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NATIONAL TSING HUA UNIVERSITY

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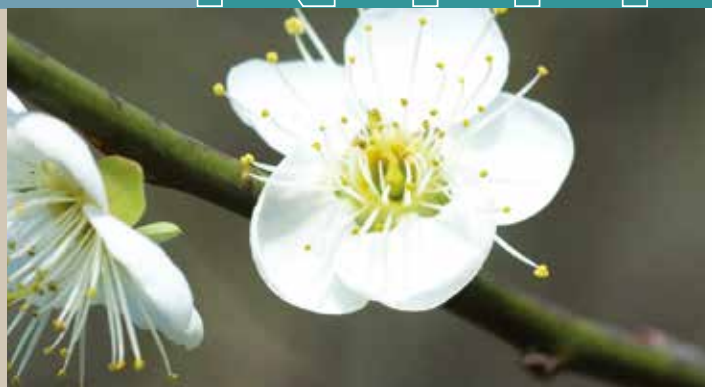
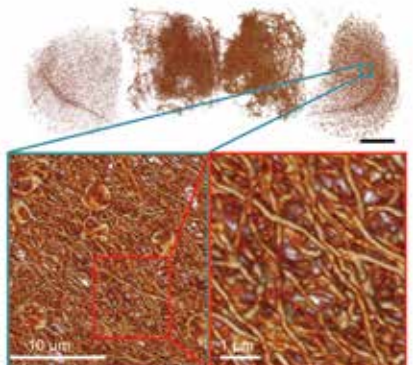
NTHU





A MAJOR BREAKTHROUGH IN SUPER-RESOLUTION MICROSCOPY TECHNOLOGY

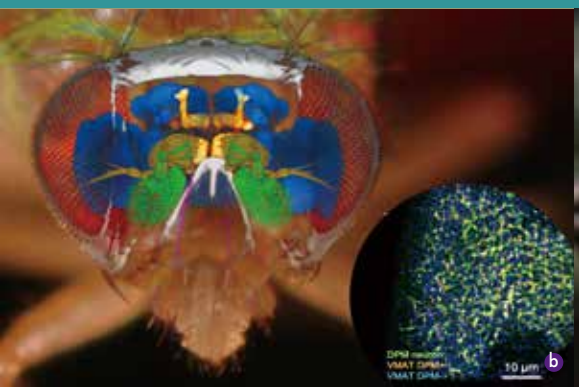
A research team at NTHU's Brain Research Center led by Prof. Chiang Ann-shyn, working in conjunction with Chen Bi-chang, an assistant research fellow at Academia Sinica, has recently developed a "transparent lightsheet localization microscope" which provides a clear nanoscale image of a single protein molecule in intact biological tissue, marking a major advance in super-resolution microscopy technology. This new technology is expected to facilitate major advances in the study of tissue physiology and pathology, as well as the mechanisms underlying memory.

Chiang said that microscopic observation is the key to understanding biological phenomena and pathological conditions. The 2014 Nobel Prize in Chemistry was awarded to three scientists who invented "super-resolved fluorescence microscopy," which made it possible to observe molecules as small as 30 nanometers, but only in a thin layer of cells. By contrast, the microscope developed by Chiang and Chen provides three-dimensional stereoscopic images of single molecules in large tissues, making it possible to observe for the first time the quantity and the spatial distribution proteins produced during the formation of memory.

Prior to joining Academia Sinica, Chen worked as a research assistant with Eric Betzig, who won the 2014 Nobel Prize in Chemistry. The microscope developed by Chiang and Chen provides a transparent image of tissues, making it possible to map out the dopaminergic neural pathways in the brain of a fruit fly, and their groundbreaking research has been published in a recent edition of *Nature Communications.*

Chu Lian, a postdoctoral researcher at the Brain Research Center, explained that the memory of a fruit fly is related to the vesicular monoamine transporter of the parallel circuits in its brain called mushroom bodies. The research team used their transparent lightsheet localization microscope to observe the distribution of this type of protein in the mushroom body, thereby revealing the mechanisms involved in memory formation. They discovered that in addition to the cell body, memory is also stored in the synapses between the nerve cells.

Chen said that they encountered many problems while attempting to expand Betzig's two-dimensional cell-imaging technology into a three-dimensional microscope, including the difficulty of evenly distributing the fluorescent dye, and the opaqueness of the fruit fly's brain.



Yet the interdisciplinary research team found ways to deal with each of these problems. For example, Chiang's method for making the brain transparent was effectively applied to the fruit fly brain, and Chen Peilin processed the super-resolution images. The lead authors of the research paper were Chu and Lu Chiehhan; the other members of the research team were Yang Shunmin, Liu Yanting, Tsai Yunchi, Wang Wencheng, Chang Weikun, and Ping kuanlin.

Chu said that super-resolution 3D microscopy makes it possible to analyze three-dimensional images of the entire brain of a fruit fly in one day—a significant advance over what a two-dimensional imaging can do—and it can also provide detailed information on the amount of protein in any neuron.

Major funding for this research was provided by Academia Sinica's Research Center for Applied Sciences and its Career Development Award.

