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# NTU



## NEWSLETTER

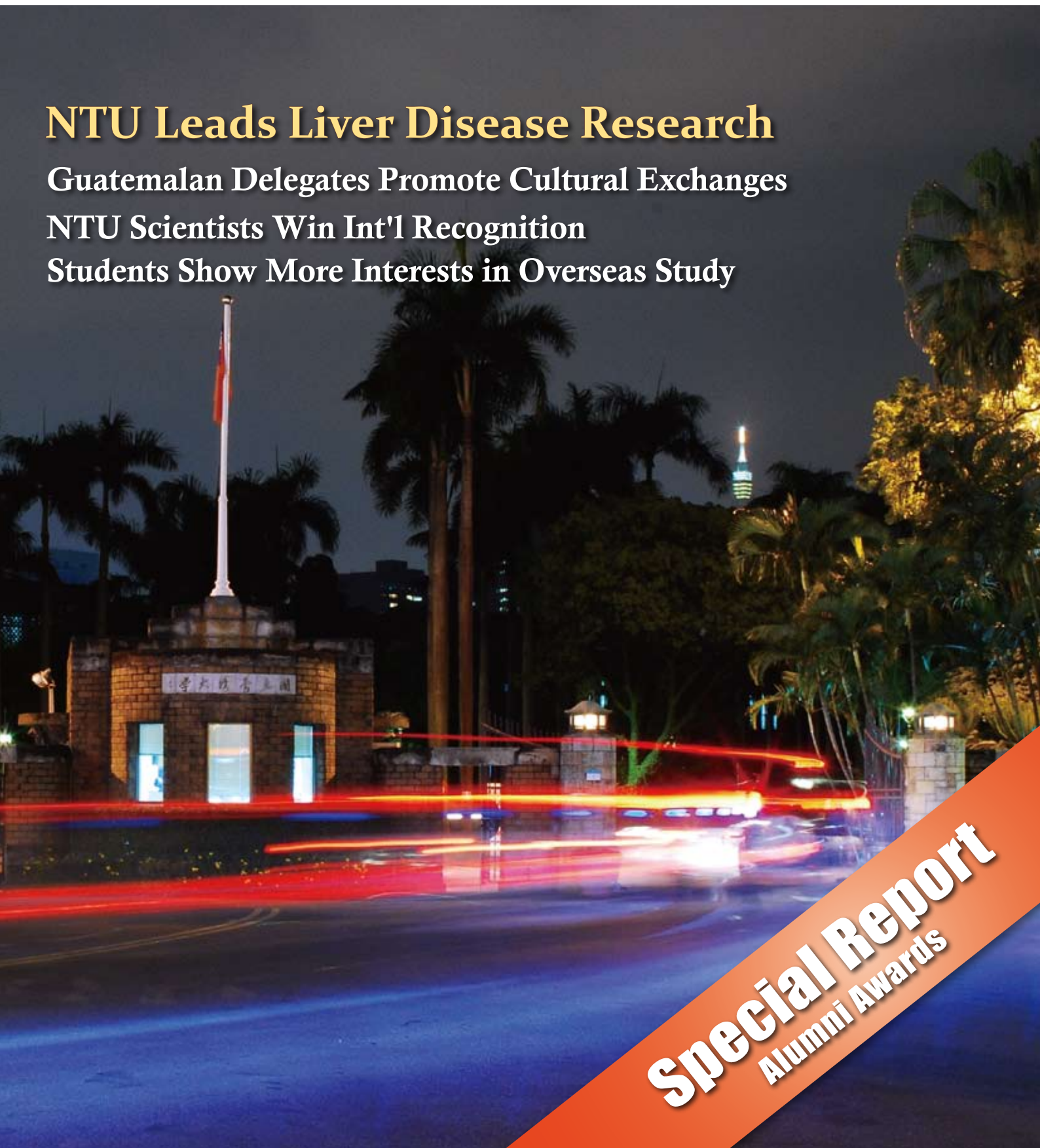
December 2011 / No. 27

## NTU Leads Liver Disease Research

Guatemalan Delegates Promote Cultural Exchanges

NTU Scientists Win Int'l Recognition

Students Show More Interests in Overseas Study



**Special Report**  
Alumni Awards



# CONTENTS

DECEMBER 2011 / NO.27

## SPECIAL REPORT

- 1 President Lee Calls on NTU Family to Become Leaders in Anniversary Speech
- 2 Guatemala President Leads 20-Plus Delegation to NTU for Cultural Exchanges
- 3 Honorary Doctorate and Alumni Awards Presented at 83rd Anniversary Celebration
- 3 2011 NTU Outstanding Alumni Award Recipients

## HONORS

- 4 Students Win International Electronic Design Automation Contest
- 5 NTU Professors Claim National Chair Professor Awards and Academic Awards
- 6 US Liver Disease Association Presents Award to Dr. Ding-shinn Chen
- 6 NSC Awards 2011 Ta-you Wu Memorial Award to Ten NTU Professors
- 7 Mathematical Science Institute Wins Taiwan-France Science and Technology Award
- 7 Environmental Engineer Wins Teco Award for Green Technology Contributions

## INTERNATIONAL CORNER

- 8 International Students Visit Amis Aboriginal Village of Tafalong
- 9 Political Science Student Shares His Exchange Student Experience in Japan
- 9 Waseda University Impressed with NTU's New Online Filing System

## RESEARCH ACHIEVEMENTS

- 10 Biomedical Researchers Publish Important Cancer Research Discovery in *Science*
- 11 Former Bell Labs Scientists Seek Holy Grail of Compound Semiconductors
- 12 Red Blood Cell Production Findings Could Help People with Blood Problems
- 12 Psychologist Explores Infant Speech

## CAMPUS SCENES

- 13 NTU Milk Farm Charms with Historical Architecture

## TEACHING & LEARNING

- 14 College of Management Signs Agreement for Eurex Summer Internships
- 15 NTU Study Abroad Fair Draws Doves of Interested Students and Parents
- 16 Fubon Financial Donates NT\$30 million to Create Fubon Chair Professorship
- 16 Entrepreneurship Students Shadow Wang Group Chairman Sheng-yi Dai

## NTU AT A GLANCE

Reduced Latin American Silver Production, Not Opium Wars, Spurred China's Decline



## From the President's Office

During the second stage of NTU's Aim for the Top University Project, we are striving to enhance the overall well-being of society by finding solutions to the challenges the world faces in the pursuit of sustainable development. In addition to adopting an institution-to-institution approach to rapidly boost NTU's international academic standing by teaming up with prominent international universities and companies, we also encourage our faculty to work together on research in line with the university's policies. An excellent example of the results that can be achieved through this type of teamwork is Taiwan's world-famous national health insurance program, which was designed by Prof. Chih-liang Yang and Prof. Tung-liang Chiang at the NTU College of Public Health and Prof. Kai-shiun Wu of Taiwan's Asia University two decades ago.

There are numerous examples of NTU's efforts to work for the betterment of society. For instance, we have established a research center to devise urgently needed disaster prevention measures to deal with the effects of global climate change. Furthermore, the university is addressing the emergence of an aging society in Taiwan and the rise of preventative medicine. We have utilized information and communications technology to establish a remote healthcare framework as well as an intelligent living center.

In addition to requiring academic excellence of its faculty, NTU also stresses learning outcomes. Therefore, each department has established standards for the core abilities students are expected to achieve. For instance, the university has designed programs to provide students help with teamwork and communication skills as these have been identified as areas in which they need improvement.

李嗣涔

President  
Dr. Si-chen Lee



# President Lee Calls on NTU Family to Become Leaders in Anniversary Speech



Today, we come to celebrate NTU's 83rd Anniversary. This year's anniversary is especially worth celebrating because the university received approval for the second stage of the Ministry of Education's Aim for the Top University Project in April, and NTU's academic standing in the world continues to climb.

