NATIONAL UNIVERSITY CORPORATION

# TMDU ANNUAL NEWS

Tokyo Medical and Dental University

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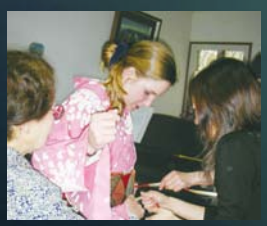



# MESSAGE FROM THE PRESIDENT

*Takashi Ohyama*
*President*

The mission of our university is to provide top-level education, conduct advanced research, offer cutting-edge medical and dental treatment, and contribute to the world and local community. As we enter our sixth year since incorporation, I believe that we have made respectable progress in these fields thanks to the hard work of our academic and other staff.

I also believe it is time that the university responds to the staff's efforts. In order to do so, we have set up a strategy and promotion council meetings under individual trustees.

These meetings discuss issues drawing on the university's collective expertise and wisdom. Their findings are further deliberated by the Board of Trustees, after which matters are discussed by the Education and Research Council. Under this new setup, I have discovered that there are more views and requests than I had imagined.

To reward our staff for their efforts and achievements and to ensure the future development of the university, we have already taken budget measures for some projects. For example, we have budgeted for improvements to dissection and other laboratories to reduce exposure to formaldehyde. We have also set aside budget for repair work on the Research/Education Building and the Faculty of Dentistry's dental care practice room as well as for enhancement of the buildings and athletic fields of the College of Liberal Arts and Sciences. With an eye on the completion of the Medical-Dental Building II in June this year, budget has been readied for the transfer of facilities into the new building, including the university library, memorial hall, and the Animal Research Center.

In the area of medical and dental treatment, we need to repair and upgrade our university hospitals' facilities and equipment which are showing signs of age. We are now discussing a new strategy to increase revenues.

In the area of planning and international exchange, we are re-envisioning the International Student Center and will hold an international summer school (tentative name). We are promoting infectious disease research projects based at the collaborative research center opened at the University of Ghana last year as well as projects with Chile to support medical and dental treatment, education, and research. We have also taken concrete action to create an overseas base to develop top-flight leaders and researchers in Asian nations and to form a medical and dental treatment network.

In the area of education, we are considering, and in some cases have made and implemented decisions; a system for mutual recognition of credits with the Open University of Japan, support for multidisciplinary courses within the Tokyo Consortium of Four Universities and our MD-PhD program, increase of the number of students sent overseas under our framework to subsidize overseas training, and consideration of alliances and cooperation with other universities and regulations for selecting special professors.

In the area of research, we are considering follow-up or revival of research projects for which public financial support has ended. We are also examining enhancement of the Center for Brain Integration Research and development of the Disease Model Research Center. Furthermore, we are reviewing the status of TMDU-affiliated research institutions and thoroughly investigating other issues.

This year, I would like to continue to actively improve the university environment, particularly our facilities, ensure optimal and efficient use of time, and develop ties with colleagues.

This year marks the last fiscal year of the stage I medium-term objectives and plans, and will be formulating the next, stage II plan. The assessments and innovative planning we construct now will influence the future of our university. I invite the entire university community to join hands and envision a bold and dynamic future for Tokyo Medical and Dental University.

*Takashi Ohyama, DDS, PhD President*

New Year's Celebration on January 5, 2009

# International Exchange Activities in TMDU: Recent Progress and Future Plans

Reflecting the rapid globalization of every aspect of life today, it is necessary for universities to become truly international institutions. Under the clear leadership of our new President, Takashi Ohyama, DDS, PhD, many new plans to elevate the international exchange activities of TMDU to a world-class level are being planned and put into action. I would like to summarize some of our recent activities in these regards.

### Organization of a Strategic Committee for Planning and International Exchange

In order to discuss strategic planning for TMDU and its international exchange activities, a trustee and team for this task were appointed in April 2008. Ever since, the Strategic Committee for Planning and International Exchange committee has been investigating and analyzing the current status, identifying problems, and proposing plans to solve these problems. This strategic committee will play a central role in planning, implementing and evaluating TMDU's international exchange activities.

### Creating the "International Exchange Center"

The TMDU International Student Center (ISC) was established in 2000 with the mission of caring for international students. The ISC helps students adjust to living in Japan and studying at TMDU, and provides Japanese language classes. However, the demand for the ISC has greatly increased as TMDU's international exchange activities have accelerated in the past several years. To meet the current needs of TMDU and its international students, the ISC will be completely remade and renamed as the International Exchange Center (IEC) starting April 2009. Administrative functions will be strengthened and the Center will move to the main campus in Yushima so that students can more conveniently access the IEC facilities. A new English language curriculum will open and redoubled administrative support will promote international exchange-related matters. Also, the IEC will assist in the creation of a faculty development program for international exchange, the holding of an annual Summer Symposium which will introduce students from overseas to the academic opportunities that await them at TMDU, the complete revision of a database of international TMDU alumni, the planning and holding of a reunion of international alumni, the making of an international network for medical and dental services, and finally a revision of the English version of the TMDU website.

*Sei Sasaki, MD, PhD*
*Trustee*

### Establishment of A Network of Overseas Offices

In 2008, TMDU and the Noguchi Memorial Institute for Medical Research (NMIMR), Ghana, launched a collaborative project for the research and cure of emerging and reemerging infectious diseases. As part of this project, TMDU established a collaborative research center at NMIMR in 2008. It is important to note that this center is TMDU's first overseas office and that two TMDU researchers are staying there with multi-year commitments. West Africa is a hot zone for breakouts of emerging and reemerging infections, and the major targeted diseases are HIV/AIDS, hemorrhagic fever, avian influenza, malaria and tuberculosis among others. By collaborating with NMIMR, we aim to provide scientific data useful for the promotion of regional public health and to nurture talented persons who will actively participate in the infectious disease field in both Ghana and Japan.

TMDU and Clinica Las Condes, Chile, have begun discussions on an education/research project for early diagnosis of colon cancer. This project will be in many ways a carryover of TMDU's previous project in the area, a training course for pathological diagnosis of digestive tract cancers. The original project was supported by the Japan International Cooperation Agency (JICA) and lasted 15 years. We are planning to ask the physicians in South America who took the TMDU-JICA course (a total of 146 doctors) to help this new project.

TMDU and Chulalongkorn University, Bangkok, Thailand have a long history of agreement-based collaboration and Thailand-based TMDU international alumni have reunions in Bangkok. In light of these activities, TMDU is exploring the possibility of opening an office in Bangkok. The purpose of this office would be to facilitate connections between alumni members and TMDU and contribute to identifying and overcoming international health problems in medical and dental fields.

We are now considering other strategically-based international exchange offices. The establishment of a tight network between TMDU and a network of overseas offices will dramatically in-

crease the scope and quality of TMDU's global exchange activities and make TMDU a truly international university.

### Global communication through education and research activities

TMDU actively communicates with more than 50 international universities with whom we have agreements to collaborate in education or research. For example, in alliance with Partners Harvard Medical International, TMDU has sent 32 medical students and 62 teaching staff to Harvard Medical School. In return, TMDU has received teaching staff from Harvard Medical School for the past 7 years, leading to great innovations in our teaching curriculum. We have also increased the amount of the funds available for overseas fellowships, which allows more TMDU students to have the opportunity to experience international education.

This year, the Japanese government awarded TMDU one of its largest Global Center of Excellence (GCOE) Program grants, for support of our "International Research Center for Molecular Science in Tooth and Bone Diseases" education/research project. In this program we will foster many collaborations with international universities and institutes in terms of educating postgraduate students/young researchers and performing research on hard tissues. TMDU also successfully obtained many government grants for new programs, such as those aimed to facilitate a double degree curriculum and the promotion of cooperation between university and industry. We are looking forward to increased and active international communications with overseas universities through these new programs.

### Message to TMDU International Alumni: Please Contact Us

As the above makes clear, TMDU is making every effort to facilitate international activities. To this end, feedback and support from international alumni will be highly valuable and greatly appreciated. We would ask our International Alumni to inform us of your updated contact information and affiliation, and send us your comments or suggestions as well. Finally, we look forward to sending you this English-version of Bloom! regularly and letting you know the latest news about our international outreach activities.

*Sei Sasaki, MD, PhD*
*Trustee, Strategic Planning and International Exchange*

Mail address: iss.adm@tmd.ac.jp  Home page: http://www.tmd.ac.jp/

International Collaboration 1

# The University of Ghana and TMDU Collaborate on Emerging and Reemerging Infectious Diseases Study


Signing Ceremony between the University of Ghana and the TMDU Faculty of Medicine on May 28, 2008

**The Noguchi Memorial Institute for Medical Research, the University of Ghana and the Faculty of Medicine, Tokyo Medical and Dental University officially signed an agreement on May 28, 2008 to promote research partnership and development of human resources. Based on the agreement, TMDU founded a research center at the Noguchi Institute and launched an cooperative research project on emerging and reemerging infectious diseases. This is the 8th overseas research center following those already founded in Thailand, Vietnam, China, India, Zambia, Indonesia and Philippine supported by the Ministry of Education, Culture, Sports, Science and Technology-Japan. The study will be headed by Prof. Nobuo Ohta of TMDU and specially appointed two researchers from TMDU will be stationed in the Noguchi Institute to gather basic data that will later be utilized to implement a countermeasure for emerging and reemerging infectious diseases and to foster human resources in the research field of infectious diseases.**

As a global issue to be addressed in the 21st century, infectious diseases have attracted a strong attention from medical, social, economic and political fields. We live in the era in which an infectious disease breakout can take place at anytime and at anywhere. We must therefore be aware of the fact that breakouts of emerging infectious diseases not encountered in the past could possibly and suddenly arise around ourselves.

The successful control of diseases requires early and fast access to the site or the subject infected with a specific disease to acquire information related to the disease. Many emerging and reemerging infectious diseases have broken out in the developing countries, suggesting that we should establish a partner relationship with researchers in those areas allowing easier and earlier acquisition of the real-time data. "Program of Founding Research Centers for Emerging and Re-emerging Infectious Diseases" by the MEXT was launched in 2005 to meet the urgent need of Japanese society, to strengthen the cooperation established between the researchers in Japan and the developing countries, and to implement a countermeasure in Japan for timely and effective control and cure of infectious diseases in the world.

Being supported by the MEXT program, Tokyo Medical and Dental University in cooperation with the Research Institute of Tuberculosis, Japan anti-Tuberculosis Association has promoted the research partnership with the Noguchi Memorial Institute for Medical Research, The University of Ghana, Ghana to launch a collaborative research on infectious diseases. Infectious diseases are prevalent in the West African sub-region where Ghana is located. Not only HIV/AIDS, tuberculosis and malaria, but also viral hemorrhage fever such as Lassa fever and Yellow fever, parasitic diseases such as African sleeping sickness and schistosomiasis, bacterial infections such as Buruli Ulcer which is specific for the West African sub-region remains to be serious problems for public health. However, the medical research for those infectious diseases still remains to be developed to understand the disease process and to find a cure for them. To meet the need, first of all it is required to establish a reliable epidemiological data base and an information network through interaction with researches resident in the disease site. In addition, many basic problems in a field of applied medicine, for instance, how to establish proper protocols for treatment of diseases and how to develop a new cure for diseases, require further attention. When these problems are properly handled, we assume it is possible to promote not only the research but also human resources and the countermeasures for infectious diseases.