Research Center for Applied Sciences director Kuo Shangchih said that his Center is preparing to sign a memorandum with NTHU's Brain Research Center and College of Life Science for jointly establishing a scholarship for outstanding doctoral students conducting research in basic science.

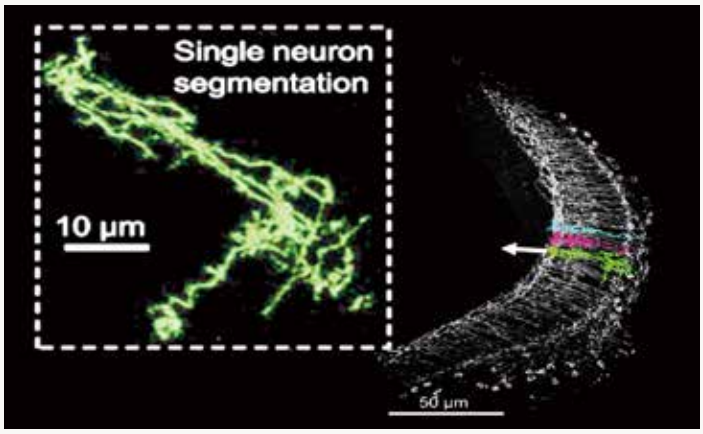


Image of a single neuron of a fruit fly's eye made with super-resolution microscopy.

a Super-resolution microscopy makes it possible to map out the dopaminergic neural pathways in the brain of a fruit fly.
b Image of monoamine protein distribution made with super-resolution microscopy.

The team's research article in *Nature Communications* can be viewed at: https://www.nature.com/articles/s41467-019-12715-3

UNIVERSITY MUSEUM ACQUIRES VALUABLE COLLECTION ON THE EARLY DAYS OF THE ROC IN TAIWAN

In early December 70 years ago the Government of the Republic of China (ROC) officially announced its move to Taiwan. Chair Prof. Yang Rur-bin of the Institute of Philosophy and his wife, Prof. Fang Sheng-ping of the Center for General Education, have donated to the NTHU Museum a collection of more than 2,000 items relating to this historically significant event. This collection includes correspondence relating to the shipment of the ROC's gold reserves to Taiwan, letters written by Taiwanese celebrities living in mainland China after the end of World War II, letters relating to the relocation to Taiwan of a relic of the eminent Buddhist monk Xuanzang, and documents relating to a plan for making Hsinchu the new capital.

The donation ceremony was held at Taipei's Zhongshan Hall, where part of the collection was on display in an exhibition titled Back to 1949: Items Relating to the ROC's Relocation to Taiwan.

The Collection is divided into four themes—war, politics, religion, and economics—centers on December 7, 1949 (the date on which the ROC officially announced the relocation), and includes materials covering the end of World War II, the end of the Chinese Civil War, the ROC's relinquishment of the Dachen Islands, and the events leading up to the stalemate which continues to this day. The exhibition features a number of handwritten letters and pieces of calligraphy written by government officials and prominent religious figures, thereby providing a unique glimpse into the atmosphere of those turbulent days.

ⓐ NTHU president Hocheng Hong (left) and Prof. Yang Rur-bin at the donation ceremony.

ⓑ Left to right: Hocheng, Yang, and Fang.

In one of the more notable episodes of "The Great Retreat," the Central Bank's 4.5 million taels of gold were hurriedly dispatched to Taiwan in five batches, becoming an important means of funding for the ROC government and the subsequent development of Taiwan. The collection includes a letter written in late May 1949 by Chiang Kai-shek to General Tang Enbo, who was commanding the ROC forces defending Shanghai. In the letter Chiang instructs Tang to ship all the gold reserves in the Central Bank to Taiwan. Four days later, Shanghai fell into the hands of the People's Liberation Army.

The same letter also provides information on the military situation, including Chiang's instructions to abandon Qingdao, revealing that even though Chiang had stepped down from the presidency, he continued to wield much power.

In another important letter in the collection, the Buddhist monk Wushang petitions the central authorities to entrust his Lingyin Monastery in Hsinchu with the enshrinement of a relic of Xuanzang which was looted by the Japanese during World War II, but recently handed over to the ROC. In the end, at the insistence of Chiang Kai-shek, the relic was installed at the Hsuanchuanguang Monastery, located next to the Ci'en Pagoda at Sun Moon Lake.

These historical documents have also attracted the attention of many collectors, and Yang and Fang have decided to donate the entire collection to NTHU, where they have both taught for many years. At the donation ceremony NTHU president Hocheng Hong said that Prof. Yang used his meager salary to gradually acquire these precious documents over several decades, adding that providing an accurate and reliable portrayal of the past is one of the central missions of modern education.

A Man with a Mission

Yang's collection ranges from calligraphy and paintings from the Ming and Qing dynasties to contemporary calligraphy, some of which are valued at tens of millions of new Taiwan dollars, making it hard to imagine how he was able to amass it on his own. As soon as Yang began teaching in the Dept. of Chinese Literature in 1987 he began to use practically all of his income in acquiring his impressive collection.

"At that time my monthly salary was little more than NT$60,000 a month, which was barely enough for three characters composed by the master calligrapher Yu Youren," said Yang with a smile. However, Yang was soon obsessed with collecting, and even borrowed money from the bank and from his wife, who eventually had to put her foot down by refusing to give him any more "loans".

