

NTU HIGHLIGHTS



Special Report:

May Fourth Movement Centennial

Kowtows to Female Scientists

- NTU System hosts Break & Fuse Festival
- Marine Researchers Develop Data Buoys to Predict Typhoons
- NTU, ICDF Advance Health Care in Guatemala



Contents

01 Words from Our Executive Vice President, Dr. Ching-Hua Lo

Special Report

02 Special Exhibition on the Centennial of the May Fourth Movement

04 2019 NTU Art Festival: “L’imagination au pouvoir”

05 New College Culture: Opening Doors to the World

Honors

06 NTU Distinguished Professor Yng-Ing Lee and Associate Professor Haojia Abby Ren Receive 2019 Taiwan Outstanding Women in Science Awards

07 Three NTU Hospital Doctors Receive the Taiwan Children Healthcare Excellence Award

International Corner

08 NTU Makes Great Strides in Partnering with European Universities

09 President Kuan Visits UIC to Promote Bilateral Collaboration

10 International NTU: Break & Fuse Festival

Research Achievements

11 International Consortium Develops a Potential Vaccine against MERS

12 Precise Typhoon Prediction and Tracking Made Possible by NTU’s Functionally Enhanced Data Buoys

Campus Scenes

14 Freshman Limited Edition Shirt — Blessings for NTU Newbies

Teaching and Learning

15 NTU-ICDF Joint Project to Advance Women and Children’s Health Care in Guatemala

16 NIG Method: Two-Day Workshop on Delivering a Successful Scientific Presentation

NTU at a Glance

17 When Art Meets Books: NTU-JW Profound Art Book Exhibition

Back Cover

18 AI Innovation x Advanced Robotics: 2019 Open House Day



Engineer Chin-Ron Lu (upper) and Master student Chia-Ying Hsieh on the NTU air-sea buoy after its deployment in the Northwest Pacific.

Publisher: Chung-Ming Kuan
Editorial Consultant: Lin-Lin Ku
Editor: Hsiao-Chih Sun
Executive Committee: NTU Secretariat
Published by National Taiwan University
Tel: 886-2-3366-2041
Address: No. 1, Sec. 4, Roosevelt Rd., Taipei 10617, Taiwan (R.O.C.)
Website: <http://ntuhighlights.ntu.edu.tw/>

Words from Our Executive Vice President, Dr. Ching-Hua Lo

“An excellent learning environment is the foundation for academic excellence.”

In recent years, NTU has encountered many challenges. Talent exodus is one of them, as we see an increasing number of high school graduates who opt out from studying at NTU and instead choose to study abroad. If we stop making NTU ever more attractive and competitive, this problem will worsen and our advantage as the prominent university in Taiwan will disappear.

Despite these obstacles, I firmly believe that NTU is the leading university in Taiwan and a world-class university. We need to abandon our island mentality, keep pace with global trends, set the benchmark for higher education in Taiwan, and define our unique role in the global academic community. And, this is my key mission as an executive vice president of NTU—to strategize for excellence. Our team is vigorously examining the university environment and infrastructure to make sure that we can attract the best of talents and support their efforts in pursuing academic excellence.

Before I stepped up as Executive Vice President of NTU, I served in various university positions, and these experiences have helped me develop a comprehensive understanding of the university. As a professor, my teaching and research work allowed me to engage in knowledge production and dissemination. As the chairperson of the Department of Geosciences, I mainly served the students by ensuring the quality of their learning and campus life, while I also worked to internationalize our department. And, when I became Dean of the College of Science, I mainly served the faculty members, as I was responsible for faculty recruitment and seeking resources. Because of these experiences, I have come to better understand the needs of the different stakeholders as well as the university’s possible future directions.

Whenever I make decisions, I tailor the best management practices and strategies to Taiwan’s culture and environment. One practice from Princeton University I have introduced to NTU’s Department of Geosciences is the concept of group advisors, which allows students to access academic advising from professors of different disciplines. To create a motivating and competitive environment, I expanded our scholarship program, encouraging students to submit research papers to international journals and conferences. This has motivated our professors and enhanced their academic visibility, as well.

Now, as Executive Vice President, I continuously strive to create an outstanding academic environment for the entire university and make these changes more visible. Also, I have always aspired to make NTU the academic powerhouse of Southeast Asia and the first choice for all students and scholars. We must build and boost this academic culture and environment of excellence to attract top talents from around the world to NTU.



Dr. Ching-Hua Lo, NTU Executive Vice President.



Group photo.

Special Exhibition on the Centennial of the May Fourth Movement

This year marked the centennial of the May Fourth Movement. In order to commemorate this significant and far-reaching historical event, a series of activities were held at NTU, including a special exhibition, two keynote speeches, a panel discussion, and a seminar. On May 1, “The Renaissance: Centennial Exhibition of the May Fourth Movement” formally opened at the Gallery of NTU History. NTU President Chung-Ming Kuan spoke on behalf of NTU at the opening ceremony, which was attended by Executive Vice President Ching-Hua Lo, University Librarian Kuang-Hua Chen, Dean Mu-Hsuan Huang of the College of Liberal Arts, and Associate Dean Fu-Chang Hsu.

The special exhibition showcases the May Fourth Movement from the perspective of Taiwan and NTU, focusing on how the movement was dynamically interrelated with the world, Taiwan, and NTU. The May Fourth Movement was an anti-imperialist, cultural, and political rally initiated by student protests in Beijing on May 4, 1919. They protested against the Chinese government’s weak response to the Treaty of Versailles, and in particular the concession of the Shandong Peninsula to Japan, after the Siege of Tsingtao in 1914. The demonstrations sparked nationwide protests and an upsurge of Chinese nationalism, shifting the nature of the movement from a cultural activity among traditional intellectual and

political elites to a mass-based political mobilization. In an extended sense, the term “May Fourth Movement” also was used in reference to the New Culture Movement, which took place during 1915-1921 when some Chinese intellectuals upheld global and western values, such as democracy and science, against traditional Chinese values. The movement gave rise to many prominent, radical political and social leaders of the next five decades.