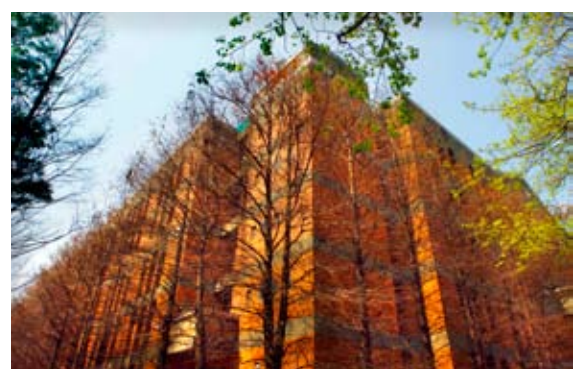
For Stage 2 of the Aim for the Top University Project, besides accelerating our pace, we are making basic changes in our strategic thinking. For research, we innovated the use of organization-to-organization agreements to initiate cooperation with elite foreign enterprises and research institutes. In March, Intel, the world's largest semiconductor company, and NTU's College of Electrical Engineering and Computer Science jointly established the Intel-NTU Connected Context Computing Center to develop M2M (machine-to-machine) technology. With M2M technology, we will anticipate future technology trends for at least the coming decade, and change from followers to leaders.

The NTU College of Medicine and the MD Anderson Cancer Center, America's top cancer center, are preparing to jointly set up a research center. Furthermore, NTU will establish an intelligent

robotics and automation center in collaboration with France's National Center of Scientific Research and Pierre and Marie Curie University. Combined, NTU will have three world-class research centers, which certainly will boost the university's international academic standing.

In education, NTU shifted from emphasizing teaching as the core instructional method to stressing outcome-based education. As to social responsibility, we are striving to apply academics in providing solutions to key issues, such as the sustainable development of society and the promotion of people's well-being. For instance, NTU will devise measures for the prevention and multi-level management of the disasters that might result from global climate change. Additionally, NTU will develop remote the healthcare technology and systems needed for aging societies and the coming era of preventative medicine.

Today, we are here especially to award an honorary doctorate degree to Prof. Pang-yuan Chi. We will also present Outstanding Alumni Awards to six distinguished alumni: Nan-chun Yang, Bang-xin Ding, Chen-ming Hu, Jen-shyong Ho, Stephen Lee and Chau-chun Lu. We wish to express our profound respect for Prof. Chi



for her significant contributions to the reform of elementary and middle school language education, the introduction and promotion of Taiwanese literature to an international audience, the stimulation of international research into Taiwanese literature as well as the establishment of Taiwanese literature as an academic field. We also wish to honor the outstanding alumni for their great accomplishments in academics, commerce, industry, community service and nation building.

As we celebrate NTU's 83rd Anniversary, we members of the NTU family should improve ourselves and broaden our outlooks and attitudes, and rise from followers to leaders to make our greatest contributions to Taiwan's society and human civilization. Let us all wish NTU a happy birthday and wish each of our guests, professors and students health and happiness. Thank you all.

# Guatemala President Leads 20-Plus Delegation to NTU for Cultural Exchanges



**G**uatemalan President Álvaro Colom Caballeros headed a delegation of over 20 Guatemalan dignitaries that visited

NTU to engage in cultural exchanges on October 11. During the visit, Guatemala's Minister of Culture and Sports Dr. Héctor Leonel Escobedo Ayala presented a fascinating lecture on Maya culture, which drew an audience of over 150 students and faculty members. The College of Liberal Arts, NTU Center for the Arts and Office of International Affairs organized this event on behalf of NTU, ensuring it was a resounding success.

President Si-chen Lee attended Minister Escobedo's lecture to address the audience and present a gift to President Colom, who also mounted the stage to address the audience. Other NTU officials attended to meet the Guatemalan representatives, including Dean for International Affairs Hsiao-wei Yuan, Deputy Dean for International Affairs Hsin-yu Lee, Dean of the College of Liberal Arts Jo-shui Chen, Deputy Dean of the College of Liberal Arts Luisa Shu-ying Chang, Chair of the Department of Anthropology Maa-ling Chen and NTU Center for the Arts Chief Director Siu-hung Lau. NTU faculty members and students interacted enthusiastically with the Guatemalan representatives.

In his lecture, entitled "The Archaeology of the Ancient Maya City of El Perú-Waka, Guatemala," Minister Escobedo introduced the world renowned Maya civilization that occupied Guatemala, Mexico, Honduras, Belize and El Salvador and dated back to

Guatemala's Minister of Culture and Sports Dr. Héctor Leonel Escobedo Ayala presents a lecture on Maya culture.



2000 B.C.E. Though the arrival of the Spanish in the 16th century destroyed the civilization, 8 million people still speak Mayan languages. The culture's famous pyramids are symbolic of the connection between heaven and earth. The Maya writing system used 800 glyphs, while the civilization's calendar was highly accurate and complicated. Minister Escobedo also described current archeological efforts aimed at understanding this ancient civilization.

Minister Escobedo has a solid academic background. He earned his Ph.D. from Vanderbilt University, and has taught at several prestigious American universities, including Harvard and Brown. He previously served as Guatemala's vice-minister of Cultural and Natural Heritage.

NTU arranged Minister Escobedo's lecture to bring greater internationalization to the NTU campus, broaden the international perspectives of its faculty and students and provide an opportunity to learn about the important cultures of Central and South America. Besides helping expand worldviews here at NTU, the Guatemalan delegation's visit also allowed the two parties to engage in substantive discussions



1. A large audience listens to Minister Escobedo's lecture. 2. President Si-chen Lee presents a gift to Guatemala's President Colom. 3. NTU lecture organizers appear with Minister Escobedo.





# HONORARY DOCTORATE AND ALUMNI AWARDS PRESENTED AT 83<sup>RD</sup> ANNIVERSARY CELEBRATION

NTU's 83rd Anniversary Ceremony was held at the NTU Sports Center on November 15. On this momentous occasion, President Si-chen Lee called on the NTU family to broaden its outlook and aim for the top, and expressed his aspiration for NTU to change from a follower to a leader. He also presented this year's Outstanding Alumni Awards as well as an honorary doctorate degree to Prof. Pang-yuan Chi.

Prof. Chi's innovative reforms of Chinese language and literature and English language education guided an entire generation. In particular, her compilation, research and promotion of Taiwan literature propelled the nation's literature onto the world stage.

The Outstanding Alumni Awards were awarded to: Nan-chun Yang of the Department of Foreign Languages and Literatures, Bang-xin Ding of the Department of Chinese Language and Literature,



Chen-ming Hu of the Department of Electrical Engineering, Jen-shyong Ho of the Department of Economics, Stephen Lee of the Department of Electrical Engineering and Chau-chun Lu of the Department of Electrical Engineering.

Besides the anniversary ceremony, the entire NTU family, from each department and institute and student association to every student and member of the faculty and staff, came together to organize an exciting range of activities and events in the days around the ceremony. These included academic forums, art lectures, arts and culture performances and exhibitions, an overseas studies fair, a campus fair, guided campus tours as well as a series of intellectually-stimulating tours and activities.

For more information, please visit the NTU's 83rd Anniversary website at <http://www.ntu.edu.tw/activities/festival2011/festivaleng.htm>.

## 2011 NTU OUTSTANDING ALUMNI AWARD RECIPIENTS

**A**rts and Humanities: Nan-chun Yang, an influential founder of Taiwan's mountain hiking culture, is a venerated member of the hiking community who has played a vital role in introducing the cultures of Taiwan's indigenous peoples to the nation.