In order to expand his collection, Yang adopted a highly frugal lifestyle; he doesn't own a mobile phone, and for 30 years he lived in the faculty apartment on campus, before finally buying a house last year. As Yang put it, "A house isn't essential, since I could live in my office if need be. For me it's more important to spend money on things I find interesting."

As Yang sees it, "a public university receives the lion's share of its funding from the national coffers, and since I used my salary to acquire this collection, it's only natural to donate it to a public institution like NTHU," adding that, "actually, I'm grateful to NTHU for undertaking the responsibility to preserve and display these important cultural relics."

Prof. Fang, formerly of the Department of Chinese Literature, expressed her gratitude to Tanigawa Masau, a professor at Nara University of Education in Japan, who played an important behind-the-scenes role by facilitating the collection of these artifacts, adding that she is confident that the collection will be well taken care of at NTHU, and that she feels like she is giving

c CWhile teaching at NTHU for 30 over years Yang used practically all of his income in acquiring his impressive collection.

b Yang's collection includes a letter written in late May 1949 by Chiang Kai-shek to General Tang Enbo.

Former NTHU president Liu Chao-shiuan said that the reverberations of the period covered by Yang's collection continue to be felt down to the present.

away a daughter in marriage.

NTHU Museum Preparatory Office director Ma Mengjing said that Yang's collection will be the pround collection of the Museum which will open its doors to the public in 2022.

Bearing Witness To turbulent Times

Amongst the many VIPs who attended the donation ceremony was Liu Chao-shiuan, the director of the Foundation of Chinese Culture for Sustainable Development and a former president of NTHU, who said that in addition to having much significance for the history of the ROC, the collection also provides insight into the prevailing attitudes on all levels of society concerning those eventful days, the reverberations of which continue to be felt down to the present.

Tien Chiu-chin of the Control Yuan said that these historical relics bear witness to troubled times, the lessons of which have made Taiwanese society more resilient and open to diversity.

In this important letter in the collection, the Buddhist monk Wushang petitions the central authorities to entrust his Lingyin Monastery in Hsinchu with the enshrinement a relic of Hsuanchuang.

AN AI SYSTEM TO PREDICT THE OUTCOME OF CHILD CUSTODY CASES

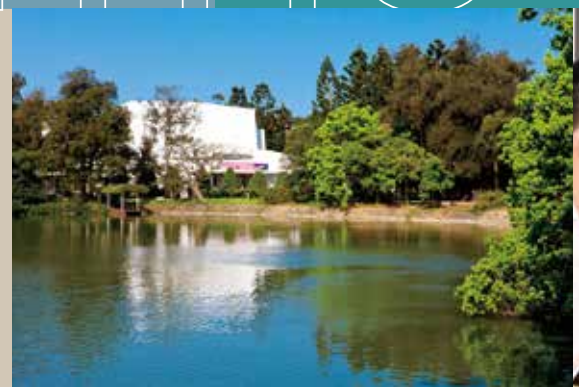
An interdisciplinary research team at NTHU has recently unveiled Taiwan's first artificial intelligence (AI) system using natural language processing technology to predict child custody judgements in divorce cases. Once the particulars of the case are entered into the system, it predicts with 90 percent accuracy which parent will be awarded custody of the children.

The research team is led by Prof. Wang Daw-wei of the Dept. of Physics and the National Center for Theoretical Sciences (NCTS) and Associate Prof. Lin Yun-hsien of the Institute of Law for Science and Technology (ILST). On September 20 they presented their system at a workshop on AI and society, which was held at NTHU and organized by the ILST. On the same day they launched a test version of their system on the Internet (https://custodyprediction.herokuapp.com/), and are currently gathering feedback from those who have tried it out.

The NTHU research team which has developed an AI system predicting the outcome of child custody judgements in divorce cases.

Wang said that the team used more than 2,000 judgments made between 2015 and 2017 as models for the system. Lin said that their system is designed to help couples in the midst of an acrimonious divorce to understand the likely outcome of a court case involving child custody, thereby making it easier for them to reach an agreement without litigation, and also reducing the large backlog of child custody cases clogging the judicial system.

Wang said that similar AI systems are already being used overseas to assist judges in such areas as determining the likelihood of recidivism and for handling credit card disputes, and that the AI system developed at NTHU can be extended for use in other types of legal cases. He explained that in divorce cases, child custody is determined by civil law in accordance with the principle of the best interests of the child, but doing so requires taking into account a wide range of factors of varying importance, depending on the case, including the wishes



of the husband, wife, and children; and the parents' economic status, work situation, relationship with their children, support system, and place of residence.

Wang said that the team developed a natural language processing technology similar to the one used for speech recognition by Apple's Siri virtual assistant, enabling users without specialized legal knowledge to enter a case by either selecting from several options on a series of webpages, or by verbally describing the situation, whereupon the system provides the most likely judgement should the case go to court.

Team member Li Yalun said that the system uses a special labeling method and data amplification technology for which they have applied for a patent, as well as an efficiency-enhancing network of algorithms which mimics the human nervous system, and is widely recognized as the most suitable algorithm for dealing with natural language.