The Gallery of NTU History and the NTU Library co-organized the centennial exhibition, collecting and curating precious photographs and manuscripts from Beijing, the United States, and Taiwan’s Academia Sinica and Academia Historica. The scope and breadth of the exhibition is impressive, as it aims to portray how the May Fourth Movement deeply impacted modern Chinese history, and how the “May Fourth Spirit” has influenced Taiwan and NTU.

In his opening remarks, President Chung-Ming Kuan mentioned that when the Nationalist Government moved from mainland China to Taiwan, a connection was made between the May Fourth Movement and NTU. On the fourth of May in 1919, one of the student leaders at the forefront of the procession, waving the banner, was Ssu-Nien Fu, who later became the respected President of NTU. During his studies at Peking University, President Fu founded the journal *The Renaissance* in an effort to support the New Culture Movement. In 1961, on May 4, *The Renaissance* was resurrected by NTU’s Department of Chinese Literature. The calligraphy on the cover of the journal was done by Prof. Jing-Nong Tai of the Chinese



The Renaissance: Centennial Exhibition of the May Fourth Movement.

Literature Department, who was also a crucial figure in the May Fourth Movement.

President Chung-Ming Kuan also described how he had been personally influenced by the continuing impact of the May Fourth Movement. He said that in 1979, 60 years after the movement, numerous scholars discussed the significance of the movement, and he happened to be an impressionable young man at the time. The comments on the movement published at the time by eminent scholars, such as Ying-Shih Yu, represented cultural enlightenment to him and deepened his knowledge of history. He cited a passage written by Prof. Ying-Shih Yu in 1955: "If we were to sing praises of the May Fourth Movement indiscriminately, it would seem as if we were upholding cultural progress, but in reality we would be guilty of resurrecting a form of conservatism and impede the progression of culture." President Kuan said that he was happy to see NTU holding this special exhibition to commemorate the centennial of the May Fourth Movement, for it provides us with an opportunity to reconsider the significance of the movement in a contemporary context, and to contemplate its historical and cultural influence on Taiwan and NTU.

The guests at the opening ceremony were later given a tour of the exhibition at the Gallery of NTU History. The exhibition is mainly located in the stack room between the first and second floors of the Gallery, and sections that were closed to the public in the past have been opened to visitors. Visiting the exhibition is like going on time travel, as past events and historical figures arise to tell us their stories.

The Centennial Exhibition of the May Fourth Movement was launched on May 2, and it will continue until June 30 at the Gallery of NTU History. Visitors are welcome to visit during opening hours. (The Gallery is closed on Tuesdays and national holidays.)



The Renaissance: Centennial Exhibition of the May Fourth Movement.

2019 NTU Art Festival: “L’imagination au pouvoir”

“Are we living in a better world? Is the world today better than it was 50 years ago?” NTU students may voice their opinions just like students who took the streets in Paris in 1968 — but this time, they are using the power of art to reshape the world.

The 2019 NTU Art Festival, which was held during May 3-24, explored the theme of “L’imagination au pouvoir” (All power to the imagination). The festival aimed to use the power of imagination to break down boundaries and bring art closer to the public. During the festival, artists explored their imagination regarding art and society and produced works in a wide diversity of art forms, filling the campus with their unlimited creativity.

In the afternoon of May 3, people gathered at the “Imagination Market” to shop for art pieces and creative designs. In the evening, the annual festival was officially kicked off with lively performances on the Chen-Hsing Lawn in front of NTU Library. Lumi, Kowen Ko, Sweet John, and other musical artists entertained the audience with spectacular performances. Participants then embarked on an artistic adventure, exploring the boldness and beauty of fashion with the “Le Cadre Humain” fashion show.



President Kuan gives an opening address at the 2019 NTU Art Festival.



2019 NTU Art Festival.

Opportunities for Art Exchange and Social Engagement

To promote cultural and artistic exchanges between Taiwan and Japan, the National Taiwan University Graduate Student Association (NTUGSA) collaborated with Katayanagi Institute to present multimedia works by students from Tokyo University of Technology and Nihon Kogakuin College. NTU’s student photo club NTUPhoto also participated in the festival, bringing together a multitude of perspectives from diverse cultures through the medium of photography. Also, the stunning and intricate paintings of disabled artists from Eden Social Welfare Foundation’s Wan Fang Center for Disabled People were on display during the festival.

Art as a Dynamic Platform

This year, the festival's Art and Culture Promotion Department invited several prominent authors and artists including Xue Chen, Ya-Ching Yang, and Li-Ying Chien, to speak on campus. In addition, the NTU Art Festival collaborated with the Museum of Contemporary Art in Taipei to promote the public’s appreciation of modern art.

NTU Art Festival not only worked with different parties but boasted a diverse team with members from 12 colleges and universities across Taiwan. Anyone interested in art can find a place on the team. The festival’s artworks will not only be exhibited at NTU but also displayed at National Taiwan University of Science and Technology, so more people may witness the charms of the art festival.

Envisioning a Better Future

Adopting the motto, “Your imagination is your only limit,” NTU Art Festival aims to break down all forms of boundaries with the power of art. Through the power of art and imagination, we may envision a better future.

Dive deeper into the festival by visiting:
<https://www.facebook.com/NTUartfest>

New College Culture: Opening Doors to the World

On March 20, a delegation led by President Kuan hosted an admission forum at Taichung City Dadun Cultural Center. The forum was titled, “New College Culture: Opening Doors to the World,” and speakers introduced the academic offerings and research strengths of NTU. The event was aimed to help local students and parents learn more about NTU’s educational eminence and continue regarding the school as their first university of choice.

Ever since President Kuan took office this January, he has been striving to open doors for economically disadvantaged students and search for the best talents. His plan is to give access to economically disadvantaged students, provide eligible candidates with additional aid, and enact new measures to attract the best and the brightest students.

This is the first time that a President of NTU has engaged in direct conversations with high school teachers, students, and parents. Through such face-to-face interactions, participants could feel the care of President Kuan and better understand the advantages of studying at NTU.

Shih-Torng Ding, Vice President for Academic Affairs, Chui-Shan Chen, Professor of the Department of Civil Engineering and Deputy Director of iNSIGHT Center (Center of Innovation and Synergy for Intelligent Home and Living Technology), and Yu-Xuan Li, an NTU student, all participated in the event in Taichung because of their backgrounds and connections. Prof. Chui-Shan Chen graduated from Taichung Municipal Taichung First Senior High School, and Yu-Xuan Li is the Director of the NTU Alumni Association of Taichung.