Academics: Bang-xin Ding researches the history and dialectics of the Chinese language. His principle book is *Chinese Phonology of the Wei-Chin Period: Reconstruction of the Finals as Reflected in Poetry*.

Academics: Chen-ming Hu researches applied physics and engineering science. Hailed as a visionary of microelectronics by the IEEE, he has published four books, presented over 800 papers and holds more than 100 patents in the United States.

Industry and Commerce: Jen-shyong Ho is chairman of Tung Ho Steel Enterprise Corp., one of the largest steel manufacturers in Taiwan. Deeply involved in the arts and humanities, he has been passionate in his support of education, culture and academic research.

Industry and Commerce: Stephen Lee is a distinguished industrialist and philanthropist. In 1994, he founded notebook computer maker Arima Computer Corp. Five years later, in 1999, he established Arima Communications Corp., an important partner to the world's leading mobile phone manufacturers. In 2007, Lee started Arima Eco Energy Technologies Corp. to develop solar energy technology.

General Category: Chau-chun Lu graduated from the Department of Electrical Engineering at the top of his class in 1975. He possesses 24 patents in the United States and has published over 50 journal articles. Etron Technology Inc. is among the many companies he has founded. Lu continues to make important contributions in industry, scholarship and research.



# Students Win International Electronic Design Automation Contest

**N**TUtimer, integrated circuit timing analysis software designed by a student team at the Graduate

Institute of Electronics

Engineering, won first place

in the 2011

IEEE Council

on Electronic

Design

Automation

Power and Timing

Modeling, Optimization

and Simulation-Timing

Analysis Contest. The winning team included graduate students



Prof. Yao-wen Chang

automation takes place at the beginning of the semiconductor production chain and involves the development of computer software that facilitates the development, analysis and design of electronic products. It helps enterprises shorten the product design process and raise market competitiveness.

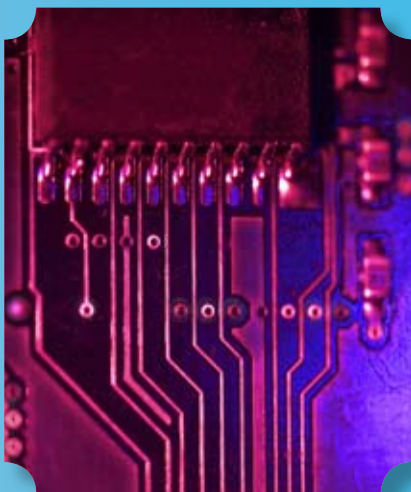
The IEEE (Institute of Electrical and Electronics Engineers) is the most important international organization for electronics engineering and electronics. The CEDA is a society established by the IEEE for the field of electronic design automation. Its mission is to encourage the development of global academic and industrial communities in electronic design automation. The PATMOS workshop is a major regular meeting; this year's workshop was the 21st.

This year's Timing Analysis Contest was the first to be held with CEDA sponsorship at PATMOS. The topics were focused on timing analysis for integrated circuits. The topics and judging methods were formulated by experts at IBM and Portugal's Institute for Systems and

Computer Engineering: Research and Development in Lisbon. The goal of the contest was to develop timing analysis software that could analyze whether selected integrated circuits would operate normally and stably at the speeds expected by their product developers.

The contest drew outstanding teams from around the world. The NTU team's NTUtimer software was able to accurately, rapidly and with low memory usage analyze 30 out of 31 integrate circuits in the contest. The team's standout performance led PATMOS 2011 General Chair José L. Ayala to praise the team personally at the international workshop in September.

This is the fifth time in five years that a team led by Prof. Yao-wen Chang has won at an international integrated circuit electronic design automation competition. Chang's repeated wins are more than anyone else's and have led the world's most important electronics industry journal, *Electronic Engineering Times*, to publish reports on Chang five times.



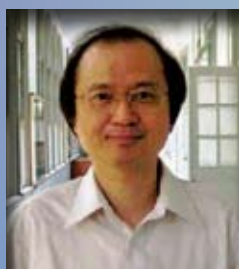
Ho Kuan-hsian and Ho Yuan-kai, who received guidance from Prof. Yao-wen Chang. The team was invited to receive its award at the International Workshop on Power and Timing Modeling, Optimization and Simulation (PATMOS) 2011, which was held in Madrid, Spain in September. The team's winning performance once again demonstrated NTU's leadership role to the international electronic design automation community.

Electronic design

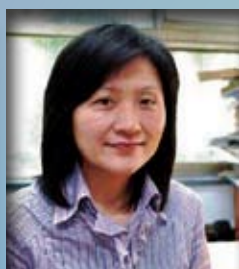




# NTU Professors Claim National Chair Professor Awards and Academic Awards



Prof. Jo-shui Chen



Prof. Yi-ting Li



Prof. Jia-hong Kao



Prof. Shun-jen Cheng



Prof. Din-ping Tsai

The Ministry of Education (MOE) has announced the recipients of the 15th National Chair Professor Awards and the 55th Academic Awards. NTU professors performed exceptionally well this year, accounting for two of the five National Chair Professor Awards and six of the ten Academic Awards.

Prof. Jo-shui Chen of the Department of History received the National Chair Professor Award for Arts and Humanities and Prof. Yi-ting Li of the Department of Economics received the National Chair Professor Award for Social Sciences.

The university's MOE Academic Award recipients include Prof. Feng-wu Chou of the Department of Chinese Literature (for Arts and Humanities), Prof. Chun-chieh Huang of the Department of History (Arts and Humanities), Prof. Hui-wen Koo of the Department of Economics (Social Sciences), Prof. Din-ping Tsai of the Department of Physics (Mathematics and Natural Science), Prof. Shun-jen Cheng of the Department of Mathematics (Mathematics and Natural Science) and Prof. Jia-hong Kao of NTU Hospital (Biological, Agricultural and Medical Sciences).

Prof. Jo-shui Chen is a world-recognized historian whose research interests range from medieval Chinese thought to the social history, women's history, family history, etc.

Prof. Yi-ting Li's researches microeconomic theory and uses search models to investigate monetary theory. Prof. Li has authored numerous research articles that have been published in prestigious journals. Two of her articles in particular have been listed as highly-cited articles, having been cited 74 and 66 times, respectively.

Prof. Feng-wu Chou specializes in compiling and researching excavated texts, including oracle bones, bronze vessels, bamboo and wood inscriptions, silk fabrics, jade tablets, rock carvings and scrolls. Prof. Chou is recognized internationally as the leading expert in his field.

Prof. Chun-chieh Huang has achieved great success in his study of the history of the Confucian and Mencian philosophies in China. In recent years, Prof. Huang has broadened his scope to include Confucianisms in East Asia.

Prof. Hui-wen Koo researches microeconomics and the economic

history of Taiwan. She achieved recognition as an influential scholar for her article in the *American Economic Review*, in which she explored the influence of family planning on income distribution.

Prof. Din-ping Tsai, a leading figure in near-field optics, has been the first to report many important research findings. In 1994, his article on localized surface plasmon was published in *Physics Review Letters*, and has been cited nearly 200 times.

Prof. Shun-jen Cheng is highly respected around the world for his contributions to Lie superalgebras, a core field of mathematics essential in the description of theoretical physics. Prof. Cheng published a series of milestone papers on this field.

Prof. Jia-hong Kao made outstanding accomplishments in researching viral hepatitis over the last 20 years. His greatest work concerned genetic research on hepatitis B.

Prof. Feng-wu Chou



Prof. Chun-chieh Huang



Prof. Hui-wen Koo (center)



## US Liver Disease Association Presents Award to Dr. Ding-shinn Chen



The American Association for the Study of Liver Diseases has named Dr. Ding-shinn Chen, a distinguished chair professor at the College of

Medicine who specializes in viral hepatitis and liver disease, the recipient of the 2011 Distinguished Clinician Educator/Mentor Award.

