugs that possesses outstanding medical personnel and an excellent research environment. The hospital strives to develop innovative and influential clinical trials and simplify the pharmaceutical development process to build the optimal pharmaceutical clinical trial environment for Taiwan.

PAREXEL International is the global leader among biological and pharmaceutical service providers. The firm provides knowledge-based research, consultation and global drug manufacturing services as well as medical communications services for the biotechnology and medical equipment industries. It works to provide solutions that reduce the time it takes to get drugs on the



market and achieve peak market penetration. PAREXEL has abundant experience developing plans for global clinical trials. The company provided clinical trial services for all of the 50 top-selling drugs currently on the global market.

The two parties intend to combine their strengths to improve the development and quality of clinical trials in Taiwan.

NTU and DOH Open Two Centers to Develop Health Data Applications

A ceremony marking the joint opening of the Collaboration Center of Health Information Application at NTU (CCHIA-NTU) and the NTU Health Information Research Center took place on NTU's medical campus on November 29. NTU has been commissioned and funded by the National Science Council's Board of Science and Technology to carry out the Health Data Value Added Models Project. The two new centers, while working within the parameters of Taiwan's Personal Data Protection Act, will analyze Department of Health data with the goal of improving public health and helping people live longer, happier lives.

The opening ceremony was a modest and solemn affair that was attended by important NTU and government officials. Among these officials were NTU's Vice President for Financial Affairs Ming-je Tang, Dean of the College of Management Shu-hsing Li and NTU Hospital Superintendent Ming-feng Chen, who serve jointly as directors of the Health Data Value Added Models Project, as well as Executive Yuan Minister Without Portfolio Simon Chang and Director Lee-hua Chen and Section Chief Shih-hsien Chan of the DOH Office of Statistics.

Speaking at the ceremony, NTU Vice President for Academic Affairs Ching-hua Lo, at the behest of NTU President Si-chen Lee, delivered a message of congratulations, congratulating Vice President Tang in particular for his successful promotion of the Health Data Value Added Models Project. Vice President Lo also represented NTU in expressing gratitude to Minister of



the National Science Council Cyrus C. Y. Chu and Minister Chang for their support. Lo went on to extend special thanks to Director Chen and Section Chief Chan for granting approval for the CCHIA-NTU to kick off trial operations and begin accepting data requests from NTU researchers on December 3.

Minister Chang, who formerly served as head of Google's hardware operations in Asia, praised NTU for its efforts in promoting value added applications for health data. Minister Chang expressed his hope that the new centers, while working to ensure the privacy of individuals through the Personal Data Protection Act, would use their achievements to promote the concept of open data, and transform data into information and information into valuable knowledge so as to develop applications that will lead to the betterment of society.

Director Chen of the DOH Office of Statistics expressed his appreciation for NTU's support of the CCHIA-NTU and heaped endless praise on the NTU Health Information Research Center for its human-oriented approach and the space and planning it has provided to guarantee data security.



The opening of the centers marks a milestone for NTU in the field of health data research. NTU's researchers will take advantage of the centers' resources to make further advances in the analysis of health data. Through their endeavors, they will become examples for the nation and fulfill the mission and ideals of NTU.

FOUR ELECTRICAL ENGINEERS ELECTED AS IEEE FELLOWS

The IEEE has elected four professors from the College of Electrical Engineering and Computer Science as IEEE Fellows for 2013. The four honored professors are Prof. Tzi-dar Chiueh, Prof. Chih-wen Liu, Prof. Yao-wen Chang and Prof. Tzong-lin Wu. A total of nine Taiwanese scholars were named IEEE Fellows for 2013. With a new total of 34 IEEE Fellows, our electrical engineering college continues to lead all other universities in Taiwan.



Prof. Tzi-dar Chiueh has created outstanding innovations and applications in the field of wireless communications and was elevated to IEEE Fellow “for contributions to baseband processing integrated circuits for communications systems.” Prof. Chiueh’s research team, working

in wireless local area networks (WLAN); digital video broadcasting—terrestrial (DVB-T), wideband code division multiple access (WCDMA) and ultra-wide band (UWB) for wireless communications; cognitive radio; and high-mobility WiMAX, has achieved numerous technological breakthroughs and attained a world-class position.



In naming Prof. Chih-wen Liu a fellow, the IEEE cited him “for applications of phasor measurements to fault location and dynamics monitoring in power networks.” Prof. Liu became the first researcher in the world to integrate the theories of synchronized phasor

measurements and non-linear dynamical systems for the development of innovative technologies for dynamics monitoring in large-scale power networks, thereby creating a new field of research for power system dynamics.



Prof. Yao-wen Chang is a distinguished professor who serves as associate dean of the College of Electrical Engineering and Computer Science as well as director of the Graduate Institute of Electronics Engineering. Prof. Chang, who is renowned for his achievements in the field

of electronic design automation (EDA), was named IEEE Fellow “for contributions to VLSI [very-large-scale integration] physical design and manufacturability.” EDA technologies developed by Prof. Chang’s research group are unrivaled internationally and have become the core engines for many integrated circuit design tools thanks to technology transfers to companies in Taiwan and abroad. Prof. Chang’s number of paper citations for the previous five years recently placed him at the head of over 40,000 scholars in the category of hardware and architecture on Microsoft Academic Search.