Though simple in conception, this delightful and stimulating event made a deep impression on the attendees. President Kuan kicked off the event with a talk titled, “Opening a Door for You” and Vice President for Academic Affairs Ding gave a detailed presentation on the offerings of NTU and the resources available to its students. Afterwards, Profs. Chen and Li shared their personal campus experiences. The presentations were followed by questions and answers, and the event was declared a huge success.

NTU will host two more admission forums for students in northern and southern Taiwan, respectively, to introduce NTU’s offerings, resources, and environment to a wider audience. The school leaders hope that all high school students will come to realize that NTU not only offers students a chance to prosper in Taiwan but also opens doors for them to explore the infinite opportunities of this world.

Senior high school teachers, students, and parents participate in the admission forum in Taichung.



2019
第十二屆

台灣傑出女科學家獎 TAIWAN OUTSTANDING WOMEN IN SCIENCE



Winners of the 2019 Taiwan Outstanding Women in Science Awards (left to right): Yi-Chia Chou (Rising Star Award), Yng-Ing Lee (Outstanding Award), Haojia Abby Ren (Rising Star Award), Hsiang-Ying Chen (Tsuei-Chu Mong Merit Scholarship).

NTU Distinguished Professor Yng-Ing Lee and Associate Professor Haojia Abby Ren Receive 2019 Taiwan Outstanding Women in Science Awards

This year marks the 12th year of the Taiwan Outstanding Women in Science Awards, an honor dubbed the “Nobel Prize for Women.” The award is the first to specifically honor the academic contributions of female scientists in Taiwan. This year, Yng-Ing Lee, NTU Distinguished Professor of Mathematics, and Haojia Abby Ren, Associate Professor of the Department of Geosciences, received the 2019 Outstanding Award and the 2019 Rising Star Award, respectively.

Dr. Yng-Ing Lee is a world-renowned mathematician and a leading scholar in the field of geometric analysis. Lee’s research is focused on two areas. The first area involves using Riemannian structures and symplectic structures to explore Lagrangian minimal submanifolds and special Lagrangian submanifolds. The second area involves exploring mean curvature flow. Lee is also known for her contributions to mathematics education in Taiwan. From 2000 to 2007, she worked with the Ministry of Education in revising the “Grades 1-9 Curriculum Guidelines for Mathematics,” oversaw the quality of the elementary

mathematics textbooks, and resolved disputes over the policy of adopting reform mathematics curricula. Over the past 25 years, Lee has been an active member of the mathematics community, organizing international academic conferences and serving as the chair of the Department of Mathematics at NTU. During her tenure as department chair, she initiated various reforms and initiatives, hosted lectureships, recruited talents, and expanded the number of scholarships. Lee is the mentor of many recognized geometers in Taiwan, and her leadership has had a profound impact on the field and profession in Taiwan.

Haojia Abby Ren pioneered a world-leading precision method to measure the composition of nitrogen isotopes in trace samples during her PhD studies. Ren’s recent research is aimed to explore the impact of natural and human activities on the ocean’s nitrogen cycle and productivity by studying coral and seabed sediment records, in order to find solutions to protect marine life. Over the past three years, she used samples from the South China Sea to study the marine nitrogen cycle. Her research was published in the May 2017 issue of *Science*, and her findings have received the attention of scholars from home and abroad. Ren’s research achievements and publications have won her several awards, including the Ta-You Wu Memorial Award, the Early Career Researcher Distinguished Lecture, the 2018 MOST Young Scholar Fellowship Columbus Program, and the Nanne Weber Early Career Award in Paleoceanography from the American Geophysical Union. Ren believes that science is the exploration of the unknown. When confronted with hurdles and difficulties, one must choose between two clear choices: to make or break. Once the decision has been made, she says, one must persevere until the very end.

Three NTU Hospital Doctors Receive the Taiwan Children Healthcare Excellence Award

The ceremony for the 8th Taiwan Children Healthcare Excellence Award was held on April 13. This year's winners include six doctors and one medical unit. These awardees have made significant contributions to the field of child healthcare, and three out of the six doctors—we are proud to announce—are doctors/professors at NTU Hospital.

The award is sponsored by Taiwan's Ministry of Health and Welfare and organized by the Raising Children Medical Foundation. The Vice President of Taiwan, Chien-Jen Chen, attended the ceremony to personally present the awards to these dedicated medical professionals who work almost 24/7 to provide care for the next generation.

CEO of Raising Children Medical Foundation, Dr. Frank Leigh Lu, also took the opportunity to thank the award-winners for their painstaking work, which helps families that need assistance and attends to children and teenagers in medical need, changing their lives and brightening the future of Taiwan. Since 2005, the award has been presented to 39 outstanding pediatric doctors/nurses and five medical units. The three doctors from NTU Hospital who received the award include the following:

Dr. Meng-Fai Kuo, director of pediatric neurosurgery at NTU Children's Hospital, received the honor for outstanding veteran physician. Back in the days when Dr. Kuo was an intern, she developed a keen interest in surgery and recognized that she had the talent for this challenging discipline. Specializing in pediatric brain and spinal cord tumors, spinal dysraphism, and craniosynostosis, she leads a team at the hospital that uses magnetic resonance angiography (MRA) to screen children for moyamoya disease, which helps conduct early diagnosis and treatment. Dr. Kuo remarks, "Helping patients recover their health and well-being brings me immense happiness."

Dr. Hsin-Chia Lin, a pediatric cardiologist at NTU Hospital's Yunlin Branch in Central Taiwan, earned the emerging doctor award. Dr. Lin works in Yunlin County, where he makes the most of the scarce medical resources there to provide quality service for local children. Besides, Dr. Lin has helped establish a cloud database for heart disease screening and planned the equipment upgrade program for the pediatric ICU so that the Yunlin Branch can offer more comprehensive care to its patients.