AASLD notes that, in addition to Dr. Chen's outstanding contributions to the understanding of liver diseases, he has dedicated himself to education and research at NTU Hospital since 1975. He has trained over 90 gastroenterologists and hepatologists. Twenty-seven years ago, he led the drive to institute a hepatitis B immunization program for newborns in Taiwan that effectively controlled the disease's spread. Dr. Chen encourages his students to delve into important clinical issues that have yet to be resolved, and to pursue these issues in both the hospital and laboratory. He urges his students to publish their research as he believes no research is complete until it is published.

Dr. Chen has published more than 600 journal articles, and serves as a reviewer of international journals in gastroenterology, hepatology and hepatitis research. He was the associate editor of *Hepatology* from 2001 to 2006.

## NSC Awards 2011 Ta-you Wu Memorial Award to Ten NTU Professors

The National Science Council recognized ten NTU professors with the 2011 Ta-you Wu Memorial Award. The recipients are: Prof. Jeng-daw Yu of the Department of Mathematics, Prof. Ying-jer Kao of the Department of Physics, Prof. Joseph Tao-yi Wang of the Department of Economics, Prof. Huei-wen Chen of the Graduate Institute of Toxicology, Prof. Lin-chi Chen of the Department of Bio-Industrial Mechatronics Engineering, Prof. Yen-jung Lee of the Department of Accounting, Prof. Carol Hsu of the Department of Information Management, Prof. Winston H. Hsu of the Graduate Institute of Networking and Multimedia, Dr. Chen-hua Liu of the Hepatitis Research Center at NTU Hospital, and Dr. Kuen-feng Chen of the Department of Medical Research at NTU Hospital.

The NSC awards Ta-you Wu Memorial Awards to associate professors and associate research fellows, as well as other research fellows below these levels, who are 42 years old or younger and who produce outstanding, forward-looking research. The award is named in honor of physicist Ta-you Wu for his extraordinary accomplishments in teaching, learning and research as well as his contributions to the development of national science policies in Taiwan.

Dr. Chen-hua Liu conducts research on chronic hepatitis C. Estimates put the number of hepatitis C carriers worldwide at around 170 million. In Taiwan, two to five percent of the population carry hepatitis C. Many these carries die as a result of cirrhosis or liver cancer caused by hepatitis C.

Dr. Kuen-feng Chen pursues research regarding target therapy. His research has demonstrated that inhibiting the CIP2A-PP2A-PI3K/Akt pathway is the crucial factor in determining whether the proteasome inhibitor Bortezomib will be effective in treating hepatocellular carcinoma. Published in *Cancer Research* in 2008 and *Oncogene* in 2010, this work provided a deeper understanding of drug resistance in liver cancer and identified biomarkers that are effective in raising the success rates of clinical experiments.

The *NTU Newsletter* will introduce the other award winners in upcoming issues.



## Mathematical Science Institute Wins Taiwan-France Science and Technology Award

**P**rof. Tony Wenhann Sheu and his research group at the Taida Institute of Mathematical Science (TIMS) were awarded the 2011 Taiwan-France Science and Technology Award. They won the award jointly with Dr. Marc Thiriet of France's Pierre and Marie Curie University (PMCU).



Prof. Sheu is a tenured professor in the Department of Engineering Science and Ocean Engineering. His research mainly involves scientific computing for the purpose of exploring scientific, mathematical and engineering issues. He has published more than 150 journal papers. Dr. Thiriet, a long-time research collaborator with Prof. Sheu, works on biofluid modeling and simulation.

Prof. Sheu's group began cooperating on biofluid mechanics research with Dr. Thiriet's PMCU Louis-Jacques Lion Laboratory (LJLL) in 1999. The two parties initially cooperated on the 3D simulation of the human airway and radio frequency ablation of liver tumors. More recently, they made progress in using high-intensity focal ultrasound for liver tumor ablation.

TIMS and LJLL are currently investigating the formulation of a mechanotransduction mathematical model for mast cell response to stress disturbance by nearby moving needle manipulation. They will soon begin cooperating on the multiscale finite element simulation of mast cell/moving needle interactions. These moving needle projects are cutting-edge studies related to acupuncture in Chinese medicine.

The two sides also implemented student exchanges and dual-degree programs. TIMS designated research cooperation with LJLL as one of its main tasks for the near future.

## Environmental Engineer Wins Teco Award for Green Technology Contributions


**P**rof. Shang-lien Lo of the Graduate Institute of Environmental Engineering is a recipient of the 18th Teco Awards. Prof. Lo was honored with a Teco Award for Mechanics/Technology/Environmental Technology for his accomplishments in green technology research and development.

The awards ceremony on November 5 was an impressive affair, with Taiwan's Vice President Vincent Siew presenting the awards and addressing the audience and a traditional aboriginal song and dance troupe providing entertainment. The ceremony highlighted the awards' efforts to promote the spirit of culture and technology.

Prof. Lo has developed a new adsorption filter technology that improves the drinking water treatment process for the removal of small amounts of heavy metals. He also completed the formulation of remediation plans for cadmium polluted soil in Taoyuan County, laying a solid foundation for future restoration work.

In recent years, Prof. Lo has made outstanding contributions to the environmental protection and sustainable development efforts of industry through his work on microwave-induced pyrolysis and torrefaction of biomass waste, nano-photocatalysts, resource recovery and treatment, interactions of heavy metals at solid-solution interfaces, and environmental systems.

The Teco Technology Foundation, which was established by Teco Electric and Machinery Co., began the Teco Awards as the Teco Technology Awards in order to encourage those who made significant contributions to science and research and development, and to promote innovative technology research and development. The foundation added the Teco Culture Awards in 1998, and changed the awards' name to the Teco Awards in 2004.

 Prof. Shang-lien Lo (center left) and Vice President Vincent Siew (center right) are joined on stage by other Teco Award recipients.






## INTERNATIONAL STUDENTS VISIT AMIS ABORIGINAL VILLAGE OF TAFALONG



Students pose for a group photo in front of a 600-year-old Amis bamboo house.

**T**he NTU International Student Information Service organized a trip for NTU's international students to experience aboriginal culture in the village of Tafalong in Hualien County October 15-16. With the assistance of the NTU Office of International Affairs, the NTUISIS arranged the trip through the National Youth Commission's Youth Travel Spots in Taiwan program.

Tafalong Village is a traditional home of the indigenous Amis people. The journey gave the international students firsthand opportunities to learn about the history of the Tafalong area, observe the ancestral land of the Amis and take part in traditional archery and dance activities. They also enjoyed Amis cuisine, including wild boar, millet wine and purple rice cake.

 Students learn traditional Amis archery.



The most delicious culinary treat for the students was the braised chicken, which is cooked whole. A local tour guide taught the students how to set up a braising rack and build a pile of straw to burn for cooking. When the chickens were cooked, the students could not help but go native and stuff their faces with the succulent meat.


Nonetheless, the most exciting event was picking up bows and arrows and trying traditional Amis archery. It was the first time for many of the students to shoot an arrow, and they thoroughly enjoyed themselves.

Due to inclement weather on the first night, a scheduled trip to view the night sky was cancelled. Instead, the NTUISIS arranged a small party and performance, which featured a wild sexy dance by a female impersonator. The show left the students in stitches, and proved to be a perfect close to the day's activities.

