

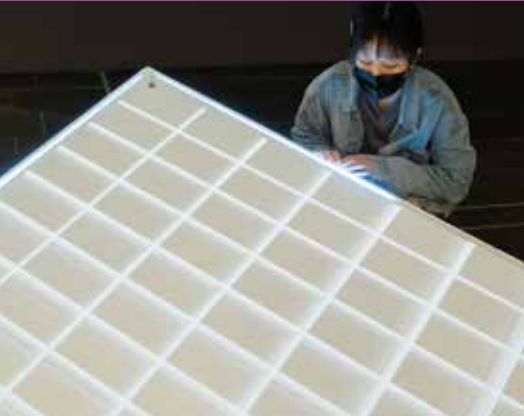
# 清華

NATIONAL  
TSING HUA  
UNIVERSITY



## NEWSLETTER

July 2022 | Vol. 16 | No. 3



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## NTHU INAUGURATES NEW PRESIDENT

On April 30<sup>th</sup> W. John Kao (高為元) was sworn in as the new president of NTHU. The occasion was marked by a ceremony in which he received the official school seal from his predecessor, Hocheng Hong. In his inaugural address, President Kao affirmed his commitment to leading Tsing Hua University in meeting the educational challenges of the future while holding fast to its core values of self-governance, academic freedom, equity, inclusiveness, and diversity.

Due to the pandemic, the scaled-back ceremony was broadcast live online, and in-person participation was limited to President Kao, former president Hocheng, political deputy minister of the Ministry of Education Lio Mon-chi (劉孟奇), Selection Committee convener Liang Kung-ye (梁廣義), and Alumni Association president Tsai Jinbu (蔡進步).

President Kao said that he was honored to join the Tsing Hua family, and that in addition to continuing NTHU's commitment

to interdisciplinary education and diversity in faculty and student recruitment, he plans to consolidate the university's emphasis on science, engineering, humanities, and social sciences, and to expand its role as a comprehensive research university. President Kao plans to meet these objectives while thinking globally and acting locally in consonance with Tsing Hua's core values, so as to strengthen diversified whole-person education as well as post-graduation counseling.

President Kao's academic background is in biomedical engineering, with a focus on translational medicine, which connects basic medical research



a. NTHU's new president W. John Kao (right) receiving the official school seal from his predecessor, Hocheng Hong (left), with political deputy minister of the Ministry of Education Lio Mon-chi (劉孟奇) (center) as the facilitator.

b. Onsite participants (left to right): Selection Committee convener Liang Kung-ye (梁廣義), Hocheng, Lio, Kao, and Alumni Association president Tsai Jinbu (蔡進步). Online participants can be seen on the screen.



to clinical applications. He began his academic career at the University of Wisconsin-Madison, where he taught for 18 years. During his tenure as the vice president of the University of Hong Kong, he implemented a BOT model for the 2,000-bed Hong Kong University Shenzhen Teaching Hospital. His related experience will

be invaluable as he guides the development of medical education at National Tsing Hua University.

President Kao said that NTHU's early emphasis on nuclear science placed it in a good position to become a leading center for the development of boron neutron capture therapy (BNCT), and that to date this treatment has provided a new lease on life to over 200 cancer patients from around the world, demonstrating the results of translational medicine. He is also keen on strengthening Tsing Hua's value chain by expanding basic research and cooperation with industry.

Although President Kao was born in Taiwan, he has lived overseas for many years, and when he arrived in Taiwan at the beginning of April he had to undergo the mandatory ten-day quarantine, plus seven days of self-health



c. Kao being sworn in as president of NTHU.



d. Hocheng and Kao making a pandemic-style "elbow shake."

management. He noted that due to the pandemic he has not been able to visit his relatives and friends in Taiwan for the past three years, and said that "It feels so good to be home!" Nonetheless, he was disappointed that due to the pandemic, his parents, relatives, and friends living in Longtan, Taoyuan, were unable to attend the inauguration ceremony.

President Kao noted that the original guest list included his uncle, the Taiwanese film director Wu Nien-jen, adding with a grin that he played the key role of chaperone when Wu was courting his aunt.

The ceremony also marked the end of Hocheng Hong's presidency, the longest in NTHU's recent history. Former president Hocheng said that he is confident that the selection committee has chosen the best candidate for

the job, and that President Kao has the breadth of vision and boundless energy required for leading the school as it enters its next phase of development.

Hocheng smilingly recalled that during his own inauguration ceremony eight years ago, "The outgoing president congratulated me on landing a plum job, but I now know that he should have been consoling me for being tricked into accepting a position which requires non-stop travel, sometimes with a cello in tow, giving speeches on a daily basis, and even conducting all-night negotiations with disgruntled students."

Hocheng also took the opportunity to say that he feels highly honored to have had the opportunity to serve as the president of such a prestigious university with a century of



history. He felt as though he was standing on the shoulders of giants, which gave him the courage to overcome any difficulty and to go beyond his own limitations, adding that "In my heart I will always be at Tsing Hua!"

Hocheng observed that the school's first phase, "NTHU 1.0," began with the establishment of Tsing Hua College in Beijing, and focused on integrating Chinese and Western culture. During the second phase, "NTHU 2.0," which began in the 1960s, the two Tsing Huas—one in Beijing and one in Taiwan—developed separately, and the emphasis shifted to science and technology. During the current phase, "NTHU 3.0," in which Hocheng himself has

played a key role, the emphasis has shifted to integrating science and technology with the humanities and social sciences. Indeed, during Hocheng's tenure, a quarter of the university's graduates had a double specialization, and a quarter of its faculty members have conducted interdisciplinary research. He has also been instrumental in expanding and diversifying research and teaching in such fields as medicine, semiconductors, political economy, education, and art.

Hocheng is also a highly skilled fundraiser, and during his tenure he attracted nearly NT\$6 billion in donations. In addition, he raised NT\$2.6 billion for NTHU's merger with the National Hsinchu



University of Education (NHCUE), NT\$3 billion for the establishment of the Taipei School of Economics and Political Science (TSE), and NT\$36 billion for the College of Semiconductor Research (CoSR). He also expanded the campus by 22 hectares, an increase of 17%, through such additions as the Nanda Campus and the NTHU Hospital.



At the ceremony, from left to right: NTHU senior vice president Tai Nyan-hwa (戴念華), Tsai, Hocheng, Kao, Liang, and chief of staff King Chung-da (金仲達).



- e. Kao said that he is keen on strengthening Tsing Hua's value chain by expanding basic research and cooperation with industry.
- f. Lio (left) presenting Hocheng with a memento in recognition of his many contributions to NTHU.
- g. Hocheng said that he is highly honored to have served as the president of such a prestigious university with a century of history.

Lio Mon-chi, who served on the Selection Committee, said that among the many highlights of Hocheng's impressive eight years at the helm were the establishment of the Post-baccalaureate Program in Medicine and the implementation of various reforms for increasing student diversity.