Lin said that the research team is planning to develop an expanded version of the system based on input provided by legal scholars, lawyers, judicial personnel, and social workers.

Some of the other research projects presented at the ILST workshop were on the application of AI in such areas as art, legal ethics, self-driving cars, and international human rights.

NTHU ESTABLISHES A GRADUATE PROGRAM IN MEDICINE

NTHU is currently preparing to establish a post-baccalaureate program in medicine. Many of the courses will be taught by the 170 faculty members currently in related departments at NTHU, and the program will also appoint an additional 150 part-time faculty members to be sourced from leading medical centers throughout Taiwan, including the Chang Gung Memorial Hospital, the Changhua Christian Hospital, and the Cathay General Hospital. On December 10, President Hocheng Hong and Taoyuan General Hospital (TGH) director Hsu Yongnian signed a contract arranging for TGH doctors to teach at NTHU and for cooperation in teaching and research.

President Hocheng said that many of the major advances in the medical field have been related to the application of high technology and digitalization, and that around 70 percent of the research being conducted at NTHU has medical applications. He also said that earlier this year he and Taoyuan mayor Cheng Wen-Tsan signed a letter of intent outlining a plan for NTHU and the Taoyuan City Government to jointly develop a medical complex as part of the Taoyuan Aerotropolis to be built next to the Taoyuan Airport, making it imperative for NTHU to establish a post-baccalaureate program in medicine.

NTHU president Hocheng Hong (right) and TGH director Hsu Yongnian.

Hocheng pointed out that although NTHU does not currently have a department of medicine, in the 2020 academic rankings published by Times Higher Education, in clinical medicine NTHU is ranked 230th in the world and fourth in Taiwan, which is the highest ranking among universities without a department of medicine. In the field of life sciences NTHU is ranked 191st in the world and second in Taiwan.

As for part-time faculty in the new program, NTHU has already appointed 35 doctors from the Chang Gung Memorial Hospital, the Veterans General Hospital, the National Taiwan University Hospital, and the MacKay Memorial Hospital. In addition to part-time faculty appointments, the arrangement with

Minister of Health and Welfare Chen Shih-chung said that with the cooperative arrangement with Tsinghua University the TGH will become one of the best hospitals in Taiwan.

TGH includes provisions for resource sharing and internships.

Hocheng also said that TGH is a leader in many fields, especially geriatric medicine, an area in which NTHU's strength in artificial intelligence has numerous applications. The Tsinghua University Hospital is being established with the support and supervision of the Ministry of Health and Welfare, and by cooperating with the TGH and the Chang Gung Memorial Hospital will provide comprehensive medical services of the highest standards.

According to NTHU senior vice president Chou Hwai-pwu, the long-term plan is to establish a college of medicine, beginning with a post-baccalaureate program in medicine. The program will emphasize research and will recruit publicly funded students to serve in rural areas, thereby distinguishing itself from other such programs.

During the signing ceremony Taoyuan mayor Cheng Wen-tsan said that through the cooperative arrangement with NTHU the TGH is set to become one of the top hospitals in Taiwan.

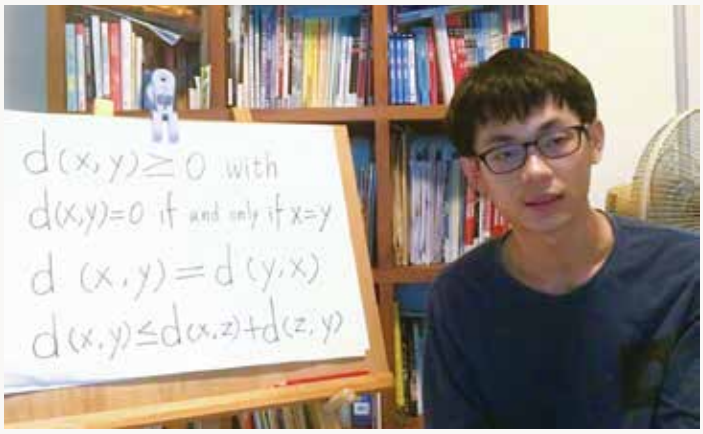
Hsu Yongnian, the director of TGH said that through the combination of the TGH's expertise in clinical medicine and NTHU's strength in research and teaching, both institutions will derive much benefit. He also pointed out that artificial intelligence has a wide range of potential applications in medicine, which can greatly reduce the manpower required for medical treatment and improve the effectiveness of a wide array of medical procedures.

At the signing ceremony (right to left): Taoyuan mayor Cheng Wen-tsan, NTHU president Hocheng Hong, TGH director Hsu Yongnian, and Minister of Health and Welfare Chen Shih-chung.

Mr. Chang has taught himself three languages.

SPECIAL ADMISSION PROGRAM ADMITS NEW BATCH OF UNIQUELY TALENTED STUDENTS

On December 13 NTHU announced that for the 2020-21 academic year 60 students have been admitted via the Special Admission Program, out of a total of 1,101 applicants. Amongst the applicants, 703 applied to the Tsing Hua College program, and 33 were admitted, including a mathematical genius suffering from selective mutism and a young historian who has already published two books. Associate vice president for academic affairs Prof. Chiao Chuan-chin, who also serves as the director of the Student Recruitment Center, said that the record-breaking number of applicants posed a big challenge to those tasked with reviewing the applications. In order to be fair and objective, numerous panels of experts were assembled to conduct interviews with each short-listed applicant.