The next day, the students were taken on a tour of the area around Tafalong. At one stop, located 700 meters above sea level and overlooking the East Rift Valley, the students marveled at the beauty of the Central Mountain Range to the west. Next up was a visit to the seaside to gaze at the surf. Against

the backdrop of Hualien's verdant coastal mountains, the students strolled along the shore as a sea breeze blew in off the Pacific Ocean. The final destination of the day's tour was a well-preserved 600-year-old Amis bamboo house, which provided the perfect backdrop for group photos. Though this marked the end of the students' visit, the experiences they enjoyed over



 An international student prepares to savor authentic Amis braised chicken.

those two days will remain forever in their hearts.

Coming from over 12 countries, the international students not only learned about Amis culture, but made friends with schoolmates from around the world. The NTUISIS looks forward to arranging similar trips in the future to create greater opportunities for NTU's international students to learn about the beauty of Taiwan.



## Political Science Student Shares His Exchange Student Experience in Japan

**D**epartment of Political Science graduate student Hung-lin Yeh here shares his experience as a student at Hokkaido University in 2010.

NTU's College of Social Sciences has held an exchange agreement with Hokkaido University's School of Law for years. I was fortunate to participate in this program and go to Hokkaido in September 2010 to begin my year as an exchange student.

The educational systems in Japan and Taiwan are quite different. The number of weeks spent in class is significantly less in Japan. At NTU, each class lasts 18 weeks, while in Japan classes last for about 15 weeks. Japanese graduate students are like non-degree students in Taiwan; they have no formal student status.

Hokkaido's School of Law has a practice class that meets once



Sumo club members share a local meal following a competition.

a week. Professors give lectures, graduate students present reports and all graduate students studying that subject will attend. The students' interactions with the professors and other students are very close, and they like to develop these relationships by going out to drink and sing karaoke together.

Hokkaido has many student clubs. I didn't participate in a club at first, but later saw a flyer seeking students for the sumo club, and felt curious. I thought I would be able to handle it with my strength,

but discovered that technique was crucially important as well.

I experienced ups and downs in my life as an exchange student. However, during that year I not only qualified as a PhD candidate, I passed my Japanese language proficiency test and decided on the direction for my PhD dissertation. These were wonderful achievements. I felt moved by the enthusiastic assistance provided by NTU's College of Social Sciences and Department of Political Science during my year in Hokkaido, and wish to express my deep appreciation to them.

Members of Hokkaido University's sumo club strike a pose.



## Waseda University Impressed with NTU's New Online Filing System

**O**n November 8, a delegation from Waseda University in Japan visited the Office of International Affairs to learn about NTU's decision making process. The delegates included representatives from Waseda's International Affairs Division, Research Promotion Division and Department of User Support. Waseda University and NTU have a strong relationship and have been working very closely in a variety of areas.



Chief Ming-yuan Yeh of the NTU Office of General Affairs' Documentation Division, together with Director Jean Lin of the OIA's International Program Division, hosted the delegates and explained the strategies our university adopted in developing its new online filing system for administrative documents. The new system, which was scheduled to be launched at the end of November 2011, is expected to speed up administrative procedures and serve as a comprehensive storage system for administrative documents.

Chief Yeh said, "The process of building the system was really an opportunity for NTU to rethink how our decision making process functions. Not only were we able to define clearly certain features that used to be ambiguous, we were also able to clearly identify the problems we had with our previous process and design the system accordingly."

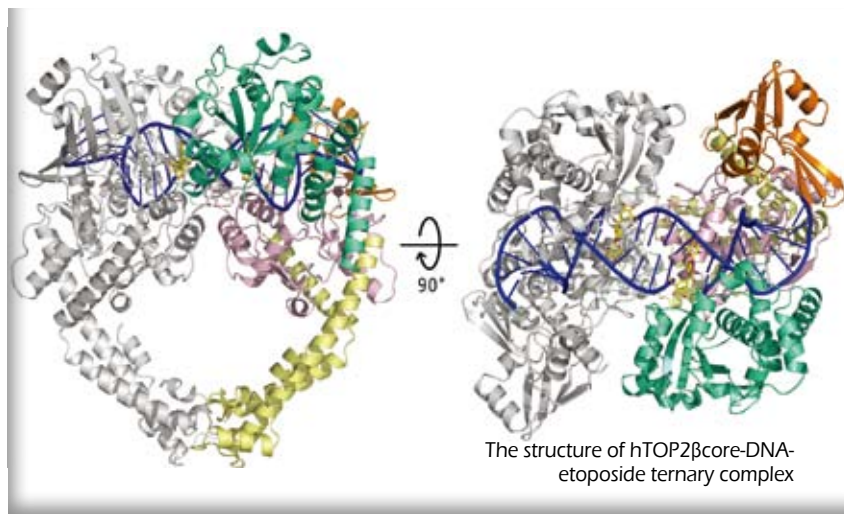
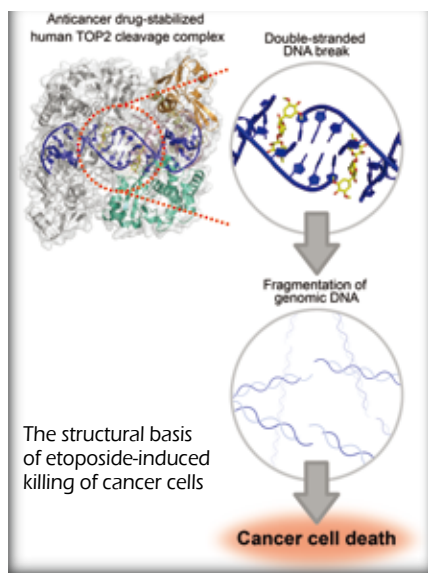
The Waseda University delegation was very impressed with the NTU team as well as the strategy used in designing the new filing system. The meeting allowed both institutions to share their experiences on administrative procedures and to learn from each other's experiences. NTU is pleased to have had the opportunity once again to further deepen the close bond it enjoys with Waseda.

## BIOMEDICAL RESEARCHERS PUBLISH IMPORTANT CANCER RESEARCH DISCOVERY IN *SCIENCE*

In a recent *Science* article, the research team led by Prof. Nei-li Chan and Prof. Tsai-kun Li at the College of Medicine described the structural basis by which the widely used anticancer drug etoposide kills cancer cells by interacting with its cellular targets named type II DNA topoisomeraes. In a one-sentence summary of this paper, the journal editor wrote: "Inhibition of an enzyme that alters DNA topology with an anticancer agent should facilitate development of better cancer drugs."

Type II topoisomerases (TOP2s) are ubiquitous enzymes that play essential roles in cellular DNA transactions, including replication, transcription, recombination and chromosome condensation and segregation. These twofold symmetric enzymes transiently cleave a pair of opposing phosphodiester bonds four base pairs apart, generating a TOP2-DNA cleavage complex. Passage of a second DNA segment through this enzyme-bridged "DNA gate" and its resealing complete the topological change of the DNA.

### TOP2's DNA cleavage activity



is a double-edged sword; failure to reseal the enzyme-mediated DNA break can lead to cell death. Several potent anticancer drugs, such as etoposide, mAMSA, doxorubicin and mitoxantrone, exploit this harmful aspect of TOP2 and promote the formation of cytotoxic DNA lesions by increasing the steady-state level of cleavage complexes. Despite the extensive clinical use of these drugs, however, the lack of three-dimensional structures of any drug-stabilized cleavage complexes has left the structural bases of drug actions and resistance largely unresolved.

In the *Science* paper titled "Structural Basis of Type II topoisomerase inhibition by the anticancer drug etoposide" (*Science*, Vol. 333, pages 459-462, 22 July 2011), the NTU researchers reported on the crystal structure of a large fragment of human TOP2 $\beta$  (designated hTOP2 $\beta$  core) complexed to DNA and to etoposide. This structure provided the first observation of a TOP2 ternary cleavage complex stabilized by an anticancer drug.