Prof. Tzong-lin Wu has accumulated numerous outstanding accomplishments over his many years of research on high-frequency noise suppression and electromagnetic compatibility technologies for IC packaging systems. Prof. Wu was named IEEE Fellow “for

contributions to noise mitigation technologies and electromagnetic compatibility design on printed circuit boards.” Prof. Wu’s research group was the first to use planar electromagnetic bandgap (EBG) structures for the suppression of power plane noise in packaged integrated circuits. The group published three articles detailing the theoretical basis, design methods and future applications of this technology in prestigious IEEE microwave journals. These articles have been cited in over 300 academic papers, according to Google Scholar.

TEXTBOOK WINS AWARD AT ADVANCED INDUSTRY EQUIPMENT COMPETITION

NTU and National Kaohsiung First University of Science and Technology (NKFUST), with support from the Ministry of Education, held the 2012 Advanced Industry Equipment National Student Product Competition and Accomplishments Exhibition on November 30.

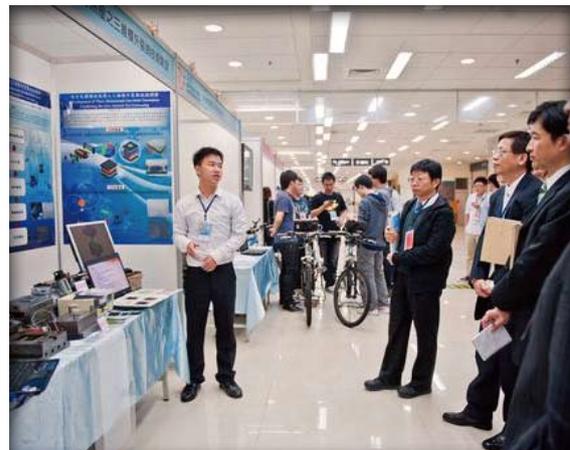
Although 233 teams registered to compete at the start of the year, a highly competitive review process permitted only the top three teams in each competition category and two outstanding products to receive awards. In addition, six companies earned awards in the three categories of smart tools, digital molds, and semiconductors and photovoltaics. In all, 59 students from 16 teams won awards.

NKFUST won first place in the competition's university category

with "Cooling System for High Power LED Automobile Headlights," and National Kaohsiung University of Applied Sciences claimed first place in the graduate school category with "Development of Three-dimensional Out-Mold Decoration Combining Gas-Assisted Hot Embossing."

Besides the student competition, ten resource centers jointly held an exhibition highlighting the accomplishments of the Talent Fostering Program for Advanced Industry Equipment. Also, monetary awards were presented as encouragement to educators working with the program. Fourteen professors received awards for outstanding teaching materials and textbooks.

Prof. Jui-jen Chou of NTU's Department of Bio-industrial



Mechatronics Engineering won first place for his textbook *Mechatronic Systems and Lab*. Prof. Yuan-chuan Hsu and Prof. Shui-wang Chuang of National Formosa University won second and third places, respectively. In addition, three resource centers were presented with awards for outstanding accomplishments.

PROFESSOR RECEIVES NATIONAL AWARD FOR GENERAL EDUCATION TEACHERS

Prof. Rong-huay Juang of the Department of Biochemical Science and Technology is one of four recipients of the Ministry of Education's 5th Distinguished Award for General Education Teachers. At the awards presentation ceremony on December 26, Prof. Juang was cited as a sterling example for general education teachers and commended for his long-term devotion to general education as well as for his effort to put the goals of general education into practice.



Prof. Juang has taught at NTU for a full 30 years, and he currently serves as dean of academic affairs. In his early years of teaching, Prof. Juang's courses were all related to specialized areas of biochemistry. However, 15 years ago he began to feel there was a need to allow students who didn't major in a life science to get to know biology and understand the meaning of life in scientific terms. Consequently, he began to teach the general education course, "Cell and Molecule," specifically for non-life science majors.

Prof. Juang says he recently was inspired by a video of Harvard's Michael Sandel teaching the course "Justice." It made him feel more certain of the possibilities of and necessity for increased class discussion in undergraduate courses. Prof. Juang says the combination of video, slides, and discussion has already become the standard model for his teaching and that it has achieved positive results.

Prof. Juang says that the 2,566 students who have taken his general education courses should be commended because they developed a deep love of life and society by deepening their understanding of the science of biology.

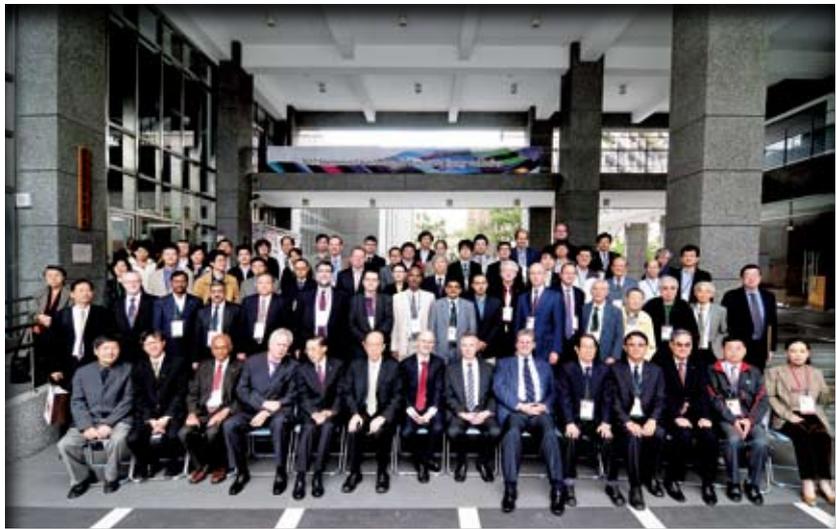
INTERNATIONAL CONFERENCE ADDRESSES RENEWABLE ENERGY POLICY IN TAIWAN



President Si-chen Lee served as the conference's chairperson and delivered its opening remarks.

