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President Wen-Tsuen Chen attended the Hong Kong Tsing Hua Alumni Conference and dinner on February 10th, 2007. This activity attracted over 300 Hong Kong alumni of NTHU and Beijing’s Tsing Hua University and had a very lively atmosphere. Beijing Tsing Hua President Gu Binlin and Professor Yang Chen Ning, a distinguished alumnus and the Nobel Laureate in Physics 1957, were also in attendance. Vice President Yip Ming-Chuen and President of the NTHU Alumni Association Dr. Hsu Ming Teh, accompanied President Chen during the conference. The two presidents reported the recent development of their respective universities, stressing cooperation and interaction between the two, aiming to become world-class universities in the near future. Before the end of the dinner, NTHU Professor Lung Ying-Tai, a famous writer and critic, gave a special speech on the common spirit of the two Tsing Hua Universities across the Taiwan Strait.
PRESIDENT CHEN VISITED TOP INSTITUTIONS IN JAPAN

President Wen-Tsuen Chen visited the prestigious universities and a research institute in Tokyo area in early March. The trip was hosted by the Interchange Association of Japan. Secretary General Mao-Jiun Wang and Director of Academic Cooperation Hsiao-Wei Chiang accompanied President Chen. During the visit, President had the chance to meet with President Masuo Aizawa of Tokyo Tech University, President Yoichi Iwasaki of Tsukuba University, President Ryoji Noyori (Nobel Laureate in Chemistry 2001) of RIKEN, the Institute of Physical and Chemical Research, as well as the Vice Presidents of Waseda University and Keio University. In addition, tours of the core facilities and research labs were also arranged. The trip was very fruitful and some possible exchange programs were discussed. Since Japan is not far from Taiwan, President Chen is committed to promote the collaborations between NTHU and the partner universities and research institutes in Japan.

President Chen and Keio University Vice President Sonoko Watarabe.
President Chen and President Ryoji Noyori of RIKEN.
PRESIDENT AND MRS. B. JOSEPH WHITE OF UNIVERSITY OF ILLINOIS VISITED TSING HUA

Invited by the Ministry of Education and as the guest of the Minister, President and Mrs. White visited National Tsing Hua University on their second day (March 19th) after arriving in Taiwan. As the chief administrator of the Illinois University System, President White oversees the operation of the Illinois universities in Chicago, Springfield and Urbana-Champaign campuses. President Wen-Tsuen Chen and President White exchanged experiences and ideas on how to lead major research universities in the course of becoming world-class universities. President and Mrs. White were very pleased to meet one of their alumni at Tsing Hua, Dean Youn-long Lin of the Office of Research and Development and held further discussion with Dean Lin and Prof. Chung-min Chen, Director, University Center of International Affairs on future exchange and cooperative efforts between Tsing Hua and Illinois universities.

FOUR FACULTY MEMBERS WON OUTSTANDING RESEARCH AWARD OF NATIONAL SCIENCE COUNCIL

The winners of this year’s Outstanding Research Award of National Science Council were announced in January. Four Tsing Hua Professors won the honors. They are: Professor Sue-Lein Wang of Chemistry Department, Professors Rong-Ming Ho and Shih-Yuan Lu of Chemical Engineering Department and Professor Jui-Chou Hsu of Institute of Molecular Medicine. The research focus of Professor Sue-Lein Wang is Inorganic Materials Chemistry. The research interests of Professor Rong-Ming Ho include: Molecular Design, Fabrication and Applications of Polymeric Nanomaterials and Supramolecules, Platform Nanotechnology for Applications of Polymeric Nanomaterials, Block Copolymer Physics and Crystallization Behavior of Polymers. Professor Jui-Chau Hsu’s specialty is in Developmental Cell Biology and Genetics. Professor Shih-Yuan Lu specializes in Preparation and Applications of Nanomaterials and Nanostructures.

Professor Sue-Lein Wang
Professor Jui-Chou Hsu
Professor Rong-Ming Ho
Professor Shih-Yuan Lu
FACULTY SPOTLIGHT: PROFESSORS HONG MINGHWEI AND KWO RAYNIEN AN OUTSTANDING FACULTY COUPLE BRINGS SEMICONDUCTOR BREAKTHROUGH TO NTHU

Over twelve years ago, while carrying out frontier research for Bell Laboratories, Dr. Hong Mingwei and Kwo Rayniem made a breakthrough discovery involving GaAs semiconductors based field effect transistors. Three years ago, the couple returned and joined the faculty at NTHU. Prof. Hong is currently the TSMC Chair professor in the Department of Material Science and Engineering and Prof. Kwo is the Outstanding Chair professor and the Chairperson of the Physics department. In their return to Taiwan, the couple has brought not only their world class academic expertise but also about NT$ 200 million-worth of equipment to benefit Tsing Hua University.

