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NTHU is fortunate to have a blue ribbon committee to advise her administrators on important issues of university development. This high caliber committee is made up of leading scientists, experienced university administrators, industrialists and eminent scholars spanning the disciplines from natural sciences to humanities. They are: Mr. Bruce Cheng, Chairman of Delta Electronics; Dr. Johnsee Lee, President of ITRI; Dr. Yih-Yuan Li, Academician of Academia Sinica; Dr. Chao-Shiuan Liu, President of Soochow University and former President of NTHU; Dr. Chung-Laung Liu, Academician of Academia Sinica and former President of NTHU; Dr. Hsiang-Tsung Kung, William H. Gates Professor of Harvard University; Dr. Way Kuo, Academician of Academia Sinica; Dr. Mu-Ming Poo, Academician of Academia Sinica; Mr. Ming-Kai Tsai, Chairman of MediaTek Inc.; Dr. Ovid Tzeng, Chancellor, University System of Taiwan and Dr. Kenneth Wu, Director of National Health Research Institutes.

This year’s meeting was an intensive, day-long symposium held on July 20. President Wen-Tsuen Chen kicked off the meeting with an opening introduction describing the accomplishments and strategies of the university’s plan to join the rank of world-class universities. Prof. Youn-Long Lin, Dean of Research and Development, reported on the strategy to recruit top flight scholars and on-going cutting edge research projects. Dean of Academic Affairs, Dr. Tien-Ko Wang briefed the committee on his plan to uplift academic standard and performance across the entire university and implement a balanced curriculum aiming to mold our students into well-rounded Tsing Hua Persons. Vice President, Prof. Ming-Chuen Yip targeted his presentation on the strengthening of the university operation system and the up-grading of university infrastructure in order to provide a more conducive learning and research environment.

During the afternoon session, the committee was split into three areas for in-depth deliberation. The first sub-committee discussed developments in the sciences, the second in engineering and the third focused on developments in humanities and technology management. All academic deans were included in these intensive sessions where committee members can hear the Deans’ plans and provided sound advices on the issues of academic development.
In the 2007 Shanghai Jiao Tong University Academic Ranking of World Universities, National Tsing Hua University was placed at the 317th, 29 spots higher than that of the previous year. Other Taiwanese universities which cracked the top 500 in the rankings include National Taiwan University, National Chiao Tung University, National Cheng Kung University, National Yang Ming University, and National Central University.

The Academic Ranking of World Universities is compiled by Shanghai Jiao Tong University and includes major institutes of higher education ranked according to a formula that took into account alumni winning Nobel Prize and Fields Medals (abbreviated Alumni, 10 percent), faculty winning Nobel Prizes and Fields Medals (Award, 20 percent), “highly-cited researchers in 21 broad subject categories” (HiCi, 20 percent), articles published in *Nature and Science* (N&S, 20 percent), the Science Citation Index, Social Sciences Citation Index, and Arts and Humanities Citation Index (SCI, 20 percent) and weighted score according to the size of the institution (SIZE, 10 percent).

According to the analyses put forth by the 2007 Academic Ranking of World Universities, Tsing Hua ranks first among universities in Taiwan in score on SIZE. From this data, we see that individually, Tsing Hua professors have on average the best performance in Taiwan, since the SIZE score is determined by performance of the faculty weighted over the size of faculty members. Asides from Score on Alumni taking a slight drop, all our other scores in the Academic Ranking were increased. National Tsing Hua University’s overall ranking has steadily improved over the years between 2004-2007, finishing at 353th, 351th, 346th respectively, and finally at 317th this year.

Back in March 2007, Shanghai Jiao Tong University ranked universities around the world in their respective academic fields, and only three Taiwanese universities managed to make it into one field in the rankings, the field of Computer Science and Engineering. NTHU is ranked between 77 and 106 among all schools. The index for thesis publications in top journals (Score on TOP) shows that Tsing Hua was first among the three schools (National Taiwan University and Chiao Tung University are the others). NTHU is ranked alongside Stanford University in the 17-21 range in the world when judging a school by the Score on TOP criterion. This reflects that in the field of Computer Science and Engineering, NTHU publishes high quality and highly regarded research papers.