Lio said that he has been looking forward to this event for the past six months, adding that President Kao's extensive international experience, global perspective, can-do attitude, and excellent communication skills convinced the Committee that he is highly qualified to lead NTHU as it enters its next stage of development.

Liang Kung-ye is a graduate of NTHU and currently serves as the president of the National Health Research Institutes. He said that the Selection Committee was highly impressed with Kao's modesty, concern for higher education, positive energy, and international outlook.

Alumni Association president Tsai Jinbu welcomed President Kao on behalf of NTHU alumni around the world. He said that Kao is the youngest individual appointed as president of NTHU since it adopted its current selection system in 1994, and that his modesty, restraint, and optimistic outlook will go a long way in promoting a sense of unity throughout the school, including among alumni, who can be counted on for their continued support.

Among the many guests in virtual attendance were former NTHU president Chen Wen-tsuen (陳文村), University System of Taiwan chancellor Chen Lih-juann (陳力俊), NYCU president Lin Chi-hung (林奇宏), NCU president Chou Jing-yang (周景揚), NCCU president Kuo Ming-cheng (郭明政), NCKU president Su Huey-jen (蘇慧貞), Mexican representative to Taiwan Martin Torres, Macronix chairman Wu Miin-chyou (吳敏求), CEO of E. SUN Commercial Bank N.C. Huang (黃男州), Pegatron

Technology chairman Tung Tzu-hsien (童子賢), and National Federation of Teachers' Unions chairman Hou Junliang (侯俊良).

## NTHU ASTRONOMER HELPS SOLVE THE MYSTERY OF THE HUGE BUBBLES AT THE CENTER OF THE GALAXY

By using advanced computer simulations, an international research team, including Professor Karen Yang (楊湘怡) of the Institute of Astronomy, has found that eROSITA and Fermi, two giant bubbles in the Milky Way, are relics of the past activity of a black hole at the center of the galaxy. The bubbles were formed 2.6 million years ago, during a period when the Milky Way was highly active.

The high-energy particles and two sets of giant bubbles are still

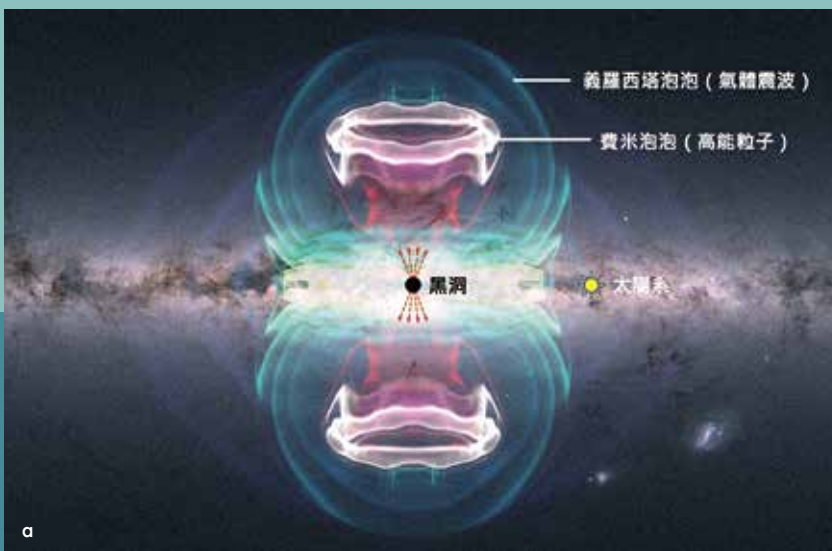
expanding outward at a speed of 1,500 kilometers per second, and they are gradually coming toward our solar system. "Don't worry," says Professor Yang with a reassuring smile, "It will be millions of years before they reach us."

The research team was composed of astronomers from NTHU, the University of Michigan, and the University of Wisconsin. Their findings have been published in a recent issue of *Nature Astronomy*.

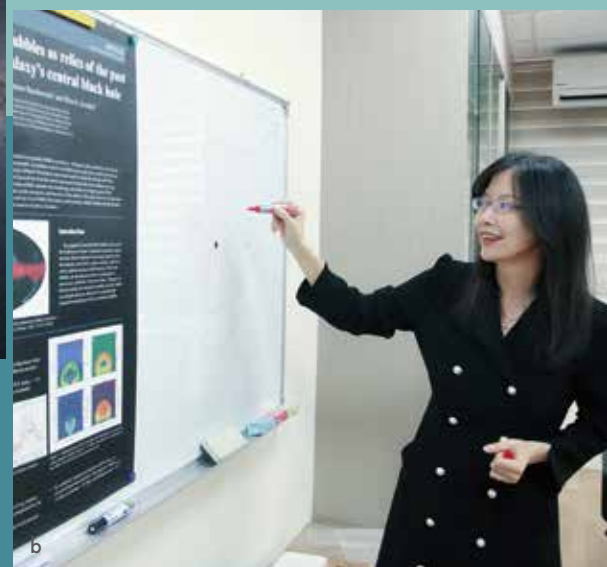
Professor Yang said that the Fermi bubbles symmetrically arrayed at

the center of the Milky Way were discovered in 2010 by astronomers using a Fermi Gamma-ray Space Telescope (FGST). How they were formed, however, was unknown and hotly debated; some believed that they were made by energy erupting from a black hole, while others considered them to be a galactic wind generated by an exploding supernova.

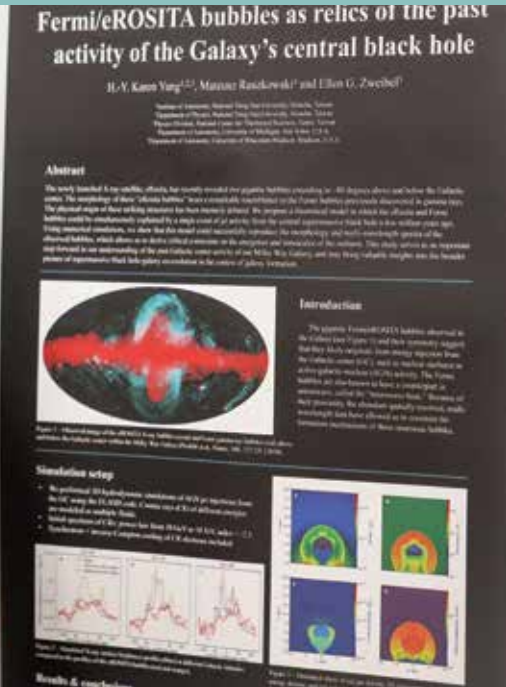
However, when the extended ROentgen Survey with an Imaging Telescope Array (eROSITA) was launched in 2019, it soon observed two other symmetrical bubbles, similar in shape to the Fermi bubbles, but larger; they were named the eROSITA bubbles.