The NTU Energy Research Center hosted the 2012 International Conference on Renewable Energy and Policy here at NTU from November 11-15. The conference was organized to elevate and strengthen Taiwan's policy development for renewable energy and promote the integration of renewable energy technological innovations and government policy as well as reduce the risks brought by climate change and confront the future costs of the impact of global warming and climate change. During the conference, scholars and experts from energy development and environmental change research institutions in Germany, France, Japan, India and China engaged in exchanges and shared the different strategies these countries are devising for the development of renewable energy under the particular conditions they face.

The conference invited 23 experts and scholars from Taiwan and abroad to share their particular experiences over two days and 14 sessions. The speakers presenting opening remarks on the first day of the conference included a number of influential people, including NTU President Si-chen Lee, Minister of Foreign Affairs David Y. L. Lin, Secretary General of the Alexander von Humboldt Foundation Enno Aufderheide, Director General of the German Institute in Taipei Michael Zickerick and Head of the Culture, Education and Science



Participants in the 2012 International Conference on Renewable Energy and Policy gather for a group photograph.

Section at the French Office in Taipei Christophe Gigaudaut. The Taiwan Energy Summit took place on the second day and, with over 170 people in attendance, was a great success.

The symposium topics on the first day of the conference's explored the impacts and influences of renewable energy and policies for the sustainable development of energy. Mr. Tony Soo, president of the Taiwan Society of Refrigerating and Air-Conditioning Engineers, opened the symposium as the keynote speaker of the first session. In his speech, Mr. Soo reflected on such topics as the energy/spiritual crisis, materialism/spiritualism and renewable energy in addressing the climate change crisis confronting the world.

The meetings on the second day focused mainly on the challenging issues of the impact of climate change on industry, the responses of governments around the world to climate change and the latest

developments and global market outlooks for renewable energy technologies. In the afternoon, the Taiwan Energy Summit participants discussed Taiwan's current energy situation and related development trends, covering such issues as harnessing energy from the Kuroshio ocean current, geothermal energy, biofuel, offshore wind farms and heat pumps.

At the end of the summit, NTU Prof. Falin Chen, who is executive director of NTU's National Science and Technology Program for Energy, served as moderator for a panel discussion between all invited speakers and guests. The panelists shared their experiences concerning renewable energy and energy policy, and expressed their hope that, by adopting renewable energy as the core of its energy strategy, Taiwan will enhance its overall international energy competitiveness, obtain international recognition and develop possibilities for cooperation.

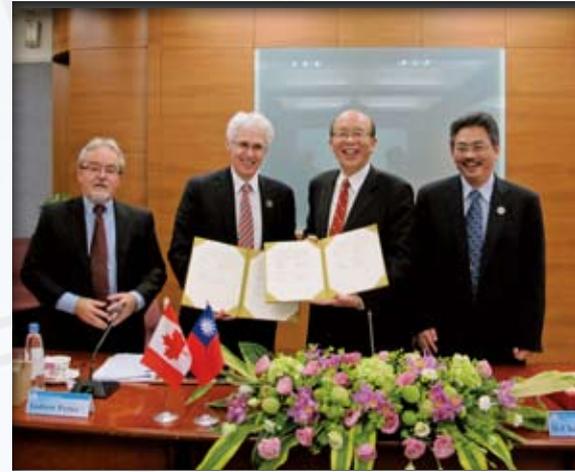
UNIVERSITY DELEGATIONS FROM MEXICO, FRANCE AND CANADA VISIT NTU

Vice President Jean-François Prud'homme of the College of Mexico, which is renowned for its humanities and social sciences programs, visited NTU to meet with Vice President for Academic Affairs Ching-hua Lo and Associate Dean for International Affairs Hsinyu Lee on November 13. One of the college's important international partners is the Fox International Fellowship Program at Yale University, which is similar to the NTU student exchange program and the NTU Leadership Development Program. The two parties engaged in preliminary discussions on the possibility of cooperation between the College of Mexico and NTU's College of Social Sciences, Institute for Advanced Studies in Humanities and Social Sciences and College of Liberal Arts.

Vice President of the French Academy of Sciences Philippe Taquet, in Taiwan at the invitation of

the National Science Council, visited NTU and presented a lecture at the College of Life Science on November 14. Vice President Taquet was received by Vice President Ching-hua Lo, Dean for International Affairs Hsiao-wei Yuan and Director of the Center for International Academic Exchanges at the College of Life Science Jer-ming Hu, who provided a briefing on the current academic exchanges between Taiwan and France. Vice President Taquet's lecture, "Dinosaurs in North Africa," drew over 80 students and faculty members.

