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NTU NEWSLETTER

August 2013/No.37

President Yang: Sustainable Development

Pulitzer Laureate Brings Shakespeare to Life

Genetic Engineers Fighting Swine Virus

Graphene for Transparent Smart Phones

Special Report

Int'l Academic Alliance

Contents

August 2013 / No. 37

Special Report

Honors

International Corner

Research Achievements

Campus Scenes

Teaching & Learning

NTU at a Glance

From the President's Office

Since taking office as NTU president, I have endeavored to educate talented professionals, pursue sustainable development and boost international competitiveness for the betterment of Taiwan. Moreover, it has been my hope that NTU's students demonstrate their sense of social responsibility and strive to contribute to the nation.

NTU is home to the finest students—students who demonstrate both exceptional character and professional skills—and society has generously provided it with plentiful resources. How can we help our students fulfill the expectations of society, develop their professional talents and feel honor in being NTU students? Perhaps we can improve our curriculum design and learning environment by working to strengthen core disciplines, boost foreign language abilities, push forward internationalization efforts and promote a sense of giving back to society, and in general make adjustments symbolic of the NTU spirit.

For instance, we should work to develop leading scholars in the Asia Pacific region by incorporating curriculum content used at Harvard and other elite universities and by merging with the international community. We must also encourage students to take up community service and learn about the needs of the people through community participation.

Compared to China, Hong Kong, Macao and Singapore, Taiwan has maintained a more diverse and comprehensive embodiment of Chinese culture and Confucian thought. I hold great expectations of establishing NTU as a place for international scholars to gain an understanding of ethnic-Chinese people and the East Asian region by attracting international students to study the politics, society, culture and psychology of the ethnic-Chinese world in Taiwan.

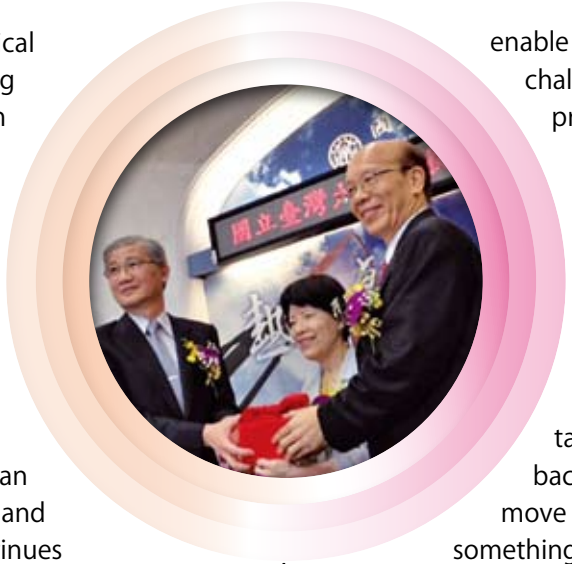
Let's move forward together.

楊泮池

President
Dr. Pan-Chyr Yang

PRESIDENT YANG AIMS TO MAKE NTU A LEADER IN SUSTAINABLE DEVELOPMENT

Ministry of Education Political Deputy Minister Pi-Twan Huang presided over the inauguration ceremony for new NTU President Pan-Chyr Yang on June 21.



Addressing the audience, Deputy Minister Huang said, "President Yang is a renowned doctor in Taiwan. Yet he does not strive to be simply a renowned doctor but an outstanding practicing doctor, and he wants to lead NTU as it continues to build on the foundation established by his predecessor and continues to create excellence."

The following are excerpts from President Yang's inauguration speech.

Due to the hard work of President Si-Chen Lee and all previous NTU presidents as well as all of their colleagues, everyone can see the exceptional educational and academic accomplishments made at NTU over the years.

Taiwan does not enjoy abundant natural resources. The only thing we rely on that can sustain development in the face of international competition is our outstanding human resources. This is our most significant advantage. NTU boasts the most outstanding faculty and students and receives injections of resources from society. This is NTU's unshirkable responsibility, a mission we must take up.

If we are to produce even more and even better professionals, we must aspire to make students the finest graduates by the time they graduate and enable them to confront any external challenge with courage and solve problems.

In addition to pursuing academic rankings, it is also very important for a university to promote social responsibility. NTU bears the responsibility of making our students aware that one who takes from society must give back to society and make society move in the proper direction. This is something we should do, as well.

As to our curriculum, we all know internationalization is important. However, if students gain international experience only after going abroad, that is a bit too late. We can give students a chance to learn from the curricula of important international scholars by attempting to integrate these curricula into our own teaching.

Another important thing that we have been promoting is creative courses. I sincerely hope that we can do even better in the coming years and that we will encourage our students to form groups that seek out and solve real problems so they know they possess this real ability.

NTU enjoys an excellent tradition and we together uphold its ideals and values. I personally hope with all my heart that all NTU faculty, students and administrative staff will continue to strive to elevate NTU to be the leading ethnic-Chinese university and in the ranks of the world's leading universities, to make NTU a leader in sustainable development in Taiwan, and to make contributions to all of humanity.

Houston Alumni Raising Funds for NTU's 85th Anniversary Celebration

The president of the National Taiwan University Alumni Association in Greater Houston (NTUAAH), Dr. Helen Weng, returned to Taiwan in May to meet with then NTU President Si-Chen Lee and incoming NTU President Pan-Chyr Yang on May 27. During the meeting, Dr. Weng discussed preparations for NTU's 85th Anniversary Celebration as well as the plans of the alumni association. Discussion topics included:

(1) Fund raising: In response to President Lee's calls in recent years for alumni to join together to raise funds on an annual basis as well as to celebrate NTU's 85th Anniversary, Dr. Weng said that NTUAAH would hold its fund drive for this year until the middle of November. President Lee stated that there are presently around 100,000 NTU alumni in the United States and Canada and that the university would benefit greatly if each were to donate just USD100.

(2) Liaison with regional alumni associations: The Internet will be used to report on the activities of alumni associations in different regions so that the alumni associations maintain contact with each other and the university. Three websites support this contact:

1. Alumni Liaison Office: Facebook : https://www.facebook.com/alumni.NTU?fref=ts

2. Alumni Liaison Office Latest News: http://homepage.ntu.edu.tw/~ntualumni/

3. NTU Alumni e-Paper: http://host.cc.ntu.edu.tw/aepaper/ePaperShow.asp

(3) Invited speakers and visits: Dr. Weng extended an open invitation to the NTU president and noted members of the NTU community to visit and speak in Houston.