Dr. Wen-Yu Tsai, who retired last year as a pediatric endocrinologist at NTU Hospital, received the lifetime achievement prize as he devoted 38 years of his life to this profession and first promoted the newborn screening program against congenital hypothyroidism back in 1983. One of the first participants in the clinical trial is now pursuing a degree abroad, and affirms that "my life wouldn't be the same if I had not met Dr. Tsai."

We extend a big thank-you to these hardworking medical professionals! It is you and your hard work that make Taiwan a better place for children who have to live with disease.



Dr. Wen-Yu Tsai, winner of the lifetime achievement prize.



Dr. Meng-Fai Kuo, winner of the outstanding veteran physician award.

Dr. Hsin-Chia Lin, winner of the emerging doctor award.



Executive Vice President Chou introduces NTU to the president and deans of the University of Ljubljana.

NTU Makes Great Strides in Partnering with European Universities

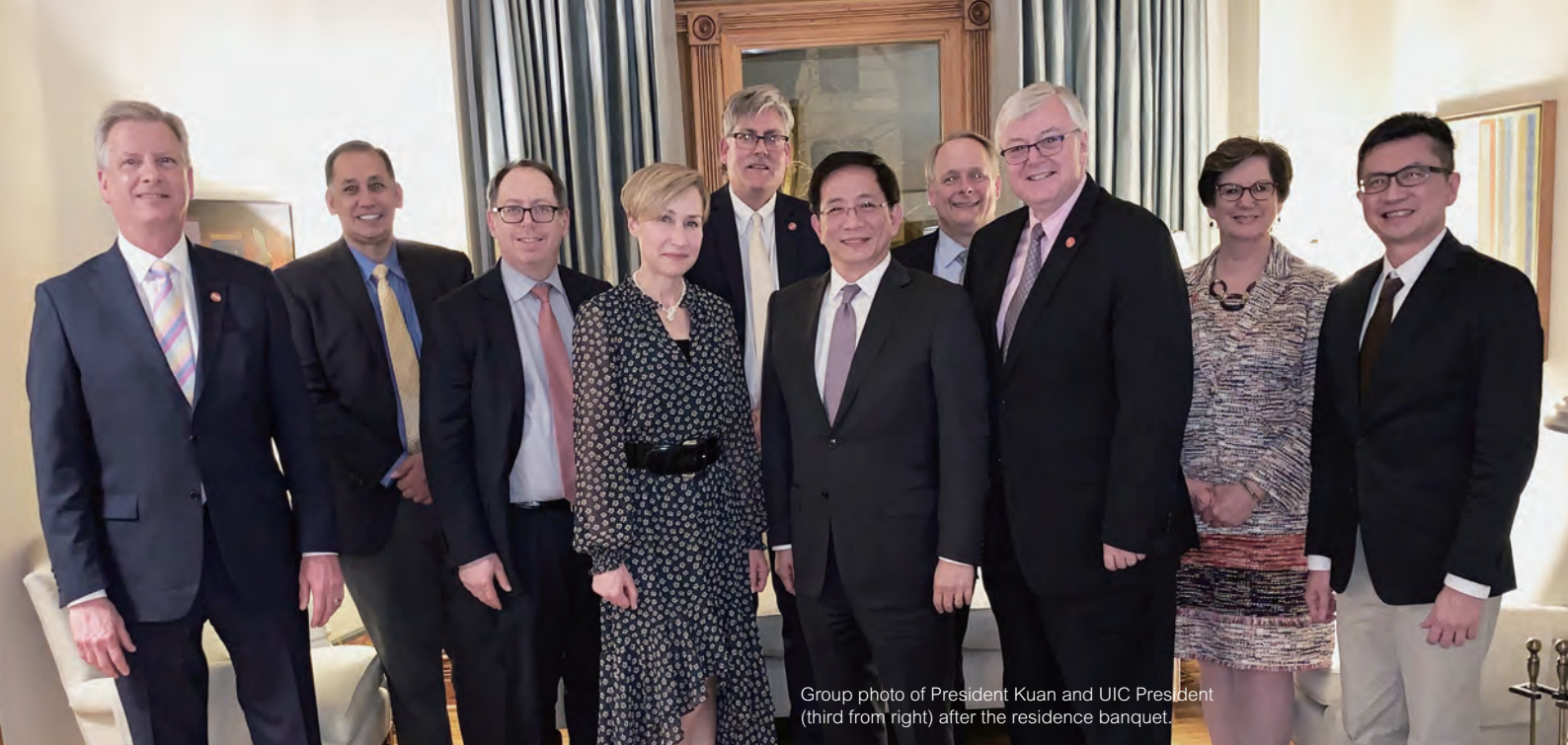
NTU has made a major breakthrough in internationalization. To create more exchange opportunities for students to expand their horizons, President Chung-Ming Kuan proposed the idea of setting up the Student Exchange Fund this March, aiming to support 100 students to conduct exchange studies in foreign countries. Later this April, a delegation led by Executive Vice President Chiapei Chou visited Europe and signed agreements with eight universities in the UK, France, Hungary, Poland, and Slovenia. In the future, there will be 30 more exchange opportunities available to Taiwanese students who wish to study at colleges in Europe, including the famous Queen Mary University of London. NTU is the first university in Taiwan to become a sister school of Queen Mary University of London, and Queen Mary is also NTU's first partner university in London.

This was the first time NTU's Office of International Affairs (OIA) sent a delegation to visit Central Europe to sign sister school agreements. The delegation visited many prestigious universities there, including Eötvös Loránd University (Hungary), the University of Warsaw (Poland), and the University of Ljubljana (Slovenia).

The delegation was warmly received and achieved outstanding results.

Thanks to the endeavor of staff at different administration levels, NTU now offers 1,400 exchange opportunities to its students every year. More than one-third of undergraduate students have the option to study abroad if they meet the language and GPA requirements. Besides promoting student exchange programs and academic cooperation with universities in Asia and North America, NTU is also striving to form alliances with established colleges in the highly populated, culturally rich Central and Eastern Europe. NTU has been actively pushing for the signing of student exchange agreements. While attracting students from Eastern Europe to study at NTU, we hope they will choose to stay and pursue their graduate and doctoral degrees here in the future.