- Image of the Fermi (red interior) and eROSITA (blue exterior) bubbles, formed 2.6 million years ago by the energy emitted from a black hole.
- Yang explaining how the energy emitted from a black hole forms a symmetrical pair of huge mushroom-shaped bubbles.
- Yang played a key role in solving the mystery of the huge bubbles at the center of the galaxy.







evolution of a galaxy. Professor Yang's interest in astronomy dates back to her high school days. Her husband is a quantum physicist, and their passion for astronomy has rubbed off on their children. When their son was only three years old, he drew a picture of a black hole spewing out matter, giving his preschool

When Yang and her team conducted a hydrodynamic simulation on the latest data collected by eROSITA, they discovered that the temperature and density of the gaseous matter was similar to that emitted from a black hole, indicating that the Fermi and eROSITA bubbles were both derived from the same black hole; it was also found that the inner cores are composed of gamma rays emitted by high-energy particles ejected by a black hole, and that the outer sections are composed of X-rays released by gaseous shock waves.

Professor Yang explained that a black hole at the center of the galaxy absorbs matter equal to between 10,000 and 100,000 times the mass of the sun, but only a small part of this is actually drawn into the

area where even light cannot escape, and most of the matter, interacting with the magnetic field, is jettisoned at close to the speed of light, pushing the gaseous matter of the galaxy outward, and forming huge bubbles. The pressure created by the large number of fixed stars in the galactic disk resulted in the formation of a symmetrical pair of huge mushroom-shaped bubbles, like a balloon being blown up while a string is tightly bound around its center.

Team member Mateusz Ruszkowski of the University of Michigan said that the findings have enriched our understanding of how supermassive black holes evolve and interact with other galaxies, and that future studies are expected to shed light on the effect these bubbles full of enormous energy have on the

teacher a big surprise. After returning to Taiwan from the United States in 2020, Professor Yang began teaching at NTHU as part of the Yushan Young Scholar program of the Ministry of Education. Her participation in the study was supported by research grants from the Yushan Scholar Program and the Ministry of Science and Technology.

## TSING HUA CELEBRATES ITS 111<sup>TH</sup> ANNIVERSARY

On May 1<sup>st</sup>, NTHU celebrated the 111th anniversary of its founding and 66th anniversary of its reestablishment in Taiwan. During the celebration, the school's newly appointed president, W. John Kao (高為元), said that as long as the Tsing Hua community works together in harmony, and with courage and determination, it will surely

be able to successfully meet the challenges of the next 111 years. One of the highlights of the event was the donation of NT\$25 million to NTHU by the class of 1972.

Kao, who was officially sworn in as president of Tsing Hua University the day before the anniversary, said that he has had a memorable two days, that he is grateful for all the words of encouragement he has received

recently, and that he is honored to join the big Tsing Hua University family.

President Kao said that Tsing Hua's continuing emphasis on excellence in education and research accords with his own core values: autonomy, academic freedom, equity, inclusiveness, and diversity. During the first few months in his new position, he plans to spend a lot of time



On May 1<sup>st</sup>, NTHU celebrated the 111<sup>th</sup> anniversary of its founding and the 66<sup>th</sup> anniversary of its reestablishment in Taiwan.





a. President Kao said that NTHU is sure to successfully meet the challenges of the next 111 years.  
 b. President Kao (center) receiving a donation to NTHU in the form of an oversized check from four members of the class of 1972 (left to right): You Wenchian (游文乾) of the Department of Physics, Qian Shanheng of the Department of Nuclear Engineering, Li Jengjung (黎正中) of the Department of Mathematics, and Shou Mingjung (壽明榮) of the Department of Chemistry.

listening to what teachers and students have to say, so as to strengthen his ability to enhance NTHU's unique position as a leader in cross-disciplinary research and education.

Alumni Association president Tsai Jinbu (蔡進步) was on hand to welcome Kao. He said that NTHU is currently developing its programs in medicine and various other fields, and that Kao's administrative skills, global vision, and extensive international experience place him in an excellent position to lead the school at this critical juncture.

Tsai pointed out that 2022 is the 60th anniversary of the death of NTHU's founding president Mei Yi-chi, who once said, "The greatness of a university is not measured by the size of its buildings, but rather by the quality of its faculty." He observed that since NTHU already has both

great buildings and outstanding faculty, the challenge is to reaffirm and carry out the school's historic commitment to independent thinking, innovation, and social justice. He added that doing so is the best way to wish the school a happy birthday!

Representing the class of 1972 was Lu Chengli (呂正理), who said that when he graduated, the school had only four departments—nuclear engineering, physics, mathematics, and chemistry—and that the student body, including graduate students, numbered less than one thousand. Amazingly, today there are 12 colleges, 69 departments, and more than 18,000 teachers and students.

Lu pointed out that despite such impressive growth, a public university cannot rely solely on government funding to meet its development requirements.

Thus, donations are essential; however, those provided by big corporations and a handful of wealthy alumni are insufficient, which leaves it to ordinary alumni to make up for the shortfall. With this need in mind, a group of alumni from the class of 1972 initiated a fundraising campaign targeting their classmates who graduated in the same year. Of the 160 members of the class of 1972, they successfully contacted nearly 100, over half of whom made a donation.

During the anniversary celebration, four members of the class of 1972, each representing one of the school's four departments at that time, presented the donation to NTHU in the form of an oversized check. The donation has been ear-marked for a variety of purposes, including the Rising Sun Scholarship, the Zhumeng

Scholarship, and the conversion of the Main Auditorium into the Chun-shan UMC Concert Hall. Those representing the class of 1972 at the ceremony were Qian Shanheng (錢善恒) of the Department of Nuclear Engineering, You Wenchian (游文乾) of the Department of Physics, Li Jengjung (黎正中) of the Department of Mathematics, and Shou Mingjung (壽明榮) of the Department of Chemistry.

Due to the pandemic, the scaled-back celebration was broadcast live online, and in-person participation was kept to a minimum.

Representing the student body was Wu Chengyun (吳承灃), this



year's recipient of the Presidential Education Award. At the age of 14, he was affected by a rare condition known as Leber's hereditary optic neuropathy, which left him nearly completely blind.

Nonetheless, Wu excelled at music, and gained admission to NTHU under the Special



Admissions Program, which grants admission based on an interview rather than standardized test scores. As a student of the Experimental Education Program, he designed his own curriculum consisting of courses in music, marketing, and management. Having released an album of his piano music, and organized a benefit concert, he sees a bright future for himself now that "Tsinghua has shown me the world!"

## 創校 111 週年 暨在臺建校 66 週年



- c. President Kao (center) presented the Outstanding Alumni Award to Chen Wentsuen (left) and SC Hsin (right).
- d. Representing the student body was Wu Chengyun, this year's recipient of the Presidential Education Award.
- e. Wu (left) presenting President Kao with a CD of his piano music.
- f. The Tsing Hua AI Orchestra performing during the celebration.
- g. Attendees enjoying the captivating performance by the Tsing Hua AI Orchestra.