Dr. Weng also reported that the NTUAAH board of directors had already raised a total of USD7,000 for the 85th Anniversary Celebration since kicking off its fund drive on May 11. Alumni wishing to make a donation to the association are invited to mail a check addressed to NTUADF at P.O. Box 270172, Houston, TX 77277-0172. Donators must provide personal information, including Chinese and English names, address, telephone number and email address, and complete a Donor Form, which is available at http://info2.ntu.edu.tw/donation/DonationFormUS.aspx. The category of donation must also be marked on the Donor Form. Categories include: (1) endowment, (2) individual department, (3) dormitory renovation fund, (4) student emergency aid and (5) library academic journal procurement. Alumni with questions are invited to contact Dr. Weng by phone at (713)-668-2881.

NTU AND INDIANA UNIVERSITY CONSOLIDATING PARTNERSHIP

NTU and Indiana University stepped into a new era of collaboration with the signing of a partnership agreement on May 28. The agreement was signed by NTU President Si-Chen Lee and IU President Michael McRobbie while the IU president was visited the NTU campus with a delegation of IU officials.

The first collaboration following the agreement will be between IU's Maurer School of Law and NTU's College of Law. Other areas of possible cooperation include faculty exchanges, summer programs, and joint or dual degree programs.

President Lee said he looks forward to the partnership advancing cultural exchanges between the students and faculty of the two universities.

IU boasts a renowned rigorous East Asian Studies department. Taiwanese students account for the fifth largest international student population at IU.

UCLA Chancellor Leads Delegation to Meet NTU President

UCLA Chancellor Gene Block appears with NTU President Pan-Chyr Yang.

Chancellor Gene Block of the University of California, Los Angeles, led senior UCLA officials to Taipei for a meeting with NTU President Pan-Chyr Yang on July 5. The visit is the second visit of UCLA officials to NTU and marks a new phase in collaborations and partnerships between the two institutions.

Currently, NTU has partnerships with over 435 institutions in 56 countries, as well as extensive student exchange programs that offer over 313 options for student travel and exchange. NTU has hosted 64 exchange students from UCLA during the past decade. These students are only a portion of the over 3,300 international students and 996 study abroad students at NTU.

Taiwanese students comprise the sixth largest study abroad population in the United States. At UCLA, their presence in the study abroad population ranks fourth. NTU also has 52 full-time faculty members across nine colleges who are UCLA alumni. These close ties set the stage for future collaboration and possible joint degree programs between the two institutions.

During the meeting, officials of the two universities discussed NTU's recent collaborations and investments, possible collaboration with the Center for Taiwan Studies and NTU's diverse Summer+ Programs. Because UCLA's academic semester and NTU's semester begin and end around the same time, there is no obstacle to cooperation on summer programs.

The two universities also expressed their openness to dual degrees. NTU already has 41 dual degree programs and hopes to create more connections through the medical school and accounting program in particular.

NTU Signs Agreement with University of Minnesota

NTU President Pan-Chyr Yang and University of Minnesota President Eric Kaler forged new ties with the signing of a university-level memorandum of understanding on July 5. President Kaler was on the NTU campus as head of a delegation from the University of Minnesota, which included Ms. Meredith McQuaid, Associate Vice President and Dean for International Programs, Global Programs and Strategy Alliance; Ms. Joan Brzezinski, Executive Director, China Center and Confucius Institute, Global Programs and Strategy Alliance; and Ms. Diane Young, Development Director, Global Programs and Strategy Alliance.

The universities have a long history of partnership. Thirty-two NTU faculty members are University of Minnesota alumni, and the two universities' schools of management have already signed an MOU. However, both presidents noted that this new university-level MOU will provide a platform for strengthening collaboration in areas of mutual interest in the future, research and student exchange programs in particular.

The University of Minnesota boasts 70,000 students as the eighth largest public research university in the United States, and receives eight million dollars annually to devote to research. NTU has over 435 partner institutions in 56 countries, 313 student exchange programs and 996 study abroad students.

Furthermore, NTU has partnered with world-class research institutes to set up the Intel NTU Center, a cancer center with MD Anderson Cancer Center, and an intelligent robotics and automation research center with French institutes. President Kaler remarked that he is eager to partner with a leading research university like NTU to broaden solutions to problems that plague contemporary society.

NATIONAL ENVIRONMENTAL EDUCATION AWARD

The NTU Highland Experimental Farm has received the National Environmental Education Award—Excellence Award for an Organization from the Environmental Protection Administration. This is the first year these awards have been presented.

In its effort to promote environmental education, the EPA, in accordance with the Environmental Education Act, announced the National Environmental Education Award Regulations to establish the National Environmental Education Awards program in January 2012. Awards are given in six categories: private enterprise, school, organization, group, community, and individual. By offering awards in a number of categories, the EPA hopes to extend the breadth and depth of the participants and attract more private enterprises and government agencies to work cooperatively to promote environmental education.

The award regulations encourage local government participation in environmental education work by placing local governments in charge of the first evaluation stage of the awards. Local governments also present awards to the winners of the first stage. The local governments then send the names and information of the first-place winners in each category in the first stage to the EPA for further evaluation in the second stage and final stage.

The NTU Highland Experimental Farm began holding nature and ecology camps in 1998 to promote teaching and research, environmental education, and environmentally friendly farming practices. The farm's personnel teamed up and worked together to register for participation in the awards in June 2012.

In the first evaluation stage, Nantou County awarded the farm the first-place award for an organization. The farm was then listed among the top-five organizations in the country in the second evaluation stage in April of this year. When the results of the final evaluation stage were announced in June, the NTU Highland Experimental Farm was presented with the National Environmental Education Award—Excellence Award for an Organization.

The farm was given the award because of its development of high-quality environmental education courses, publication of ecology and nature books, formulation of courses integrating sustainable agriculture, forest conservation, and indigenous culture, as well as its continuous improvement of the quality of courses and financial soundness. The farm's enthusiastic and professional environmental education personnel regularly organize activities, such as growth education training and in-the-mountains lectures to continue advancing their environmental education knowledge and skills as well as the environmental awareness and values of the farm's personnel.