Whether we speak of academic instruction or academic research, NTHU has long been considered a stalwart of the highest academic standards in Taiwan. It may be noted that since 2006, with the support of the “5 year, 50 billion” project underway, NTHU has had breakthroughs in extremely high tech research projects, raising great hopes and expectations for the future in joining the rank of world-class research universities.
The winners of National Chair Professorship and Academic Award administered by the Ministry of Education (MOE) were announced in early September. Like last year, four senior faculty members won these high honors for their respective accomplishments. Prof. Wen-Wei Lin, Dept. of Mathematics won a National Chair Professorship awarded by the MOE for the development of structure-preserving doubling algorithms and the solutions of inverse quadratic eigenvalue problems as well as digital secure communication by robust hyper-chaotic systems. Chair Professor of Industrial Engineering and Engineering Management, Mao-Jiun Wang won the Academic Award for his long-term anthropometric survey project which is considered one of the most significant contributions in the ergonomics research.

Two other Academic Awards were won by Chair Prof. Kuei-Jung Chao, Department of Chemistry and Chair Professor Ann-Shyn Chiang, Director of the Brain Research Center. Dr. Chao is recognized for the development of novel preparation and characterization methods in zeolite catalysts, ultra-low dielectric-constant films and nanostructured metals. Dr. Chiang has made many breakthroughs in brain imaging techniques and is recognized as the first scientist to successfully depict the 3D olfactory neural circuits in the Drosophila brain.

The Ministry of Economic Affairs has also set up a special award for the first time this year to recognize university faculty and researchers who make important contributions to industrial development in Taiwan. The first winner is our Dean of Research and Development, Chair Prof. Youn-Long Lin!
The Ta-You Wu Memorial Award was established by the National Science Council (NSC) to commemorate distinguished contributions of the late President of Academia Sinica to the scientific and academic community of the nation. The NSC selects thirty-five young university faculty members and researchers from all the universities and research institutes in the nation, based on their research records and honors them with this prestigious award annually.

Four of our young and bright faculty members were among the award recipients this year. They are: Associate Professor Kuo-Chang Chen, Department of Mathematics; Associate Professor Chih-Hsing Chu, Department of Industrial Engineering and Management; Professor Ya-Chin King, Institute of Electronic Engineering as well as Assistant Professor Yi-Lin Wu from the Department of Quantitative Finance.

NTHU is very proud of these four recipients for their stellar research records and is happy to point out that as one of the many universities and research institutes in Taiwan with a relatively small faculty, we have won far more than our “fair share” of this prestigious award regularly!
Accompanied by Prof. Mao-Jiun Wang, the Secretary General and Prof. Chung-min Chen, CEO of the University Center of International Affairs, President Chen attended the 13th Annual General Meeting and the 21st Board of Directors Meeting of the Association of East Asian Research Universities (AEARU) hosted by the Kyoto University during Aug. 21-23.

At both meetings, President Chen reported on the recent developments of NTHU and deliberated with other members of the Board of Directors on issues ranging from the admission of new members to new mechanisms to enhance exchange and cooperative efforts among membership universities.

On behalf of NTHU, President Chen agreed to host a workshop focusing on the cultures of East Asia and how such cultural traditions affect higher education and the recent technological and scientific developments in this region. Scheduled in October of 2008, this workshop will be organized and hosted by NTHU faculty members and attended by paper presenters from various members of AEARU.