While working for Bell Laboratories, the couple discovered that the GaAs semiconductors are superior in quality and speed to the silicon semiconductors commonly used today in cell phones and computer micro processors. It is expected when silicon nano electronics technology reaches the 22 nanometer level (expected in 2011) GaAs semiconductors will be the next step effectively replacing silicon semiconductors.

Both are middle aged, and the students they have taught over the years seemed like their own children to them. They both have been Christians devoted to church and research activities. When they reached their prime time they began to concern more about the society, and started to nurture young generations. After the devastating earthquake of September 21st, 1999 the couple made a special trip back to Taiwan, not only caring for disaster victims, but also living together with them in shipping container accommodation. Through these experiences, they realized their deep affections they have had for Taiwan. Later, during the SARS scare in 2003, they have decided to move back to Taiwan.

The couple plans to nurture young talents of science and technology in Taiwan, and leads Taiwan at the forefront of technology research and development.

("Professors Kwo Rayniem and Hong Mingwei"
"
Professors Kwo Rayniem and Hong Mingwei with their students")
SOLAR SYSTEM MINNOWS - SMALL ROCKS DISCOVERED IN THE REMOTE SUBURB OF THE SOLAR SYSTEM

A team led by Prof. Hsiang-Kuang Chang, Department of Physics and Institute of Astronomy discovered occultation events caused by small Trans-Neptunian Objects (TNOs) in the X-ray light curves of Scorpions X-1. This discovery indicates that there exist quadrillions of 100-meter-size TNOs in the solar system, far more than previously thought. It does not only provide the first detection of such small TNOs, but also impose important constraints on theoretical models of how planets formed in the early solar system. This discovery was published in the issue of Nature on August 10th, 2006.

TNOs are objects in the out skirt of the solar system, beyond the orbit of Neptune. About one thousand TNOs larger than 100 km have been found since 1992. Several of them are comparable to Pluto and one (now named Eris) is even larger. Smaller ones, although expected to be more abundant, are too dim to be directly imaged with currently available optical telescopes. The total number and size distribution of TNOs are important to our knowledge of the solar system formation. In recent years, search for optical occultation by TNOs of km size has been conducted, but yet to yield definite result. The NTHU team, instead, looked for such events in the X-ray emissions from a neutron star binary, Sco X-1, with data of the Proportional Counter Array (PCA) on board NASA’s Rossi X-ray Timing Explorer (RXTE) taken during 1996-2002. In altogether 564 ksec usable data, 107 definite dip events of millisecond time scales were discovered. Further investigation, whose result will be published in Monthly Notices of the Royal Astronomical Society soon, indicates that at least 10% of these events are most likely due to occultation by 100-meter-size TNOs, and the total number of those objects in the solar system is estimated to be about several quadrillions.

Besides the immediate impact on the current picture of the solar system and on the theoretical modeling of the early solar system, this discovery also demonstrated, for the first time, that X-ray occultation can be employed for the study of solar system small bodies. It opens up a new approach in this field. Furthermore, the shapes of the occultation light curves are related to the X-ray emitting region of the background source, in the present case, Sco X-1. Although still limited by the sensitivity of the currently available instruments, detailed analysis to resolve the inner edge of the accretion disk surrounding the neutron star in Sco X-1 is being conducted. This discovery is therefore also the onset of a new approach in the study of cosmic X-ray sources, that is, to resolve the source with occultation events. Cosmic X-ray
sources are mostly compact objects, such as neutron stars or black hole candidates accreting from its companion, or supermassive black holes at the center of active galaxies. Because of the significance of this discovery, it was published together with an article in the “News&Views” column of the same issue of Nature. It was also featured in the “Making the Paper” column of the same issue and in the editor’s summary of that issue. This discovery has received much attention and has been reported all around the world, such as in the website of RXTE and many academic institutions. It also appeared in “Science News”, “New Scientist”, CNN, USA Today, and media in various kinds of languages worldwide.