In August 2012, the NTU Highland Experimental Farm was certified by the EPA as an environmental education facility. Since then, nine of the farm's environmental education personnel received certification from the EPA. Winning the National Environmental Education Award stands as the ultimate affirmation of the farm personnel's many years of hard work in the promotion of environmental education. The farm will continue to uphold its environmental principles as it promotes and implements environmental education.

SUMMER LAW PROGRAM DRAWS INTERNATIONAL STUDENTS

The students said they came away enriched by the content of the program and deeply impressed by its faculty.

The College of Law offered its first summer program on international economic and trade law in June. The program, which was held June 3 - 21, was designed as a short-term program for master's students from around the globe who are interested in studying law in Taiwan or elsewhere in Asia. The law school has earned an outstanding reputation for its academic accomplishments and teaching quality, and thus has attracted large numbers of international students in recent years.

The program covered basic theory and the latest legal perspectives on international economic and trade law. Course instructors included Prof. Chang-Fa Lo and Prof. Tsai-Yu Lin, international authorities in WTO law at the College of Law, Prof. Winne Ma, a highly experienced educator in international arbitration from Australia's Bond University, and Prof. Timothy Webster, who was specially invited from Case Western Reserve University in the United States. Course topics mainly concerned WTO law, international commercial arbitration and international business transactions.

The rich teaching experience of the instructors plus the fact that the courses were taught entirely in English made the program especially challenging for the students. Still program drew outstanding law students from such countries as the Netherlands, Japan, China and the United States.

To lighten the pressure of the program's the intense course work the program included field trips to scenic spots around Taipei, such as the National Palace Museum, Longshan Temple, and the Judicial Yuan. The students also took in the races on the day of the Dragon Boat Festival.

Agriculture College Seeks More University Partners in Europe

The College of Bioresources and Agriculture established strong relations with prestigious universities in the United States during the past three to five years. This year, it set the goal of expanding relations with European institutions and expects to establish stable relations with several of them in two to three years.

In early April, Deputy Dean Ya-Nan Wang and Prof. Ming-Ju Chen, the director the college's Center for International Agricultural Education and Academic Exchange, visited four European agricultural universities: Purpan and ISA Groupe in France and Wageningen University and CAH Vilentum University of Applied Sciences in the Netherlands.

The college signed cooperation agreements with Purpan and ISA Groupe in 2010 and 2011, respectively, and now has student exchange programs with each of these institutions. The purpose of this year's visit was to gain a better understanding of the two institutions' facilities and resources as well as to meet with their officials and international affairs personnel to build relationships and discuss further possible areas of cooperation.

The college is working to establish partnerships with the two Dutch universities. It has initiated procedures to finalize an agreement with CAH Vilentum University of Applied Sciences. Also, Wageningen University has agreed to sign agreements for academic cooperation and student exchanges and is preparing drafts of such agreements.

Deputy Dean Wang and Director Chen also squeezed in a visit to Montpellier SupAgro in southern France, where they met with international affairs officials and held preliminary talks regarding possible areas of cooperation. Impressed with SupAgro's outstanding achievements in agricultural research, the college has designated the French institution an important target for cooperation.

Pulitzer Prize Winner Greenblatt Graces the Inauguration Ceremony of the Taiwan Shakespeare Association

Harvard University Chair Professor and Pulitzer Prize winner Stephen Greenblatt spoke on "Shakespeare's Life Stories" at the inaugural meeting of the Taiwan Shakespeare Association at National Taiwan University on July 5. Shu-Ying Chang, Association Dean of the College of Liberal Arts, expressed her sincere welcome; other eminent Shakespeareans addressed the event. including Pin-Chia Ping of the National Science Council, Judy Celine Ick of the Asian Shakespeare Association, and I-Chun Wang of the English and American Literature Association of the Republic of China and the Taiwan Association of Classical, Medieval, and Renaissance Studies.

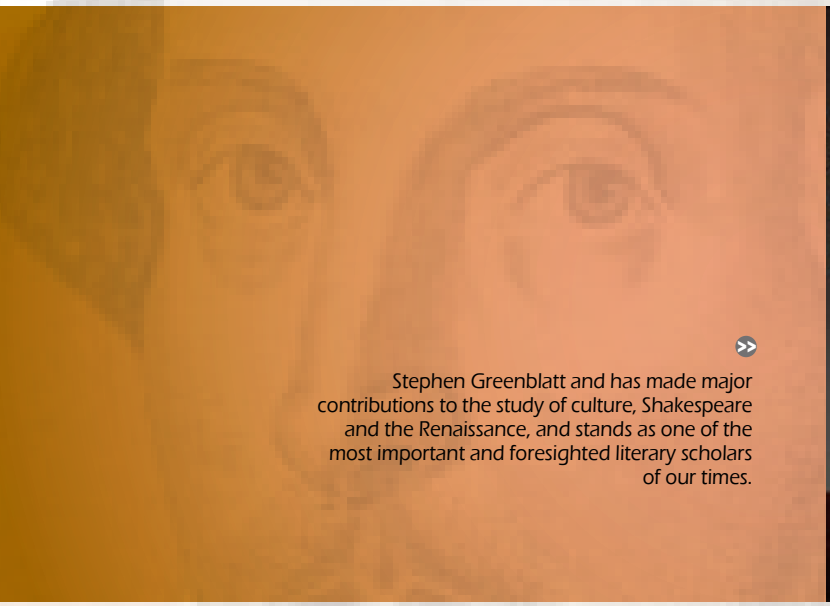
A leading literary scholar, Greenblatt has made a tremendous impact on cultural, Shakespeare, and Renaissance studies. He is the founder of New Historicism and has integrated the perspectives of history, politics, and theory to invigorate early modern literary research. His influence goes beyond academia. His book Will in the World was on the New York Times Best Seller List for nine weeks, and his latest work The Swerve won the 2012 National Book Award and the Pulitzer Prize for General Non-fiction.