After the AEARU meeting, President Chen traveled to Nara on the 24th. The trip to Nara was to visit and sign an agreement with the National Nara Woman’s University (NWU). During the signing ceremony, President Kume of NWU, who visited NTHU last May, expressed his interest in sending NWU’s students to NTHU’s programs in science and technology and welcome NTHU students, both undergraduates and graduates to study topics in letters and basic sciences on his campus. President Chen, in his address at the signing ceremony, emphasized the fact that this agreement paired two universities that have complementary strengths and expressed his strong interest to support this newly established exchange program.
The classical Three-body Problem concerns the motion of three celestial bodies moving in space in accordance with Newton’s law of universal gravitation. The problem has been extensively studied since the 18th century by some of the most prominent figures in the history of mathematics, such as Euler, Lagrange, Jacobi, Weierstrass, Poincaré, Birkhoff. Applications of the problem include Sun-Earth-Moon, Sun-Jupiter-Asteroid, triple stars, satellite around a double star, and many others. Most commonly observed solutions are prograde, retrograde, self-similar, unbounded, or even chaotic. The mathematics of the problem is very complex and intriguing, many analytical and topological tools were developed for this purpose but many fundamental questions remain unanswered. Classical existence for prograde and retrograde solutions are largely relied on a perturbation argument known as the Poincaré continuation method. The theory bases on introducing small parameters which typically represent mass ratios or distance ratios, and choosing appropriate coordinates so that the implicit function theorem is applicable to conclude existence of orbits near an existing self-similar solution. In spite of countless numerical results in literatures, no rigorous proof for their existence was known when all masses and mutual distances are comparable in size. In a paper by Prof. Kuo-Chang Chen at the Department of Mathematics, variational methods were successfully applied to the Three-body Problem to prove the existence of infinitely many periodic and quasi-periodic retrograde solutions with various masses. This breakthrough largely complements classical results on such orbits and supplies theoretical basis for considerable numerical work. Prof. Chen’s research work on retrograde orbits has been accepted for publication by the Annals of Mathematics, a top notch journal founded in 1884, edited by the Princeton University and the Institute of Advanced Studies. The journal publishes around 50 papers a year. A total of four papers from Taiwan have been accepted by this journal, first two were published in the 90’s by Prof. Jing Yu, a Distinguished Chair Professor of mathematics in NTHU. The other two were recently accepted, one by Prof. Kuo-Chang Chen, the other jointly by three researchers at the University of Utah and NCU. Mathematicians at the NTHU have also taken the lead in numbers on many other prestigious journals. For example, members of the NTHU published four papers on the distinguished journal Inventiones Mathematicae (one by Prof. Jing Yu, Prof. So-Chin Chen, two by Prof. Dong-Ho Tsai), outnumbers the collected total from other universities in Taiwan.
Memory, its flashy advent and misty evaporation, has long inspired scientists’ imagination yet remains beyond their scope. Scientists know that memory is initiated at the synapses among neurons. A Nobel Prize was awarded to Eric Kandel in 2001 for his achievements in this area. We also know that there are certain genes involved in the formation of memories. The circuitry in the brain, however, is still a puzzle. The best strategy to solve this puzzle is to disturb specific genes in the brain and examine the consequential behavior due to the memory alterations. However, it is impossible to do such experiments on human, thus Drosophila Melanogaster (fruit flies) were chosen as a model system for its short generation period and feasible genetic manipulations. Recently, fruitful harvests on memory research will soon be collected through the joint projects by researchers in institutes across the Pacific. Since his first visit to the Cold Spring Harbor Laboratory (CSHL) in the United States six years ago, Prof Ann-Shyn Chiang, the Director of the Institute of Biotechnology, and the Brain Research Center (BRC), has been collaborating with CSHL scientists in the studies of learning and memory of Drosophila. Dr. Timothy Tully is one of the scientists at CSHL and inventor of the fly olfactory training machine. The machine contains two ports with plastic tubes attached, where flies may be exposed to various odors. Flies are trained in one port to associate an odor with electric shocks and are made to discriminate two odors in the other port. Normal flies can learn and remember to avoid the odor they have associated with the uncomfortable electric shocks. It is with this machine that some candidate memory genes have been identified. However, the first generation training machine was rather clumsy; even though much high impact research resulted from it. A heavy C-clamp used to tighten

A FRUITFUL INTERNATIONAL COLLABORATION

The 1st generation fly olfactory training machine with a heavy C-clamp
The renovated fly olfactory training machine
the two sidewalls makes the upright standing machine shaky during experiments. In addition, the barrel sticks from time to time and is difficult to slide, especially for female researchers. Prof. Chiang was thinking about an improvement when he brought one model back from the US five years ago. He got rid of the C-clamp and made the machine a flatbed one. There had been frequent communications between Prof. Chiang and Dr. Tully for the detailed interior designs and the external appearance of the machine. The improved product is a light and easy-to-operate instrument bearing the wisdom of two researchers and Taiwanese craftsmanship. This new machine has successfully replaced all the old models in the CSHL and NTHU. Because of the success of this collaboration, Dr. Tully installed another new type of fly training machine in NTHU which can do a massive training for eight different sets of flies simultaneously and control the procedures automatically with a PC. Behavioral observations will not reveal the underlying mechanism unless the neural circuitry in the brain can be examined simultaneously. This is where Prof. Chiang’s lab shows its prowess in neural anatomy. With the technology to prepare a transparent brain tissue, the whole 3D distribution of any neural circuitry within an intact fly brain may be visualized under a confocal microscope. Meanwhile an interdisciplinary research teams from BRC together with Prof. Yung-Chang Chen from the Electric Engineering Department developed algorithms for image processing in a standardized anatomical framework; Prof. Wei-Lun Fang from the Institute of Nanoengineering and Microsystem developed a micro-monitoring system to record fly activities. Also, BRC and the National Center for High-performance Computing are collaborating to build a 3D image database for the neural circuitry in the Drosophila brain. Equipped with such systems for behavioral observation together with the unique image technologies to examine the genomic neural anatomy of the Drosophila brain, puzzles of memory circuits in the brain are gradually falling into places. Researchers and students now can test hypothesis for the engram in fly brains. Results accumulated by collaborating teams were published or have been accepted for publication in the top notch research journals, all with the Impact Factor Number higher than 10. Such collaborations demonstrate that our researchers here are not only able to work with scientists in the international community but are actually key players in the formation of these breakthrough projects. We have the confidence that we are on a par with our collaborators in this partnership and shall be making more contributions to the science community in the near future.
CONSTRUCTING A BRIDGE FOR THE FUTURE: CROSS STRAIT ACADEMIC EXCHANGE