Despite suffering from selective mutism, Mr. Chang is a math prodigy.

A Reticent Genius

Selective mutism is a type of social anxiety disorder in which a person has the ability to speak normally, but cannot speak in certain situations. Amongst the successful applicants was Mr. Chang, who has suffered from selective mutism since childhood. As a result, having encountered countless difficulties at school, he dropped out and since the third grade he has taught himself at home. However, his condition became increasingly serious, and there was a three-year period in which he was completely unable to speak. With the help of the Selective Mutism Association of Taiwan (SMAT) and foreign experts, his condition gradually improved, and today he uses internet technology to practice speaking.

Despite his disability, Chang is extremely intelligent, and early on he was recognized as a math prodigy. During the fifth grade he read all 13 volumes of the English version of Euclid's Elements, and in the seventh grade he completed the online Stanford Calculus Course. Although enrolled in high school, Chang is unable to attend regular classes; he goes to school only for the exams, and

always scores at the top of his class. His teachers provide him with one-on-one instruction in math and chemistry, and he does chemistry experiments when no one else is in the laboratory. He has also taught himself English, French and German.

Due to Chang's special circumstances, he was allowed to have an online interview, in which he had his back to the camera and used communication software to type his answers to the panel's questions. The written math test was also conducted online, and the panelists were immediately convinced of Chang's remarkable ability, but some wondered what such a genius might possibly gain from a university education. One of the panelists was NTHU honorary chair Prof. Chang Shih-lin, who convinced the other panelists that the Special Admission Program was meant for students like Chang.

Chang's mother said that she expects that Chang will be able to attend classes at and fit into campus life, especially if he has a private dorm room. Chiao said that NTHU University will provide Chang with special assistance to help him adapt to campus life and succeed in realizing his dreams.

An Aspiring Performer

Coincidentally, Chang's elementary school classmate Shen Li'an was also amongst this year's batch of successful applicants. Shen is currently a student at the National Experimental High School at Hsinchu Science Park. Because she is fluent in German, when a German expert gave a talk at the SMAT, Chang's mother had her serve as the interpreter. Shen said that she was pleased to have the opportunity to use her language skills to help others.

Shen's parents recently emigrated abroad, but in order to pursue a career in the performing arts, she decided to remain in Taiwan. She was a contestant in the first Jungle Voice contest and has appeared in a commercial with Jam Hsiao. She said that she has promised her father that her singing career won't interfere her schoolwork.

Shen said that what attracted her to NTHU was the opportunity to engage in independent study and to design her own major, centering on management and fashion marketing. She said that she was really nervous while waiting for the application results, and was elated to learn that she has been admitted.

Young historian Jiang Zhongyuan has written seven books, two of which have already been published.

A Precocious Historian

Jiang Zhongyuan is another self-taught student admitted under the Special Admission Program. He dropped out of high school because he wanted to concentrate on writing history, and in the past two years he has written seven books in about 900,000 characters. Two of them have been published (one on the controversial politician Wang Jingwei and another on Nazi Germany), and another four will be published soon.

Jiang said with a smile that he has no interest to exonerate Wang or Hitler, but rather wants to present such figures from a different perspective so as to provide a deeper understanding of history. He also created a Facebook page titled History Storyteller, which already has nearly 20,000 fans. He said that NTHU is his dream school, due to its innovative admission program and the academic freedom students enjoy, and that he is planning to focus on history and literature.

In September of this year Chang Chuyi received the Kaohsiung Social Education Contribution Award for her work in rural education.

Born to be an Inventor

Also amongst this year's batch of successful applicants was Jiang Chengwei, a young inventor who has already received four patents.

Jiang said that he came up with one of his inventions while accompanying his mother to the hair salon, one of the customers was an old lady in a wheelchair who regularly came in to have her hair done. She got dropped off by the local public services van, but once her hair was finished, she usually had to wait a few hours to get picked up and taken home by a family member. Always intent on benefiting others, Jiang soon set about inventing a device which converts an ordinary wheelchair into an electric wheelchair, thereby greatly increasing the mobility of wheelchair users. His invention won the platinum award at the 2017 Taipei International Invention Show & Technomart.

Jiang also invented a portable bathing device for bedridden people, such as his grandmother, who suffers from diabetes. This invention won a gold medal at the 2018 Kaohsiung International Invention & Design Expo and has also been endorsed by the Genesis Social Welfare Foundation.

Jiang said that from his participation in numerous invention exhibitions he has come to learn that most inventions are not easy to market. Thus he has come to NTHU to

hone his abilities in such areas as design, marketing, innovation, and entrepreneurship, and he hopes to start his own enterprise by his junior year.