The Japanese government donated the Noguchi Institute to the University of Ghana in honor of Dr. Hideyo Noguchi. The Noguchi Institute is one of the best institutions in the West African region with excellent research facilities; they have

The Noguchi Institute

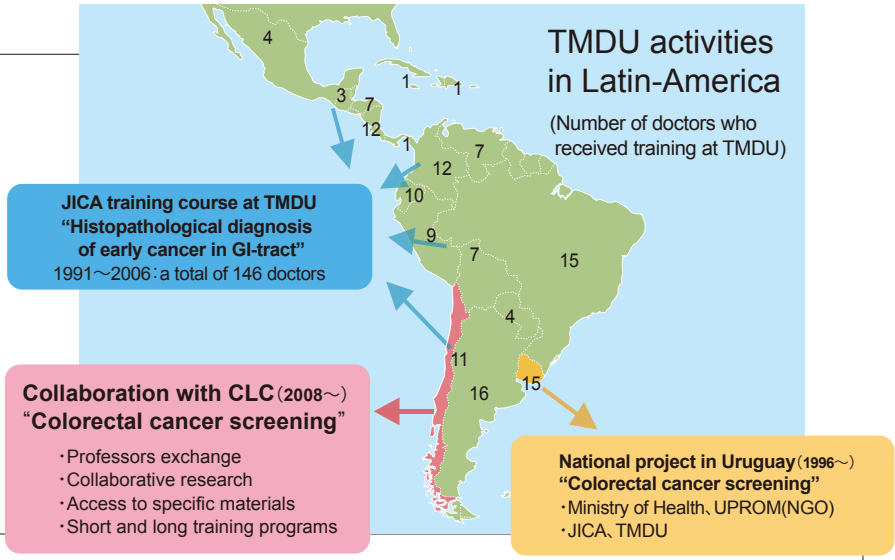
Research members with Prof. Ohta second from right

P3 level laboratory facilities and an experimental animal center. Two researchers from TMDU have already been selected and dispatched to the Noguchi Institute, and we have started research for viral and parasitic infectious diseases by utilizing the partner relationship with the researchers at the Noguchi Institute. Last year commemorated the 80th anniversary since Dr. Noguchi succumbed to Yellow Fever in Ghana. In honoring Dr. Noguchi, it is important for Japanese researchers to stay in Ghana and promote leading-edge research on infectious diseases. There is also an enormous significance for us to play a central role in facilitating to improve the research for infectious diseases, and to foster young researchers in the West African region.

*Nobuo Ohta, MD, PhD*
*Professor of Environmental Parasitology, TMDU*

International Collaboration 2

# Clinical, scientific, and academic collaboration with Clinica Las Condes in Chile



## Outline of the collaboration:

Increasing mortality rate of colorectal cancer has recently become one of the public health problems in Latin-America. In Chile (population, 15 millions), the rate has increased 1.6 times for the past 10 years. Clinica Las Condes (CLC), the most sophisticated hospital in Chile, has launched a national project for secondary prevention (early detection and treatment) of colorectal cancer. For the implementation of the project, CLC proposed clinical, scientific, and academic collaboration with Tokyo Medical and Dental University (TMDU). TMDU has basically agreed with the proposal at the end of 2008.

In the collaboration, Japanese technologies and knowledge for the screening, diagnosis, and treatment of early colorectal cancer are introduced during the annual training course held in Santiago, the capital city of Chile. Many Latin-American doctors, who participated in the previous JICA training course held in TMDU, will be invited as lecturers or teaching staffs in the training course in Santiago for the purpose of their further development in technologies and knowledge and thereby the spread of Japanese methods in Latin-American countries. The collaboration also includes researches for evaluating the feasibility of Japanese methods in Latin-America and developing immunochemical faecal occult blood test (IFOBT) and other effective screening methods such as quantification of DNA methylation in blood samples. Successful results in Chile may contribute to Latin-American and subsequent worldwide distribution of the Japanese technologies and knowledge for early colorectal cancer.

Colorectal cancer screening in Latin-America; Uruguayan doctors in the IFOBT training with Prof. Eishi at far left

## Backgrounds:

For the past 15 years (1991~2006), TMDU had provided a JICA training course for 3 months every year for Latin-Americans (totally 146 doctors) on histopathological diagnosis of early esophagogastric and colorectal cancers. During the training course, they were used to ask why so many early cancers can be found in Japan and finally to learn about Japanese methods of cancer screening for asymptomatic people as well as advanced technologies and knowledge for diagnosis and treatment of the early cancers.

After returned back to home countries, Uruguayan doctors were especially keen on introducing the Japanese screening method for colorectal cancer with IFOBT. In 1996, they launched a pilot study program in Montevideo, the capital city of Uruguay (population, 3 millions), directed by the TMDU and funded by the JICA. In 1997, the national digestive cancer program was set up by the Ministry of Public Health for the implementation of colorectal cancer screening . In 2006, results of the project were published in European Journal of Cancer Prevention (15: 384, 2006), reporting the highest cancer detection rate (approximately 1 cancer patient per 100 people screened) in the world.

Following to the Uruguay, in 2007, Chilean doctors have launched a small pilot study of colorectal cancer screening with IFOBT. A total of 3500 asymptomatic people were screened with IFOBT, and early cancers were found in 12 patients. All patients were curatively treated. Based on the results, a big pilot study (200 thousands people to be screened for 6 years) has been planned by doctors in CLC. They invited Professor Yoshinobu Eishi from TMDU at the congress held in October 2008 and proposed clinical, scientific, and academic collaboration with TMDU. TMDU has basically agreed with the proposal and the activities described below are planned for the project.

## Cooperation activities:

1. Researchers and Professors exchange to cover and complete courses offered by both institutions.
2. Medical and scientific research collaborative studies.
3. Access to medical equipment and specific material for either diagnosis or research.
4. Short and long training programs involving doctors from other Latin-American countries.
5. Other collaborative activities agreed between both institutions.

## Cooperation areas:

The cooperative activities will cover those areas with common interest for both institutions. It will be clearly defined the collaborative areas, its funding and also projects for Innovation and Technology Transfer to fill in the existing gaps. The collaboration on digestive diseases will be limited at the beginning to early colorectal cancer diagnosis and treatment in patients detected by screening with IFOBT and preventive activities. The collaborative areas will include Anatomical Pathology, Molecular Biology, Gastroenterology (specially endoscopic diagnosis and treatment of early lesions) and Colorectal Surgery.

### TMDU members to be involved in the project:

- **Anatomical pathology:**
  Professor Eishi Y, Associate Professor Kumagai J, and Assistant Professor Kawachi H
- **Molecular Biology:**
  Professor Yuasa Y, Associate Professor Hukamachi H, and Assistant Professor Akiyaka Y
- **Gastroenterology:**
  Professor Watanabe M, and Assistant Professor Nagahori M
- **Colorectal Surgery:**
  Professor Sugihara K and Associate Professor Uetake H
- **Secretary for collaboration:**
  Miss Iida K and Mr. Katayama T

*Yoshinobu Eishi, MD, MedScD, PhD*
*Professor of Human Pathology, TMDU*

# International Exchange in Dentistry


An important mission of our university involves educating health care professionals with an international perspective and exposure to world-class researchers. In the area of international exchange, the university has set up a goal of responding proactively to the international needs in terms of research, education and service. The Faculty of Dentistry, Dental Hospital and Graduate School (dentistry) actively undertake various activities in accord with the above goals.

We have established an official cooperative relationship role with various partners overseas as shown in the Table. In total, there are 35 inter-faculty affiliated universities as of January 2009. Twenty-six schools are located in the Asian region, 5 schools in North America, 3 Schools in Europe and one school in Oceania. Three-fourths of the affiliated universities are located in Asian countries, as we put an emphasis on the strong relationship with neighboring Asian countries.

The number of international students has increased steadily over the last 25 years to about 8 times the number in the early 1980s. The number of PhD candidates started to increase in the early 1990s, and now stands at more than 80 % of all the international students. Since 1995 we have accepted undergraduate students in the School of Dentistry. The fact that the number of students supported with the Japanese Government Scholarships is greater than that of privately-funded students constitutes one of the features of our international student profile. In the future we expect to accept more privately-funded students with distinguished academic abilities and performance records. We are very proud that when our international students return to their home countries they actively continue to contribute to promotion of their country's dental research and education. International graduates have established high reputations for their activities and abilities on their return to their home nations.

The TMDU Office of International Relations was established in January 1987 with the purpose of supporting international students, international academic exchange, and international cooperation in dental service. The chair of the International Committee serves as a director of the Office with the assistance of foreign students' advisors and the General Affairs Section. As an administrative body of the International Committee, the Office is engaged in various activities with a close cooperation with the TMDU International Student Center and sections/divisions of the Faculty, Dental Hospital and Graduate School (Dentistry).

We are now planning to implement a new international project with the support of the Japan Society for the Promotion of Sciences. The title of this project is the "Young Researchers' Project in Medicine and Dentistry –Establishing a Network of Health Care Professionals in Southeast Asia –". Overall the goal of the project is

## Overseas affiliated universities

| Area | Country | University |
|---|---|---|
| Asia | Korea | · Seoul National University<br>· Kyungpook National University<br>· Chonnam National University |
| | China | · School of Stomatology Peking University<br>· Jilin University<br>· Stomatology College of Dalian Medical University<br>· School of Stomatology, Capital Medical University<br>· School of Stomatology, Tongji University |
| | Taiwan | · College of Oral Medicine, Taipei Medical University<br>· National Taiwan University |
| | Thailand | · Chulalongkorn University<br>· Mahidol University<br>· Chiang Mai University<br>· Prince of Songkla University<br>· Khon Kaen University |
| | Indonesia | · University of Indonesia |
| | Singapore | · National University of Singapore |
| | Myanmar | · Institute of Dental Medicine, Yangon |
| | Malaysia | · University of Malaya |
| | Vietnam | · The University of Medicine & Pharmacy at Ho Chi Minh City<br>· University of Odonto-Stomatology, Hanoi |
| | Cambodia | · University of Health Sciences, Phnom Penh Cambodia |
| | Laos | · National University of Laos |
| | Philippines | · University of the Philippines Manila |
| | Mongolia | · Health Sciences University of Mongolia |
| | Sri Lanka | · University of Peradeniya |
| America | U.S.A | · Harvard School of Dental Medicine<br>· The University of North Carolina at Chapel Hill<br>· University of California San Francisco<br>· University of Pennsylvania |
| | Canada | · McGill University |
| Europe | Germany | · Charité-University Medicine Berlin |
| | U.K | · King's College London Dental Institute |
| | Denmark | · University of Copenhagen |
| Oceania | Australia | · The University of Melbourne |