President Andrew Petter of Canada's Simon Fraser University headed a six-person delegation that visited NTU on the day of NTU's 84th anniversary celebration on November 15. President Petter and NTU President Si-chen Lee signed a basic agreement between the universities as well as a student



Spirits were high at the agreement signing ceremony for NTU and Canada's Simon Frazier University.

exchange agreement, which was focused on exchanges in the field of public health. The delegation included SFU's Faculty of Health Sciences Dean John O'Neil. The delegation also visited the College of Public Health and held talks with Dean Wei J. Chen, Associate Dean Chang-chuan Chan and over 20 professors.

OIA HOLDS TWO INTERNATIONAL STUDENT EVENTS

The Office of International Affairs held two events aimed at helping international students adapt quickly to life in Taiwan and at NTU in January.



On January 11, the OIA joined the Office of Academic Affairs and Office of Student Affairs in conducting a workshop for advisors and counselors to international students that introduced the resources the three offices provide for counseling international students. Senior advisors also participated in the workshop to share their counseling experiences. Other international student workshops and lectures will be held for professors and administrators in the future.

The OIA arranges for interested international students to spend Lunar New Year with local host families each year. Before the New Year, it also holds an event for the students and their host families to let them get to know each other in a relaxed and enjoyable setting. On January 12, the OIA took over 40 students and families on a day trip to the historic ceramics town of Yingge.

Leadership and Law Summer Programs Added for International Students



Local NTU students act as Mandarin Chinese language tutors for international students taking part in the university's summer programs.



The Office of International Affairs' Center for International Education has teamed up with the College of Management and College of Law in offering two new summer programs for international students this year. The new programs, +5 Global LEAD Summer Program and +6 Summer Program for International Law, add to the diversity of NTU's offering of high-quality summer programs. The other programs are +1 Summer Intensive Program for Chinese Language and Culture, +2 Summer Program for Laboratory Research and Culture, +3 Biodiversity, Agriculture and Culture of Taiwan, and +4 Summer Program for Biotechnology.

The College of Management's Global LEAD Summer Program is a four-week program, taught in English, that is focused on character building, life empowerment, leadership and academic development. The program is designed to prepare its participants to face the future challenges and opportunities presented in the ever-changing business environment. The Global LEAD curriculum aims to inspire and empower international students with a new perspective on life, a fresh learning experience and a regenerated willingness to make a difference in the world.

The College of Law will host the Summer Program for International Law. In this globalized era, international exchanges between nations and enterprises have become increasingly common. For students who wish to get a working knowledge of how law is practiced in real courts in an international environment, the program offers courses on WTO law, international business and trade law, and international arbitration. The college has invited a current chief justice of Taiwan and international law professors from Taiwan, the United States and Australia to join the exciting program for this year.

Overseas Study Promotes Growth and Maturity

The following is an abridged translation of an essay composed by Department of Life Science student Yi-hung Peng.

If you are a student who hopes to go abroad to study in the United States, perhaps my summer experience can serve as a point of reference.

Last summer, I participated in the UC Davis Global Research Experience in Advanced Technologies (GREAT) Program. The entry threshold was actually



not that high. The most important thing was that your documents, such as your TOEFL scores, met the standard. Also, in their statement of purpose, applicants were expected not only to explain their research potential and the reasons why they should be accepted but also to show their enthusiasm and high motivation.

I found the atmosphere and interactions in this American laboratory to be truly conducive to learning and reflection. Two things in particular impressed me deeply. The Americans I worked with always spoke directly and clearly, and they were concerned to let me know just what I was doing in the laboratory.

I had many interesting experiences outside the laboratory, as well. Since this was the first time I had lived in a new and unfamiliar place, my experiences outside the laboratory also made me grow and mature.

In conclusion, overseas study provides university students with a rich variety of experiences that make them develop, mature and broaden their outlook. Overseas study offers potentially great experiences for every student to explore.



DOCTORS PUBLISH NEW IMAGING METHOD FOR DETECTION OF CHILDHOOD CANCER

Recently, an interdisciplinary team of researchers led by radiologists and pediatricians at NTU Hospital published a study demonstrating that a new diagnostic imaging tool for neuroendocrine tumors achieves more accurate results than traditional imaging methods for the detection and tracking of neuroblastic tumors. The new method, (18)F-fluorodihydroxyphenylalanine positron emission tomography ((18)F-FDOPA PET), can help physicians more accurately diagnose the location and area of influence of tumors, and thereby improve the outcomes of treatment and follow-up care.

The study has drawn significant international attention to NTU. Besides earning the team a number of major awards at prestigious international conferences, it was published in the January issue of

PET imaging method with (123)I-metaiodobenzylguanidine ((123)I-MIBG) scintigraphy and (18)F-Fluorodeoxyglucose-PET ((18)F-FDG PET). Each of these approaches requires a different radioisotope to be injected as a tracer into a patient's bloodstream before it is scanned. The team found that, while (123)I-MIBG and (18)F-FDG PET achieved an accuracy of 75% and 87%, respectively, (18)F-FDOPA PET performed significantly better, with an accuracy of 98%.

The current study is the product of a series of clinical investigations initiated at the Department of Radiology and Department of Pediatrics back in 2008. The investigators saw potential for the use of (18)F-FDOPA PET for the detection of neuroblastoma because the method was already being used in the diagnosis of



The results of the latest study are inspiring. As of 2011, the researchers had used (18)F-FDOPA PET imaging to perform diagnostic or follow-up testing for 34 neuroblastoma patients. In addition, they had conducted tissue pathology testing on 50 tumors removed during treatment to compare the biopsy results with those of the scans. The study found that the new imaging method not only successfully located neuroblastoma tumors in various parts of the body at a sensitivity of 98% and a specificity of 88%, but it produced clear, high-quality images.