An additional highlight of the celebration was the conferral of this year's Outstanding Alumni Awards. One of the recipients was former NTHU president Chen Wen-tsuen (陳文村) (B.S., nuclear engineering, 1970) who has played a key role in the development of computer science in Taiwan. In his speech, he said that he came to NTHU over 50 years ago at the age of 18 to study nuclear engineering, and has been here ever since, apart from his mandatory military service and his time studying abroad. Chen added that he is grateful for the excellent learning environment at NTHU.

The other recipient was SC Hsin (辛水泉) (B.S., physics, 1978; M.S., physics, 1980), president of VisEra Technologies, a leading semiconductor manufacturer. He said that he returned to NTHU in 2009 to serve as a mentor for the residential college, in which capacity he led a group of students on an unforgettable disaster relief mission to Pingtung

County following the devastation caused by Typhoon Morakot. In an interesting turn of events, Chen Wen-tsuen was the president of NTHU at that time, in which capacity he presented the mission with the school flag.

Another highlight of the celebration was a rendition by the Tsinghua AI Orchestra of the famous John Lennon song "Imagine," using a recently developed technology called "music source separation."



## NTHU RESEARCH TEAM SETS UP PEPTIDE DATABASE

Recent years have seen the increasing popularity of various health supplements and health care products featuring peptides, short-chain proteins which are easily absorbed due to the small size of their molecules. With this trend in mind, an NTHU research team has recently developed the world's first database for designing novel peptides based on molecular dynamics; it functions like a search engine, and can be used to design peptide drugs which are more effective and pose fewer health risks.

The team was led by Professor Yang Lee-wei (楊立威), director

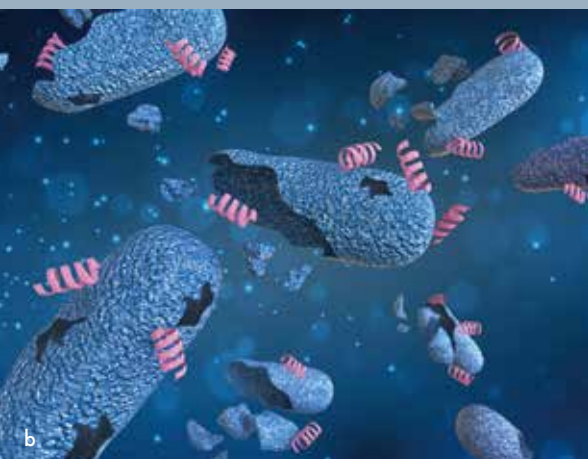
of the Institute of Bioinformatics and Structural Biology. Team members Lan Chung-yu (藍忠昱) and Fu Hua-wen (傅化文), both professors of the Institute of Molecular and Cellular Biology, identified a peptide which can diagnose helicobacter pylori, and resist pathogenic *Candida albicans*, colon bacillus, and liver cancer. Their findings have been published in a recent issue of *Nature Communications*.



Peptides are composed of amino acids, the smallest constituent molecules of proteins. Those composed of two amino acids are called dipeptides, whereas those composed of three amino acids are called tripeptides. Because



- a. Team leader Yang Lee-wei, director of the Institute of Bioinformatics and Structural Biology.
- b. The research team has developed a database of novel peptides.
- c. Computer simulation of newly designed peptides (pink) resisting colon bacillus (blue).
- d. Yang explaining the process by which a helical peptide becomes lodged in the phospholipid membrane.
- e. Members of the research team (left to right): Tsai Jengyu (蔡政育), Fu Hua-wen (傅化文), Yang Lee-wei (楊立威), and Lan Chung-yu (藍忠昱).



of their effect on the immune system, amino acids are used in the treatment of diabetes and other diseases. However, the development of peptide drugs has long been hampered by the huge number of amino acid combinations.

Keen to solve this problem, Yang extracted 1.7 million  $\alpha$ -helical peptides from the existing protein database, and then used computer simulation of their molecular dynamics to identify their patterns. For example, to design a peptide with antibacterial functions, the researcher starts by simply entering a combination of known-function and unknown-function amino acids (e.g., AxxBxxC), and the database then surmises which peptide sequence will best meet the desired function.

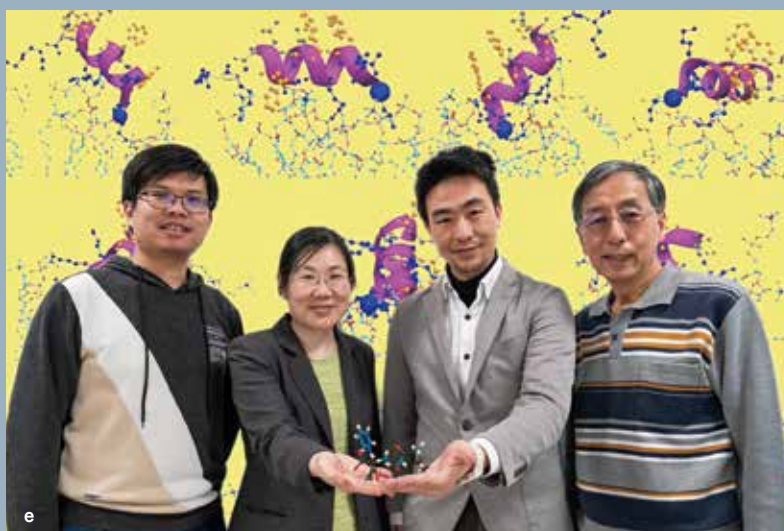
Professor Lan, a specialist in microbiology, was in charge of running the experiments which determined whether or not the peptides selected by the

computer actually have the desired effect. The results confirmed that the peptides selected from the database effectively resist pathogenic *Candida albicans* and harmful bacteria, and are less prone to cause the rupture of red blood cells.

Professor Fu, an expert in biochemistry, said that in addition to designing peptides with better therapeutic effects, the database can also be used to diagnose disease. For example, the team used the database to find a segment of peptide in a gastric helicobacter pylori

protein identifiable by using a commercially available antibody, which can then be put to new diagnostic and therapeutic uses. Moreover, the team developed an algorithm which helped them identify a peptide with the potential to counter coronavirus.

Professor Yang said that in addition to serving as an important platform for designing new peptides, this database can also be used in the development of a wide range of cosmetics and health care products, such as mouthwash, contact lens solution, and toothpaste.



## NTHU POST-BACCALAUREATE PROGRAM IN MEDICINE HOLDS OPENING CEREMONY

On March 30, NTHU held the opening ceremony for the Post-baccalaureate Program in Medicine, during which NTHU president Hocheng Hong said that the new program will train students to meet the challenges of tomorrow by focusing on the ABCs of the medical science of the future, viz., Artificial intelligence (AI), Big data, and the Cloud-based internet of things.