Greenblatt expressed his best wishes to the new Taiwan Shakespeare Association. Shakespeare studies in Taiwan are rich, diverse, and ever-changing and include translation, research, teaching, and performance. The Taiwan Shakespeare Association will stir new interest in Shakespeare by hosting international conferences, participating in international organizations, as well as interacting and collaborating with overseas theaters and academic institutions.

The governing board members and supervisory board members are mainly from National Taiwan University, including Beatrice Lei (President) [http://www.shakespeare.tw/TSA/home.html], Chin-Jung Chiu (Secretary-General), Hsin-Jung Liang, Ching-Mei Chu, Yi-Meei Wang, and Ching-Hsi Perng. National Taiwan University has played an important role in the development of Shakespearean appreciation, studies and performance in Taiwan.

In May 2014, Asian Shakespeare Association will hold its inaugural conference "Shakespearean Journeys" at National Taiwan University. Among the invited speakers are Peter Holbrook, Chair of the International Shakespeare Association; Japanese scholar Kawachi Yoshiko, Lena Cowen Orlin, Executive Director of the Shakespeare Association of America; Indian scholar Rustom Bharucha, Chinese scholar Shen Lin, Egyptian scholar Nehad Selaiha, and Thai director Ing K. The conference will be a watershed event that should draw everyone interested not only in Shakespeare but in cultural translation.

For more information and call for papers please visit the official website http://AsianShakespeare.org.



Stephen Greenblatt and has made major contributions to the study of culture, Shakespeare and the Renaissance, and stands as one of the most important and foresighted literary scholars of our times.

BACT SUMMER PROGRAM DRAWS DIVERSITY OF INTERNATIONAL STUDENTS

The Biodiversity, Agriculture and Culture of Taiwan 2013 Summer Program reached new heights in terms of new participating universities this summer. The program recruited students from England, Australia, Singapore and Canada for the first time, which made the program more diverse and interesting. This year, a group of 15 international students from around the world joined three local NTU students in taking part in the four-week program from June 23 to July 20.

Students pose for a group photo after an enjoyable hike to the peak of Hehuan Mountain.

The international students came from the University of Illinois Champaign-Urbana (USA), Purdue University (USA), University of Newcastle (Australia), University of Leicester (Britain), University of British Columbia (Canada), the Hong Kong University of Science and Technology (Hong Kong), National University of Singapore (Singapore), Nanyang Technological University (Singapore) and Shanghai Jiaotong University (China). It turns out that the students found the diversity if English accents from these different regions to be one of the most interesting parts of their experience in the program.

The BACT program is designed to promote academic and cultural exchanges between students from NTU and universities abroad, while giving the students first-hand experience of Taiwan's culture, agriculture and biodiversity. The students attended lectures given by NTU's faculty and embarked on field trips directly related to the lectures. They were given the opportunity to interact with wild animals, insects, alpine plants, livestock, agricultural products and cultural handicrafts. Among the most intriguing outdoor activities for the students, were observing frogs, identifying plants and insects, visiting the seashore to find alien-like sea invertebrates in the intertidal zone, eating the local food at night markets, brewing tea at the Phoenix Tea Farm and making traditional breakfast "manto" at the Meifeng Farm.

Due to this special combination of indoor and outdoor activities, plus a three-day team project

Students make Chinese traditional "mantou" at NTU's Meifeng Farm.

conducted in NTU's Experimental Forest, the BACT summer program has long been popular and particularly welcomed by international students.

The BACT summer program keeps its own blog that serves as a platform for students to share their thoughts and reflections regarding the program. The feedback received through the blog allows the program's organizers to identify which aspects of the program require further improvement or should be eliminated and what new activities can be added in the future.

The support and input of the faculty of the College of Bioresources and Agriculture (CBA) has ensured the program is regularly modified and updated. This keeps the program current and expands the aspects Taiwan the program explores, and it ensures the program remains an attraction for international students interested in Taiwan.

The BACT program would not be the success it is without the support of the staff at the CBA's Sitou Experimental Forest and Meifeng Farm. The CBA will continue to improve the program by designing new activities and lectures.

GENETICALLY ENGINEERED BANANA PLANTS VACCINATE SWINE

NTU researchers have genetically engineered banana plants to feed to hogs as an oral vaccine against a costly swine virus. This plant-based oral vaccine, which the researchers have proven prevents pigs from being infected by the porcine reproductive and respiratory syndrome virus (PRRSV), has attracted attention both here in Taiwan and abroad.

On July 17, the National Science Council held a press conference to spotlight this breakthrough as well as the interdisciplinary team of researchers behind it, which included investigators from the Department of Horticulture and Landscape Architecture and the School of Veterinary Medicine. Moreover, the team's article introducing their research breakthrough attracted international recognition by being featured as the cover story for the April issue of the *Plant Biotechnology Journal*.

In the article, the authors pointed out that in future developments of recombinant subunit vaccines, adapting plants will become the main trend in developing a new generation of vaccines. Oral delivery activates the immune response of the mucous membrane and thereby induces the immune response of body fluids and cells, helping the host resist the invasion of external pathogens. Such a vaccine has the advantages of being mass producible, inexpensive, easily preserved, and convenient to administer.

PRRSV has been the cause of significant economic losses for pig breeders ever since it first appeared around 1990. To date, no vaccines capable of warding off the virus have been developed.

The research team selected the banana plant as its gene expression system due to the advantages that it can be grown in most tropical and subtropical climates and can be consumed fresh, making it a good bioreactor. The researchers used recombinant DNA technology to engineer banana plants to express the ORF5 gene of PRRSV envelope glycoprotein (GP5).

The plant vaccine is administered by feeding hogs the leaves of the transgenic banana plants three times at two week intervals. Just three weeks after the initial feeding, the oral vaccine spurs an exclusive immune response to PRRSV in the cells and body fluids of the hogs. The immune response can reach stable levels four weeks after the first feeding. PRRS is effectively repressed in the vaccinated hogs and the hogs' lungs do not produce indirect pneumonia lesions.

This is the first research demonstrating that banana plant oral vaccines can be used to vaccinate mammals, and that plant-based oral vaccines can prevent many animal diseases, and even human diseases, that are resisted by the immunological system of the mucus membrane.

The research project was promoted by the Office for Industrial Promotion of Agricultural Biotechnology. It received funding from the National Science Council, Council of Agriculture, as well as Reber Genetic Co. and FlySun Development Co., which participated as industry-academia partners.