Trading the Catwalk for Rural Education

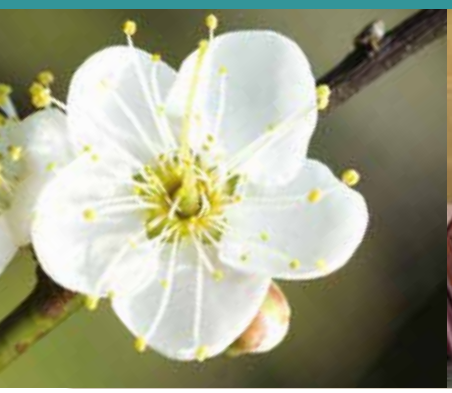
Also amongst this year's successful applicants was Chang Chuyi. Previously an aspiring model who once won third prize in a modeling contest, Chang later decided to trade modeling for public welfare work and rural education, and in September of this year she received the Kaohsiung Social Education Contribution Award. In addition, she is also a violinist for the Kaohsiung Youth Symphony Orchestra.

Chang said that she wants to become an art therapist, and that in her junior year she will enter the Dept. of Educational Psychology and Counseling. She plans to combine her interests in music and counseling. In addition, Chang is planning to broaden her world by joining the International Volunteer Society.

The Special Admission Program—the first of its kind in Taiwan—was set up in 2014 to provide opportunities to prospective university students with unique abilities and excellent character, but who might have difficulty gaining admission through the ordinary admission channels. The program also gives special consideration to students who have demonstrated fortitude in overcoming a disadvantaged background. The percentage of freshmen admitted under the Program was initially 1%, and has recently been increased to 3%.

Number of students admitted under the Special Admissions Program for the 2020-21 school year by department

Department	Number of applicants	Number admitted	Percentage
NTHU College bachelor's program	703	33	4.7%
Mathematics	27	3	11.1%
Physics (Optical Physics Group)	32	5	15.6%
Chemistry	14	2	14.3%
Materials Science and Engineering	16	2	12.5%
Power Mechanical Engineering	63	3	4.8%
Computer Science	94	6	6.4%
Life Sciences	17	3	17.6%
Special Education	40	1	2.5%
Arts and Design (Art Group)	42	1	2.4%
and Design (Design Group)	53	1	1.9%
Totals	1101	60	5.4%



NTHU RESEARCH CENTER LAUNCHES INNOVATIVE HOUSE PRICE INDEX

NTHU's Anfu Financial Engineering Research Center (AFERC) has recently launched the Anfu House Price Index (AHPI), which is published monthly, making it the most up-to-date index in Taiwan. The Index is based on six indicators and appraises house prices in six special municipalities and ten counties and cities. The first edition of the Index indicated that the sharpest price increases were in Nantou and Tainan.

Prof. Lin Che-chun, who is the director of the AFERC and also the dean of the College of Technology Management, said that the Index will come out on the fourth Thursday of every month and is based on the pricing information provided by the Ministry of the Interior on the price of residential units in multistory buildings (excluding townhouses), which is augmented with the big data compiled by the AFERC and refined by using quantitative modeling, artificial intelligence, and GPS.

Lin said that for most people, buying an apartment is the most important investment they will ever make, and that the AHPI will provide potential buyers with highly accurate, objective, and transparent pricing information. It will also serve as a handy reference for researchers, urban planners, and government agencies.

AFERC members (left to right) Ma, Lin, and Huang displaying the AHPI.

Ma Jui-chen serves as the executive director of the AFERC and is also an Associate Prof. of the Department of Quantitative Finance. Ma said that over the past year, house prices in Taiwan have shown a modest and stable upward trend. The average increase was 4.2%, slightly higher than the inflation rate of 2.54% over the same period.

Over the past year, the counties and cities in which increases in house prices have exceeded the

inflation rate were Nantou, Tainan, Yunlin, Changhua, Kaohsiung, Yilan, Chiayi, Taichung, and Taoyuan. Among these, prices in Nantou County rose by 10%, a surprising increase which Ma attributes to the recent completion of an industrial research park in Nantou, as well as a sharp increase in the number of tourists from mainland China visiting Sun Moon Lake, which has triggered increased investment in the local tourist industry.

As for Taiwan's six special municipalities, Tainan had the greatest increase in housing prices, which rose by 8.5% during the past year. The increase was most dramatic in the Rende District, which Ma attributes to the area's convenient transportation and its proximity to a high-speed rail station and Tainan City; other contributing factors are the Southern Taiwan Science Park in Tainan and a number of infrastructure improvements completed in recent years.

Housing prices in Kaohsiung increased by almost 6% over the past year—the second largest increase amongst the six special municipalities—which Ma speculates may be related to the increase in construction costs brought about by the large amount of land which has become available for development in Kaohsiung, resulting in a backlog of construction projects for local builders. Ma predicts that real estate prices in Kaohsiung will continue to appreciate at a similar rate in the short term.

Members of the AFERC (left to right): Huang Yu-Lieh, Ma, Lin, Chang, and Tyler Yang.

Housing prices in New Taipei City and Hsinchu have risen slightly over the past three months, at levels similar to the inflation rate. Ma points out that the data provided by other pricing indexes is several months old at the time of publication, whereas the data published by the AHPI will be at most a few weeks old.

Chang Chin-o, a member of the AFERC advisory committee, said that a useful real estate pricing index needs to be timely and comprehensive, and that the AHPI comes out on top on both counts. Chang also said that areas covered by an index should be as small as possible, since this increases its accuracy, and that the innovative approach used by the AFERC will help make up for the insufficient sample size in some administrative regions.