During the trip, the NTU delegation also visited Imperial College London (U.K.), University of Bordeaux (France), and Slovenian National Building and Civil Engineering Institute (Slovenia) to discuss the possibility of offering faculty exchange programs, research programs, graduate-level internships, and projects to co-advise graduate students. By offering student exchange programs, NTU hopes to strengthen its ties with Sorbonne University (France), the University of Bordeaux, and the University of Warsaw, and build a solid foundation for future academic cooperation. NTU is looking forward to developing partnerships with these universities to provide double and triple degree programs in the future, as well as build international, interdisciplinary research teams.



Group photo of President Kuan and UIC President (third from right) after the residence banquet.

President Kuan Visits UIC to Promote Bilateral Collaboration

Since taking office, NTU President Chung-Ming Kuan and his executive team have spearheaded efforts to internationalize NTU. In mid-April, President Kuan and Deputy Vice President for International Affairs Prof. J. Chris Lin visited the University of Illinois at Chicago (UIC) to promote bilateral collaboration. During their visit, President Kuan also addressed the NTU Alumni Association in Chicago on his vision and upcoming plans for NTU.

UIC, formerly known as the Colleges of Medicine, Dentistry, and Pharmacy, has the largest medical college in the United States and is ranked among the top nationwide in medicine, dentistry, pharmacy, and nursing. It is also the main training center for medical staff in Illinois. UIC is considered one of the top three universities in the Greater Chicago region along with the University of Chicago and Northwestern University.

President Kuan shared with the UIC hosts his plan to further internationalize NTU, including the innovative “NTU Hub” concept, aimed to make NTU the academic hub in Asia by collaborating with internationally recognized universities worldwide and creating global interdisciplinary research groups. President Kuan also stated that he hoped UIC would embrace NTU as their strategic partner in Asia, and the hosts at UIC responded positively. According to the hosts at UIC, they are now working to establish strategic partnership programs with NTU. UIC Chancellor Michael Amiridis further promised to

lead a delegation to Taiwan to work out the final details.

During their visit, the NTU delegation was invited by Chancellor Amiridis to attend a banquet at his residence. At the banquet, they had the opportunity to meet with UIC faculty members from various colleges, including the Colleges of Medicine, Dentistry, Pharmacy, Nursing, Engineering, Business Administration, and the Innovation Center. Discussions were held covering the possibility of creating dual master’s and PhD programs, overseas internship and opportunities, customized summer programs, visiting scholar programs, and collaborative research projects.

Specifically, the delegation sought to establish interdisciplinary collaborative projects with the College of Medicine on key issues, including the advancement of medical education and the professional training of hospital administrators. The delegation also pushed for overseas internship programs and the “sandwich scholarship program,” which would allow NTU PhD students to study at UIC for two three-month terms and be co-mentored by professors from both universities, with the College of Nursing and the College of Pharmacy. The delegation also met with administrators from the College of Business Administration to discuss establishing a dual MBA/MS degree program, which would allow MBA students from NTU to intern in the US for three years, further boosting their global competitiveness.

The consensus reached during this visit have sparked new opportunities for NTU to pursue its internationalization efforts. NTU will continue working strategically with internationally recognized universities around the world and make itself an important flagship university in Asia.

International NTU: Break & Fuse Festival

Since 2015, NTU has collaborated with the other two members of the NTU System, National Taiwan University of Science and Technology (NTUST) and National Taiwan Normal University (NTNU), to organize the annual Break & Fuse Festival.

This year, the Break & Fuse Festival kicked off with a series of dazzling performances — a traditional celebration dance kayau by NTUST's Indonesian students, beautiful songs by the international students from NTNU, and local dance by NTU's overseas Chinese students from Indonesia. Following these amazing performances, NTU Executive Vice President and Vice President for International Affairs Chiapei Chou extended her warm welcome to all the honorable guests and the professors and students who made the event possible. The NTNU OIA Associate Vice President Yi-De Liu also attended the event with his colleagues OIA Director Roxane Weng and International Student Advising Manager Chelsea Yang. Other honorable guests included NTU Executive Vice President Ching-Hua Lo, Vice President for Student Affairs April Chiung-Tao Shen, Deputy Vice President for Student Affairs Shih-Pe Wang, and NTUST OIA Program Coordinator Yi Liu.

The Multicultural Food and Culture Fair consisted of 32 stands jammed around the Lu-Ming Square. Student

participants from around the world were dressed in traditional clothing, representing their respective cultures. Unique food and culture was there to be discovered: one could find spring rolls and sandwiches from Vietnam, *röschti* (fried potatoes with cheese) from Switzerland, *kari ayam* (curry chicken) from Malaysia, along with delicacies from other parts of the world. The cheerful, festive vibe of the event drew hundreds of people to the Lu-Ming Square, and all of the visitors spent a spicy, delightful afternoon eating great food and experiencing diverse cultures.

The highlight of the festival took place on the second day, the NTUOSAOIA Singing Competition. Enthusiastic participants all vied for the same goal: the champion's trophy. With 34 competitors registered in the individual category and eight teams in the group category, the competition was fierce yet the performances were spectacular. After five hours of competition, Yu Sook En from Malaysia won the championship and the team "134" from Indonesia won the group championship with their rendition of "Medley." The group "Sweethearts," also from Indonesia, won the People's Choice Award with the song "A Little Sweet" by Silence Wang. An enthusiastic round of applause brought joy and pride to all the winners!

As the singing competition drew to a close, so did the 2019 Break & Fuse Festival. But don't worry, we expect to see you there next year!

Group photo of the honored guests and performers.



International Consortium Develops a Potential Vaccine against MERS

An international collaborative consortium led by Prof. Hui-Wen Chen at NTU, Prof. Chien-Te Kent Tseng at the University of Texas Medical Branch (UTMB), and Dr. Che-Ming Jack Hu at Academia Sinica has developed a novel vaccine against the Middle East Respiratory Syndrome coronavirus (MERS-CoV) infection.

The Middle East Respiratory Syndrome, commonly known as MERS, can suddenly cause severe and often lethal respiratory symptoms, systemic infection, and multiple organ failure. Since the first identified case of MERS in 2012 in Saudi Arabia, the syndrome has caused more than 2,250 confirmed infections, either transmitted from camel to human or person to person, with a 35 percent mortality rate, in 27 different countries. Due to the highly mutational nature of the MERS-CoV, no vaccine or specific treatment for MERS is currently available. And, that's exactly why multidisciplinary collaborations for innovative solutions are so sorely needed.