REVOLUTIONARY THERMAL CONDUCTION DISCOVERY PUBLISHED IN *NATURE NANOTECHNOLOGY*

A research team at the Center for Condensed Matter Sciences has published a paper introducing a revolutionary breakthrough in the field of thermal conduction. Appearing in the June 30 issue of the prestigious journal *Nature Nanotechnology*, the paper details the team's discovery of a ballistic thermal conduction phenomenon along nanowires that experiences no dissipation of energy at room temperature. This finding not only

rewrites the traditional textbook model of thermal conduction but will also have a crucial impact on the research and development of thermoelectric materials and thermal energy applications.

Team leader assistant research fellow Chih-wei Chang points out that in normal thermal conduction heat is transported by phonon waves through countless molecular collisions that create heat, which means thermal energy cannot be used for transmission like electrons or fiber optics. Chang's team was the first to present a solution to this challenge, and it did so using common silicon-germanium (SiGe) nanowires at room temperature. This research will have a profound influence on future energy research related to super-high frequency electronic components, semiconductor manufacturing processes, thermoelectric materials, as well as our fundamental understanding of thermal conduction.

Chang says the team's discovery went beyond their expectations. Although SiGe semiconductors are a commonly used material, they are poor thermal conductors, and almost no one would use them to search for thermal conduction by phonon waves. Most experts recommend starting with special materials that are good heat conductors, such as diamond, graphene or carbon nano tubes, and then using very expensive instruments to drop the materials to super-low temperatures for experiments.

The breakthrough of the team's finding is that ballistic thermal conduction is observable at room temperature in SiGe semiconductors. Moreover, phonon waves persist for eight microns when heat is transmitted via SiGe nanowires. This figure is one thousand times more than the textbook figure and over ten times more than that observed in diamond and graphene.

Chang explains that the metal alloy characteristics of SiGe semiconductors prohibit high-frequency thermal energy from being conducted on nanowires and allows only the transmission of super-low frequency thermal energy. According to Chang, "It's a little like allowing only buses carrying 50 or more passengers to get on the freeway, meaning there are almost no vehicles on the road and no collisions."

The significance of the team's observation of ballistic thermal conduction is that it took place at room temperature, not at super-low temperatures, and it relied on SiGe semiconductors, which are already commonly used in the

semiconductor industry. It is these features that give the team's discovery great potential for application in the information and communications technology industry.

It is noteworthy that former NTU President Si-Chen Lee, who ended his term in June, was a member of this world-class NTU research team.

TRANSPARENT MEMORY CREATED FOR TRANSPARENT SMART PHONES OF THE FUTURE

It's no news that nearly everyone is staring into a smart phone these days. As companies release a stream of innovative new products, they compete by offering large screens, aesthetic designs, and powerful functions. But, in the future they may need to compete in terms of the transparency of their devices. While making hand-held devices transparent is a recent trend and drawing a lot of attention in the industry, there is still a crucial need to design and optimize the internal components to make the entire device transparent.

Prof. Jr-Hau He of the Graduate Institute of Photonics and Optoelectronics and Department of Electrical Engineering led an inter-university team of researchers from NTU and National Tsing Hua University in producing the first fully-transparent non-volatile memory component that relies on the pairing of the two-dimensional material graphene with an oxide. This kind of memory device is not only highly transparent, it operates reliably in different environments, which takes us a step closer to realizing the dream of fully-transparent smart phones.

The crucial breakthrough of He's research is the environmental

stability of his memory component. Although current memory components go through the stages of processing, packaging, and testing, they often don't operate stably, which deteriorates overall performance, when they are exposed to changes in the external environment.

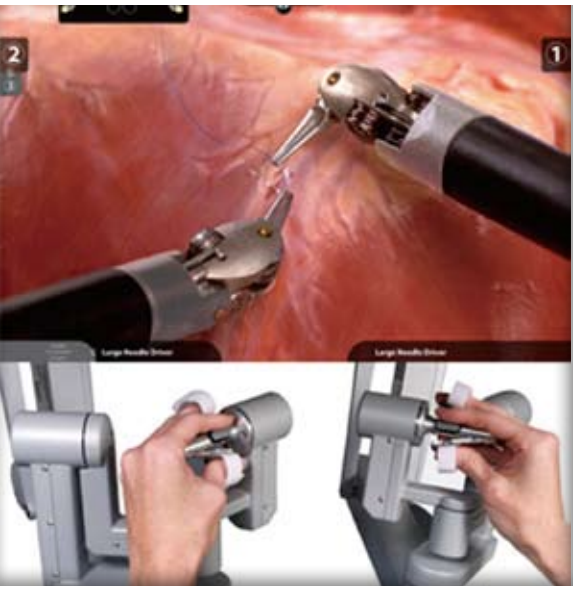
Moreover, steady advances in the development of transparent integrated circuits means an entire smart phone will sometimes be exposed directly to light pollution and radiation, which will present many as yet unknown variables and issues regarding the impact of transparency on the operational stability of the memory component. Therefore, it is crucial to develop a memory component that is both transparent and functions stably in various environments. This is necessary for the development of the transparent smart phones of the future.

Graphene is a two-dimensional material that is widely used in both basic science and commercial applications due to its outstanding mechanical and structural properties, its electrical conductivity, its transparency, as well as its flexibility. Therefore, in developing this novel fully-transparent memory component, Prof. He's research team used graphene thin film in a standard memory component to suppress the impact of the environment on the memory component. This type of memory component features low power consumption, low production cost, high performance, as well as outstanding environmental stability.

He's technology shows great potential for applications in tablet computers, displays and even solar energy technology. The team is applying for a patent, and their research has been published in the *Proceedings of the IEEE*, marking the eighth time NTU has been the leading research unit of a PIEEE article.

HOSPITAL HOSTS INTERNATIONAL ROBOTIC AND MINIMALLY INVASIVE SURGERY

NTU Hospital hosted the International Symposium for Robotic and Minimally Invasive Surgery on June 1. The symposium provided an opportunity for surgeons from Japan, Korea, Hong Kong, and China to engage in exchanges and share experiences with more than 40 renowned surgeons from hospitals around Taiwan who have performed surgical procedures using robotic arms. The Taiwanese doctors presented 25 reports at the symposium. The event was organized by surgical teams headed by NTU Hospital Vice Superintendent Ming-Tsan Lin, Prof. Rey-Heng Hu, Dr. Yao-Ming Wu, Dr. Ming-Chih Ho, Dr. Cheng-Mao Ho, Dr. Po-Ta Chen, and Dr. Chao-Ying Wu.