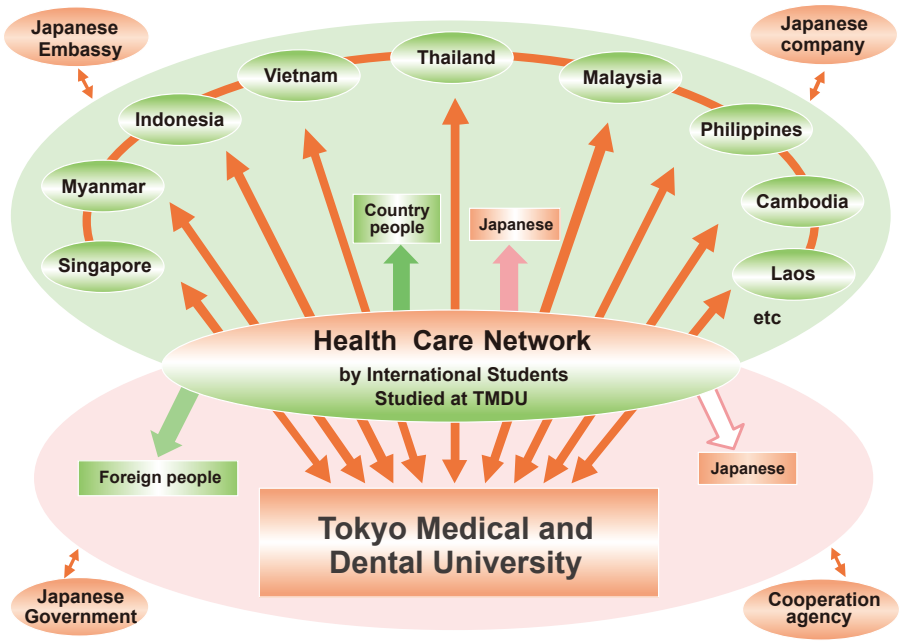
to improve young researchers' knowledge and ability in the field of medicine and dentistry for the purpose of establishing a network of health care professionals in Southeast Asia. In 2009, we will commence the project with a focus on Japan and Thailand in the field of dentistry. We will then expand the targeted countries in Southeast Asia and include medical disciplines in future years (see Figure).

The applicants for the project will mainly be previous international students who studied at TMDU and received PhD degree within the previous 6 years. These young researchers will come to TMDU and study for a short period (14 to 90 days) under TMDU nominated supervisors. TMDU will assist with the provision of return air tickets and a sustenance allowance (fee) during their stay.

The objectives of this initial project are: 1) To provide new knowledge and technology of changes in various dental fields (basic science, clinical dentistry, public health dentistry). 2) To facilitate and upgrade research development, dental care delivery and dental education techniques. 3) To broaden the young researchers' perspectives through active exchange of information and ideas with Japanese dental professionals. 4) To establish an international network of dental personnel and dental organizations. We believe this approach to young researchers will encourage their participation into the project and reestablish their affiliation with TMDU.

*Yoko Kawaguchi, DDS, PhD*
*Professor of Oral Health Promotion, TMDU*

**Health Care network in Southeast Asia** in Dentistry




## Letters from Overseas

# The relationship between Thailand and Japan

It is a great opportunity to convey my message to the first issue of TMDU Annual News. It was since 1997 that I got a Monbusho scholarship to further my study in Tokyo Medical and Dental University.

It began in 1989, when I was a third-year dental student. I participated in the Asian Pacific Dental Student Associations' Congress (APDSA) in Malaysia where I met many of Asian friends. Then I continued keeping contact to all of my friends especially the one who was studying in TMDU. In 1995, I became a staff in Oral Surgery Department, Chulalongkorn University (CU). By that time, student exchange program under the APDSA regulations between CU and TMDU was established. Eventually, the two universities became sister universities. Many Professors came to visit us and also many of us went to visit TMDU. That was the chance for me to meet Prof. Amagasa, by that time he was Professor of the 1st Department of Oral Surgery. Therefore, when I passed the Monbusho scholarship in 1997, he kindly accepted me in his department and I was there until graduation in 2002.

During my stay, I had lots of friends not only Japanese but also foreigners. I met not only new friends but also old friends from APDSA. I felt like life in Japan went so fast, probably because I had so many things to do both clinical study and laboratory work. My research work was carried out in the Department of Molecular Cytogenetic, the Medical Research Institute. Even though the work in the lab was so hard, it gave me a lot of experiences. I felt very grateful for all advices from my dear tutors, Dr. Imoto and Prof. Inazawa. Beside the research work, I also traveled around the country and did some other collaborative works and social work with Prof. Eto.

Because of the continuing collaboration

Atiphan and his family at Ueno Park

under JSPS between CU and TMDU, after graduation I got a chance to come back to TMDU 3 years consecutively. Researches were carried out under this collaboration. Apart from work, I also personally bring my family to Japan and visit Prof. and friends almost every year.

To me Japan is my second home where I feel happy to visit and not get lost any where due to the good transportations and accommodations, especially in TMDU where I feel very much at home.

Last but not least, studying in TMDU was my great opportunity and experience which I don't think that I can get these any where in the world. I would like to say thank you to all people in TMDU who gave me this chance and I will be very happy to become a part to continue the relationship between Thailand and Japan forever.

Best wishes

*Atiphan Pimkhaokham*

Dr. Atiphan Pimkhaokham
DDS(CU), PhD(TMDU), Thai Board (in OMFS), B.PA.(STOU), Mini MBA in Health(CU)
Assistant Professor
Vice Dean in Planning&Development and IT Faculty of Dentistry
Chulalongkorn University
Henri-dunant Rd. Patumwan
Bangkok Thailand 10330
Tel: 662-218-8646, Fax: 662-218-8581
E-mail: atiphan.p@chula.ac.th

# A great opportunity seized

With Dr. Jun Tsuruta in front of Tower Bridge, London

It gives me great pleasure to be able to write a few words for the new magazine from Tokyo Medical and Dental University. Thinking back, it must have been a good omen that when checking in for my flight to Tokyo in April 1998 I was told that I needn't worry about the weight of my luggage as I would be flying business class with JAL. And after being given my 12,000 yen allowance, a Taxi ride from Narita to Soshigaya International Student House in the delightful Tokyo suburb of Seijo-gakuen. Of course this luxurious mode of travel did not last any longer and I spent many wet mornings walking to Sengawa station for my Japanese language course at the University of Electrocommunications in Chofu during the rainy season and it was at this point that I realised why people cycled to work. It was at least 15 years since I had last ridden a bike and I must have looked a strange sight wobbling from side to side on my rickety old bike trying not to topple over but it didn't take much time before I was cycling one-handed with my other hand holding an umbrella.

Now I am a commuter on the London underground and as I write this article thinking back to my first few months as a Monbusho scholar, I wonder did I really live in Tokyo for five years? However, I would not now hold my position as a Clinical Lecturer at King's College London Dental Institute if it wasn't for the decision of the Japanese Embassy in London to award me a scholarship all those years ago. Nor would I have met my wife, a fellow Monbusho scholar, who also studied Tokyo Medical and Dental University. While, I was fortunate to visit many places in Japan, I regret that I did not take the opportunity to visit more.

It was my interest in the martial arts of Karate and Aikido that fuelled my interest in Japanese culture and a desire to learn more about Japan. Thanks to my teachers in the Departments of Cariology and Operative Dentistry and Fixed Prosthodontics, I also gained expertise in Adhesive Dentistry. It was Professor Hasegawa and Professor Miura who kindly allowed me to carry out research on adhesion to dental ceramics in Cariology and Operative Dentistry and Professor Tagami who kindly accepted me. Always I tell my students here at King's College London how my supervisor, Dr. Nakajima, made me rewrite my first paper at least 10 times only for it to be rejected!! Not a great start to my new academic career but a good lesson. Thanks to Dr. Nakajima's great patience and skill, things got a lot better and now I am able to pass on his teachings to my own students.

For the past few years I have worked hard to build links between King's College London Dental Institute and Tokyo Medical and Dental University and I was delighted when the two Deans were able to sign a memorandum of understanding for exchange of undergraduate students between the two institutions last November.

At a recent King's College external strategy meeting, our Vice-Dean, Professor Challacombe said to think "international", you must have studied as an international student. During my five years studying at Tokyo Medical and Dental University I was able to meet many foreign students from many countries, which allowed me to develop a global view of Dental Education.

I would like to conclude this article by thanking the Japanese Embassy in London for awarding me a Monbusho Scholarship and Emeritus Professor Hasegawa for accepting me as a foreign student in his Department. Finally, I would like to say a big thank you to all the past and present staff and students at Tokyo Medical and Dental University for a most memorable experience, one, which I will never forget.

*Richard Foxton*

Dr. Richard Foxton, BDS, PhD, MFDS RCS (Ed), FHEA
Clinical Lecturer/Honorary Specialist Registrar in Restorative Dentistry,
Floor 25, Guy's Tower, King's College London Dental Institute,
Guy's Hospital, London Bridge,
London SE1-9RT
E-mail: richard.foxton@kcl.ac.uk

# International Exchange in Medicine

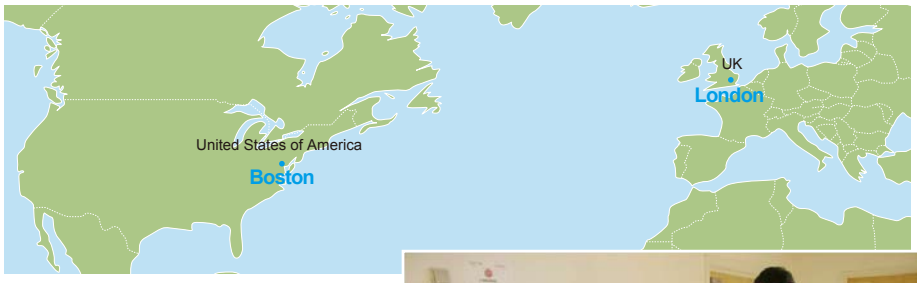
One of the educational objectives of TMDU is to educate tomorrow's doctors and scientists who will take leadership role in serving the world. To fulfill this mission, TMDU offers opportunities for students to engage in study abroad and help them to extend their intellectual horizons and foster global understanding. Particularly, the **Exchange Program with Imperial College London** and the **Harvard Medical School Externship** offer an excellent opportunity for young students to broaden their views and expose themselves to the world's most lively and inspiring environments for studying medicine and science.

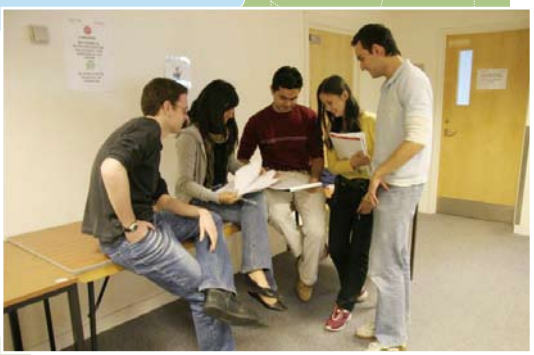
## Exchange Program with Imperial College London

The exchange program between TMDU and Imperial College London was started in 2004. This program provides students with an opportunity to gain firsthand experience for doing world-class research in the field of biomedical science.

## From Tokyo to London

TMDU students who pass the selection process spend the second semester in their fourth year (from October to March) studying at Imperial College London. They take courses offered as part of the Bachelor of Science (BSc) degree program and undertake a research project. They can engage in stimulating academic activities at one of the most prestigious institutions in the UK. Established in 1907, Imperial College has been a hub of scientific developments. Many famous scientists are associated with the college, including Sir Alexander Fleming, discoverer of penicillin and Nobel Laureate, and 13 other Nobel Laureates and 2 Fields prize winners.