To tackle this unprecedented scale of infection, the international consortium comprised of scientists from NTU, Academia Sinica, and UTMB has developed a nanoparticle vaccine which can mimic the morphology of MERS-CoV, i.e. the MERS virus, against the infectious pathogen. This novel vaccine has been tested to be safe and effective against a lethal challenge of MERS-CoV in a transgenic mouse model.

Dr. Hu is the inventor of the fabrication process of hollow biomimetic nanoparticles. According to him, by

integrating the receptor binding domain of MERS-CoV with a capsid-like polymeric nanoshell loaded with a potent immunologic stimulant, a highly potent nanoparticle vaccine can be prepared. In a mouse model, the vaccine stimulated a high and durable level of anti-MERS-CoV antibodies that could neutralize MERS-CoV antigens.

In addition, Prof. Chen of NTU's Department of Veterinary Medicine, who is specialized in coronavirus research, adds that the vaccine also triggered an elevated level of antigen-specific T cells, which is critical for MERS-CoV immunity. In a study using live MERS-CoV challenge, mice vaccinated with the nanoparticle vaccine showed a 100% rate of survival, whereas all the non-vaccinated mice succumbed to the lethal challenge.

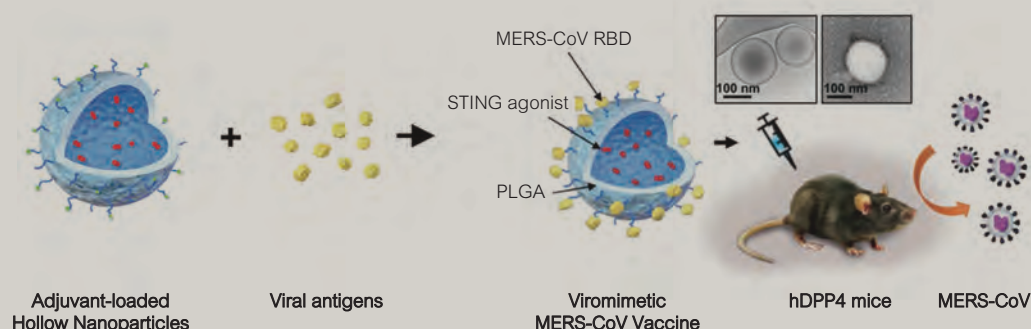
Unlike live attenuated virus vaccines, the nanoparticle vaccine demonstrates superior safety and is comprised entirely of biocompatible materials. The international team aims to assess the nanoparticle vaccine in non-human primates before moving to clinical testing.

For more details, please refer to the study, "Viromimetic STING Agonist-Loaded Hollow Polymeric Nanoparticles for Safe and Effective Vaccination against Middle East Respiratory Syndrome Coronavirus," published online in *Advanced Functional Materials*. doi:10.1002/adfm.201807616 (2019).



Dr. Che-Ming Jack Hu (Assistant Research Fellow of the Institute of Biomedical Sciences, Academia Sinica; second from right), Prof. Hui-Wen Chen of the Department of Veterinary Medicine, NTU (first from right), and the research team.

Mechanism of the nanoparticle vaccine.



Precise Typhoon Prediction and Tracking Made Possible by NTU's Functionally Enhanced Data Buoys

For the first time in history, two functionally improved data buoys have successfully recorded air and sea variables along the path of a super typhoon. NTU's marine research and technical team at the Institute of Oceanography, with the solid support of the Ministry of Science and Technology and Central Weather Bureau, has developed and deployed weather buoys for accurate typhoon prediction. The unprecedented field research was the first of its kind to be conducted and completed by a local team at NTU. The related research paper was published in the April 2019 issue of *Nature Communications*, and the research findings will be translated into computer programs, representing a major milestone in the precise and timely prediction of typhoons.

Typhoons that strike the Philippines, Taiwan, China, Korea, and Japan threaten the nearly one billion people living in coastal areas. Using observations to provide in situ data for the weather forecast center, advance knowledge of air-sea exchanges during extremely strong winds, and thus increase the accuracy of the typhoon forecasts is crucial to giving timely warnings to the public for disaster mitigation.

As early as the 1970s, scientists had found that a warmer sea surface generally provides more energy for typhoon development. The window to determining whether the water surface is warm enough to generate sufficient energy to produce a typhoon is as short as 10 hours. Scientists have struggled with the problem of insufficient data to grasp the needed temperature change. Now, the two NTU buoys have provided answers by revealing how air and sea interact at critical moments. This important cross-disciplinary study thus contributes significantly to timely warning, accurate forecasting, and improved disaster mitigation with respect to typhoons.



One of the two NTU buoys served in the Northwest Pacific.

The two NTU buoys survived Super Typhoon Nepartak in 2016. The data captured along the typhoon's path showed that sea surface temperature dropped 1.5°C in the four hours prior to the arrival of the typhoon eye. The intensity of Nepartak was, however, not affected by the temperature drop. After analyzing the data in detail, the researchers reached beyond the sea surface and identified more factors concerning the growth of a typhoon; for example, the sea current velocity in this case. The time-lapse cameras and current meters on the buoys captured the images and the data of a super typhoon, marking an unprecedented advancement in typhoon tracking. These results showed that during the four critical hours, while warm water was brought from the sea surface to the typhoon, the typhoon was also pushing the sea surface forward, speeding up currents at the top. This generated large and small vortexes in the ocean, as the currents at the bottom could not keep up with the upper currents. Icy cold sea water was thus brought up, cooling down the heat feeding the typhoon, depleting its strength.



Members of the buoy project from NTU's Institute of Oceanography pose for a group photo on Ocean Researcher I.