Since conducting its first robotic surgery in January 2012, NTU Hospital has successfully completed over 400 surgical procedures using robotic arms. These procedures include gastric surgery, renal surgery, urological surgery, gynecological surgery, colorectal surgery, cardiovascular surgery, thoracic surgery, and otolaryngological surgery.

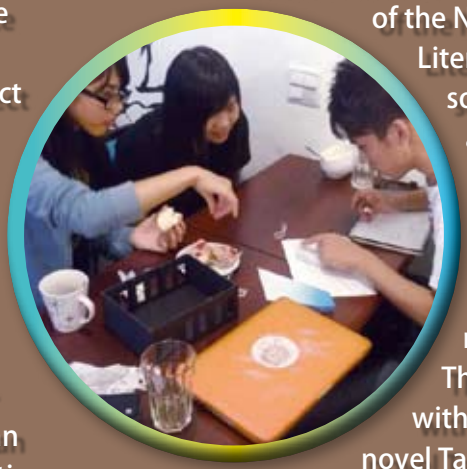
After successfully performing a kidney transplant using a robotic arm in 2012, NTU Hospital went on to use a robotic arm to perform a living donor liver transplant in May of this year. In the liver procedure, doctors removed 60% of the liver of the 22-year-old son of a man who suffered from polycystic liver disease and hepatic failure as well as an accumulation of peritoneal cavity fluid. Using a robotic arm, the doctors made five small incisions (approximately 0.8 to1.2 centimeters in length) in the donor's abdomen in order to enter the abdominal cavity and disconnect the right lobe of the liver. They then used the arm to make another eight- to ten-centimeter incision in the donor's lower abdomen in order to remove the liver for implantation in the recipient. The procedures proceeded smoothly and both father and son enjoyed healthy recoveries.

Performing a liver transplant using minimally invasive robotic arm surgery limits the length of incisions to only one-fifth of that of the standard procedure, which is approximately 40 centimeter. This not only greatly reduces post-operation pain for the patient, but also hastens recovery. Furthermore, since the larger incision is made on the lower abdomen below the waistline of pants, the scar is concealed and patients avoid the large abdominal scar, which is shaped like a Mercedes Benz logo, that comes with the standard procedure. The medical team's success in completing the living donor liver transplant turns a new page for surgery in Taiwan and demonstrates the country's leadership position for minimally invasive robotic arm surgery in Asia.

NTU Hospital will continue to share its robotic surgery accomplishments with the world, and will continue to develop ways to use robotic arms to perform highly-challenging surgical procedures. In addition to improving the health of patients, the hospital hopes to attract to the field of surgery medical students that aspire to advance medical treatment in Taiwan.

Loving the Theater and Living the Dream!

As summer vacation approaches, the students' chatter and laughter grow silent on campus and every department becomes a ghost town. However, the Department of Drama and Theatre, which stands closest to NTU's main gate remains vibrant and alive. The students' summer vacation project has started: The 2013 National Taiwan University Department of Drama and Theatre Summer Theatre Show!



Late in the summer each year, the Department of Drama and Theatre holds the "Summer Theatre Show" at National Taiwan University for two weeks, a tradition that had continued for ten years. The Summer Theatre Show is sponsored by the Department of Drama and Theatre, with the students rehearsing and presenting plays and the instructors assisting with stage design and construction. The students are fully in charge of the productions, from directing, acting, and promoting the play to stage sets and props, lighting, and costumes. Each year, 8 to 10 independent productions are staged at the 106 Experimental Theatre in the building of the Department of Drama and Theatre. Complimentary admission tickets are available before the event. The plays are nearly always sold-out, and many attendees have to be wait-listed at the venue.

The show this year is titled "2013 National Taiwan University Department of Drama and Theatre Summer Glimpse Summer Theatre Show." The event kicked off with a performance of TaKeLeiSi on August 3. The play was written by actor-director- screenwriter Tien-Kuan Wang of the graduate program of the Department of Drama and Theatre. The script won the second place in the script category of the National Taiwan University Literature Award. Although the title sounds like a translated work, it is a Chinese creation. Tien-Kuan Wang says that he added a teasing element in naming the script, "It is meant to subvert the thinking that translated novels can be a hit in Taiwan." The story is a play within a play with the protagonist writing the novel TaKeLeiSi. On the stage, actors take on all kinds of challenges, for example interpreting a person in vegetative state, yet the play also has a joyful side with characters smoking and eating bread onstage.

Chun-Yen Huang, a junior, has dreamed of directing a play since he joined drama club in high school. This summer he is realizing this life dream. He sacrificed his chance to catch up on some sleep and to travel; since the end of June, he has stepped into the department building for rehearsal at nine o'clock a.m. sharp almost every day. The work is tough and tiresome, he says; but he finds the process interesting. The play he will direct is The Clean House, a touching light comedy by American playwright Sarah Ruhl.

Dean Offers Words of Wisdom to COS Dean's Award Recipients

The scene of the day of the awards ceremony for the College of Science Dean's Award

The College of Science time capsule is sealed. Master's and PhD students will return to open the capsule twenty years from now in June 2033.

College of Science Dean Ching-Ray Chang delivers a speech during the ceremony.

The College of Science held the awards ceremony honoring the recipients of this year's College of Science Graduating Students Dean's Award on June 15, the day of the NTU graduation ceremony. College of Science Dean Ching-Ray Chang presided over the ceremony and delivered a speech offering words of wisdom to the award winners.

With 91 students receiving awards, the ceremony drew an unprecedented turnout and the audience exceeded the capacity of the ceremony's original venue. Therefore, the college opened two other areas that provided simultaneous video feed for family members to experience the excitement of the awards ceremony together.

The following is an excerpt from Dean Chang's speech.