Discussion about something fun ? At Imperial College London

## From London to Tokyo

As partial fulfillment of the BSc degree, Imperial College students undertake research work at TMDU. They stay in Tokyo for twelve weeks from February to May and engage in active research work under the supervision of TMDU faculty. A wide range of laboratory research is available. Located in the very heart of Tokyo, TMDU is an ideal academic institution to experience cutting-edge research and the contemporary culture of Tokyo. Participants can also enjoy social programs and interact with many TMDU students.

## TMDU-Harvard Medical International, Inc. Alliance for Medical Education

Since 2002, TMDU has cooperated with Harvard Medical International, Inc. and implemented wide-ranging reforms into TMDU's medical education. One of the chief aims of this alliance is to create a new model of medical education in Japan in order to meet various challenges we face in the 21st century. Partnering with HMI, closely related to Harvard Medical School, TMDU has introduced new ideas and approaches into its curriculum, including patient--doctor relationship courses, hybrid programs integrating basic science and clinical studies, and innovative clinical clerkship programs.

This alliance also provides TMDU student with a chance to take part in a clinical clerkship at Harvard Medical School. As a part of a recent curriculum reform, TMDU introduced the **Harvard Medical School Externship** program in 2004. The students who pass the selection go through nine months of preparatory training then take part in clinical clerkship at Harvard Medical School. They stay in Boston for three months and take three, four-week elective clerkship rotations. Harvard Medical School provides exchange students from all over the world with a chance to experience the same clinical training as Harvard students at HMS affiliated teaching hospitals. Working hard with talented and enthusiastic students of HMS and other medical schools around the world, TMDU students can develop their clinical skills and get a better understanding of the American healthcare system as well as acquire an international way of thinking.

Medical students of TMDU at Harvard !

*Yujiro Tanaka, MD, PhD*
*Professor of Medical Education Research and Development, TMDU*

# Letters from Overseas

## A beautiful country and a talented university

The view I remember on my walk to TMDU each day

My experience at TMDU was one of the best of my life! I spent a few months with Professor Kitagawa in the Pathology department completing a project towards my Haematology BSc. The work we achieved was subsequently published in the British Journal of Haematology.

It was not all work and no play though – I spent some special times with the friends I made in the laboratory and we spent weekends away skiing, and at the hot springs. My most memorable moments were being dressed up in a Kimono by my friends grandmother, skiing with Masaru, all the excitement about the cherry blossom, multiple visits to the hot springs, the hospitality that Professor Kitagawa and his assistant Maki Hasegawa showed me and the welcome that the Japanese people shared. A beautiful country and a talented university – I would love to return one day and recommend anyone to join the TMDU-Imperial exchange.

Being dressed in a Kimono !

I am now a qualified doctor working in a London hospital and am engaged to be married in September – and two of my Japanese friends will be celebrating with me at my wedding.

With fond memories

*Tamara Keith*

Exchange student from Imperial College London in school year 2005

## My personal and professional life enriched

Welcome reception by the TMDU faculty members in 2006

The medical course at Imperial College London requires students to undertake a one year intercalated BSc degree. As part of this degree each student spends three months working on a research project. I was one of four people chosen to take part in an exchange programme with TMDU for this period. During the three months we were expected to work in a research laboratory in Japan.

My experience at TMDU is something I will always cherish. Working in a virology laboratory under the supervision of a well known research scientist, Yamaoka Sensei, was a great privilege. Communication was not a problem as my colleagues spoke English. As much of my fellow researches came from many parts of the World including China, Korea and Paraguay I also gained a unique opportunity to learn about different cultures. During my stay in Tokyo I found everyone at TMDU extremely hospitable and always ready to help if I was in any difficulty. I value the friendships I made during my stay in Japan and still keep touch via email.

My project involved gaining skills in the cutting–edge field of NF–kB and its relation to colon cancer. The teaching I received from my colleagues has provided me with a solid foundation for carrying out research. Further, the project to which I was allocated has since been presented at The World Cancer Congress giving me hope that my project will be able to enhance colon cancer management for future patients.

In addition to working, during my stay in Japan, I spent two weeks on holiday and had a fantastic time travelling the country by Shinkensen. It was magical to visit the temples in Kyoto, the Onsen in Mount Fuji and heart-

wrenching to learn the details about the history of Hiroshima.

Living, working and travelling in Japan was an amazing experience which I hope to repeat again in my lifetime and I would like thank TMDU and Imperial College for devising such a unique working experience for medical students. My personal and professional life has been enriched by the time I spent working in TMDU.

*Jasprit Bhamrah*

Exchange student from
Imperial College London in school year 2006

In the local restaurant with Prof Yamaoka

# Promising results with a little humour

My name is Jahnavi Patel, I am currently a student at Imperial College London. Last February, myself and three classmates visited the Tokyo Medical and Dental University for a three month research visit.

## The research

My research project was looking at potential markers of stem cell activity within the wild-type murine small intestine and colon. The project was carried out under the excellent supervision or Dr. T Nakamura at the Gastroenterology and Hepatology Department.

My work included using reverse transcription PCR and in situ hybridisation to stain for Lgr5 a gene implicated in the localisation of stem cells, within the intestinal crypts, in a number of tissues with the GI tract of mice. Despite the widespread interest, as of yet there has been no published data on a method that can isolate stem cell markers in murine let alone human tissue. My results were promising and although no groundbreaking results were demonstrated, I very much enjoyed my time in the lab, learning new techniques, making friends and generally providing much entertainment with my comical mistakes!

The research group hopes to continue and further my work by using various different techniques in order to improve the specificity and sensitivity of the results, which will hopefully, in due course, lead to a publication.

## The sights and sounds of Japan

While the vast majority of our time was spent in the laboratory any free time the four of us had we used to explore this fascinating country. We were lucky enough to have a week of vacation during the cherry blossom season which was spent travelling through Japan.

We visited Kyoto, Nara, Kobe, Hiroshima, Itsuku-shima Island and Osaka during that time. Travelling on the Shinkansen was one of the most enjoyable experiences I have had in Japan. Kioyomizu Temple, Ginkaku and visiting the Gion district were the highlights of Kyoto in addition to seeing many beautiful pagodas and traditional Japanese gardens. Being an avid historian I also found the Kobe Memorial, the Edo-Tokyo and the Hiroshima Atomic Bomb Museums very interesting. On our travels we managed to join a wedding party in Itsuku-shima which was wonderfully fascinating. Moreover, we visted Yokohama which was sensational. Being a port and still very much developing it was great to see it taking shape. The other students also visited Hokkaido and Kamakura which again they very much enjoyed.

Closer to Tokyo we visited Shibuya, Shinjuku, Asakusa and regularly sat in Ueno Park, especially during the cherry blossom season, which was a truly memorable two weeks. I was also keen to see as much modern and traditional Japanese architecture as possible, and visiting Ginza with is multitude of beautifully designed buildings ranging from the Sony building to the Tokyo International Forum were a sight to behold.

## Finally…

We all thoroughly enjoyed our time at the TMDU and look back on it fondly, we would like to thank all the staff and students particularly in the Departments of Gastroenterology and Hepatology, Neuroscience and Chemical Pathology for their support and help and making our trip a truly memorable experience.

*Jahnavi Patel*

Exchange student from
Imperial College London in school year 2007

Under
the Sakura Tree

# Summer Courses in Germany & Cambridge


Summer course in Germany 2008, students visiting Linderhof-castle, near Munich.

## Intensive Language Courses Abroad

TMDU College of Liberal Arts and Sciences offers a special summer course in Germany. We select five of the best students in German to join a three-week intensive language course in Berlin, with the course fee paid by TMDU. Firstly, we fly to Munich with its beautiful, spectacular countryside, and stay there for four days. Here the students begin to practice living in their new German surroundings. On the fifth day we fly to Berlin and go straight to the "Freien Universitaet", where the intensive language course is held. From Monday to Friday the students have language lessons from nine to one o'clock. In the afternoon there are activities related to the morning's lessons: students go, for example, in small groups to the town where they must solve special problems and questions. In connection to this questionnaire, our students visit major art galleries, museums, and federal government buildings, or discover historic scenery. In the evening, students have the opportunity to visit concerts and shows. During weekends there are excursions into the surrounding regions, for example to Potsdam. The students' classmates come from all over the world, but most of them are from Europe, so they learn not only about Germany and Berlin, but also a great deal about other European countries and their citizens.

## Studio Cambridge

For students interested in combining improvement in their English language abilities with the chance to experience a foreign culture, often for the first time, TMDU College of Liberal Arts and Sciences has been recommending courses in Cambridge at one of the UK's oldest and most prestigious English language schools. Studio Cambridge, established in 1954, is a private school, independent of Cambridge University, and located in the centre of one of England's most beautiful medieval university cities. It offers a wide range of courses in essential and advanced language skills throughout the year, though on the advice of the English department at Konodai, students attend two week courses in the spring or summer. The general English program consists of twenty morning classes each week, leaving the afternoons free for activities and excursions. An intensive program, consisting of twenty-eight classes a week, also includes further study options for afternoon lessons.

Students are offered interesting choices of accommodation: they may take up residence in one of two Cambridge University colleges – Ridley Hall College or Lucy Cavendish College – or choose to experience 'homestay' life with a British family. Of the ten Konodai students who enrolled for Studio Cambridge last summer, most wanted to see life firsthand in an English home, and have reported that it was an enjoyable and worthwhile decision. Study in the UK gave our students a variety of opportunities, from encounters with second language learners from around the world to the chance to explore London and other regions of Britain and Europe.

*Emi Schinzinger,*
*Associate Professor,*
*College of Liberal Arts and Sciences*

*David Taylor,*
*Associate Professor,*
*College of Liberal Arts and Sciences*

Summer course in Germany 2006, students with international classmates in Berlin.

# "Musha-shugyo" in overseas countries has positive effects on young biomedical engineer's career

"Interdisciplinary Educational Program for Biomedical Engineers" in the Institute of Biomaterials and Bioengineering(IBB), TMDU sponsored by Japan Science and Technology Agency (JST) has started in year 2005 to educate biomedical engineers who can understand engineering as well as medical and dental sciences, and apply the interdisciplinary sciences toward multi-disciplinary researches related to nano-technology. After a year of preparation, the actual program started to recruit students and lecturers in 2006. The program can accept up to 30 students per year and the enrolment is open to the graduate students in the TMDU Graduate School of Medical and Dental Sciences, the School of Biomedical Science and for the college graduates working in industries.

The two-year curriculum focuses to provide students with basic knowledge and practical training for understanding "nano-interface technology", a technology to control the interface reaction in nanometer scale. Through inter-disciplinary programs, students are taught to apply the technology for developing new functional systems including biomaterials, drug delivery systems, and diagnostic and therapeutic systems. To achieve the primary goal of the program, courses in basic sciences, engineering, and pharmacology are offered by the experts invited from overseas and students are sent to domestic field trips as well as to one-month studies in foreign countries. In the interaction with lecturers from abroad, students learn how to prepare presentation materials in English as well as efficient way of presenting the material.