President Hocheng pointed out that the combination of medicine and new technology is the wave of the future. He further noted

that NTHU's firm commitment to the ABCs of medicine, coupled with the NTHU Hospital to be built at the Taoyuan Aerotropolis, will provide students with a comprehensive education in primary medical care.

Hsinchu County magistrate Yang Wen-ke (楊文科) said that the Hsinchu Science Park was established 42 years ago, and that last year it had an output production value of NT\$1.58 trillion. Pointing out that NTHU has played a vital role in the Park's success, he asserted that

right now is the optimal time for launching a program focusing on precision medicine and AI medical care.

The Post-baccalaureate Program in Medicine belongs to the College of Life Science, the dean of which is Kao Ruey-ho (高瑞和). Dean Kao said that the first batch of students will include twenty-three publicly-funded students, sixteen of whom will be based in the Natural Science Group, and seven in the Information Technology Group.

Dean Kao also mentioned that the Program has already appointed

The opening ceremony for the Post-baccalaureate Program in Medicine (left to right): professors of medicine Lin Chingling (林慶齡) and Li Li-ang (李立昂), Program director Chou Hung-hsueh (周宏學), College of Life Science dean Kao Ruey-ho (高瑞和), Hsinchu Science Park director-general Wayne Wang (王永壯), Hsinchu County magistrate Yang Wen-ke (楊文科), NTHU president Hocheng Hong, Hsinchu deputy mayor Shen Huihong (沈慧虹), Taiwan Science Park Association chairman C.K. Lee (李金恭), Department of Medical Science director Chen Lin-yi (陳令儀), and professors of medicine Chuang Haihua (莊海華) and Hong Yili (洪依利).







over 100 full-time and joint-appointment faculty members, and that all the required facilities will soon be ready for use, including a dissection room with nine dissection tables.

The Program's curriculum conforms to international standards. Dean Kao observed that

departments of medicine in Taiwan traditionally divide the curriculum into independent subjects, such as physiology, pharmacology, pathology, cardiology, nephrology, and urology. By contrast, NTHU's Program takes more of a systems approach, in which basic and clinical courses are combined, as in the course on the cardiovascular system which integrates related areas such as pharmacology.

Formerly the director of the Tzu Chi Hospital in Hualian, Dean Kao said that by enrolling students with backgrounds in electrical engineering, computer science, materials science, and chemical engineering, the Program will increase the diversity of medical education in Taiwan, while also providing the nation with pioneering physicians to meet the needs of the future.

The director of the Program, Chou Hung-hsueh (周宏學), formerly served as the director of the

Department of Medicine at Chang Gung University. Director Chou said that he expects students in the Program to have a strong sense of mission, and to be willing to work in areas of Taiwan which lack adequate medical facilities. He also pointed out that the curriculum includes coursework in the medical humanities, focusing on the role of public-funded physicians, so as to "turn out doctors who know how to care for their patients in a holistic manner."



## NTHU ANNOUNCES THE RECIPIENTS OF THE 2022 OUTSTANDING ALUMNI AWARD

**Congratulations to Chen Wen-tsuen and SC Hsin, the recipients of the 2022 Outstanding Alumni Award.**



Chen Wen-tsuen (left) and SC Hsin, the recipients of the 2022 Outstanding Alumni Award.

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**CHEN WEN-TSUEN (陳文村) (B.S., NUCLEAR ENGINEERING, 1970)**

*A leading figure in the development of computer science in Taiwan, Chen Wen-tsuen is also distinguished for his many outstanding contributions to NTHU and society at large.*



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While serving as the director of the Advisory Office of the Ministry of Education, Chen Wen-tsuen helped establish the Taiwan Academic Network (TANet), the first Internet in Taiwan, and he has made many contributions to Taiwan's high-tech industry. From 1990 to 2004, Chen served first as co-chairman and then as chairman of the Technical Evaluation Committee of the Industrial Technology Research Grants Program of the Ministry of Economic Affairs, and in 2004 he was awarded the Ministry of Education's Lifetime National Chair.

In 2006, Chen became the first NTHU graduate to serve as the school's president, and it was during his four-year tenure that the school began to receive considerable international recognition. For example, NTHU's ranking in the UK's Times Higher Education magazine went from 343 to 107, the highest ranking among all universities in Taiwan.

Moreover, during his tenure, Chen set up the Office of the Secretariat, the Alumni Service Center, and the Division of University Development. With respect to fundraising, Chen successfully raised nearly NT\$800

million for the university. He also played a key role in the establishment of the Tsing Hua Newsletter and the Office of Global Affairs, and concluded a number of international exchange agreements, resulting in a major increase in the number of international students enrolled at the university. In addition, it was under Chen's leadership that NTHU began to receive impressive rankings in the Thomson Reuters Essential Science Indicators (ESI). For example, the school was ranked among the top 50 schools in the world in materials science, and it was ranked in the top one percent in biology, biochemistry, and clinical medicine.

Chen also carried out reforms in NTHU's admissions procedures, emphasizing interdisciplinary education and allowing freshmen to leave their major undeclared for their first year. In 2006, he launched the Rising Star program to increase the educational opportunities of promising high school students from rural areas, and in 2008 he set up Tsing Hua College, the first residential-type college in Taiwan.

Chen's tenure was also a time of major infrastructure development at NTHU, which included the construction of Guest House I, the TSMC Building, the walking trail ringing the campus, the Delta Hall, and the Macronix Building,

projects that brought a whole new look to the campus. He also participated in the planning stages of the Alumni Gymnasium, the Tsing Hua Hall of Fame, and the Innovation & Incubation Hall. In 2010, National Tsing Hua University was awarded the Friendly Campus Award by the Ministry of Education, and Chen was given the Friendly Campus Outstanding Leader Award. Chen was also the guiding force behind a range of other important developments that took place during his tenure, including improvements in the quality of teaching, long-term planning, management, and school governance.

Chen played a key role in making NTHU a comprehensive university, one which encourages new students to study topics outside their major, to join student clubs, to make lots of new friends, and to live up to the school motto, "self-discipline and social commitment." Chen defines "self-discipline" as letting your actions speak for themselves, taking one step at a time, and having the courage to overcome your limitations; he describes "social commitment" as striving to benefit others based on a commitment to truth, kindness, and beauty, and the knowledge that giving is better than getting.

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**SC HSIN (辛水泉)(B.S., PHYSICS, 1978; M.S., PHYSICS, 1980)**

*A leading figure in the development of the semiconductor industry in Taiwan, SC Hsin is also distinguished for his many outstanding contributions to NTHU and society at large.*



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SC Hsin received both his bachelor's and master's degrees from the Department of Physics at NTHU, and he is a previous recipient of the Outstanding Alumni Award conferred by NTHU's College of Science. Hsin joined VisEra Technologies in 2010, and currently serves as its president.