The experience of being a student at NTU is happy and full of memories compared to the future when you enter society and confront greater challenges. Nonetheless, the training provided at the College of Science is thorough, and you will be absolutely equal to challenges of the workplace. I urge you students to establish the direction of your life by the age of 30. Success does not come solely from one's career; family and marriage can bring even happier accomplishments. Society places higher demands and expectation on NTU graduates. We must remain modest, yet it is even more important to display self-confidence. Among peers and subordinates, seek consensus, offer assistance, and provide leadership. To superiors, show modesty, but not inferiority. Mengzi says: "In persuading great people, treat them with disdain, do not see them as imposing." He does not mean we should look at superiors with disdain, but that we should ourselves be full of confidence. Confidence allows us to demonstrate competence in our lives and respond well to the ups and downs of life.

As for Mengzi's saying that by the age of 40 people cease to be perplexed, perhaps this is because we develop a deeper but not full comprehension of myriad things, or we possess an abundance of confidence, or perhaps it is because we believe everything is under our control, or that we understand more as we get older. Forty year olds are completely rational and clearheaded. Outwardly, they understand society. Inwardly, they understand themselves. For themselves, they understand responsibility. Mengzi then says that by the age of 50, we come to know our destinies. We have just that which is in our destinies and do not insist on that which is not. We are free of care and know our destinies. We do not insist that we can do everything. Mengzi continues that by the age of 60 we gain sound judgment. We have enjoyed the experience and growth of life. By passing on our experience to the next generation, we more deeply appreciate the fullness of our lives.

Student Service Groups Hit the Road for the Summer

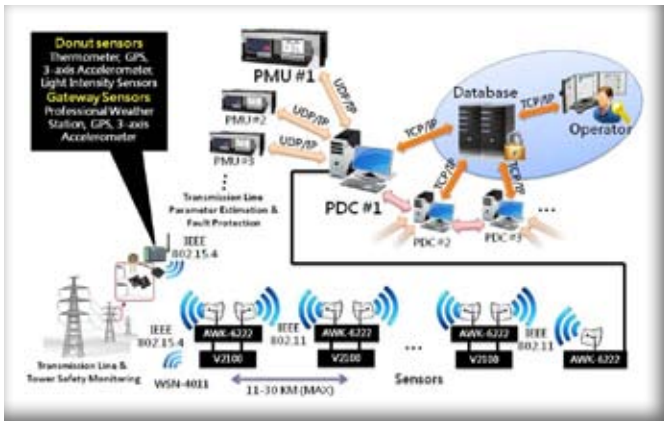
NTU's student clubs organized 44 community service groups to help people in Taiwan and overseas this summer. In all, 1,398 students will provide 2,689 hours of service to 3,383 people this summer.

The volunteers provided services all around Taiwan, with 12 groups operating in the north, four in the center, seven in the south, eleven in the east, and three on off-shore islands.

The volunteer groups traveling to other countries helped people in Myanmar, Thailand, India, and China. Notably, in China, ten NTU students joined ten students from Peking University in teaching a reading awareness program for young students in China's Yunnan Provence.

Green Power Team Enables Smart Transmission Grids

The Green Power Team of the Department of Electrical Engineering, led by Prof. Chih-Wen Liu, is making significant contributions to the development of wide-area measurement system (WAMS) technologies that enable smart transmission grids receiving a high penetration of renewable power sources. WAMS technologies, based on phasor measurement units (PMU), information and communication technologies, and wireless sensor networks (WSN), are recognized as core technologies for the creation of more secure, reliable, and efficient modern power grids.



The Security Alarming and Frequency Estimation Net (SafeNet) uses Wide Area Measurement System (WAMS) technology.

The Green Power Team has designed a Security Alarm and Frequency Estimation Network (SafeNet) using WAMS technology for the supervision of a large scale power grid, like Taiwan's power system. SafeNet is able to collect, filter, and extract knowledge from real-time measurements of multiple remote monitoring points in the power grid for various applications, including fault location, event detection, line dynamic thermal rating monitoring, complicated dynamics monitoring, and voltage stability monitoring and control.

SafeNet can also simultaneously integrate meteorological data and electricity data to visualize all the measurements and computation results through a geography-based interactive platform. This platform is designed specifically for system operators in the utility to increase the operator's situational awareness and stabilize the fluctuating power resulting from a high penetration of intermittent renewable power sources, like wind power and solar power.

Prof. Liu pioneered the extension of the PMU technique to the fault location problem in the late 1990s. This technique was later adopted in a platform used by the Taiwan Power Co. (TPC) in 2008. This demonstrated that the techniques offered superior performance over the commercial fault location schemes provided by firms such as General Electric, Schweitzer Engineering Laboratories, and Toshiba regarding accuracy and speed of locating power network faults. To date, dozens of transmission line fault events at TPC have been accurately and rapidly located by this platform, which saved TPC significant operating costs associated with fault-searching costs and power-restoration costs.

Prof. Liu also led the development of a new stability monitoring tool based on the maximal Lyapunov exponent estimation that detects

Psychology Department Hosts Symposium for Hong Kong and Beijing Universities

The psychology departments of NTU, the Chinese University of Hong Kong and Peking University began promoting faculty and student exchanges and visits in 1999. Since then, each department has taken turns hosting annual exchange events. This year the NTU Department of Psychology organized the 2013 National Taiwan University, Chinese University of Hong Kong and Peking University Psychology Department Academic Symposium, May 20 -24.

In step with the times, the department expanded the scope of this year's event and set up a planning committee of twelve professors. The committee rallied the support of the department's faculty and students, and extended hearty invitations to CUHK Department of Psychology Chairperson Patrick W.L. Leung and PKU Department of Psychology Vice Chair Yanhong Wu.

The seminar included student oral reports that allowed the students of the three universities to present the directions of research at their respective departments. An exhibition of poster presentations permitted students who were not selected to make oral reports to share their work during the seminar, thus a large number of students could take in the rich variety of research approaches presented at the seminar.

PKU Research Fellow Li Cheng and CUHK's Chairperson Leung also delivered talks on their academic specializations. Moreover, to provide students with time for open discussion, the seminar offered a student-led forum at which students to discuss core issues in psychology under special topics. The main theme of the forum was "Psychology for a Better Life and Society."

Students and professors exchange thoughts during the exhibition of poster presentations.