The high-resolution structure of the hTOP2 $\beta$  core-DNA-etoposide ternary complex reveals the intricate interplays between protein,

DNA and drugs. Besides providing the structural basis of drug action and resistance, this structure also offers molecular codes useful for the design of isoform-specific TOP2-targeting agents. This aspect is extremely important because all vertebrates possess two highly similar yet functionally distinct TOP2 isoforms. The  $\alpha$ -isoform is particularly important for DNA replication and is usually present at high levels in fast growing cancer cells, whereas the  $\beta$ -isoform is mainly involved in transcription-related processes.

Although the inhibition of both TOP2 isoforms contributes to the drug-induced death of cancer cells, targeting of the  $\beta$ -isoform has been implicated in deleterious therapy-related secondary malignancies. Therefore, it is desirable to develop the isoform-specific TOP2-targeting agents. The reported structure further reveals that, while most drug-contacting residues are conserved between isoforms, a key drug-interacting residue Q778 is replaced with methionine (M762) in the  $\alpha$ -isoform. Such a change in residue polarity may be exploitable in developing new isoform-specific anticancer drugs with reduced side effects.

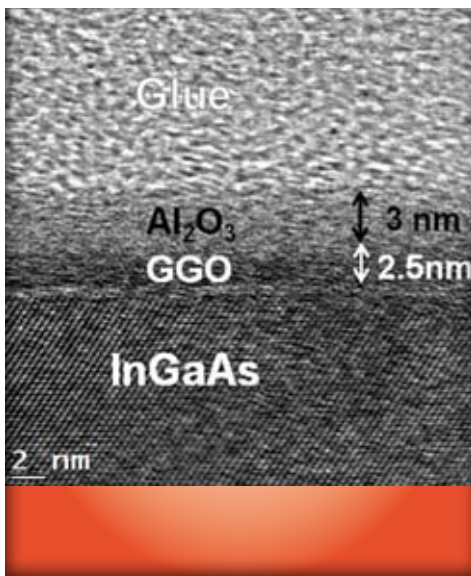


# FORMER BELL LABS SCIENTISTS SEEK HOLY GRAIL OF COMPOUND SEMICONDUCTORS



Ⓐ The ultra-high vacuum multi-chamber molecular beam epitaxy (MBE) system at the nano-epitaxy lab

The research groups of Director Ray-nien Kwo of the Center for Condensed Matter Sciences and Prof. Ming-hwei Hong of the Department of Physics and Graduate Institute of Applied Physics have made exciting technological advances in innovating metal-oxide-semiconductor field-effect-transistors (MOSFETs) based



Ⓐ Cross-sectional high-resolution transmission electron microscopy: MBE-deposited Ga<sub>2</sub>O<sub>3</sub>(Gd<sub>2</sub>O<sub>3</sub>) on InGaAs and the interfacial region

on GaAs (gallium arsenide) and InGaAs (indium gallium arsenide) compound semiconductors. Since the 1960s, scientists and engineers have been searching feverishly for the inversion-channel GaAs MOSFET as the Holy Grail of compound semiconductors.

These innovations will find important

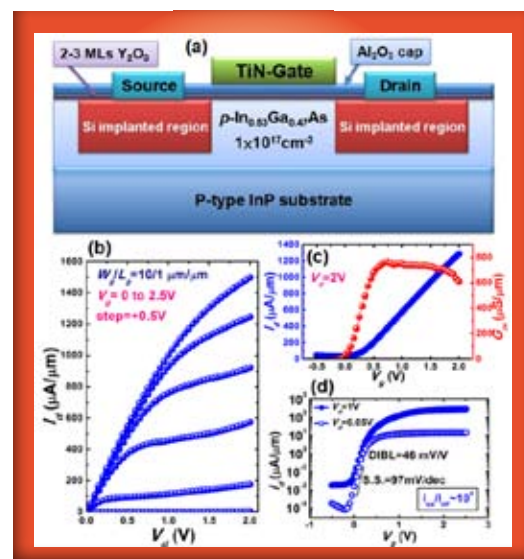
applications in computer microprocessors, cell phones and telecommunication, operating at speeds several times faster and with lower power consumption than the currently best devices based on silicon. After 18 years of extensive research and development efforts (nine years at Bell Labs and nine in Taiwan), this technology is now finally ready to be introduced into the production phase.

Prof. Kwo and Prof. Hong developed a unique ultrahigh vacuum integrated multi-chamber molecular beam epitaxy (MBE) system that allowed them to produce high k dielectrics Ga<sub>2</sub>O<sub>3</sub>(Gd<sub>2</sub>O<sub>3</sub>) films in-situ deposited on GaAs in 1994, which led to the successful unpinning of the

Fermi level for the first time. In 1996, they demonstrated the inversion-channel GaAs MOSFET of both n- and p-configurations using Ga<sub>2</sub>O<sub>3</sub>(Gd<sub>2</sub>O<sub>3</sub>) as the gate dielectric, resolving a puzzle that had persisted for the previous 35 years. Their results were published in *Science* and other major journals and presented at prominent conferences. Not only were these landmark achievements for compound semiconductor research, they created excellent opportunities for nanoelectronics beyond silicon complementary metal-oxide-semiconductors (CMOS).

Both Prof. Kwo and Prof. Hong devoted themselves to pioneering research at Bell Labs for over 22 years prior to their return to Taiwan to serve as professors 2003. During a short span of four months, leading a team of very young graduate students, they reconstructed the multi-chamber MBE system donated by Bell Labs in Taiwan. Kwo and Hong aspire to use their expertise to nurture talented young people in Taiwan and help establish a solid foundation for nanoelectronics in their home country.

Over the last eight years, Prof. Kwo and Prof. Hong have received strong support from the government in the form of grants for large-scale projects, collaborated closely with domestic research groups and produced significant research achievements. The pair has developed a self-aligned n-inversion channel InGaAs MOSFET with world-record drain current and transconductance. They have demonstrated the feasibility of CMOS beyond the 15 nm node. Furthermore, they have controlled crucial factors responsible for the operation of high k/InGaAs MOS.



Ⓐ (a) Device structure of InGaAs MOSFET; (b) Excellent device performances in drain currents, transconductance and sub-threshold swing



# Red Blood Cell Production Findings Could Help People with Blood Problems



Prof. Hsin-yu Lee's research team

A research team led by Prof. Hsin-yu Lee of the Department of Life Science has discovered that lysophosphatidic acid receptor 3 (LPA3) is a crucial factor in the production of red blood cells, a process called erythropoiesis. This discovery is expected to benefit patients suffering from blood production problems. The team's findings were published in *Stem Cells* (IF 7.871, 2010).

Prof. Lee pursued research into lysophosphatidic acid (LPA) while earning his PhD at the University of California, San Francisco, and he has published 40 papers on this

subject. His work showed that, after LPA connects with various receptors, it can activate endothelial cells in blood vessels to promote wound healing, cell adhesion and inflammation. However, LPA's impact on development processes and stem cells remains unclear.

For the research reported in *Stem Cells*, Prof. Lee's team worked with zebrafish embryos among which they observed a significant deficiency in erythropoiesis in embryos with reduced LPA receptor 3 genes. This led the team to postulate that LPA3 is a crucial factor in the production of red blood cells. The researchers further discovered that hematopoietic stem cells express large volumes of LPA3 during the early stage of their differentiation into red blood cells, and that LPA itself also promotes the differentiation of red blood cells, proving that LPA induces erythropoiesis through the activation of LPA3.

The hormone erythropoietin (EPO) is used to treat anemia patients, but recent research suggests it might cause hypertension and accelerate the growth of tumors. Prof. Lee's findings indicate that the negative side effects of this current treatment.