Although other indexes have long been published by government agencies and real estate companies, they are neither timely nor comprehensive. For example, according to Ma, the index published by the Ministry of the Interior was last updated in June of this year, and some of the indexes published by real estate companies only cover the six special municipalities. By contrast, the AHPI provides data on the latest market conditions in the six special municipalities as well as in ten counties and cities. In the future the AHPI will provide information on market trends in even smaller administrative divisions, such as the Daan District and Wanhua District in Taipei City.

Ma is confident that the AHPI will soon become the premier index in Taiwan.

Lin said that the AHPI will come out on the fourth Thursday of every month.

ADDITIONAL FUNDING FOR NTHU DOCTORAL STUDENTS

Beginning with the current semester, NTHU, the Ministry of Science and Technology (MOST), and the Xin Miao Education Foundation are providing additional funding for doctoral students, allowing promising research students to receive a total of up to NT$80,000 per month—similar to the starting salary for a Ph.D. employed in the industrial sector.

MOST has recently announced that beginning with the current semester it will begin providing subsidies for universities to establish the Scholarship for Outstanding Doctoral Students providing NT$40,000 per month, which can be renewed for up to four years. In the first and second years, MOST will provide NT$30,000, and the school will provide NT$10,000; in the third and fourth years, MOST will provide NT$20,000, and the school will provide NT$20,000. Every year, at least one student at each college of NTHU will receive this prestigious scholarship, and this year it has been awarded to a total of 22 doctoral students at NTHU.

According to Vice President of academic affairs Tai Nyan-hwa, NTHU doctoral students can also apply for two additional scholarships: the NTHU President's Scholarship and the Xin Miao Key Technology Doctoral Scholarship. The President's Scholarship provides either NT$20,000 or NT$25,000 per month, depending on one's mode of admission, and can be renewed for up to four years. However, for students simultaneously receiving the MOST Scholarship and the NTHU President's Scholarship, NTHU's contribution to the former will come out of the latter.

The Xin Miao Key Technology Doctoral Scholarship recently established by the Xin Miao Education Foundation provides NT$25,000 per month for up to three years to excellent Ph.D. students specializing in electrical engineering, computer

Wang Jianping, a first-year doctoral student of the Institute of Electronics Engineering, is simultaneously receiving three scholarships.

The generous support provided to doctoral students at NTHU makes it possible to focus on one's research.

science, communication engineering, artificial intelligence, biomedicine, or sustainable management.

Tai also said that Tsinghua has a large number of top-notch research students, and it's important for them to have sufficient financial support to enable them to fully concentrate on their research. Thus NTHU allows its doctoral students to simultaneously receive more than one scholarship.

One such student is Wang Jianping, a first-year doctoral student at the Institute of Electronics Engineering. As an undergraduate in NTHU's Department of Electrical Engineering, Wang received the Academic Achievement Award, and while completing his master's degree in the Institute of Electrical Engineering he was the first and second author of papers published in prestigious international journals; he has also presented papers at the International Electron Devices Meeting (IEDM) held by the Institute of Electrical and Electronics Engineers (IEEE).

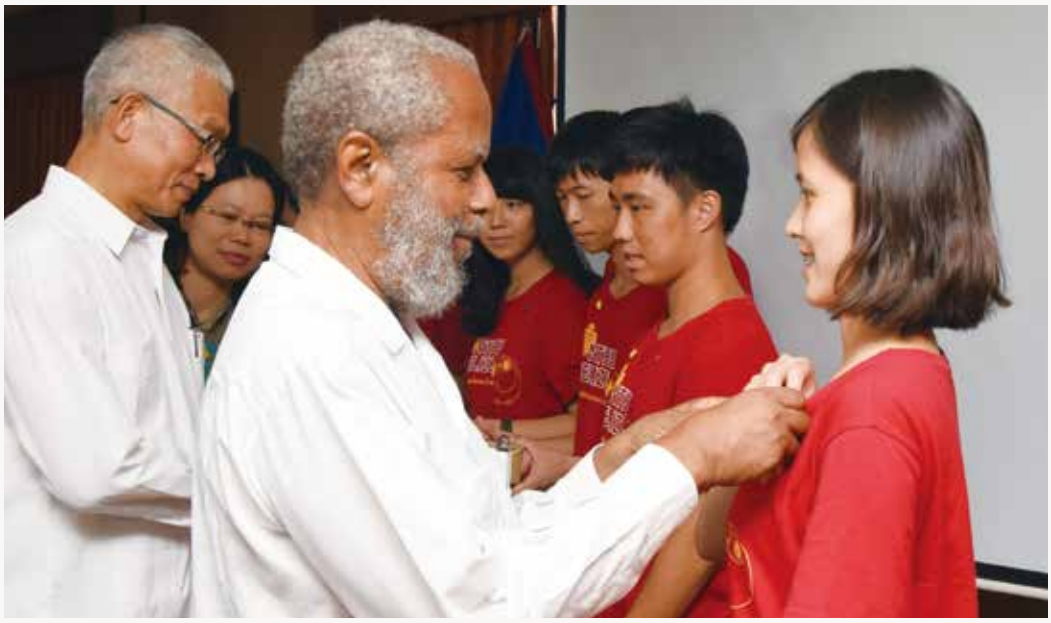
Wang said that the generous support provided to doctoral students at NTHU makes it possible to focus on one's research, and also makes it much easier to attend important international conferences and seminars, adding that while receiving three scholarships is indeed an honor, it also brings a certain amount of pressure to come up with commensurate research results.