Since year 2006 a total of 16 reputable researchers in the area of biomaterials, nano-interface, drug delivery systems, and artificial organs have been invited to work with the students in the classroom here at the Surugadai-Campus of TMDU. Field trips to Osaka and Kyoto area were also organized to let the students learn the state of the nano-interface technology.


Small group seminar with a guest researcher

Students who wish to go abroad for one-month field trip called "Musha-shugyo" first enter the BioFuture competition held in the IBB once a year toward the end of the first year where each student is asked to do a 15 minute presentation in English describing his or her research and objective of the study abroad. (The "Musha-shugyo" is a Japanese word describing a samurai warrior travelling away from home to cultivate skills as well as to expand level of understanding through actual experiences.) Those who are ranked top four in the Bio Future competition are awarded to pick the study site either in Europe, USA or Asia-Pacific, and make an arrangement with the professors in the receiving institution in the second year of the program. After completion of the study abroad, the students are asked to give an oral report in addition to a written report fully describing the experiences. In year 2007, a total of four students were awarded the support to go abroad including Queensland University of Technology, Australia, National University of Singapore, Singapore, Imperial College London, England and University of Pittsburgh, USA. In year 2008, three students completed one-month study abroad experiences, and their experiences are introduced here;


Lecture by Prof. Marcus Textor, ETH, Swizerland


Laboratory Practice

*Takao Hanawa, PhD*
*Professer, Dept. of Metals, IBB, TMDU*

# My study at EPFL in Swizerland

Yuko second from left with Dr. Mischler second from right standing next to her

I had studied at Swiss Federal Institute of Technology Lausanne (EPFL) for one month from February 10th through March 11th, 2008 in the laboratory of Dr. Stefano Mischler who is an expert in the field of "tribo-corrosion". Tribo-corrosion is an important subject for artificial joint research, because the sliding parts of artificial joints are exposed to friction wear in body fluid causing tribo-corrosion of metals. In my research at EPFL, I compared the tribo-corrosion property of a Co-Cr-Mo alloy, an anti-corrosion and wear resistant material commonly used for artificial joints, with that of a Ti-6Al-4V alloy with high corrosion resistance used for various medical devices.

While I had stayed there, I attended several lectures offered to learn tribo-corrosion and had an opportunity to present my research work in Japan. These experiences strongly motivated me to improve my English speaking skill. EPFL offers a highly international environment where many foreign students work under guidance of Dr.Stefano Mischler. Through spending time together with people from different countries, I came to realize that the difference in language is not a problem but communication skills are more important. I appreciate everyone in the laboratory and EPFL who gave me heartfelt welcome and taught me the usage of devices, techniques and English, in spite of their busy schedule.

## Homestay in Switzerland

As for my private life in Switzerland, I homestayed with a local family in a small town called Rolle located between Geneva and Lausanne. There are a lot of grape fields and lakes in that area. People wake up early in the morning to go to work and come back home early at around five in the evening to enjoy life after work. The park in the vicinity of the lake is usually crowded with families on holidays. I learned that the life style in Switzerland was so different from that in Japan. Although it was a short stay in Switzerland, I could experience different cultures in Europe. I came into contact with different people with various ethnic backgrounds. It was a wonderful experience in my life. I sincerely recommend students here at TMDU utilize this program to experience living in different countries and communicate with people through speaking different languages.

Finally, I would like to express my wholehearted gratitude to people who supported my study in Switzerland including teachers in Japan, Dr.Stefano and his laboratory' s members and my host family.

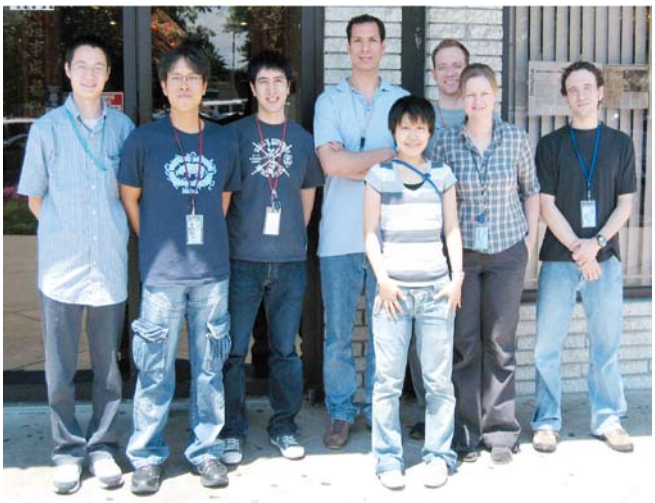
Yuko Tanaka

Dept. of Metals, IBB, TMDU

With hostmother Erika

# About NIH and NCI in USA

From June 30th to August 4th in 2008, I had a chance to study abroad under the guidance of Dr. Victor E. Marquez, Chief of Laboratory of Medicinal Chemistry, National Cancer Institute (NCI), National Institutes of Health (NIH), Frederick, MD, USA, and Dr. Peter M. Blumberg, Chief of Molecular Mechanisms of Tumor Promotion Section, Laboratory of Cancer Biology and Genetics, Center for Cancer Research, NCI, NIH, Bethesda, USA. The NIH, a part of the US Department of Health and Human Services, is the primary federal agency for conducting and supporting medical research in the United States. The NCI, a part of NIH organization, is one of the largest cancer research centers in the world.



With members of Dr. Marquez' s lab. Nami third from right in front

### Dr. Marquez's lab and Dr. Blumberg's lab

Dr. Marquez, who is a collaborator of Prof. Tamamura of the Institute of Biomaterials and Bioengineering, TMDU, introduced me to Dr. Blumberg. Dr. Blumberg's lab members are from various countries. Since Dr. Blumberg accepts people with handicaps in hearing, the lab meeting is held with a sign language interpreter. His research there is elucidation of "Mechanism of Action of Phorbol Esters and Related Derivatives". I have learned a method for evaluating the binding affinity of a ligand and its receptor using a radio isotope.

One day during my US stay, I visited Dr. Marquez in Frederick, MD. He researches about "Rational Design of Antitumor and Antiviral Agents". In Frederick, I also visited Dr. Terrence R Burke, Jr., Laboratory of Medicinal Chemistry. Everyone talked to me so kindly about their study and Frederick life.

With members of Dr. Blumberg's lab

With Dr. Marquez

### Finally

The NIH life gave me a great experience. Without kind support from everyone, the training has not been carried out safely. I would like to specially thank you for supporting my study in US.

I would like to greatly appreciate "Jinzai katsuyo committee" support.

Nami Ohashi

Dept. of Molecular Recognition, IBB, TMDU

## My experience in Norway

Campus of NTNU

For my musha-shugyo, I picked country Norway. I had stayed from May 25th to June 23th, 2008 under Prof. Bjørn Torger Stokke, Department of Physics, Biophysics and Medical Technology, Norwegian University of Science and Technology (NTNU) in Trondheim, Norway. NTNU is the second largest university in Norway, with 20,000 students, and has its main focus on technology and the natural sciences. Prof. Stokke's group has been studying morphology of polysaccharides and interaction between biomolecules and polymers in nanomerter level.

I learned two research topics from them. One is about the observation of cationic cycloamylose and plasmid DNA complex (polyplex) using an atomic force microscopy. Although I had been exposed to this technique in Akiyoshi's lab prior to going to Norway, I wanted to look at it from different angle. Through this experiment, I learned an improved method of preparing polyplex. The other topic was the detection of swelling hydrogel containing hydrophobically modified polysaccharide (we call CHP nanogel) using optical fibers. Recently, Stokke's group has established the method of using an interferometric method for determination of swelling of polymer gels with high resolution. By using this method, we succeeded in detection of swelling of CHP gel with addition of cyclodextrin which interacts with CHP gel. Since this is in an early stage of investigation, I'd like to continue this research in Japan.

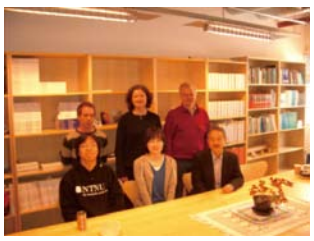
The NTNU life was exciting for me. I attended seminars held in several laboratories and had a discussion with many researchers. I was very happy to introduce my research and discuss about it. One of them had studied in Japan for several years, and we talked pleasingly about living in a foreign country each other. I also enjoyed Norwegian life with members of Prof. Stokke's lab and their friends. For example, we went hiking and jazz concert on weekends. Especially, I made the biggest impression of discussing future plan with the lab members.

Studying abroad through "Jinzai-yosei program" was good experience for me and it made a positive effect on my carriers. Especially, my attitude for my research has changed entirely since I went abroad to learn laboratory of different field. I would make greater efforts in the future! I am grateful to Prof. Stokke, Prof. Akiyoshi, and all members of both laboratories for their kind help during this training. Finally, I express sincere thanks to Jinzai-yosei committee to give me a wonderful chance to study abroad.

Sayaka Toita

Dept. of Organic Materials, IBB, TMDU

At Prof. Stokke's lab



With lab members

# "The 7th Surugadai International Symposium" and "Advanced Course of Biomedical Science"

Since 2001, The Medical Research Institute and the School of Biomedical Science have held the Surugadai Symposium, which is an annual international symposium that allows top scientists invited from abroad and Japanese scientists to discuss advanced research in the fields of medical and biological science. On November 18 2008, the 7th Surugadai Symposium, as organized by the Division of Pathophysiology with the main thema of "Cell Death, Autophagy, Cellular Senescence and Their Roles in Diseases", was held. We also held an international course, "Advanced Course of Biomedical Science", aimed at young Asian students and investigators who are interested in cell biology, especially the cellular events related to cell death, autophagy and senescence.

## "Advanced Course of Biomedical Science"

On November 16th and 17th, 43 young Asian students and investigators from China, Korea, Singapore, Malaysia and Japan and leading bioscience experts came together to fuel further learning, discussion and interaction about biosciences. It was an instructive program that included introductory lectures and technical seminars on cell biology, especially cell death, autophagy, and cellular senescence. The lectures given by the top scientists were very interactive and interesting. Participants were able to learn both emerging technologies and classical techniques to study cell biology. Active discussion could be seen in the lectures. Of particular interest for the students were the presentations by Eileen White, The Cancer Institute of New Jersey, and Scott Lowe, Cold Spring Harbor Laboratory, who provided a scientific update on research in cell biology.

Additional lectures about the cooperation between industries and academia were given by Dr. Mitsuru Miyata and Dr. Michael B. Paumen. Dr. Miyata spoke about the industry in Japan and Dr. Paumen talked about translating scientific findings into diagnostic assays. This session provided an endpoint focus on the application of research that scientists should keep at the back of their minds.

In order to provide a platform for young researchers to exchange their ideas, we arranged group discussions, short talks and poster exhibitions. All of the young speakers exhibited excellent qualities. They expressed not only their research but also their hopes. Moreover, the communication among the young researchers from different countries enhanced mutual understanding. All the participants reported they enjoyed visiting the research facilities at TMDU. They visited several laboratories of the Medical Research Institute and were impressed at how well the laboratories were equipped. The visits gave them an idea of how research was done in TMDU. Some of them would like to experience the working culture of these laboratories and to learn some of the experimental techniques employed by TMDU researchers.