## Psychologist Explores Infant Speech

The development of language in infants has always been an important topic in developmental psychology. Do humans possess language processing abilities innately at birth or do they acquire them? Are infants able to distinguish and categorize phonetic elements and demonstrate the perceptive ability of rules learning? These are some of the questions Prof. Feng-ming Tsao of the Department of Psychology is exploring at the Infant Speech Laboratory.

Prof. Tsao observed the development of the ability to distinguish the phonetic elements of a native language and a foreign language of Taiwanese and American infants aged six to eight months and ten to twelve months. He found that the infants' sensitivity to the phonetic elements of a foreign language rose and then fell with age while their sensitivity to their native language continued to increase steadily.

Prof. Tsao had previously discovered that, while nine-month old babies are able to learn the phonetic elements of a foreign language through interaction with adults, learning from a DVD was relatively ineffective. This showed that social interaction promotes phonetic perception. In follow-up research, he explored the effect of the frequency of real human interaction on phonetic perception, and found that sensitivity increased for infants that met for interaction three times a week while there were no significant changes for those that met just once a week.

In other research, Prof. Tsao's found that mothers raise the tone as well as the range of their voices when speaking to babies. These are elements of infant-directed speech.





# NTU MILK FARM CHARMS WITH HISTORICAL ARCHITECTURE



In the last issue of *NTU Newsletter*, we introduced the history of NTU Milk, which has been produced and sold right here on campus for over half a century. In this issue, we tell you about the charming Japanese colonial-era architecture of the NTU Experimental Farm's Animal Husbandry Plot, where the dairy cows are raised and milked.

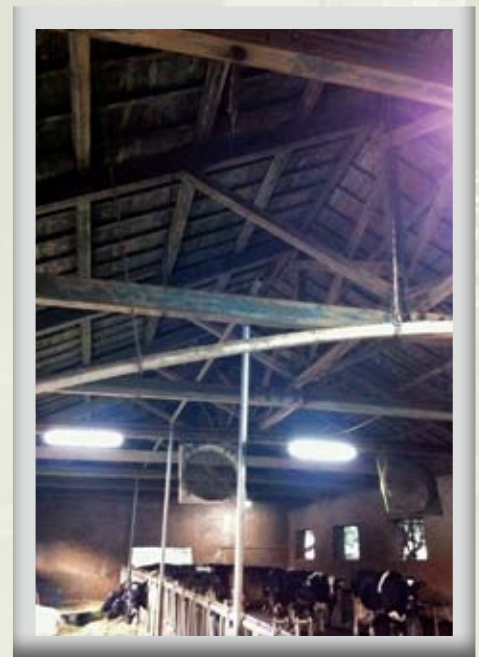


The plot's old barn, which still houses over 40 dairy cows, has a history even longer than that of NTU Milk itself. According to Experimental Farm Technician Woan-lin Chen, the barn was built around 1935. Its roof is made of durable Formosan cypress wood, which, despite having endured nearly 80 winters and summers, is still sturdy and in sound condition. Just looking at the building's design, one gets a sense of the high architectural standards of the Japanese. Technician Chen makes a special point of mentioning the barn's thick brick walls, adding that brick walls built these days pale in comparison.

A towering silage silo, constructed in 1937, rises at the side of the barn. The technique of ensilage relies on fermentation to preserve hay for storage. Technician Chen says, however, the silo never saw formal use because it turned out that ensilage is better suited to cooler climates. Nevertheless, the silo's European design creates a quaint scene, which makes it an apt subject for neighborhood children to sketch.

The plot also boasts a number of Japanese-era school buildings that were once used for classrooms. Topped with red tile roofs, the buildings' walls are the same color as the barn. Strolling among these historic buildings, one easily imagines oneself drifting back to a different era.

Further into the plot is a pair of white single-story buildings built in 1957 during the period of American aid. One was the farm's second-generation milk processing plant; the current processing plant occupies a new building. The farm's faculty and students call the other building the White House. Originally, it was a laboratory but it is now a place where students of the Department of Animal Science and Technology love to gather to socialize or discuss their lessons.



Recalling stories he heard from former employees, Technician Chen says, "At the very earliest, I don't know what year it goes back to, the NTU Farm, this piece of land, was a place where Japanese soldiers stabled their horses." Glancing at the surrounding area with a grass-covered mountain in the background, you can imagine the magnificent horses grazing there.



## College of Management Signs Agreement for Eurex Summer Internships



Students of the Department of Finance recently gained a valuable opportunity to learn firsthand about the derivatives market in Europe by participating in internships at the European Exchange (Eurex).

On November 16, Dean Shu-hsing Li of the College of Management and Roland Schwinn, Eurex's executive director and head of business development for Asia and the Middle East, signed an agreement creating two summer internship positions for NTU students at Eurex. The agreement is a big step forward in the college's drive to provide its students with firsthand experience of the international financial markets.

Under the agreement, Eurex will provide long-term support to the college in its efforts to internationalize. This also includes supplying real-time derivatives trading data to the school for educational and research purposes.

Each summer, Eurex will provide two fully-subsidized internships, nearly 10,000 euros in total, to Department of Finance students at the Eurex headquarters in Frankfurt, Germany. This opportunity is all the more valuable because Eurex offers only ten internships each year, and competition to participate is highly competitive. This is a major contribution to NTU as well as to the finance industry and finance scholarship in Taiwan at large.

Exchanges between Taiwan and Europe are expanding steadily, especially in the area of industry-academia cooperation and exchanges. A range of intercourse, including academic discussions, internship programs and exchanges of research results, is bringing Taiwan and Europe closer. On this foundation, the Department of Finance has actively pursued the establishment

of cooperative industry-academia relationships with European enterprises. This thrust is aimed at gaining greater knowledge of the developmental status of European financial markets and the operations of European companies. Moreover, it promotes NTU's students and faculty to international markets, and increases familiarity with and understanding of European financial markets in Taiwan. The department is dedicated to continuing to build its relationship with Eurex.

The world's leading derivatives exchange, Eurex was established in 1998 and is jointly operated by Deutsche Börse and SIX Swiss Exchange. The exchange traded a total of 2.6 billion contracts in 2010, all through its electronic trading and clearing platform.

It offers a full range of services, including initial public offerings, securities and futures trading, clearing, settlement and custody services as well as information services. Eurex's products include equity derivatives, equity-index derivatives, volatility-index derivatives, exchange-traded fund derivatives, credit derivatives and interest-rate derivatives. In addition to futures and options, it is also an exchange for the trading of over-the-counter cash market transactions. These include cash bonds and sale and repurchase agreements.

Eurex plays a crucial role in assisting the European Central Bank improve the efficiency, liquidity, security and integrity of financial and capital markets. It has become indispensable to the bank's efforts to stabilize markets, regain market confidence and ensure market liquidity.



# NTU Study Abroad Fair Draws Drove of Interested Students and Parents



(Left) Students and parents attend an exchange student information session.

(Right) Exchange students share their experiences at an information booth during the NTU Study Abroad Fair.

Every year, the Office of International Affairs' NTU Study Abroad Fair draws droves of interested students and parents. Held on November 15, the day of NTU's 83rd Anniversary celebration, this year's fair filled the GIS NTU Convention Center with nearly a thousand visitors interested in learning about educational opportunities in other countries.

For this year's fair, the OIA set up three main exhibition areas: an exchange student area, an overseas summer program area and a learning center and language institute area. In addition, the office held two information sessions: an exchange student selection session and an overseas summer program session.

