NATIONAL UNIVERSITY CORPORATION

TMDU ANNUAL NEWS

Tokyo Medical and Dental University

Vol. 4, March 2012

CULTIVATING PROFESSIONALS WITH KNOWLEDGE AND HUMANITY

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President Ohyama, standing in front of a new display space on the west side of Akio Suzuki Hall on the 2nd floor of M&D Tower. The displayed pictures are refreshed twice a year and highlight important events and milestones in TMDU's history.

MESSAGE FROM THE PRESIDENT

Takashi Ohyama

President

Goals and Plans for the Year 2012

Happy New Year!

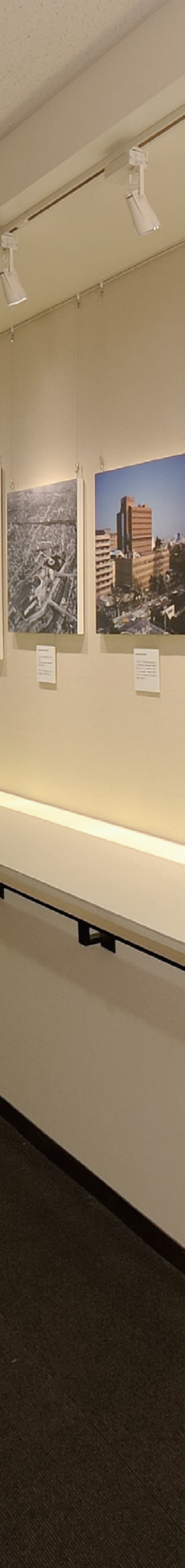
I hope you all enjoyed the New Year holiday with your families.

I appreciate the support you provided throughout 2011, and the chance to greet the New Year with you. I would like to ask you to take good care of yourselves, and to continue to give your great support for the development of our school.

Operational Subsidy and Budget for Facility Improvements

At the end of last year, the university received an unofficial announcement regarding the upcoming operational subsidy and the budget for facility improvements for 2012.

The operational subsidy is likely to be a little over 15.01 billion yen, which is a decrease of more than 540 million yen from the year before. Nevertheless, our special subsidy for operating costs has been increased by more than 300 million yen, particularly due to adoption of three new projects. In addition, although we did not request a subsidy for operating costs of the university hospitals in 2012, a subsidy has been allocated to reinforce the functions of the university hospitals. Thus, the overall reduction of the operational subsidy turned out to be small, which is certainly a relief. This advantageous result is due to the wisdom and efforts of our professors and admin-



istrative staff. I would like to express my deepest gratitude to all of you.

As for facility improvements, the demolition of former Building #3, connected to the university hospitals, is now nearly complete. This year, construction of a parking lot, an automated bicycle parking lot, a taxi stand, a walking path and a recreation area are underway, along with construction of grounds in front of the hospital and M&D Tower. These projects should be completed in the summer of 2013. The end result is that, in two years, we will have created a new atmosphere at Tokyo Medical and Dental University.

Integrative Education of Medicine and Dentistry

As for medical and dental education reform, our new curriculum, "Integrative Education of Medicine and Dentistry" will be implemented this year.

The age distribution of Japan's population and the composition of its disease structure are changing rapidly. Hence, when we face a patient, we can no longer respond to his/her needs adequately with our area of expertise alone.

Especially for the sake of elderly people, doctors and dentists need to have knowledge of both medicine and dentistry, and we thus need to facilitate further cooperation between the fields of medicine and dentistry.

Our aim in this regard is to create curricula for medical and dental education which nurture doctors and dentists who thoroughly understand this new reality. Creating appropriate curricula and implementing them in a way to optimally achieve our goals is possible due to the fact that our university is capable. But even so, we need your wisdom and support to achieve this necessary and salutary objective.

Review of Our Research Organization and Promotion of Large-Scale Research Projects

The research arena that our school aims at is productive cooperation between our medicine, dentistry, science and engineering departments. We have already reorganized our Inter-Ministerial Research & Development Division, which includes a research laboratory for intractable diseases and a biomaterials engineering laboratory, in an attempt to create and accelerate large-scale interdisciplinary research projects. In addition, we are discussing the best way of facilitating cooperation between this Division and the Graduate School of Healthcare Sciences.

Finally, we are newly establishing a bio-resource center as a formulation of the basic research foundations this year. By consolidating valuable bio-resources throughout our entire school, we will be able to make best use of them in a wide variety of ways, as well as preventing idle disposal or storage. I am expecting that this optimal allocation of resources will be a great contribution to promotion of basic/clinical research.

To best utilize these valuable resources, I hope to position the center to be a place which is able to respond to requests from pharmaceutical companies, other universities and research centers, and enable further and accelerated development.

Administrative Operation Policy of Our University Hospitals

As for administrative operation policy, we must enrich and promote our community healthcare function, which is the mission of our university hospitals, our training and development functions, and our research and development functions, making sure to maintain them in equilibrium. Currently, departments of diagnosis and treatment exist independently of each other, but it may be necessary to create a center for diseases which require comprehensive, cross-sectional diagnosis. In addition very practical ideas for cancer, sports medicine and promotion of healthy longevity are being developed.

Promotion of International Exchanges/ Contributions

It is needless to say that the overseas research bases of our school are places for us to promote research as well as to cultivate human resources, but we are also going to actively use these centers to cultivate our students' sensibilities as members of the international community.

Regarding these overseas research facilities, we have already dispatched resident researchers to them. Moreover, we have recently begun the annual dispatch of six medical students for research training to Ghana and Chile, as part of the students' regular curriculum or project semester term.

Additionally, we dispatched two students this year to the CU-TMDU Research and Educational Collaboration Center at Chulalongkorn University in Bangkok, Thailand.