A BREAKTHROUGH IN FLY BRAIN RESEARCH ADDS NEW CLUES TO UNDERSTAND HOW OUR BRAIN WORKS

A research team from the Brain Research Center led by Prof Ann-Shyn Chiang, has constructed a 3D interactive atlas, with extra high resolution, revealing neural networks in the whole brain of fruit flies (Drosophila), including part of the olfactory circuitry. Such an achievement has attracted international attention and the result has been published on the top notch journal, “Cell” (March 23rd, 2007), the first from Taiwan. It is critical to know how the brain perceives its surrounding environment, learns and remembers in order to understand the mental capability of a superior animal, like us. Therefore the foremost challenge now in the sensory neuroscience is to elucidate how the
sensory stimuli are relayed, level by level in the brain, interpreted and eventually results in proper behavioral responses. The neural circuitry atlas for the Drosophila brain may provide some clues to the procedure. This research is an interdisciplinary work, led by Prof. Chiang, integrating biology, engineering and informatics, with the Brain Research Center (BRC) as the communication platform. Although with very limited resources, they still developed breakthrough technologies on bioimaging. The preliminary results on the olfactory circuit in the Drosophila brain were immediately recognized by the international academic society and the publication on “Cell” was ensued.

Prof Chiang found that the relay of olfactory signals in the Drosophila brain is through stereotyped connections, at least to the third level neural center, the mushroom body. This stereotype connection is not exactly the same through different levels (e.g. in the second level, the antenna lobe) but is one of the principles for information coding used in the brain. Prof Chiang’s finding suggests that the olfactory transmitted from the antenna lobe is decoded in the mushroom body, an indispensable processing center involved in learning and memory for flies. It is over there the integration and calculation of various neural signals occurs and they are further transmitted to high center. The report in Cell is intriguing to scientists in terms of the process of perception within the brain. The publication also ensures a seat in the elite research circle in Taiwan.

Prof Chiang’s team is currently devoting themselves to understand how genes in various neural networks modify the performance of the fly brain and behaviors. Among major research institutes, neural network studies on the brain have become a main stream. A newly established institute, Jenalia Farm of the prestigious Howard Hughes Medical Institute, inviting Prof Chiang to give a plenary talk in mid March, is also developing imaging and computation technologies for brain research.

The BRC has collaborated with and benefited from international institutes, such as the Cold Spring Harbor Laboratory, local institutes, such as the National Center for Highperformance Computing, and many departments including Departments of Life Science, Electrical Engineering, and Computer Science in NTHU and NCTU. The long term goal of BRC is to construct the world first image database for the whole brain genomic and neural networks, exploring neural networks specifically for smell, taste, hearing, learning, memory, aggression, even gay behavior and aging. The paper in “Cell “ is the first major triumph in the “Race on Cutting Edge” project for NTHU, with the support from the special program “Establishing the First Rank Universities and Research Centers” of the Ministry of Education. Combining researches on genomics and neural networks in the brain is monumental. Its impact on neuroscience and brain medicine is expected to be phenomenal.
One of the major issues in the educational reform debate that has engulfed the entire country is the issue of equitable distribution of educational resources and opportunity. While people debated, Ting Hua proposed a concrete and effective measure! NTHU is the first university in Taiwan to offer a program that addresses this inequality directly and has received enthusiastic endorsement from the Ministry of Education.

NTHU proposed and implemented the "Project Thousand Points of Light" admission program starting in the academic year of 2007. Students admitted through this special program must meet the following criteria and have been recommended by their respective high schools. The criteria are as follows. 1. Among the five subject areas tested in qualification examination, applicants must have a top 12% ranking in two of the subject areas and top 25% ranking in the remaining three. 2. Applicants must also graduate at the top 5% of their respective classes.

This innovative admission policy not only adds a new mechanism through which students can be admitted to NTHU. More importantly, it allows deserving students graduating from ordinary high schools to have a special chance to be considered for admission. To encourage these students, NTHU also established scholarships to be awarded based on merits as well as on needs. To further ensure a smooth transition from high school to university, a group of faculty members are asked to serve as mentors for this group of students so that they will be guided in their academic works and new campus life.