Approximately 500 children and adolescents are diagnosed with cancer in Taiwan each year. Among the forms of cancer affecting these young patients, neuroblastoma, which tends to strike infants and young children, is the most common extracranial solid cancer. Currently, around 30 patients seek treatment for neuroblastoma in Taiwan annually (NTU Hospital treats nearly half of these patients). Unfortunately, for more than 50% of these children, the cancer has already metastasized or proliferated in multiple locations by the time of diagnosis, and their lives are in great danger.



the *Journal of Nuclear Medicine*, the top-ranking journal in the field of medical imaging, under the title "Characterization of Neuroblastic Tumors Using 18F-FDOPA PET."

In their study, the researchers compared the new (18)F-FDOPA

Parkinson's disease. They received support from the Atomic Energy Council's Institute of Nuclear Energy Research, which produced the (123)I-MIBG that was used to carry out the study.

EXPERIMENTAL FARM GAINS BREEDERS' RIGHTS FOR NATIVE ORCHID



Pleione formosana Hayata is regarded as the tulip of Taiwan. The Experimental Farm is pursuing large-scale cultivation and sales of this native Taiwanese orchid in hopes of making it shine on the global stage.

Pleione formosana Hayata is a species of orchid unique to Asia, and Taiwan is at the easternmost extent of the orchid's natural distribution. Called the single-leaf orchid in Taiwan, this orchid was given its scientific name by Japanese botanist Bunzo Hayata in 1911. It earned the British Royal Horticultural Society's Award of Garden Merit six times between 1920 and 1975. In the past, the bulbs of the orchid were collected for export, which led to a gradual decline of its natural population. The orchid is protected under the International Union

for Conservation of Nature Red List of Threatened Species and trade in collected from the wild is prohibited.

Students and faculty of the Department of Horticulture and Landscape Architecture and the Highland Experimental Farm have spent over 30 years collecting this orchid from the wild, conducting cultivation experiments and performing human selection. The Experimental Farm first applied for plant breeders' rights (PBR) for varieties it had cultivated from the Council of Agriculture in 2008,

and its Mei Shue and Feng Hsing varieties gained PBR that year. The Mei Yue and Feng Man varieties earned PBR in 2009 and the Feng Mi and Feng Yue varieties received PRB this year. Over ten other varieties are currently being tested and evaluated in preparation for submitting PBR applications. The Experimental Farm welcomes inquiries concerning the transfer of the breeders' rights.

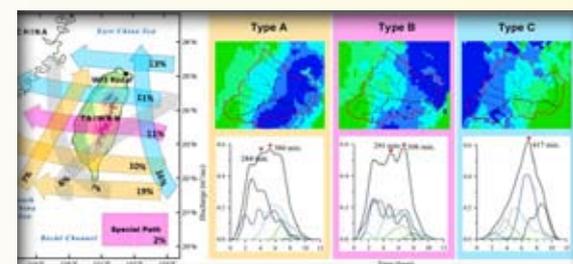
Pleione formosana Hayata is regarded as the tulip of Taiwan. The Experimental Farm will continue to enhance the beauty and value of this orchid with the ultimate goal of

TYPHOON RAINFALL STUDY COULD IMPROVE FLOOD FORECASTING

A research team led by Prof. Jr-chuan Huang of the Department of Geography and Prof. Cheng-ku Yu of Chinese Culture University's Department of Atmospheric Sciences analyzed high-resolution radar observations of 38 rainfall events that occurred in the Liwu River watershed in eastern Taiwan during typhoons from 2000 to 2010 to better understand the relationship between typhoon track, rainfall patterns and flood peak time. The results of their study were published as a special feature article in the September issue of the journal *Water Resources Research* (Vol. 48, Issue 9). Moreover, this

article was introduced in the Research Spotlight section of the American Geophysical Union journal *Eos* (*Eos* Vol. 93, No. 47).

The investigation showed that the distribution of the typhoon rainfall was spatially aggregated and that variations in the intensity of the rainfall became smaller at higher rainfall rates. That is, the larger the typhoon, the more even the rainfall distribution. Additionally, statistical analysis revealed three distinct types of rainfall distributions. The standard rainfall distribution type, Type A, which occurs primarily downstream. Type B is similar to Type A, but its intense rainfall is



concentrated in the northeastern portion of the watershed. Type C occurs far from the downstream and affects the interior high mountain area in the western portion of the watershed.

The team's findings could be applied to flood forecasting and real-time flood warning systems to generate earlier, more accurate warning information.

STUDY IN *THE LANCET* TO REWRITE ANTIBIOTIC THERAPY FOR *H PYLORI*

Recently, a multidisciplinary research team led by doctors at NTU Hospital presented the results of a large-scale study that supports replacing triple antibiotic therapy with sequential antibiotic treatment as the standard first-line treatment for *Helicobacter pylori* infection. The team's sequential treatment could well become the preferred approach for addressing the growing problem of antibiotic resistance in *H pylori*.



Members of the *H pylori* research team pose for a group photo.