### Program

〔**16th November, 2008**〕

1. Opening Remark and Introduction —Masaki Noda (TMDU)
2. Technical lectures —Shigeomi Shimizu (TMDU), Masaaki Komatsu (Tokyo Metropolitan Institute), Masashi Narita (Cancer Research UK)
3. Group Discussion "Platform for scientific exchange"
4. Lectures 1 "Functional aspects of cell death" - Takeshi Tsubata (TMDU), Hiroshi Nishina (TMDU), Hitoshi Okazawa (TMDU)
5. Poster Presentations

〔**17th November, 2008**〕

1. Lectures 2 "Cooperation between industry and academia" - Mitsuru Miyata (Nikkei Bio. Co.), Michael B. Paumen (Dx Assays Pte. Ltd., Singapore)
2. Visit to research facilities at TMDU
3. Selected Talks from Participants
4. Lectures 3 : "Molecular Mechanisms of Cell Fate" - Masayuki Miura (University of Tokyo) , Scott Lowe (Cold Spring Harbor Laboratory), Eileen White (The Cancer Institute of New Jersey)
5. Reception


### "The 7th Surugadai Symposium"

The symposium "Cell Death, Autophagy, Cellular Senescence and Their Roles in Diseases" was held on November 18, 2008. It introduced wide knowledge and current advances about cellular events related to cell death, autophagy and senescence, which are becoming hot points in the life sciences research. Top researchers inspired the audience by describing their latest findings and summarizing their theories. Furthermore the symposium provided a time for fruitful and wide-ranging discussion with the 156 participants in audience.

*Shigeomi Shimizu, MD, PhD*
*Professor, Department of Pathological Cell Biology, The Medical Research Institute*

**Program**
〔18th November, 2008〕

1. Opening Remark–Takashi Ohyama (President TMDU)
2. Session I – Shigeomi Shimizu (TMDU), Noboru Mizushima (TMDU), Eileen White (The Cancer Institute of New Jersey), Yoshinori Ohsumi (National Institute for Basic Biology)
3. Session II–Takeshi Tsubata (TMDU), Masayuki Miura (University of Tokyo), Masashi Narita (Cancer Research, UK), Scott Lowe (Cold Spring Harbor Laboratory)
4. Closing Remark- Hiroshi Tanaka (Dean, School of Biomedical Science)

# Inaugural TMDU Summer Symposium

## Bringing together cancer research and international students, Sept. 6～9, 2009

We are pleased to report on our plans to hold the inaugural TMDU Summer Symposium from September 6 ~ 9, 2009. The purpose of this symposium is to bring together researchers from the East and West, with the special aim of introducing research students from schools in Asia to experts who are pursuing cutting edge medical and scientific research. A select number of students from schools in Asia will be given full support to attend the Symposium.

In addition to bringing together researchers and students, we are looking forward to expanding our overseas networks and helping create new opportunities for all participants. We are especially hoping to introduce TMDU to students in Asia who are not yet familiar with how their academic and professional careers would benefit from studying at TMDU. Thus, if you know of a person who might be interested in taking part in the Summer Symposium, please direct them to the International Student Center website, **<http://www.tmd.ac.jp/TMDU-e/isc/>** where they can get more information and a downloadable application form.

The Symposium will consist of two sections: a Summer Course, for students, and an International Symposium, mainly for researchers. In the Summer Course, researchers from overseas and from Japan will present lectures on their current research and participate in panel discussions. In addition, it is planned that some students will make poster presentations on their current areas of research. In the International Symposium component we look forward to similar exchanges of information as researchers present papers on their work and discuss their research with each other.

The theme of "cancer research" was chosen for our inaugural symposium because cancer detection and treatment are becoming more important every year in Asia, with the region's generally rising living standards and life expectancy, and in Japan in particular, with its aging society.

Three leading figures in cancer research have accepted our invitation to be featured speakers in the Summer Course: Dr. Charlotte Bevan, from Imperial College London (UK); Dr. Minetta Liu, from the Georgetown University Hospital (US); and Dr. Michael O'Reilly, from the University of Texas M. D. Anderson Cancer Center (US). Each of these featured speakers will provide a lecture in the Summer Course

TMDU Campus Buildings

Ochanomizu area
around TMDU Campus

and present a paper in the International Symposium. Several other researchers from Japan will also participate in the Summer Symposium; however, at the time of this writing, that part of the program has not yet been finalized.

Student participants will be selected from applicants from universities in Bangladesh, China, Korea, Malaysia, Singapore, Thailand, Vietnam, and other Asian countries. Our hope is that these students will gain new insights from the courses and presentations in the Symposium and from their interaction with the invited researchers and their peers. In order to facilitate such interaction and dialog, we have scheduled a reception, a bus tour of Tokyo and other events in addition to the lectures, poster sessions and panel discussions described above.

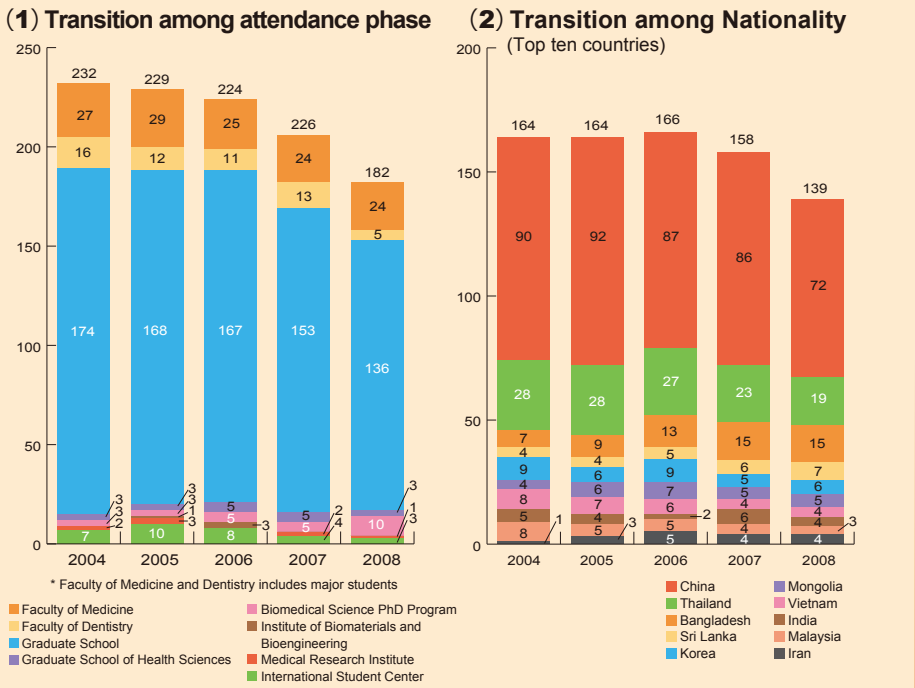
The organizers are very grateful to the TMDU administration for their generous support and encouragement for the Summer Symposium. We share the administration's belief that the Symposium will be a key factor in increasing TMDU's presence overseas and increasing the number of visiting professors and international students at TMDU.

We also greatly appreciate the support by the Faculty of Dentistry, which has kindly allowed us to use their Auditorium for the duration of the Symposium.

Based on the feedback we receive and an evaluation of the success of the Symposium, we hope to make this an annual event that becomes an anticipated part of Asian medical school studies.

*Yasuhito Yuasa, MD, PhD*
*Professor of Molecular Oncology, TMDU*

**Trend in Number of International Students at TMDU, from 2004 through 2008. Unfortunately, the number of international students has slightly declined. That is one reason why we start TMDU Summer Symposium.**




## *Featured Speaker Profiles, TMDU Summer Symposium 2009*

### *Dr. Charlotte Bevan*

Dr. Charlotte Bevan joined Imperial College London,(UK) in 1999 as head of the Androgen Signalling Group in the Department of Oncology, SORA (Division of Surgery, Oncology, Reproductive Biology and Anaesthetics). The aims of the group are to investigate the mechanisms of signalling via the androgen receptor and how signalling is altered during prostate cancer progression. The group also investigates the biological causes of prostate cancer development and progression, with emphasis on research leading to the development of new therapies or improvement in the application of existing therapies. The mechanisms, how antiandrogens used in hormone therapy exert their effects, and the role of androgen receptor-interacting proteins (coactivators and corepressors) in these processes are studied as well. Dr. Bevan is also Non-Clinical Head of the Section of Molecular Cell Biology.

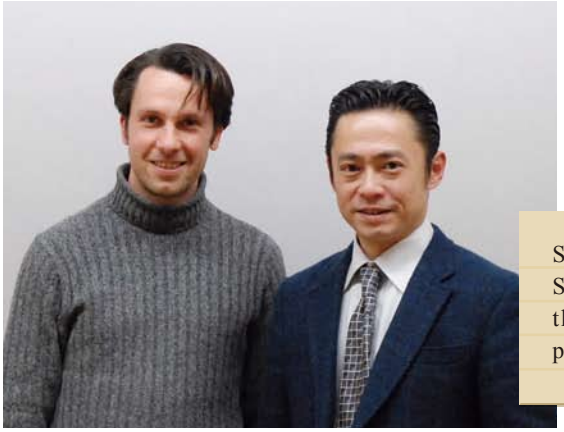
### *Dr. Minetta Liu*

Dr. Minetta Liu is Associate Professor of Medicine and Oncology, Biomarker Section Chief of the Clinical Molecular Diagnostics Laboratory, and Director of the Translational Breast Cancer Research Program at the Lombardi Comprehensive Cancer Center, Georgetown University Hospital, Washington,D.C.(US) where she has been a faculty member since 2001. Dr. Liu is heavily involved in translational research with a focus on the use of microarray gene analysis in identifying the molecular mechanisms responsible for determining chemotherapy sensitivity versus resistance. She is an investigator on several grants, is actively involved in teaching graduate students in the Tumor Biology department, and coordinates the Georgetown University Hospital Multidisciplinary Breast Cancer Conference. Dr. Liu is firmly dedicated to the care and education of women with breast cancer.

### *Dr. Michael O'Reilly*

Dr. Michael O'Reilly, Associate Professor of Cancer Biology and Associate Professor of Radiation Oncology at the University of Texas M.D. Anderson Cancer Center,(US) has focused his research efforts on the discovery and characterization of endogenous inhibitors of angiogenesis. By studying the phenomenon of the suppression of tumor growth by tumor mass, he discovered the angiogenesis inhibitors angiostatin and endostatin and an antiangiogenic form of antithrombin. Dr. O'Reilly is now studying the interaction of antiangiogenic agents with each other, radiation therapy, and chemotherapy in a series of projects designed to produce improved efficacy and diminished toxicity in the treatment of cancer. Dr. O'Reilly has characterized a novel type of tumor dormancy, study of which should allow for a better understanding of the dormant state and the patterns of growth of primary and metastatic cancer.

# Research on Vesicular Glutamate Transporters in the Takamori Lab



Stephan Schenck (left) and Shigeo Takamori (right) at the press release of their publication in January 2009.