Accurate typhoon forecasting requires more than a full understanding of the physical interaction between air and sea. It also needs constant feeds of atmospheric and oceanic in situ data into computer models, as well as regular verifications and modifications. Technical developments and satellite remote sensing have contributed significantly to the accurate prediction of typhoon direction. However, the forecast of typhoon intensity remains a challenge because there are insufficient observations of sea-air exchanges. On the one hand, sending research vessels or instruments to the deep blue sea to await typhoons or chase typhoons is like sending mice to attach a bell to a cat—an impossible mission. On the other hand, if we could deploy anchored buoys in selected areas to “wait for” typhoons, measure and assess the key metrics with advanced sensors, and rapidly transmit the data to land-based labs for forecasting and analysis, it would be far safer and more effective. Unfortunately, buoys that can precisely measure

oceanic weather conditions and deliver data rapidly are not yet commercially available. Merchandising the buoys and their deployment services may be the next step to take.

Since 2015, the two buoys have documented the changes in weather at sea during 10 typhoon events. The altruistic act of sharing data is a part of the TOMATO (TOwards Multiple Arrays for Typhoon Observations) framework that deploys weather buoys and underwater gliders in the Northwestern Pacific Ocean. In the future, TOMATO will partner with meteorological organizations and universities in the Philippines to expand the scope and scale of the program. The NTU meteorological buoys will serve as sentinels at the defensive perimeter, protecting the lives and property of people in Taiwan.

Freshman Limited Edition Shirt — Blessings for NTU Newbies

Every August during NTU's freshman opening day ceremony, all the attendees, including the university president and faculty members, will don the limited edition freshman shirt of the year, symbolizing their blessings to the incoming students. The selection of this shirt is based on a university-wide vote to select the shirt design that best conveys NTU's image and spirit.

Every year, the Office of Student Affairs issues an open call to students to submit creative designs for this commemorative shirt. Next, a committee of experts is convened to come up with a short list, followed by a campus-wide student vote to make the final decision. Participants are encouraged to submit designs that highlight certain features of the campus or the university culture. For example, one shirt design adopted the colors of azalea blossoms for the font. Another design showcased a flock of bicycle-riding Malayan night herons, a species of bird commonly seen on campus.

The designer of the winning 2018 freshman limited edition shirt was Yu-Zhi Lin. Lin used a brick-piling image to create the word NTU on the shirt—each freshman is like a brick, and by means of peer collaboration and knowledge accumulation, the students eventually construct their respective knowledge systems during their four years at college. Bricks are also the most distinctive building material on the NTU campus. Particularly remarkable are the brick main gate built during the period of Japanese rule and the 13-groove ribbed tile exteriors of the historic buildings that flank the two sides of the Royal Palm Boulevard.



Freshman limited edition shirt.

“This is the very first school souvenir I’ve received since entering NTU. It is really memorable,” said Mariposa Chao (Class of 2022, social work major), one of the freshmen wearing this 2018 special edition shirt. She did not pay particular attention to the brick-inspired design until she read the shirt design concept, but she takes pride wearing this commemorative shirt, as it truly inspires her to construct her school life from blueprint to turnkey during the next several years at NTU.

As for the 2019 freshman commemorative shirt, the final round of voting has concluded, and the winner is a shirt design based on the concept of adventure. We all look forward to seeing it when we welcome the new freshmen this fall. Our incoming students will soon embark on this new adventure, full of uncertainties and at times stressful. But, as long as we stay true to ourselves and stay the course, we will embrace this adventure with pride and anticipation.





NTU Hospital neonatal specialists demonstrate respiratory care practices to Guatemalan trainees.

NTU-ICDF Joint Project to Advance Women and Children's Health Care in Guatemala

NTU Hospital and the International Cooperation and Development Fund (ICDF) collaborated in the "Promotion of Medical Technologies to Improve Maternal and Neonatal Health Outcomes in Guatemala Project" to provide medical and public health assistance to women and children in Guatemala, a diplomatic ally of Taiwan. The idea of the project was initiated during the visit of Guatemala's First Lady, Mrs. Hilda Patricia Marroquín de Morales, to Taiwan in May 2016. She had been invited to attend the presidential inauguration ceremony, after which she visited NTU Hospital where she was deeply impressed by Taiwan's advanced maternal and child healthcare facilities and services.

Improving children's health has been one of President Morales's key policy mandates. Upon the First Lady's return, staff from our Embassy in Guatemala invited ICDF to join in developing a healthcare program dedicated to pregnant women and newborn babies. ICDF outlined the Guatemalan government's needs and priority areas for collaboration, while NTU Hospital concentrated on capacity-building for frontline medical personnel and institutions in Guatemala. The program's goal was to enhance health outcomes and healthcare quality for women and children in the country.

Since 2016, in carrying out this medical assistance project, the NTU Hospital has dispatched obstetric and neonatal specialists to Guatemala, initiated close collaboration with two Guatemalan public hospitals, and organized local workshops. In 2017, NTU Hospital provided advanced training for five medical professionals from Guatemala at its Obstetrics and Gynecology (OB/GYN) Department and Neonatology Division. Both sides have actively engaged in furthering this bilateral medical and health cooperation so as to enhance Guatemala's medical infrastructure, including hospitals, obstetrics centers, clinics, health service stations, and midwife referral systems, as well as to provide emergency care for pregnant women.

Both national governments attach great importance to this project. In early 2018, with the support of Taiwan's Ministry of Foreign Affairs, Guatemalan Foreign Minister Sandra Jovel visited NTU Hospital with five senior officials. This year, Guatemalan President Jimmy Morales Cabrera and the First Lady visited NTU Children's Hospital on May 1, where they were received by the top administrators of NTU Hospital, including Superintendent Shyr-Chyr Chen, Deputy Superintendent Tyng-Guey Wang, Children's Hospital Superintendent Mei-Hwan Wu, and the directors of the OB/GYN Department, Neonatology Division, and International Medical Service Center. Dr. Po-Nien Tsao, head of the Neonatology Division, gave a detailed presentation on neonatal care.

This collaborative project has not only improved public health and medical quality for women and children in Guatemala, it has also strengthened the bonds of friendship between peoples of these two nations.



Photo of the workshop co-organized by NTU's College of Life Science and NIG Japan.