When it comes to public welfare, Hsin spares no effort. As the longstanding director of the Taiwan branch of the Pearl S. Buck Foundation, he has organized a volunteer group which provides after-school tutoring for children from disadvantaged families, as well as tutoring in reading skills at elementary schools in rural areas. The Foundation also provides a range



of social and educational services for new immigrants and their children.

Since graduating, Hsin has maintained close ties with NTHU. In 2011, he helped establish the Committee of 100 fundraising campaign, and in 2009 he became a mentor for the newly established residential college, in which capacity he led a group of students on an unforgettable disaster relief mission to Pingtung County following the devastation caused by Typhoon Morakot that year. He is also a longtime supporter of the Tanzania Volunteer Group at NTHU, and arranges for its members to come to his company to share

their experiences and set up a fundraising exhibition.

Hsin has also participated in numerous fundraising campaigns for the Department of Physics. Over the years, he has donated millions of New Taiwan Dollars to a variety of projects, including the establishment of the general physics lab, the renovation of the astronomical observatory, retiling the veranda in front of the Department of Physics, and setting up a doctoral scholarship program. In 2019, he gave an inspiring talk at the Department on his studies, research, and career.

Hsin believes that whatever one's course of study may be—natural

sciences, humanities, or social sciences—what's most important is learning how to become a good person and a conscientious citizen. He also encourages students to make the most of their time at university by taking a variety of general education courses and other courses outside their majors, so as to gain a broader perspective on the world, since you never know what the future has in store.



# MAKING GRAVITATIONAL WAVES IN ASTRONOMY AND ART AT NTHU

The "Tsing Hua Effects 2022—Astronomy and Art Festival," which opened at the Main Library on April 21, is the first science and technology art exhibition on the theme of astronomy held in Taiwan. The centerpiece of the Festival is an interactive exhibition titled Cosmic Ripples, which makes a variety of astronomical phenomena—gravitational waves, space-time distortion, and the merging of black holes—readily accessible to the general public. The exhibition is open to all, so invite your friends to join you in exploring the mysteries of the universe.

The curator of the exhibition is Professor Albert Kong (江國興) of NTHU's Institute of Astronomy. Prof. Kong said that the existence of gravitational waves was first predicted in 1916 by Albert Einstein. Based on his general theory of relativity,



Einstein surmised that the merger of two massive black holes or stars should generate ripple-like space-time distortions called "gravitational waves."

However, it wasn't until 2016 that Einstein was shown to be correct, when gravitational waves were detected for the first time by the Laser Interferometer Gravitational-Wave Observatory (LIGO) in the United States. The three leaders of the thousand-strong international

research team won the Nobel Prize in Physics the following year. One of the key components of the apparatus used at LIGO is a coating for high-sensitivity laser mirrors, which was developed by a research team led by Professor Chao Shiuh (趙煦) of NTHU's Institute of Photonics Technology. The coating reduces thermal noise, making it possible to quickly and accurately detect faint gravitational waves.

Prof. Kong said that in addition to the laser mirror coating developed by the Tsing Hua team, the Festival features a miniaturized interactive replica of the apparatus used at each of LIGO's two observatories to detect gravitational waves. The exhibit was created by the Research Center for Technology and Art at NTHU, and by pressing a button, visitors can see for



- a. An interactive display created by the Research Center for Technology and Art at NTHU showing how gravitational waves are observed.
- b. Chao Shiuh of the Institute of Photonics Technology explaining how a special coating developed by his team reduces thermal noise, making it possible to quickly and accurately detect faint gravitational waves.

themselves how gravitational waves are observed.

In addition to learning how gravitational waves are detected, visitors can also hear the "sound of the universe" in the form of a simulation of the sound created when two black holes of different masses merge.

Kenneth Liu (劉士達), the director of the Research Center for Technology and Art, said that additional highlights of the exhibition are a display that uses marbles to simulate planetary orbits, and a cosmic table hockey game, in which a joystick is used to catch an oncoming star and throw it to one's opponent, with an ink-spewing cosmic squid appearing now and then to make the game more interesting.

In addition to his academic

research, Prof. Kong is also dedicated to bringing knowledge of astronomy to the wider public, an effort that received added impetus when NTHU established a College of Arts a few years ago. The exhibition was sponsored by the Science Popularization Program of the Ministry of Science and Technology, and was organized by the Research Center for Technology and Art, with an emphasis on making research findings on gravitational waves accessible to the general public.

NTHU senior vice president Tai Nyan-hwa (戴念華) said that the Astronomy and Art Festival is the latest manifestation of Tsing Hua's ongoing emphasis on interdisciplinary learning, and he encouraged everyone to come and learn more about this fascinating universe we inhabit.



Deputy Minister Lin Minn-tsong (林敏聰) of the Ministry of Science and Technology said that the Ministry has been giving special emphasis to creative and cross-disciplinary projects in recent years because solving problems in an ever-changing world requires overcoming the barriers between academic disciplines, adding that this exhibition is a fine example of how to use art and astronomy to "make some creative ripples."

The "Tsing Hua Effects 2022—Astronomy and Art Festival" was

held in the quiet study area on the first floor of the Main Library (Macronix Building); the main exhibition concluded on May 8, while the related exhibits will remain on display until August 31. The Main Library is open Monday to Friday, from 8:00 am to 10:00 pm, and on Saturday and Sunday from 10:00 am to 6:00 pm. For information on the exhibition in Chinese, visit the Festival website at: <https://techart.nthu.edu.tw/THE2022/d>.

c. Kong is dedicated to bringing knowledge of astronomy to the wider public.

d. At the opening ceremony (left to right): Institute of Astronomy director Lin Dengsung (林登松), College of Arts dean Hsu Su-chu (許素朱), Prof. Albert Kong (江國興) of the Institute of Astronomy, Deputy Minister Lin Minn-tsong (林敏聰) of the Ministry of Science and Technology, Senior Vice President Chen Sinn-wen (陳信文), Senior Vice President Tai Nyan-hwa (戴念華), Alumni Association president Tsai Jinbu (蔡進步), and Library director Hsiao Chu-chen (蕭菊貞).





## TSE INAUGURATES NEW CLASSROOMS AT NTHU

On April 7, NTHU's Taipei School of Economics and Political Science (TSE) inaugurated its dedicated classrooms. TSE dean Chen Tain-jy (陳添枝) said that the biggest risk factor for business operations at present is the Russian-Ukrainian war, since enterprises have little ability to prevent or control for the disruptions brought about by international conflicts. The TSE is responding to this challenge for international business by redoubling its commitment to providing a comprehensive education in geopolitics and economics.

The TSE is currently recruiting

students for the 2022-23 academic year. The school is planning to enroll about 45 new students for its three master's programs, viz., Asian Political Economy, Global Political Economy and Asia, and Economic Development. All courses are taught in English, and the proportion of foreign to domestic students is expected to be 7:3. The school's doctoral program is planning to launch in 2024.