Back in 2002 Shigeo Takamori and I met for the first time in the Max-Planck-Institute for Biophyscial Chemistry in Göttingen, Germany, where Shigeo was working as a postdoc and I started my PhD on neuronal fusion proteins. I was dealing with a suitable way to control the properties of artificial lipid-vesicles while Shigeo was continuing his research on vesicular glutamate transporters (VGLUTs), which he had originally identified in the year 2000 (Takamori S. et al., Nature, 2000). Just like it probably happens in the life of every PhD-student, I was struggling with my former project and during our frequent discussions just as smoking mates on the balcony, the idea of working more closely together was born. Still being far from seizable, we started dreaming of reconstituting purified VGLUT protein into liposomes to investigate the transport of the most abundant neurotransmitter glutamate in a controlled environment. However, first a major change had to take place. Shigeo eventually got a position in the newly established 21st Century COE Program in the Tokyo Medical and Dental University in 2004. He immediately asked me if I want to join and go with him to Japan. Well, that was potentially a big cut in my doctoral studies since we had to establish a new lab almost from scratch. After some incubation my curiosity became stronger than my fears and I decided to let this adventure just happen and followed him two months later to the great city of Tokyo. We soon started to establish knockout mouse lines that we kindly received from our collaborators and friends in TMDU and Göttingen and were pretty busy with getting enough knockout individuals that were necessary for our investigations. Not only the work with mice was new to us but also the whole lab life. Shigeo was confronted with a whole set of new responsibilities and duties as a principal investigator, while I was unintentionally starting to cause turmoil on the basis of my different cultural background every now and then. Gladly we had the help of Shigeo's wife Mitsuko Hirosawa-Takamori and her excellent scientific and organisational skills to help us in managing the early phase of the newly born lab.

The time-and labour-intensive work with native vesicles from knockout animals was finally managed by us but something by no means easier was still lying ahead. How should we get to have purified recombinant VGLUT for our experiments ? The number of trials and approaches was high and we had to understand that whatever we will do: The amount of purified transporter will be minimal in any case. Thus, we had to find a way how to purify the protein also if it is present only in low abundance in the source and how to work with it in an economical manner. In December 2006 just before the Christmas eve I saw the first good sign of the newest approach. From then on, all the ideas to investigate the transporter in detail and manifest our theories on the glutamate loading mechanism of synaptic vesicles appeared to be within our reach. We finally got all the pieces together to draw a complete picture of what we envisioned before, however with many big surprises, since we were moving on novel grounds. Our efforts were then finally published in February 2009 (Schenck S. et al, *Nat Neurosci*, 2009) .

In the middle of this voyage I was perhaps not always confident if I would ever be able to bring everything to a happy ending. But despite the troubles we were facing, we didn't forget to focus on our goal and continued to find scientific solutions. This persistency made us finally succeed. Looking back I can say it was the right decision to let something new into my life. Even though I could have mentally crashed with the unconventional decision to make a break in the middle of the PhD. I am glad to have learned about a totally different world and thus also about myself. There are no guarantees in life, so why not just sneak out from your cosy home and seek for the new?

Isn't this what science is all about ?

*Stephan Schenck*

*Takamori Laboratory*
*Center for Brain Integration Research, TMDU*

**References and further reading:**

1. **Takamori S, Rhee JS, Rosenmund C, Jahn R.** Identification of a vesicular glutamate transporter that defines a glutamatergic phenotype in neurons. *Nature*, 2000 Sep 14;407(6801):189-94
2. **Schenck S, Wojcik SM, Brose N, Takamori S.** A chloride conductance in VGLUT1 underlies maximal glutamate loading into synaptic vesicles. *Nat Neurosci.* 2009 Feb; 12(2):156-162.
3. **Schweizer FE** Exit chloride, enter glutamate. *Nat Neurosci.* 2009 Feb; 12(2):111-2

# Aquaporin-2 Water Channel Clears Its Own Route

**Assistant Professor Yumi Noda supported by a Grant-in-Aid for Creative Scientific Research from the Japan Society for the promotion of Science (picture right showing Yumi Noda during press conference on August 8, 2008) and her group working in Nephrology Department of Professor Sei Sasaki uncovered the mechanism of aquaporin-2 water channel movement. The discovery can be useful in treatment of nephrogenic diabetes insipidus which affects millions of people around the world. The finding was published in The Journal of Cell Biology 182:587-601, 2008.**

The human body is two-thirds water. The ability of ensuring the proper amount of water inside the body is essential for maintenance of body homeostasis. The key event for maintenance of body water balance is water reabsorption in the kidney collecting ducts, which is regulated by aquaporin-2 (AQP2) water channel. Under normal conditions, AQP2 is restricted in the cytoplasm in the collecting duct cells. But when the body is dehydrated and needs to retain water, AQP2 relocates to the apical membrane, allowing water reabsorption from the urinary tubule into the cell. Its impairments result in various water balance disorders including diabetes insipidus, which is a disease characterized by a massive loss of water through the kidney, leading to severe dehydration in the body. AQP2 relocation is under the control of antidiuretic hormone vasopressin. This hormone activates protein kinase A (PKA), which in turn phosphorylates AQP2. But how this phosphorylation induces AQP2 movement has been completely unknown. In the present study, we discovered the direct mechanism, which drives AQP2 movement to the apical membrane. Surface plasmon resonance (SPR) measurements show specific binding of AQP2 to G-actin in reconstituted proteoliposomes, which is negatively regulated by PKA phosphorylation. Dual color fluorescence cross-correlation spectroscopy (FCCS) reveals local interaction dynamics of AQP2 with cytoskeletal proteins along the route of AQP2 relocation in a live cell at the resolution of single molecule. Coimmunoprecipitation assays in renal epithelial cells, and cosedimentation and pyrene-actin assays using recombinant proteins reconstituted in proteoliposomes show the role of AQP2 phosphorylation in their interaction and actin dynamics. Under basal conditions, AQP2 binds to G-actin and F-actin stabilized by tropomyosin-5b (TM5b) forms a barrier inhibiting translocation of AQP2 toward the apical membrane. Vasopressin-triggered cAMP signaling and phosphorylation at serine 256 of AQP2 release AQP2 from G-actin and promote AQP2 association with TM5b, which sequesters TM5b from F-actin and destabilizes F-actin network, opening the way for AQP2 to reach the apical membrane. Knockdown and overexpression of TM5b confirm its role in AQP2 movement to the apical membrane through local actin reorganization along its route. These findings indicate a novel mechanism of trafficking, in which the channel regulates local cytoskeleton to initiate the movement of itself. Because trafficking of numerous other channels is regulated by phosphorylation, and because many channels interact with actin, we suggest that other channels may also promote their own relocation through this scheme.

We have succeeded to measure the spatial and temporal dynamics of channels and cytoskeletal molecules at the single molecule level and clarify the direct mechanism, which drives channel movement to the targeted site. The novel methods established here provide a powerful new way of investigating channels.

From the present study, we suggest TM5b is an appropriate therapeutic target for nephrogenic diabetes insipidus, for which there is currently no cure. Developing a drug to inhibit TM5b specifically can be a treatment for this life-threatening disease.

*Yumi Noda, MD, PhD*
*Assistant Professor,*
*Dept. of Nephrology, TMDU*

**Reference**

Yumi Noda, Saburo Horikawa, Eiichiro Kanda, Maho Yamashita, Hu Meng, Kayoko Eto, Yuhua Li, Michio Kuwahara, Keiji Hirai, Changi Pack, Masataka Kinjo, Shigeo Okabe, and Sei Sasaki. Reciprocal interaction with G-actin and tropomyosin is essential for aquaporin-2 trafficking. *The Journal of Cell Biology*, 2008 182:587-601.

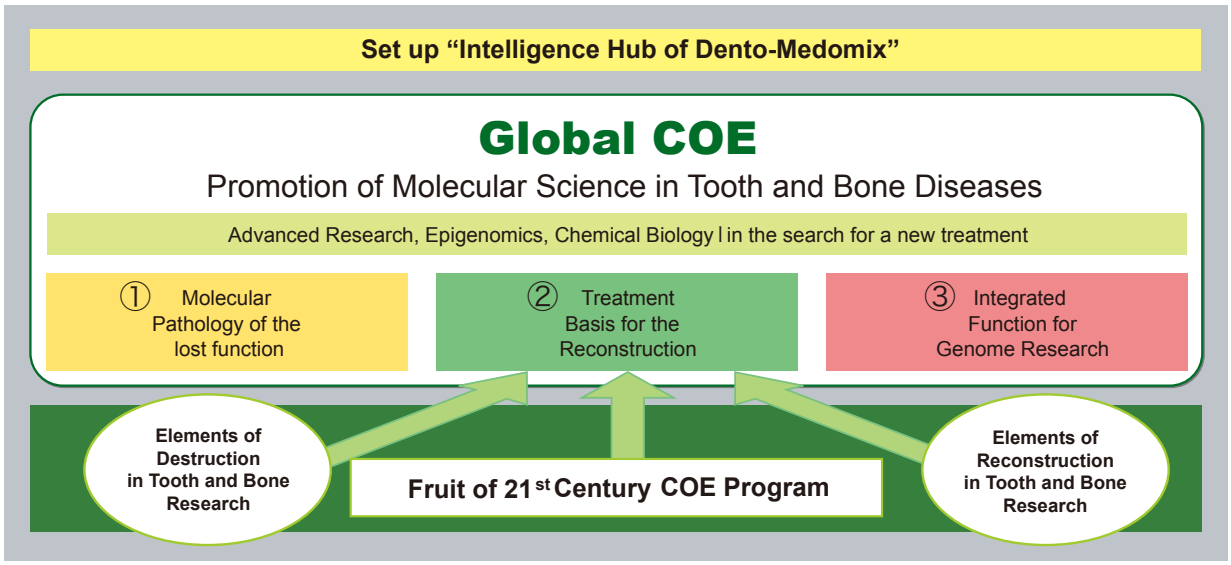
# Global COE (Center of Excellence) Program

## for Promotion of Molecular Science in Tooth and Bone Diseases Worldwide

Tokyo Medical and Dental University is a distinguished institution and known as a world center for the study of "tooth" and "bone" diseases. The purpose of this Global COE (G-COE) program is to form a world-top class research center in the field of tooth and bone diseases. This program is a new development as well as continuation of the previous 21st century COE (21COE) program. We will promote our cutting-edge studies on tooth and bone diseases and form a unique international educational research center that will nurture young researchers of the next generation. We will educate young scientists who will work globally on molecular science in "tooth" and "bone" diseases. This is critical for the future welfare of all human beings and is of particular importance in Japan, the world's fastest aging society.

In modern developed countries, maintenance of not only life expectancy, but also "healthy life expectancy" is an important issue, and "tooth" and "bone" diseases are major problems that need to be urgently addressed in this regard. In the 21COE program, our center has made a remarkable accomplishment in clarification of the mechanism of loss of tooth and bone and in discovery of novel methods for tooth and bone reconstruction by finding "key elements" of the regulatory systems in the function of osteoclasts and osteoblasts, as well as "key elements" in initiation for clinical medicine. However, identification of individual "key elements" alone is not enough to understand the mechanisms of the comprehensive pathology and onset of the diseases. Thus, in the G-COE program, such “elements” of basic studies and “elements” of clinical research discovered in the previous 21 COE program will be integrated and developed into three areas including (1) elucidation of basic molecular mechanisms in pathology of the diseases leading to loss of tooth and bone, (2) fundamental clinical research for diagnosis and therapeutic measure, and also (3) advancement of functional genomic studies on tooth and bone diseases based on genomic and epigenomic sciences. Through the research in these three areas, our center will aim to become the highest standard organization in the world in terms of “integrated research on molecular science for tooth and bone diseases”. Moreover, we will further develop the “international research network”, which was initiated during the 21COE program. Through the nations, we will aim to function as “an intelligence hub” that will create innovative science and will lead the top research in the world to provide cutting edge information worldwide.