National Tsing Hua University has long been a proponent of friendly cooperation and an enthusiastic supporter of efforts that will enhance mutual understanding between scholars of Taiwan and China. Since the year 2000, NTHU has been paving the road for long term academic exchange through its summer academic programs aimed at young scholars on both sides of the Taiwan Strait. In the year 2007, such exchange reached a new height.

Eleven of China’s top universities now participate in this exchange. Arrangements are made for students to be taken under the wing of excellent professors in their respective fields so that they can receive appropriate guidance and be intellectually stimulated in a vastly different academic environment. This year, 67 NTHU students headed to mainland universities while 77 students and faculty members from China were hosted here on Tsing Hua campus.

Summer academic exchange programs have become the main medium through which students from the two sides of the Strait can broaden their horizons, gain a more rounded international outlook, and experience friendly academic interaction. Since the program started in 2000, the numbers of participating members, contributing organizations, and the scale of events have all been increased steadily. These are encouraging signs that the bridge being built to promote academic cooperation between mainland China and Taiwan will be strong and steady.

Last, but not the least we will like to take this opportunity to thank Chun-Tsung Scholarship Foundation, MediaTek Co. and TSMC for their generous support to these exchange programs.
Want a meaningful and unforgettable summer? There is no better choice than joining the NTHU International Service Volunteers and travel to places where you always wanted to go but yet to have a chance! Traveling as a tourist is fun but traveling as a NTHU International Service Volunteers is exciting and also provides you with opportunities to know different cultures, learn local ways of life and expand your horizons. Organized by the Office of Student Affairs, four groups of Tsing Hua volunteers travel to Nepal, Indonesia, Qinghai, China and Malaysia this past summer. Together with other volunteer organizations, students went abroad to assist in medical clinics, teach English, conduct seminars and workshops to plan for community learning centers, and provide tutoring sessions to overseas Chinese students in Malaysia. Participants of this year’s service corps were selected from a large pool of applicants. They were prepared by pre-departure training sessions aiming at cultivating their sensitivity toward other cultures. Volunteers of these first groups, while abroad and serving in different ways, all felt that they have learned a great deal from this opportunity and were thankful for the chance to serve people whose material conditions are not of the standard that we enjoy in Taiwan.
PRECISION, COOPERATION AND TEAM SPIRIT WON THE INTER-COLLEGIATE BRIDGE TOURNAMENT CHAMPIONSHIP FOR NTHU

NTHU's Faculty Bridge Team, led by Prof. Kan-Sen Chou and includes Professors Wing-Kai Hon, Shih-Chieh Lin, Tai-Bor Wu, Hsieu-Ming Chang, Sidney S. Yang, and Ya-Chang Chou competed in a three-day tournament during July 9th and 11th and came home with this year's championship! The Tournament was hosted by the National Formosa University and held at the Prince Hotel, Jian Hu Resort, Yun-Lin County this year. Participated by teams representing twelve universities from different parts of Taiwan, the Inter-Collegiate Bridge Tournament is an annual competition among bridge enthusiasts from various institutes of higher education throughout Taiwan. While all the members of NTHU are 'amateurs' with full time teaching and research responsibility, they take their game seriously and practice weekly. Dr. Hsieu-Ming Chang of the Brain Research Center indicated that this is the second championship that our Bridge Club had won in the nation-wide competition and he welcomes, on behalf of his Club, all the bridge-lovers to join their weekly practice.