In all, the fair featured 40 exhibition booths. These were manned by 30 NTU students who had returned from studying abroad as exchange students and 77 international exchange students currently enrolled at NTU. The students spared no effort in designing their exhibition booths to attract students and provide detailed and useful information about studying overseas. Besides providing a range of promotional brochures introducing programs at their respective institutions, the students also showed their

enthusiasm for their institutions by offering informative answers to the queries of NTU students interested in taking part in educational programs abroad, as well as in sharing their own personal experiences as exchange students.

The overseas summer program exhibition area, a new attraction this year, was a popular attraction. Thirty-eight NTU students who spent last summer overseas participating in exchange programs set up ten booths to provide a wide range of advice and information. Furthermore, the OIA invited personnel from language testing organizations as well as the education divisions of the Taiwan-based representative offices of a number of countries to take part in the education fair. The exchange student selection session and overseas summer program session also proved to be a great success, drawing a total audience of nearly 500 people.

With so many well-designed and informative booths making this year's NTU Study Abroad Fair a resounding success, the OIA organized a voting activity to encourage the students who set up booths and to show its appreciation for their enthusiasm and hard work. Students who attended the

fair were allowed to cast votes for their favorite exchange student booths and overseas summer program booths. After the final tally, the University of California and California State University booth garnered 74 votes to be named the best booth. The University of Hawaii and University of Wisconsin booth came in second with 31 votes, while Hokkaido University took third place with 27 votes.

The OIA commenced online registration for the selection of international exchange students for the 2012/2013 academic year on November 21. Students interested in participating are invited to visit the OIA's website at <http://www.oia.ntu.edu.tw> for the most up-to-date information.



Curious students cluster around overseas summer program information booths.



## Fubon Financial Donates NT\$30 million to Create Fubon Chair Professorship



**F**ubon Financial Holding Co. has donated NT\$30 million to NTU for the creation of the Fubon Chair Professorship at the College of Management, the first corporate-sponsored chair position in Taiwan. Fubon Financial's generosity marks a milestone in the long-term support of the improvement of academic research standards by private enterprise in Taiwan.

With the goal of training more experts in the field of management, the College of Management will form a committee entrusted

with inviting acclaimed scholars worldwide who have made major academic research achievements to fill this new position.

The signing ceremony for the donation was attended by NTU officials and high-level Fubon executives, among them President Si-chen Lee, Fubon Financial Vice Chairman Richard M. Tsai, and Fubon Art Foundation CEO Maggie Tsai.

President Lee observed that many universities in the United States have chair professorships

established through contributions from businesses or businesspeople. President Lee declared that the donation for the Fubon Chair Professorship was the first time such a contribution was made in Taiwan and that the chair will not only benefit current students, but will create advantages for generations of students to come by advancing academic research and education in Taiwan.

Expressing delight at returning to his alma mater, the College of Management, Vice Chairman Tsai said that he felt a sense of gratitude in donating the perpetual fund to NTU for the establishment of the Fubon Chair Professorship. He said schools are cradles for the nurturing of talented professionals, and outstanding professionals are an important asset for businesses.

## Entrepreneurship Students Shadow Wang Group Chairman Sheng-yi

**S**eptember 26 was without a doubt an unforgettable day for students Ms. Yi-ling Lin and Mr. Huan-chi Chang, for it was the day the pair enjoyed the chance to shadow Mr. Sheng-yi Dai as he performed his duties as chairman of the Wang Group. The two had earned this opportunity by being selected to fill the only two spots offered through the Creativity and Entrepreneurship Program to shadow a chairperson on the job. It turns out the first experience Chairman Dai shared with Ms. Lin and Mr. Chang was attending a farewell ceremony for a departing Wang Group employee.

The Wang Group is a major multinational restaurant conglomerate

whose operations include steakhouses, Japanese restaurants and other food businesses. The group has emphasized attentive service to win over the hearts of its patrons. Yet, the students witnessed firsthand that the group's success was due as well to the personal attention Chairman Dai demonstrated in caring for his employees.

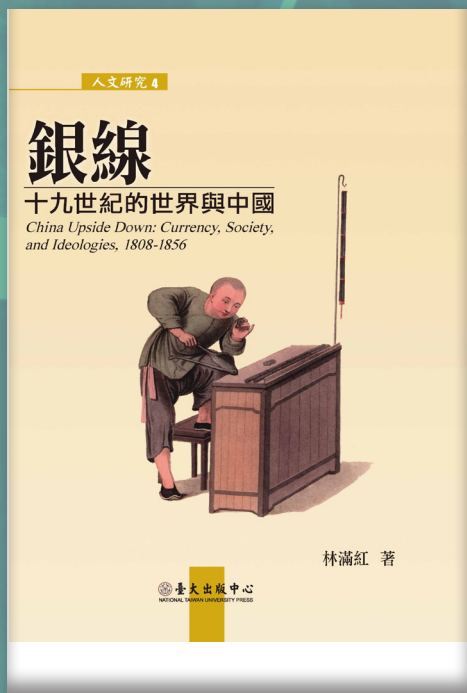
Ms. Lin and Mr. Chang must have been surprised to discover the Wang Group office in Taipei is actually relatively small, covering only 4,320 square feet of floor space in an old office building. Nonetheless, Chairman Dai's standard is "big enough to use is good enough."



In explaining to the students the reason the Wang Group has been able to continue to create new brands, Chairman Dai said, "Service isn't simply about differentiation. Superiority is an indispensable element. For a business to exert its influence in the right markets, it must position itself in the appropriate markets and find the superiority of differentiation, and then pursue a focused, deep development."



## Reduced Latin American Silver Production, Not Opium Wars, Spurred



The Opium Wars are often believed to be the turning point marking China's decline in the 19th century; however, Dr. Man-hong Lin contends that the crisis that arose in China due to reduced silver production in Latin America during the period before and after the Opium Wars in fact exerted a greater impact on China's decline than the wars themselves.

Dr. Lin, a renowned economic historian at Academia Sinica's Institute of Modern History, presented this revision of *Chinese history in her English-language book China Upside Down: Currency, Society, and Ideologies, 1808-1856* (Harvard East Asian

Monographs, 2006).

NTU Press recently published a Chinese translation of this important work. Divided into three sections, the book first discusses silver around the globe and China's silver network, then explores the cultural factors behind the economic disputes and finally addresses competing academic viewpoints. The book's conclusion points out the seriousness of the outflow of China's silver in the first part of the 19th century and its influence on the world economy and China's decline.

Dr. Lin was closely involved in the book's translation. In the Chinese version, Dr. Lin addresses numerous critiques of the arguments she presented in the original English version, as well as questions raised during a symposium on the English version at a global history conference in London in March 2011.





# **Financial Times 2011 Global EMBA Rankings List NTU at 45th**

The recently released Financial Times 2011 Global EMBA Rankings, which ranks the top-100 EMBA programs around the world, rank the EMBA program at the College of Management at 45th place. The annual rankings are based on such criteria as the quality of a program's students, student career development after graduation, a program's academic achievements and research capabilities, average alumni salaries and a program's degree of internationalization.

Visit the Global EMBA Rankings website at <http://rankings.ft.com/businessschoolrankings/emba-rankings-201>

# **Cheers Magazine Names NTU EMBA Program Best in Taiwan**

Cheers magazine has named the College of Management's EMBA program the best in Taiwan for the second year running. For the last ten years, Cheers has conducted an annual survey of 1) executives at the assistant manager level and higher at 3,000 leading enterprises in Taiwan, as ranked by Commonwealth Magazine, 2) reserve staff and 3) university alumni and students who participated in EMBA satisfaction surveys. Cheers' rankings rate the programs based on employment expectation and the school's competitiveness. Under school competitiveness, NTU's EMBA program was ranked number one. The report proclaimed that NTU's EMBA program is this year's top program and concluded that given the long-term management effectiveness associated with NTU's EMBA label, the program will maintain its leading position.



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