NTHU president Hocheng Hong said that Tsing Hua's longstanding excellence in science and technology is attested to by the fact that it is the only school in greater China which has three



Nobel Prize winners among its alumni. He also pointed out that all the major crises facing the world today—food scarcity, pollution, dwindling oil supplies, trade wars, and even the Covid-19 pandemic—are related to technology, politics, and economics, each of which needs to be taken into account



a. TSE dean Chen Tain-jy (陳添枝) said that the primary mission of the school is to provide a comprehensive education in geopolitics and economics.

b. VIPs at the opening ceremony.

in the pursuit of sustainable development.

President Hocheng also noted that by virtue of its excellence in science and technology, NTHU is playing a leading role in educating the next generation of political and economic leaders. He stated: "For solving the increasingly complex problems relating to geopolitics and economic development, it is necessary to combine the perspectives offered by politics, economics, science, and technology. This is today's challenge for academia."

TSE Foundation chairman Huang Huang-hsiung (黃煌雄) said that the TSE has been being planned for around ten years, and it is a dream come true that it is now up and running, adding that the school's primary mission is to prepare talented students from Taiwan and abroad to deal with the economic and geopolitical challenges of the future.

Dean Chen holds a Ph.D. in Economics from Penn State University in the US. He has served as a minister of the Council for Economic Planning and Development (CEPD) and the National Development Council (NDC), and is the former president of the Chung-Hua Institution for Economic Research.

Dean Chen said that in the 1950s Taiwan's economy was focused on industrial development, and that the programs at the universities and technical colleges of the time were designed accordingly. Afterwards, the focus shifted to exports, including some local brands, and the higher education sector responded by establishing colleges of commerce and MBA programs. The focus of the current phase of economic development



is high-tech manufacturing for the export market, making it necessary to train business leaders with interdisciplinary expertise in international politics and economics.

The increasing demand for executives with this kind of interdisciplinary expertise is evidenced by TSMC's appointment earlier this year of a business intelligence analyst familiar with the political and economic relationships between the United States, China, and Taiwan, with



- c. TSE dean Chen Tain-ty (left) with TSE student Maggie Ho (何佳禎).
- d. TSE Foundation chairman Huang Huang-hsiung (黃煌雄) (left) said that the school has been in the making for some ten years, and it is like a dream come true now that it is up and running.
- e. The proportion of foreign to domestic students at the TSE is expected to be 7:3.





an annual salary of NT\$3 million. This demonstrates that, in addition to specialists in science and technology, Taiwan's high-tech industry also requires executives proficient in international politics and economics.

According to Dean Chen, it is difficult to provide this kind of education to a large number of students, mainly because a deep and extensive presentation of the history and culture of a particular country is best provided by a native of that country. With this situation in mind, the TSE is actively recruiting overseas students, and the first batch of master's students includes individuals from Indonesia, the Netherlands, and Mongolia.

Dean Chen also said that funding from the TSE Foundation has made it possible to offer the kind of remuneration required to attract top-notch faculty from abroad. Among the many distinguished professors in the current faculty lineup are Amitav Acharya, an expert in international politics who

is currently Distinguished Professor of International Relations at American University in Washington, DC, and Wong Bin, currently Distinguished Professor of History at UCLA, where he served as the founding director of the Asia Institute.

Among the first batch of TSE students is NTHU graduate Maggie Ho (何佳樺), who has a Ph.D. in Chemistry from Oxford University and post-doctoral research experience at MIT. Currently the chief operating officer of Amarex Taiwan, she has decided to return to NTHU to round out her education.

Ho's experience in conducting clinical trials on a reagent for use in Covid-19 rapid test kits convinced her that scientific tools alone are not enough to control the pandemic. Instead, what is needed is a seamless approach combining science, politics, economics, and public policy. Ho said that she has learned a lot while attending classes taught by famous professors from Stanford University and the London School of Economics, and that she has also become better informed about the Russian-Ukrainian war through her discussions with students who have studied in Russia.

All TSE courses are open to students from other departments at NTHU as well as the schools in

the University System of Taiwan, and some of the more popular courses have had as many as 80 students enrolled. As Ho put it, "By letting the world come to Taiwan, engaging in international exchange



NTHU president Hocheng Hong (third from right) presenting TSE Foundation chairman Huang Huang-hsiung (left) with a reproduction of the calligraphy of Zhu Xi, a famous Confucian scholar of the Song dynasty.

does not necessarily require going abroad anymore."

Among the distinguished guests at the opening ceremony were Chen Lih-juann, (陳力俊) chancellor of the University System of Taiwan, and Burn Lin (林本堅), dean of NTHU's College of Semiconductor Research (CoSR).



## NTHU AND TAOYUAN CITY EXPAND COOPERATION IN EDUCATION

On April 18, NTHU and Taoyuan City signed a memorandum of cooperation on specialized training and professional development for teachers. In accordance with the terms of the agreement, NTHU will assist high schools in Taoyuan City in setting up advanced placement courses for students preparing for university, organizing workshops for high school teachers, and training bilingual teachers for primary and secondary schools.

Taoyuan City mayor Cheng Wen-tsan (鄭文燦) said that the curriculum used at primary and secondary schools in Taoyuan is based on the STEAM



(an acronym for science, technology, engineering, arts, and mathematics) model, and also includes courses in advanced mathematics and science, robotics, computer programming, and learning by doing—all of which are NTHU's strong points.

Mayor Cheng said that the cooperation between Taoyuan and Tsing Hua started in 2019, when NTHU and the Taoyuan City government agreed on a plan to jointly develop a medical complex as part of the Taoyuan Aerotropolis to be built next to the Taoyuan



a. Hocheng (right) thanked Mayor Cheng for his continued support in the development of medical education at NTHU.  
b. NTHU and Taoyuan City have recently signed a memorandum of cooperation on professional development for teachers.

At the signing ceremony (left to right): Taoyuan City deputy mayor Lu Weiping (盧維屏), Lin Mingyu (林明裕), Cheng Wen-tsan (鄭文燦), Hocheng Hong, NTHU senior vice president Tai Nyan-hwa (戴念華), Wu Yung-hsien (巫勇賢), Chou Hsiu-chuan (周秀專), and Teacher Training Center assistant director Hsieh Chuan-chung (謝傳崇).



Airport. He was deeply impressed by the effort NTHU president Hocheng Hong has put into the project, and by his effectiveness in garnering the support required to bring it to a successful completion.

Cheng also said that the Taoyuan City government is giving its full backing to the Tsing Hua University Hospital to ensure that the site is prepared and transferred to NTHU by next year. He noted that work on the access road will begin this year and that the underground passage connecting the two sections of the complex will be constructed by the company contracted to build the Taoyuan Aerotropolis, pointing out that once the groundwork is finished, NTHU will take over the project.