The team recently published the results of their study in an article in the prestigious medical journal *The Lancet* (Vol. 381, No. 9862, pp. 205-213, 19 Jan. 2013). The importance of this study is highlighted in a review of the team's article in the same issue of *The Lancet*. The reviewers pointed out that the team's innovative sequential treatment and treatment efficacy prediction model will rewrite the therapy standards for *H pylori* and make major contributions to the treatment of gastrointestinal diseases. The review was authored by E. Robert Greenberg of the Division of Public Health Sciences, Fred Hutchinson Cancer Research Center, Seattle, Washington, and William D. Chey of the Division of Gastroenterology, University of Michigan Medical School.



Triple therapy, in which three antibiotics are taken twice daily for the entire course of treatment, is the standard clinical treatment for *H pylori* used by doctors around the world. However, as with other disease-causing bacteria, *H pylori* is gradually developing resistance to antibiotic treatment, causing the bacterial eradication rate of this therapy to fall below 80% in many regions of the world.

In conducting the study, the researchers recruited 900 *H pylori* patients from six medical centers in Taiwan. The subjects were divided into three groups of 300 patients each. Two groups underwent sequential treatment for 10 and 14 days, respectively, and one group received triple therapy for 14 days. The sequential treatment groups took lansoprazole 30 mg and amoxicillin 1 g for the first five to seven days and then lansoprazole 30 mg, clarithromycin 500 mg and metronidazole 500 mg for either another six to 10 days or eight to 14 days. Triple therapy consisted of lansoprazole 30 mg, amoxicillin 1 g and clarithromycin 500 mg for

14 days. All drugs were taken twice daily.

The results revealed significantly higher bacterial eradication rates in the sequential treatment groups (90.7% for 14 days and 87.0% for ten days) compared to the triple therapy group (82.3%). Moreover, antibiotic resistance was shown to be the most important element influencing the treatment efficacy of both sequential treatment and triple therapy.

The research team also designed a computer model that clearly



predicts the relative treatment efficacy of sequential treatment and triple therapy anywhere in the world. Users simply input the prevalence of antibiotic-resistant *H pylori* in their region to obtain customized eradication predictions.



Student Entrepreneurs Set up Free Campus Bicycle Sharing Service



Virtually anyone who takes a stroll around the NTU campus is certain to be struck by a similar thought: “Look at all the bikes!” As for the NTU students who need to shuttle around campus on a daily basis, bicycles are an absolute necessity.

Unfortunately, with the number of bicycles on campus continuously on the rise, some inconveniences have started to emerge. Students find it increasingly difficult to locate parking spots when they go to classes. This leads to their bicycles being towed for improper parking, or being exposed to the elements, which is harmful to the bicycles. Also, with the opening of the campus there have been increased reports of bicycles being stolen. In recent years, the administration and students have continued to devise solutions. One novel solution was introduced last September, when a group of student entrepreneurs rolled out a long-term bicycle sharing system called Sharing Wheels.

The students, who set up a start-up company called Team Nineteen to run the service, say their core mission is to spread the concept of bicycle sharing in Taiwan and promote the functionality of bicycles in people’s lives through bicycle sharing. Sharing Wheels is available to all NTU students, faculty and staff. Users need to simply put down a small deposit and sign a contract to use the service. Providing a long-term rental system based on the concept of sharing reduces the purchasing and maintenance costs of owning one’s own bicycle, allowing users to enjoy the convenience of having a bicycle minus the burdens.

The students of Team Nineteen took into consideration the long periods of time the bicycles might sit unused during winter and summer vacations or when students return home or travel overseas and decided to limit the rental period to one semester in the rental contract. This means students don’t have to leave their bikes parked on campus while they are away, which would raise the risk of theft. Furthermore, by reducing the ratio of privately-owned bicycles on campus, Sharing Wheels will help to rid the campus of abandoned bikes, freeing up parking spots for those who truly need them.



For many NTU students, bicycles are simply a convenient way to get around campus, to get from class to class. Providing shared bikes in this environment is community-minded and reduces the burdens of riding a bicycle, and thus creates a clear win-win situation. Since its introduction, the service has received encouragement and positive responses.

The Taipei City Government actually runs a similar service called U-Bike that allows riders to pay rental fees with their EasyCard payment smartcard. These bicycles are not only for recreational use but can be a good partner in people’s daily lives. And, with the government promoting the use of mass transportation, Sharing Wheels provides an additional mass transit option.



NTU National Energy Program Office Participates in Green Industry Show



◀ The smart grid and advanced metering section was the most popular attraction at this year's show.



The Office of the National Science and Technology Program–Energy (NSTPEO), which is based at the NTU Energy Research Center, took up the invitation of the Ministry of Economic Affairs' Bureau of Foreign Trade to participate in the Taiwan International Green Industry Show (TiGiS) last October. Organized by the Taiwan External Trade Development Council (TAITRA), the exhibition took place at the Taipei World Trade Center Nangang Exhibition Hall, October 9-12. In addition, the Taiwan International Smart Green City Expo was held along with the green industry show to further promote intelligent urban living.

The three themes of TiGiS were energy development, energy storage and management, and energy conservation applications. The four-day exhibition featured nearly 20 poster presentations and exhibits over an area of ten booth spaces and attracted over 2,000 visitors. As a sign of the great success of the event, more than 200 companies and academic institutions expressed a high willingness to collaborate or invest in the innovations and products presented at the exhibition.