NIG Method: Two-Day Workshop on Delivering a Successful Scientific Presentation

Since 2011, NTU's College of Life Science has collaborated with the National Institute of Genetics (NIG) in Japan to offer an overseas internship program. Besides co-organizing symposiums and seminars, Prof. Yasushi Hiromi, then Director of NIG's Office for Research Development, led his team to visit NTU last year in December to conduct a workshop and teach NTU students how to effectively make presentations and write about their research in academic English.

According to Prof. Hiromi, a research presentation should not be just an oral version of the research paper, for it is intended to deliver not just the research results but also valuable information about the presenters, including the scope of their research interests, logical and critical thinking skills, future directions, and personality. To help young researchers better disseminate their research to the scientific community, Prof. Hiromi has been promoting the "NIG Method" across Japan, particularly by organizing workshops that are well-received and widely sought-after.

In December 2018, he held a two-day workshop at NTU to teach students how to improve their communication skills and research quality. To meet the hidden requirements of making effective scientific presentations, the NIG team developed a new methodology of scientific presentations, which has been adopted in the curriculum for scientific presentation in many departments of SOKENDAI, the Graduate University for Advanced Studies in Japan. Based on their rich experience of delivering many research presentations as well as attending numerous seminars, the NIG team introduced the essential elements of this methodology in the workshop on the first day, during which participants watched a video of a model presentation and discussed how the presentation could be improved.

On the second day, the event reached a climax when workshop participants were asked to give a speech in the Masterclass. This hands-on exercise gave the students an opportunity to take the stage and deliver a 10-minute presentation, after which the lecturers and the audience immediately pitched in and gave instructions and/or feedback. Before the Masterclass, five volunteers had already signed up for this valuable opportunity and submitted the papers they wished to present. This allowed the lecturers to understand the research topic before the presentation and to share with the students useful, specific recommendations as well as practical tips on how to write papers in readily understandable academic English. The scientific writing and presentation workshop was well-received among the participants. Similar events will certainly be organized again in the near future.

When Art Meets Books: NTU-JW Profound Art Book Exhibition

The NTU-JW Profound Art Book Exhibition was jointly held by the NTU Library and the NTU Center for the Arts from April 10 to May 12. The exhibition was a sequel to the First NTU-JW Profound Art Award exhibit, during which award-winning artworks and multimedia installations were put on display, along with selected art books from the NTU Library. The NTU Center for the Arts and the JW Profound Art Studio worked together to curate the exhibition, and to introduce and showcase the art books. Thirty-three art books, including design books, picture books, graphic art books, and rare books, were on display in the reading hall on the first floor of the Main Library, attracting many readers.

The award-winning artworks of the First NTU-JW Profound Art Award were exhibited from April 22-27.

The exhibition showcased 15 works by NTU students, including 13 graphic works and 2 multimedia art installations. The works on display included abstract and symbolic self-portraits brimming with emotion as well as realistic portrayals of social phenomena that we often overlook. The richness and diversity of these artworks are a manifestation of the abundant creativity of NTU students. The art books were exhibited in order to complement the wellspring of creativity and innovation on campus, with hopes of encouraging students to cultivate their aesthetic sense and boost their imagination.

The collaboration between the NTU Library and the NTU Center for the Arts brought together books and artworks, librarians and artists. By working together, the library and the center effectively pooled resources and created new synergy. The participating artists were surprised that the library had such a large collection of art books, and the librarians also gained new perspectives by working with the artists. This exhibition of artworks and art books marked a richly successful cross-departmental collaboration on campus, and it attracted many people to appreciate the beauty of these works.



Guests pose for a group photo at the NTU-JW Profound Art Award Ceremony.

AI Innovation x Advanced Robotics: 2019 Open House Day

On March 16, the NTU Center for Artificial Intelligence and Advanced Robotics (AIROBO) held its 2019 Open House Day, themed “AI Innovation: Present and Future of AI,” at Barry Lam Hall of the Department of Electrical Engineering.

Focusing on the latest research results in AI and robotics, the event opened with a series of lectures in the morning. Before the lectures, AIBORO Director Li-Chen Fu, Ministry of Science and Technology (MOST)’s Department of Foresight and Innovation Policies Director-General Hsiu-Ya Yang, and Dean of the College of Electrical Engineering Prof. Yao-Wen Chang welcomed the guests with opening remarks and, further, discussed the opportunities and challenges that developments in AI could bring humanity.

After the opening remarks, the honored guest speaker, Prof. Yuichi Nakamura of Kyoto University, presented a talk on “HCI and Human-to-Human Communication by Sharing Muscle Information.” By measuring the physiological signals of muscle changes, the human-computer interaction system developed by Prof. Nakamura and his team is expected to be able to predict human behavior in the near future. In a lecture on “Developing Real-Time Medical Care Model with AI,” Dr. Yi-Lwun Ho of NTU Hospital’s Department of Internal Medicine introduced recent achievements at the hospital in telemedicine and the new roles that medical professionals will start to play in the age of AI and smart technology.

Prof. Su-Ling Yeh of NTU’s Department of Psychology delivered the third lecture, entitled, “How to Develop AI Robots that Answer to Human Needs.” From a psychological perspective, Prof. Yeh emphasized how robotic designs should be more human-centered and how engineers need to make this a key consideration in the design process. Last but not

least, Prof. and Chairman Shang-Hsien Hsieh of the Department of Civil Engineering discussed the role and applications of AI in a smart city. He took a broad perspective on this issue, such as by considering how AI could be applied to provide more effective and environment-oriented solutions.

The four speakers offered a range of perspectives and insights, and discussed how AI would influence human life on different levels, serving up substantial food for thought to the students present.

In the afternoon, the 20 research teams at AIROBO participated in a poster show-and-tell event, where visitors could interact with real robots. It also provided a rare opportunity for scholars from various departments to conduct interdisciplinary discussions. The wide-ranging and groundbreaking research results demonstrated that the research center has been an effective incubator in the fields of human-computer interaction, mechanical design, machine learning, deep learning, etc., and that the most salient results can be applied in such areas as cognitive psychology, industrial manufacturing, and biomedicine. No doubt, the center’s multidisciplinary nature will broaden NTU’s vision and boost its competitiveness in the future world of AI.



Members of the NTU Center for AI and Advanced Robotics pose for a group photo.



中華郵政臺北雜字第1146號
執照登記為雜誌交寄