President Hocheng Hong thanked Mayor Cheng on behalf of NTHU for his continued support for the development of medical education, including NTHU's Post-baccalaureate Program in Medicine, which is currently in the process of recruiting its first batch of students. He added that the

university will apply the same high standards to its collaboration with the Taoyuan school system.

Hocheng observed that the Prussian field marshal Helmuth Karl Bernhard von Moltke once commented that the Prussian victory in the Franco-Prussian War was decided in advance, on the teacher's podium at elementary school, and that the future of Taoyuan City is also in the hands of its educators. He stressed that NTHU is diligently applying its rich experience in interdisciplinary education and research to the training of teachers for Taoyuan's primary and secondary schools.

Vice president for academic affairs Wu Yung-hsien (巫勇賢) said that NTHU is also planning to cooperate with high schools in Taoyuan City in holding workshops and micro-credit courses for enhancing the teaching skills of educators.

Chou Hsiu-chuan (周秀專), the director of NTHU's Center for Teaching and Learning

Development, said that Tsing Hua has already opened nine online advanced placement courses and 22 online self-study courses for high school students. Moreover, each college at NTHU has recently held an online course for high school students, including a highly popular course in smart medicine. Those who complete the course receive a blockchain certificate.

The signing ceremony was held at the Taoyuan City Hall, and was presided over by Lin Mingyu (林明裕), the director of the Taoyuan City Department of Education. Also attending the ceremony were the principals of ten of Taoyuan's high schools, including Lin Huanchou (林煥周) of Wuling High School, You Wentsung (游文聰) of Taoyuan High School, and Lin Yufeng (林裕豐) of Yangming High School.

## CEREMONY HELD TO MARK THE 60<sup>TH</sup> ANNIVERSARY OF THE PASSING OF NTHU PRESIDENT MEI YI-CHI

On May 19, a memorial ceremony was held in the Mei Garden to mark the 60th anniversary of the passing of Mei Yi-chi (梅貽琦), who served as the president of Tsing Hua University in Beijing during the 1930s and 1940s and also as the first president of NTHU in Taiwan. The solemn event was attended by a host of dignitaries and featured music as well as testimonials on Mei's inspiring dedication to NTHU.

NTHU president W. John Kao said that Mei was at Tsing Hua University for 47 years, including 30 years as its president, and that "He became the president at the age of 42, which is younger than I am, and I can only hope to emulate him to some degree."

President Kao said that Mei skillfully guided Tsing Hua through the turbulent events at the middle

of the 20th century, and that his presence is still felt at NTHU, as seen in the various annual ceremonies held in his honor, as well as the eponymous Mei Yi-chi Memorial Scholarship—NTHU's highest academic honor.

President Kao also pointed out that Mei's adherence to the spirit of democratic education and academic freedom comes through in his statement: "With an inclusive attitude, we should fulfill the mission of academic freedom."

The enduring impact of this vision can be seen 60 years later in Tsing Hua's core values of inclusiveness, fairness, and diversity.

Also in attendance was former NTHU president Chen Lih-juan (陳力俊), who observed that Yan

Yuan, a student of Confucius, once described his master's teachings with a sigh saying, "I looked at them before me, and suddenly they seemed to be behind." Chen further noted that Mei's impact on NTHU, which included the establishment of NTHU, a nuclear reactor and a fund for recruiting talented teachers, has been similarly pervasive.

Alumni Association president Tsai Jinbu (蔡進步) said that Mei was a fine example of the adage "Deeds speak louder than words," noting that his personal example has inspired generations of Tsing Hua graduates to live up to the school motto, "self-discipline and social commitment."

Beginning in early May, the Center for General Education started

- On May 19, a memorial ceremony was held to mark the 60th anniversary of the passing of Mei Yi-chi.
- Mei was widely admired for his upright character.
- Mei (left) in 1957 inspecting the future site of NTHU.
- Mei (front row, middle) with the first batch of graduate students at NTHU.







holding a lecture series titled "The Story of President Mei and Tsing Hua University," in which scholars from both sides of the Taiwan Strait have recounted Mei's key role in the development of Tsing Hua University, without whom the school's nuclear reactor would never have seen the light of day.

In addition, the Alumni Association has joined forces with the Yuehan School to commemorate Mei, and to raise support for the Rising Sun Scholarship, which provides financial support to economically disadvantaged students.

Yuehan Culture and Education Foundation director Li Min (李敏) said that his foundation partnered with the Mei Yi-chi Foundation, the students at the Yuehan School, and NTHU alumni to hold a memorial ceremony on May 22. He also noted that the Yuehan Culture and Education Foundation was established 30 years ago, when university fundraising was just getting started. Yet even from its beginnings, it has persuaded numerous alumni to make generous donations.

Mei was among the first batch of Tsing Hua students to go to the United States as part of the program funded by the Boxer Indemnity Scholarship. After completing his studies in 1915, he returned to Tsing Hua to teach, and he became the school's president in 1931. When Japan invaded China, Mei oversaw the relocation of Tsing Hua to Kunming, where it was merged with Peking University and Nankai University to form the National Southwestern Associated University. After the mainland finally fell to the Communists, Mei set about establishing NTHU in Taiwan, and served as its first president until his death in 1962.

Yue Nan, a writer-in-residence at NTHU and the author of the book *Great Teachers*, said that Mei was honest and upright throughout his life and was extremely conscientious in using his Boxer Indemnity Scholarship for its intended purpose, such that his wife had to work in a restaurant and peddle snacks on the street just to make ends meet. After Mei passed away, what was discovered in his briefcase was not

gold, silver, or jewelry, but rather a detailed account of the Tsing Hua Fund, revealing the rare single-mindedness of his mission.

True to his motto, "The greatness of a university is not measured by the size of its buildings, but rather by the quality of its faculty," Mei went all out in his efforts to recruit top scholars with a background in both Chinese and Western learning to teach at Tsing Hua, resulting in a strong tradition of academic excellence.

Chen Taining (陳泰寧), the president of the NTHU Student Association, said that in establishing NTHU Mei started from scratch, and that the effect of his accomplishments can be felt down to the present day, as if Mei's spirit continues to flow in the veins of every teacher and student at Tsing Hua University.

During the event, Chen Tingyi (陳亭屹) and six other student vocalists sang "Over The Rainbow" and "You Raise Me Up" as a tribute to Mei. Also in attendance were NTHU senior vice presidents Tai Nyan-hwa (戴念華), Chen Sinn-wen (陳信文), and Lin Sheng-fen (林聖芬).

## ***NATIONAL TSING HUA UNIVERSITY WELCOMES INTERNATIONAL STUDENTS***

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Undergraduate Program: November 15~February 15

Spring Semester Application: August 15~October 16

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*PUBLISHED BY THE OFFICE OF THE SECRETARIAT*

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