This year’s admission decision was announced on the 9th of March and 150 freshmen from 150 high schools countrywide are admitted under this special program. Among the 150 high schools that are sending one of their top students to NTHU, 32 (18 public and 14 private high schools) of them send their graduates to Tsing Hua for the first time in the last four years. These 150 high schools are distributed throughout all the counties and cities of the country and many of them (10) have below averaged household income of the nation. More specifically, the "Project Thousand Points of Light" has made the chance of being admitted to NTHU available to a greater population and, thus, helps to even out the distribution of educational opportunity and resources. We believe, this innovative measure will not only encourage the high school students in the less advantaged areas but also diversify our campus life as well as teaching environment and further give students with great potentials a chance to success.
President Chen signed an Undergraduate Dual-Degree Program Agreement with Dr. John Anderson, Provost of the Case Western Reserve University on January 15th to establish an undergraduate dual-degree program with the purpose of promoting educational exchange and cooperation between the two universities. According to this agreement, undergraduate students from NTHU will be admitted to Case Western Reserve University (CWRU) in the relevant disciplines to continue their studies after completing the required length of matriculation at NTHU. A baccalaureate will be awarded by CWRU and NTHU, respectively, to the student who fulfills the academic requirements of both universities. Reciprocal arrangement will also be made for students from CWRU to study at Tsing Hua. Students interested in this program have to be recommended by their home universities and will normally be accepted by the host universities, but each university reserves the right to decline to admit any student. All admitted student will be granted by the host universities with a tuition reduction (equivalent of 10% of the tuition) and will be responsible for other expenditures. This Dual-Degree Program is one of the measures that NTHU is undertaking to provide more opportunity for our students to study abroad, expand their horizon, meanwhile, also to bring more international students to our campus in Hsinchu.
NTHU'S "FILL A PROMISE" SCHOLARSHIP RECEIVES A GENEROUS DONATION FROM LOCAL ARTIST

Madam Lin Yue-Hsing, acclaimed local artist and wife of the late Tsing Hua Professor Yang Chen-Chung has donated the NT$ 1 Million proceedings of her charity auction to NTHU’s "Fulfill a Promise" Scholarship. Madam Lin, practiced as a physician for many years in Kaoshiung, moved to the West Court of NTHU campus with her husband several years ago. She has studied art for 10 years and her paintings, featuring a combination of Chinese and Western styles have been widely praised for being both exquisite and lifelike.

The "Fulfill a Promise" Scholarship was established four years ago by the former Dean of the College of Humanities and Social Sciences, Professor Huang Yi-Long and is aiming at supporting students with financial difficulty. The concept of the scholarship is that the money is to be raised from the public as well as previous recipients of this special scholarship. Scholarship recipients are expected to fulfill the promise to the benefactors by studying hard and making a contribution to the funds whenever they have the ability and intention to do so!

STUDENT PROFILE: LIU JIA-MING SAYS "NEVER GIVE UP"

NTHU Alumnus Liu Jia-Ming wins National Outstanding Young Person Award and an National Study Abroad Scholarship sponsored by Ministry of Education. Mr. Liu credits his determined personality and strength of character as the key factors for his outstanding achievements.

As a child of 6, Liu lost both his father and grandfather within a few months. Liu's mother, left without a breadwinner, was left to care for three young children and aging grandparents. Circumstances were difficult and it showed in Liu's early academic performance. As a junior high student, Liu says, his grades in math were rarely over 50%.

Later, however, Liu decided he would overcome the difficulties of these circumstances and adopted a "never-give-up" attitude that he says has led him to his latest outstanding achievement. However, in over 10 years of schooling, Liu claims that his happiest time is the time these that he has spent on Tsing Hua campus.
NTHU DELEGATION VISITED VIETNAM TO RECRUIT STUDENTS AND PROMOTE EXCHANGE

Organized by the Division of International and Extension Education, a delegation made up by administrators and faculty members of the National Tsing Hua University arrived in Hanoi on January 29th, 2007 to begin their visit of six leading universities in the country. The delegation was headed by Prof. Chou Kan-Sen of the Department of Chemical Engineering and included Professors Yu Ite (Director of International and Continuing Education), Lien Chenhsin (Chair, Institute of Electrical Engineering), Chang Bao-taa (Department of Economics), Yang Rur-bin, and Li Yu-chen (both of the Department of Chinese Literature), Ms. Chan Hui-chien (Administrative Assistant, Division of International and Continuing Ed.) and Ms. Quang Kim Ngoc, a native Vietnamese and graduate student at the Institute of Linguistics who served as the interpreter for the group.

The Tsing Hua Delegation visited Vietnam National Univ., Hanoi Univ. of Science, Hanoi Univ. of Technology, Thai Nguyen Univ., Hue Univ., and Vietnam National Univ. of Ho chi Minh City. During their visit to each university, they introduced NTHU and the academic programs that might be of interest to Vietnamese students and signed MOUs with each of the university they visited to provide scholarships for selected students recommended by these universities.

In return to this visit, The Vietnam National University sent a delegation to call on Tsing Hua in mid-March and continued the discussion on academic cooperation and exchange they started in January.