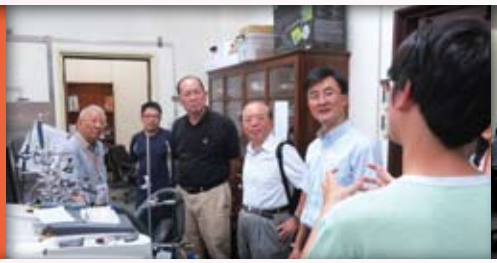
Professors of the three universities come together for a group photo.

The participating departments and graduate institutes stress that these annual exchange events promote mutual understanding of the different cultures of the three universities and the differences among them, thus facilitating future cooperation and communication. The increased understanding among the faculty and students of the three universities allows them to consider research projects that integrate each university's strengths and approaches. Moreover, each department and graduate institute can enhance the quality of its teaching and research by learning from the others' strengths and achievements.

A meeting was also held to discuss models for future events, and the possibility of expanding the events to the level of ethnic-Chinese or East Asian psychology research symposia was not ruled out. Other discussions included a laying a framework for cooperation between the psychology departments of NTU and PKU based on the cooperation agreement already signed by the two universities and models for cooperation between NTU and CUHK.

These annual symposia make a major impact on students by exposing them to each other's research interests and broadening their international outlooks. Usually only graduate students participate in international conferences, but since this year's event was arranged on a departmental level it presented new opportunities for undergraduates to participate.

College of Science Undergoes Major Evaluation



(left) A team of observers pose for a group photo.

(right) Members of the evaluation committee join for a photo.

The College of Science underwent an on-site evaluation June 20 - 21 as part of a major evaluation of the college conducted only once every five years. The distinguished academics on the evaluation committee also attended a farewell tea reception for President Si-Chen Lee on June 20 and the ceremony for the transfer of the NTU presidency from President Lee to President Pan-Chyr Yang on June 21.

The six-person committee rated the college highly outstanding but concluded that it requires major support from the university if it is to advance to a higher level.

The committee noted that the college spans a broad spectrum of disciplines from the basic sciences and geosciences to psychology and human geography, which allows it to make wide-ranging contributions to scientific research and basic education in Taiwan. However, concerned that the quantity of academic work in Taiwan cannot match that of China, the committee concluded that the college needs to emphasize quality over quantity, pursue novel, cutting-edge research, and promote its most advanced disciplines.

The committee noted that some facilities require renovation and that the electricity fee policy places a significant burden on all of the college's departments and institutes. The committee also warned that the recruitment of new faculty faces major difficulties due to low salaries and the high cost of living in Taipei, and suggested that the university should address this issue as it relates to the campus at large in devising solutions.

Legal Practitioners Speak on Their Role in Democratization

Two prominent advocates of human rights in Asia, Jerome Alan Cohen, a renowned expert on Chinese and East Asian law who is a professor at the New York University School of Law and co-director of the U.S.-Asia Law Institute at NYU, and renowned Chinese human right advocate Chen Guangcheng, spoke at a forum at the College of Law on June 25. The two, who attended the forum at the invitation of the College of Law, Taiwan Association for China Human Rights and NTU Student Association, spoke on "The Role of the Legal Practitioners in the Process of Democratization."

Chen Guangcheng had never studied at a law school but gained expertise in law through self-study. In China, Chen boldly used his knowledge to provide assistance to disadvantaged groups, protect the rights of physically disabled people, and oppose unreasonable government policies. Chen's speech filled the law students at the forum with the spirit of democracy, allowing them to learn about the work of legal practitioners in China and understand the mission of legal practitioners in pursuit of national democracy.

Prof. Cohen has endeavored throughout his life to promote human rights. Besides following

legal reforms in China, he has achieved positive results in pushing for the release of political prisoners. In 2012, after Chen Guangcheng escaped from house arrest, Cohen helped him travel to the United States to study at NYU. Taiwan's President Ma Ying-jeou and former Vice President Annette Lu were both students of Cohen when he taught at Harvard.

NTU at a Glance

NTU Hospital Kicks Off Series of Community Health Examinations at Branch Hospitals around the Nation

NTU Hospital kicked off a series of community health examination and screening activities at its branch hospitals around the nation on June 16. The university's hospital was founded 118 years ago in 1895, and its medical treatment system has been expanded to include branch hospitals around Taiwan.

The branch hospitals function as a nationwide safety net, providing services ranging from preventive health examinations to the treatment of serious illnesses. Taking advantage of this broad reach, the NTU Hospital organized these community health examinations to carry out its mission of detecting and treating health problems early to improve the health of all people in Taiwan.

The Bei-Hu Branch offered health examinations and screenings at the Wanhua District Sports Center in Taipei City while the Chin-Shan Branch set up ten health examination and promotion booths at Chung Shan Hall in the Chinshan District of New Taipei City. The Hsin-Chu Branch and Chu-Tung Branch teamed up to organize a community health promotion and examination activity in commemoration of the 118th anniversary of the founding of NTU Hospital. The Yun-Lin Branch, under the theme "NTU Heart, Yunlin Spirit, Partners in Health," held a community health promotion and screening activity at Cihtong Elementary School in rural Yunlin County's Cihtong Township.

NTU Ranked 22nd in Asia

Quacquarelli Symonds has ranked NTU 22nd in its 2013 QS Asian University Rankings, which were released on June 11.

The education services firm Quacquarelli Symonds bases its ranking of Asian universities on a range of criteria with different weightings. Of a university's total ranking score, academic reputation accounts for 30%, employer reputation 10%, papers per faculty 15%, citations per paper 15%, faculty/student ratio 20%, international faculty review 2.5%, international student review 2.5%, student exchange inbound 2.5% and student exchange outbound 2.5%.

NTU's total score in this year's ranking marks an improvement over last year. Nonetheless, the university must continue to make improvements in number of papers per faculty member and citations per paper, international faculty ratio and outbound exchange students.

The economic strength of Asia has spurred increased investments in higher education. This has in turn has created greater competition among universities in the region in education budget, publication of research, high-quality faculty and students, and degree of internationalization.

In making efforts to boost its standing in Asia and around the world, NTU will continue to speed up internationalization, improve the quality and innovation of its research and development, and enhance its influence and visibility in the global academic community.

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