According to Vice President of academic affairs Tai Nyan-hwa, NTHU doctoral students can now receive scholarships up to NT$80,000 per month.

TSINGHUA STUDENT GROUP RECEIVES BELIZE YOUTH AWARD

For the past nine years NTHU's International Volunteer Society (IVS) has been sending the Belize Educational Service Group (BESG) to Belize to teach elementary school teachers and students how to use computers; in addition, they have donated a total of 500 used computers and 24 solar panels, and have also provided 18 scholarships to help disadvantaged children complete secondary school. In recognition of the BESG's many contributions to his country, Belize's Deputy Prime Minister and Minister of Education Patrick Faber has selected the BESG for inclusion in this year's Belize Youth Awards.

Organized by Belize's Ministry of Education, the Belize Youth Awards honor young leaders aged between 15 and 29 who have made a significant contribution to Belize society in such areas as education, health care, human rights, and technology.



Belize prime minister Dean Oliver Barrow bestowed medals on the members of the 2017 BESG.

This year the international volunteer team category was added to the Awards, and was awarded to NTHU's BESG, which was commended for its ongoing commitment to improving local education and for meeting the highest standards of morality, integrity, citizenship, and social responsibility.

The award ceremony was held on November 29 at the Civic Center in Belize City, the central American nation's largest city. Representing the BESG at the ceremony were this year's team leader Huang Sheng-fen and next year's team leader Huang Cheng-tai.

At the ceremony Faber said that the BESG has served in many parts of Belize over the past nine years, and that earlier this year he visited NTHU for a meeting with donors and students who have served in Belize. He said that the BESG well deserved the award and thanked Taiwan for its long-term support.

The BESG was established in 2011 by Kieran Ryan, a student from Belize studying in NTHU's IMBA program. At that time the IVS had already sent volunteer teams to serve in Africa, and when Ryan saw how good his Taiwanese classmates were with computers, he decided to organize a team to teach basic computer skills in his hometown in the west of Belize.

Huang Jianlun, last year's BESG assistant leader, said that while focusing on teaching simple word processing to primary school children in rural areas, they soon discovered that very few computers were available in such areas, so they began collecting second-hand computers to donate to needy schools. Afterwards they found that many areas lacked a steady supply of electricity, so in 2012 they began to solicit donations of solar electricity panels for their next trip to Belize.

Huang said that they also discovered that more than half of the children in Belize are unable to complete secondary school due to financial hardship. Thus in 2015 the team began providing scholarships which help poor children complete their schooling.

Huang Sheng-fen, a graduate of the Department of Education and Learning Technology, said that she was a member of the 2017 BESG and that she enjoyed it so much that she again joined the team in 2019 as the team leader. Upon returning to Taiwan at the end of August she began wondering if she would ever return to Belize, and was therefore surprised and delighted when she received the message from the Belize Ministry of Education inviting her to participate in the award ceremony.

Huang said that when she went to Belize for the second time, she saw that the hard work of the previous years' volunteer groups had begun to gradually bear fruit. For example, she found that in stark contrast to two years ago, the computer classroom was tidy and well maintained, and that the teachers were making good use of the computers and teaching materials previously provided by the BESG.

Huang Cheng-tai, a master's student in the Institute of Nuclear Engineering and Science, said that through its long-term

service projects, the BESG has earned a strong reputation in Belize, and that there is even a road which has come to be known as "Taiwan street."

Huang Jianlun said that when he went to Belize a few years ago with the BESG he was awarded a medal and was interviewed by the local TV station, and that he was much surprised when afterwards locals recognized him while he was walking down the street.

Huang Sheng-fen and Huang Cheng-tai both modestly attributed the BESG's achievements to all the valuable support provided by NTHU, and Huang Sheng-fen added that participating in the BESG was amongst the most meaningful episodes of her university education.

The first of its kind in Taiwan, the IVS was established in 2007 under the impetus of Hocheng Hong, who at that time was the dean of student affairs and is now the president of NTHU. So far, more than 600 members of the IVS have served in a total of eight countries on three continents, including Belize, Tanzania, Kenya, and Malaysia.

Representing the BESG at the ceremony were the 2019 team leader Huang Sheng-fen (right) and the 2020 team leader Huang Cheng-tai.

NATIONAL TSING HUA UNIVERSITY WELCOMES INTERNATIONAL STUDENTS

For information on Admission and Financial Aids, please visit our website at http://oga.nthu.edu.tw/index.php?lang=en# or contact
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Application Timeline:
Degree Student
Fall Semester
Graduate Program : January 1-March 15
Undergraduate Program : November 15- February 15

Spring Semester
Graduate Program : August 15 to October 15
Undergraduate Program : August 15 to October 15

Exchange Student
Fall Semester Application: February 1~ April 15
Spring Semester Application: September 1~November 1

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