Taiwan has responded to such environmental trends as low-carbon consciousness and the revolution in renewable energy technologies by throwing itself into research and development work on the most advanced environmental

technologies. NSTPEO took part in the green industry exhibition to promote its accomplishments and future plans as well as to showcase the research achievements and products it has created through its various projects. The office hoped that by showing off its accomplishments it would attract industry investment, technology transfers and business deals. Moreover, during the exhibition, NSTPEO took advantage of a public participation day to interact with the public in an effort to raise awareness about its hard work and promote environmental consciousness and awareness.

The exhibition presented a wide variety of selections under its three themes. The energy development theme featured research projects in photovoltaic energy, biomass energy and wind power. The energy storage and management theme presented energy storage technology and smart grid and advanced metering projects. And, the energy conservation applications theme showcased LED lighting and appliances as well as a plant factory project developed by Prof. Jui-jen Chou of NTU's Department of Bio-Industrial Mechatronics Engineering.

The projects presented at TiGiS all drew positive responses. The show was an excellent opportunity

for the exhibitors to promote their projects, present new technology and products, pursue opportunities to sign patent and technology transfer deals, attract investment, find partners for the commercialization of their products, discuss cooperation and technology exchanges, and train project personnel.

In the future, NSTPEO will seek more opportunities to take part in major national exhibitions. Such exhibitions are excellent occasions to present and publicize the office's outstanding achievements, and they are great opportunities to find investment and partners for cooperation and technology transfers.



Student Papers Grab Big Awards at National Engineering Conference



Papers presented by NTU Department of Mechanical Engineering students earned four major awards, including the two first place awards, at the 36th National Conference on Theoretical and Applied Mechanics, which took place at National Central University, November 16-17. The conference, one of the most important meetings for engineering scholars in Taiwan, attracted over 600 paper presentations.

The Society of Theoretical and Applied Mechanics of the ROC is the most important association in the field of mechanics in Taiwan. Participating scholars work in a wide range of engineering fields, including mechanical, civil, aeronautical, hydraulic and environmental engineering. The national conference was first held in 1977 to promote exchanges between engineering scholars, and 36 conferences, organized by a series of universities, have been held since then. In recent years the conference has attracted around 500 to 600 paper submissions and nearly 1,000 participants each year. The conference provides engineering scholars with a great opportunity to engage in exchanges regarding their academic and technological development work, which helps deepen the foundations and improves the prospects of Taiwan technology.

The conference also holds a paper competition for outstanding students to encourage young scholars with the determination to pursue careers in engineering and mechanics to conduct further research. The paper competition at September's

conference was divided into the two categories of thermal energy and solid mechanics. In the thermal energy category, Jing-wen Hsu, who was advised by Prof. Jing-tang Yang, won first place and Jing-wei Chen, who was also advised by Prof. Jing-tang Yang, won third place. In the solid mechanics category, Heng-wei Huang, who was advised by Prof. Joseph Yao-joe Yang, won first place and Chun-yao Wang, who was advised by Prof. Chien-ching Ma, won third place.

Jing-wen Hsu's first-place paper was titled "Droplet-based Micro Total Analysis System for DNA Concentration and Isolation" and Heng-wei Huang first-place paper was called "Manufacturing a Single-key Actuator Micro-electromechanical Switch Component."

Hsu's paper uses the concept that surface-active agents will adsorb to two contact surfaces (e.g., soap will adsorb to the surface of oil and water) and combines it with the flow field characteristics of plug droplets to present an innovative DNA concentration technology. This technology allows DNA, in the absence of force fields, such as electricity or magnetism, to receive the fusing effects of polarity and force field shear stress and collect at the end of the droplet.

Jing-wei Chen's third-place paper was titled "Research on the Performance of Air Injection Co-flow Flame Stabilization for a Lean Fuel Premixed Flame," and Chun-yao Wang's third-place paper was called "The Applications of Fiber Bragg Grating Sensors in the Transient Strain Measurements of Three Dimensional Solid Edge Points."



Okinawan and Texan Delegations Hold In-Depth Talks at NTU

The vice provost for research of the Okinawa Institute of Science and Technology (OIST) led a four-person delegation that visited NTU to hold meetings and discussions regarding specific research cooperation projects between the two institutions on December 11-13. Prior to the visit, the universities conducted surveys in order to match professors working in similar research areas. In particular, it was arranged that while here each of the OIST professors would be paired with an NTU professor to engage in in-depth one-on-one discussions. Seven professors from the College of Science, College of Engineering and College of Life Science enjoyed this opportunity to discuss future exchanges in detail with their respective OIST professors.

The Okinawan delegation also paid visits to Vice President for Academic Affairs Ching-hua Lo, Associate Dean for International Affairs Hsin-yu Lee and Director Pisin Chen of the Leung Center for Cosmology and Particle Astrophysics. As Director Chen had visited OIST in late 2011, the two sides enjoyed their meeting all the more. The delegation visited the Center for Condensed Matter Sciences, where Director Li-chyong Chen guided the Okinawans on a hands-on tour of the center's experimental equipment.