*Masaki Noda, MD, PhD*
*Professor,*
*The Medical Research Institute, TMDU*

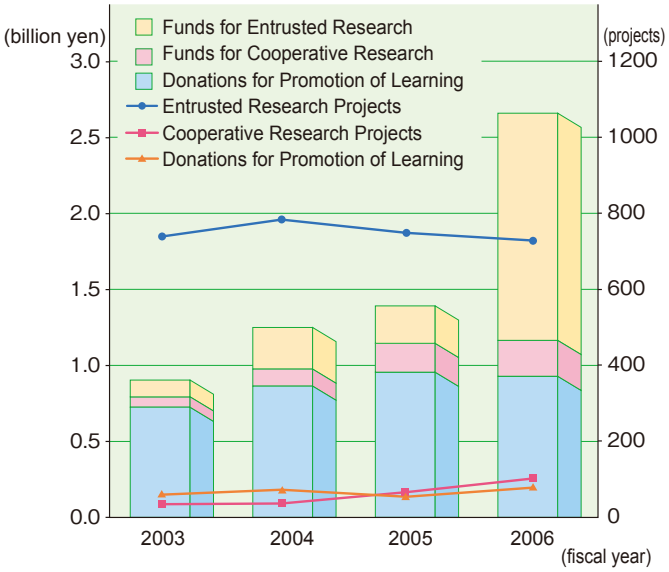



**HP address: http://www.tmd.ac.jp/mri/coet/GCOE/gcoetop_english.html**

# TMDU's Efforts and Progress Shown in Figures Since Incorporation in 2004

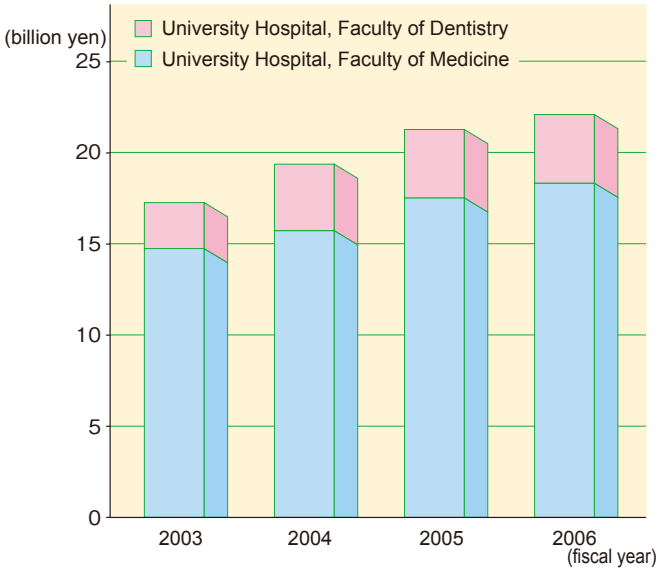
**Tokyo Medical and Dental University (TMDU) has promoted reform in the three fields of education, research, and medical and dental treatment since its incorporation. The results of our efforts are summarized in the charts below.**

## External Funding



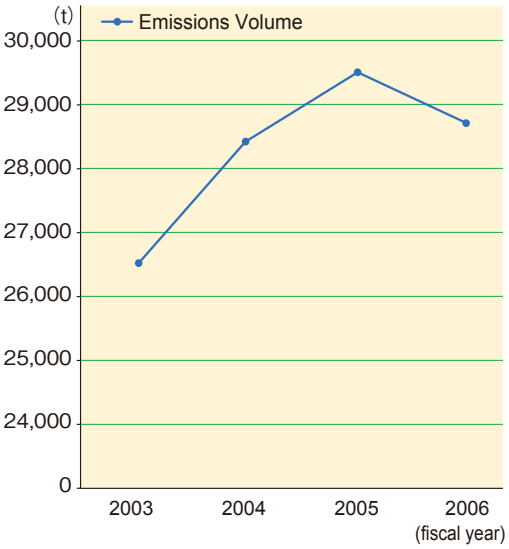

**External funding** for promising research is increasing annually and reached 2.6 billion yen in fiscal 2006. Our more than 800 research projects university-wide bring in external funding every year. Projects numbered more than 900 in fiscal 2007.

## Hospital Billing




**Hospital billing** is on the increase at both the medical and dental university hospitals and passed the 20 billion yen mark in fiscal 2005. The numbers of patients and nurses as well as the number of operations are steadily rising with the increase in billing.

## Greenhouse Gas Emissions




We are taking measures to decrease **greenhouse gas emissions** to combat global warming. Emissions until 2005 was on an increase trend due to our dynamic efforts in education, research, and medical and dental treatment were on the increase, but they started to decline in 2006. Our task is to increase our emissions reduction efforts in the future.

## Average Citation Rate of Academic Papers

| April 2004 | | May 2005 | | April 2007 | |
|---|---|---|---|---|---|
| Okazaki National Research Institutes | 13.60 | Japan Science and Technology Agency | 12.15 | Japan Science and Technology Agency | 15.32 |
| RIKEN | 11.35 | RIKEN | 11.82 | RIKEN | 13.67 |
| **Tokyo Medical and Dental University** | **11.21** | **Tokyo Medical and Dental University** | **11.41** | National Institutes of Natural Sciences | 12.65 |
| The University of Tokyo | 10.94 | National Institutes of Natural Sciences | 11.27 | **Tokyo Medical and Dental University** | **12.51** |
| Osaka University | 10.79 | The University of Tokyo | 11.20 | The University of Tokyo | 12.41 |
| Kyoto University | 10.46 | Osaka University | 11.07 | Osaka University | 12.28 |
| Kumamoto University | 10.13 | Kyoto University | 10.68 | Kyoto University | 11.91 |
| Kanazawa University | 9.32 | Kumamoto University | 10.45 | Kumamoto University | 11.85 |
| Nagoya University | 9.01 | Kanazawa University | 9.52 | Nagoya University | 10.28 |
| Kobe University | 9.01 | Nagoya University | 9.35 | Chiba University | 9.85 |

*Source: Top 10 Ranking of Japan's Research Institutes (from Thomson ISI press release)*
*Note: Average citation rate figures were calculated by dividing a research institute's number of paper citations by the total number of papers published by that institute.*

TMDU research is on a high level compared to other research institutes in Japan. Our university ranks higher than the University of Tokyo and other national universities in average citation rate, which reflects the quality of academic papers. This shows that our university publishes quality research papers on an ongoing basis.

## Editorial Summary

We are pleased to publish the first issue of **TMDU Annual News**. The **TMDU Annual News** will be published once a year in English to bring you the update on the recent progress and future plans of the activities in Tokyo Medical and Dental University (TMDU). In this issue, TMDU's international activities planned and put into action under the leadership of our new President, Takashi Ohyama, DDS, PhD together with the newly appointed Planning and International Exchange Trustee, Sei Sasaki, MD, PhD, were highlighted and they include:

1. The collaboration on emerging and reemerging infectious diseases study with the Noguchi Memorial Institute of the University of Ghana
2. The collaboration on screening, diagnosing, and treatment of early colorectal cancer with Clinica Las Condes in Chile
3. The development of a network of healthcare professionals in dentistry and medicine in Southeast Asia
4. The international exchange programs with Imperial College London (UK) and Harvard Medical School (US)
5. Overseas summer courses in Germany and Cambridge (UK)
6. Overseas "Musha-Shugyo" in Europe, USA and Asia-Pacific countries
7. The Surugadai International Symposium organized in November 2008 and announcement of the Inaugural TMDU Summer Symposium planned on Sept. 6-9, 2009.

In relation to the international exchange programs of the Faculty of Dentistry and School of Medicine, the letters of the TMDU alumni from overseas were introduced. The experiences of TMDU students in overseas countries were also introduced to send messages to overseas institutions and host families who took care of them and to show our appreciation for their cooperation.

Two of the four press-releases of the school year 2008, one by Mr. Stephen Schenck published in *Nature Neuroscience*, February 2009 and the other by Dr. Yumi Noda published in *The Journal of Cell Biology*, vol. 182, 2008 were presented to inform the international community the top rated researches conducted at TMDU.

The global COE (center of excellence) program intended for promotion of molecular science in tooth and bone diseases was described as one of the top graduate research/education programs in Japan to draw attention of the international students who might qualify for the program.

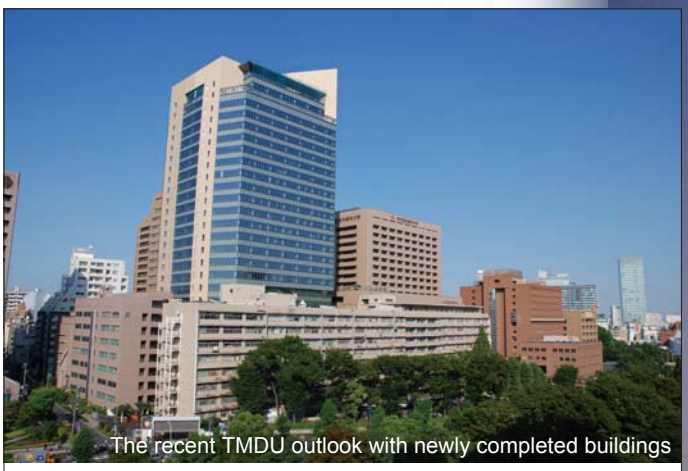
We concluded the issue by reviewing the figures that reflect progress and efforts of TMDU since its incorporation in year 2004.

The **Editorial Office of TMDU Annual News** would like to thank for those who authored the articles in this issue. Special appreciation is expressed to Dr. Atiphan Pinkhaokham of Chulalongkorn University, Dr. Richard Foxton of King's College London Dental Institute, and Ms Tamara Keith, Ms Jasprit Bhamrah, and Ms Jahnavi Patel of Imperial College London for their cooperation in sending alumni letters.

If you have suggestions and news to be included in the future issues of **TMDU Annual News**, please feel free to contact the Editorial Office at the following address.

1-5-45 Yushima, Bunkyo-ku, Tokyo Japan 113-8510
Phone: +81-3-5803-4530, Fax: +81-3-5803-0272
e-mail: kouhou.adm@tmd.ac.jp
TMDU URL : http://www.tmd.ac.jp

Cover Photo : **Diamond Fuji**
Sunrise from the very summit of Mount Fuji



The recent TMDU outlook with newly completed buildings

## Symbol of Tokyo Medical and Dental University

This symbol is designed to show development of TMDU through its history. It represents the plum blossom, the symbol of Yushima Tenjin located near TMDU where Tenjin means the God of knowledge. The center circle symbolizing the core of the flower was the emblem of the predecessor Tokyo National School of Dentistry and the five petals around the core represent the five divisions of the University including Faculty of Medicine, Faculty of Dentistry, College of Liberal Arts and Sciences, Institute of Biomaterials and Bioengineering, and Medical Research Institute. The five petals join together to make the flower bloom fulfilling the mission of the University. The bold outline of these five petals suggests further development and progress in the future.

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