Dr. Patricia Hurn, vice chancellor for research and innovation of the University of Texas System, paid an official visit to NTU, December 10-11. Dr. Hurn was accompanied on her visit to Taiwan by Director Chia Pei Chou of the Science and Technology Division of the Taipei Economic and Cultural Office in Houston, Texas. While here, Dr. Hurn visited the College of Medicine and held meetings with the Dean Pan-chyr Yang and dozens of professors there. Dr. Hurn and Director Chou also met with Vice President Lo, Dean for International Affairs Hsiao-wei Yuan and College of Medicine Associate Dean for International Affairs Tsai-kun Li. Their discussion focused primarily on medical and public health research and a joint-degree program.



NTU and Okinawa Institute of Science and Technology representatives sit for a group photo.

Students Win International Robot Competition for Fourth Year



Two student teams led by Prof. Ren C. Luo of the Department of Electrical Engineering claimed first and second place at the 2012 International Robot Hands on Competition on December 16. This is the fourth consecutive year that NTU has prevailed in this contest. The competition featured a bowling ball competition for university and high school teams and basketball competition that drew teams from universities in Taiwan, China, Singapore and Indonesia.

The basketball competition featured human-robot interaction. The robots were equipped with automatic visual



recognition systems to identify the ball's location, so they could pick it up and pass it to their human teammate, who would try to make a basket. Some of the robots could also make the shots autonomously themselves. While creative mechanical design was important, the design of the artificial intelligence software and control of the vision servers were crucial for success in this basketball competition.

Agreement with Japanese Institute Inked at Advanced Materials Workshop



Taiwan's National Science Council and the National Institute for Materials Science of Japan joined NTU in holding the NSC/NIMS/NTU Workshop on Advanced Materials at NTU, January 10-11. Distinguished speakers discussed the latest developments in advanced materials at the workshop, which also provided an opportunity for NTU and NIMS to sign a Cooperative Graduate School Agreement.

Over 20 NTU faculty members and invited guests from four other Taiwanese universities joined 13 delegates from NIMS in the workshop. The workshop provided the participants with the chance to discuss future academic collaboration. Attracting around 100 participants, the workshop was a great success.

NTU President Si-chen Lee and NIMS President Sukukatsu Ushioda opened the workshop by signing a Cooperative Graduate School Agreement. NTU and NIMS signed a general memorandum of understanding back in February 2012. These agreements will foster increased faculty and student academic exchanges between these leading Asia Pacific institutions.

NTU Press Organizes First Joint Exhibition of Local National University Publishers

In the recent years, we often saw universities from Hong Kong and Macao participate independently in the Taipei International Book Exhibition (TIBE). However, Taiwan's own university publications lacked the exhibition presence they deserved.

This year, NTU made a breakthrough at the 21st TIBE, January 30 to February 4, 2013. It organized the premier National University Press Joint Exhibition. Planned and initiated by NTU Press, the joint book exhibition showcased local university press publications with a unique style and a strong emphasis on serious scholarship. Besides NTU, participating universities included National Sun Yat-sen University, National Central University, National Chiao Tung University, National Chengchi University, National Tsinghua University, and Taipei National University of the Arts.

This first joint exhibition showcased over 500 recent publications as well as more than 20 new releases made available to readers for the first time. During the exhibition, each university publisher held lectures and forums at the exhibition site that invited luminaries, professors, and experts to address fascinating topics in literature, art, the humanities and social sciences, and natural sciences. With 16 lectures and forums in all, it offered a feast of professional knowledge.

NTU Press also arranged the four following events: A book release and forum for a book series on Taiwan literature and history, which featured a dialogue with research experts. Three professors were invited to speak on climate change on the release of a new book on the impact of climate change on Taiwan's security. Author Wen-hsing Wang, artist A-sun Wu and computer scientist Chung Laung Liu addressed a forum held for the release of a book sharing their dreams and ideals. At another forum, writer Chao Yang and poet Chia-hsien Yang discussed the world of Charles Baudelaire's literary classic *The Flowers of Evil*.



NTU at a Glance



NTU has officially launched a YouTube channel called YouTube EDU (<http://youtube.com/ntutw>) to put the university's outstanding courses onto an international stage. The university will use this global platform to provide learners in Taiwan and abroad with this channel for learning that is not limited by time or distance.

NTU possesses a large amount of video materials, and recently has released a succession of audio and video series on its YouTube channel. The university invites students and faculty to create new content for YouTube EDU in order to promote NTU from different perspectives and enhance its international image and visibility.

YouTube EDU's content will be presented in the three categories of Campus, Courses and Focus. The Campus section will present campus activities and news. The Courses section will spotlight NTU's exceptional courses. The university will select some of its finest courses, emphasizing those that are unique, have an international status and can serve as examples for the world. The Focus section will feature special reports, such as alumni profiles, research reports and community service news, to showcase NTU's great talent and educational and research environment.





Doctors Share Love with Concert for Organ Donors

NTU Hospital held a special concert called "Sharing Love" for organ donors and their families on December 22. The event was intended to express appreciation to the organ donors and their families for their exceptional compassion, as well as to cooperating hospitals for their assistance.

During the event, the hospital showed a combined audio-visual presentation of recorded comments that the families of the donors wished to share with the donors and a slideshow of related photographs. A video produced by organ registry groups was also shown. The video featured members of the public and medical personnel expressing appreciation and thanks to the families of organ donors.

The joint organ registry network formed by NTU and cooperating hospitals will continue to work together in promoting the compassionate ideal of organ donation and improving the quality of critical care services in Taiwan.



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