In particular, we are willing to use this research center in Thailand as a base or platform for joint research/human resources cultivation for medicine, dentistry, science and engineering in Asia.

Although our students are dispatched overseas for only a short period of time, they are able to experience life overseas, learn what it is like to be an expatriate researcher by working with resident researchers at the overseas bases, and see how they can make international contributions to their field. Furthermore, these students experience the pleasure of joint research and the joy of cultivating human resources onsite by observing the resident researchers while in school. I hope they will look back on their experience as having been essential in raising their level of motivation and helping them visualize their future as members of the international community.

We have also established an overseas fellowship for graduate students, rewarding their academic and research performance, in an attempt to nurture leading experts in highly-specialized medical practice.

On the other hand, as a center of learning and research in Asia, we must do our part to cultivate human resources by accepting young researchers of great promise and international origin at our school as well as dispatching domestic students overseas. We now have more than 190 foreign students from 23 Asian countries (altogether representing 90% of our international students), and we have by far the majority of international students in medicine/dentistry/engineering fields in Japan.

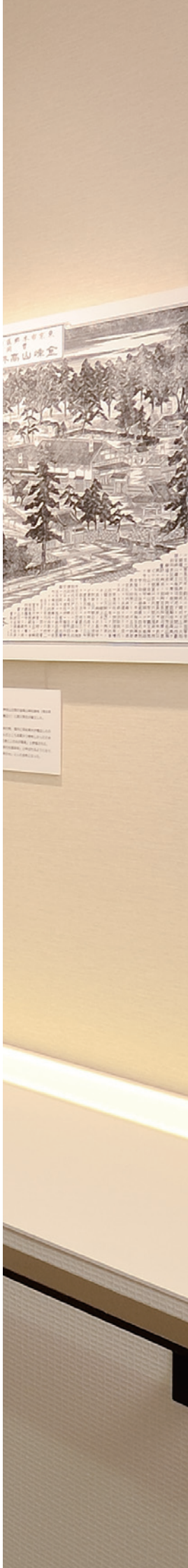
In addition to the above activities we hold an annual International Summer Program (ISP). We held the 3rd ISP last year, and have already accepted brilliant students from that and previous ISPs into our doctoral program. In order to actively promote acceptance of these students well into the future, we have established a separate scholarship program for selected ISP attendees, in addition to the governmental scholarship fund under which many international students attend university in Japan.

It is my fervent desire that we steadily promote such international strategies at our school.

In conclusion, these are my hopes and prayers for the New Year. I look forward to continuing to work with you for maximal development of our school through meticulous exchange of opinions as well as information. I would like to ask you, our TMDU professors and administrative staff, for your understanding and continuous support for this year as we make our way forward and create our future.

Takashi Ohyama

Takashi Ohyama, President



Dental Support Activities for the Great Eastern Japan Earthquake

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

Dentists: Koichi Nakakuki, Kensuke Kagaya, Satoshi Kinouchi, Kenichi Goshima, Takehiro Oyanagi
Dental Hygienists: Chiyoko Hakuta, Nozomi Okuyama, Fumi Kenmochi

ON MARCH 11, 2011, Japan experienced an unprecedented national catastrophe. Japan was simultaneously hit by the biggest earthquake in our recorded history, the Great Eastern Japan Earthquake, the subsequent giant tsunami, and multiple incidents related to the damage suffered by the nuclear power plants in Fukushima.

More than 130 countries and regions, and many international organizations and NGOs extended their help to Japan in this terrible time. TMDU international alumni members also supported Japanese people with generous donations. We express our sincere gratitude to all the people for their friendship and support.

TMDU in cooperation with the Ministry of Health, Labor and Welfare, the Japan Dental Association and academic organizations, have been carrying out dental support activities by sending dentists and dental hygienists to disas-





1 Ishinomaki City, Miyagi Prefecture 2 Onagawa Town, Miyagi Prefecture 3 4 5 Dental teams made rounds at each shelter and provided dental treatment and oral health care.

TMDU Operations Following

A Report from the Disaster Medical Assistance Team of TMDU

Tomohisa Shoko
MD, PhD
Shock Trauma and Emergency Medical Center,
TMDU Hospital of Medicine

Yasuhiro Otomo, MD, PhD, Director of Shock Trauma and Emergency Medical Center
Atsushi Shiraishi, MD, PhD, Shock Trauma and Emergency Medical Center
Yutaka Ueki, MD, Shock Trauma and Emergency Medical Center
Nao Nishi, RN, ER Center

ON MARCH 11, 2011, at 2:46 p.m. Japan time, a massive 9.0-magnitude earthquake struck off the Pacific coast of Japan's Tohoku (northeastern) region. About 25 minutes after the quake, enormous tsunami waves began pounding the Pacific coastline of the Tohoku region, causing massive damage to several coastal towns.

Four hours after the earthquake, four doctors, one nurse, and two administrative workers (a total of seven people) with Disaster Medical Assistance Team (DMAT) certification were sent from TMDU to the most heavily damaged area, Miyagi Prefecture. We reached Sendai City in Miyagi Prefecture at 4:00 a.m. on March 12 (about 12 hours after the initial disaster) and provided hospital support at Sendai Medical Center, the prefecture's largest disaster-base hospital. At that time, 25 DMATs composed of about 130 people had assembled at that hospital. Of those teams, 18 provided support in six-hour rotating shifts in the hospital's emergency department, five worked onsite at a rescue command post in the tsunami-stricken region along the coast, and two worked at the staging care unit set up at the Self-Defense Force's Kasuminome base. By the night of March 13, another 52 DMATs had assembled at Sendai Medical Center (for a total of 77 teams and about 390 personnel).

Our TMDU team served as the lead team of the red area on March 12 and 13. Sendai Medical Center sustained only minor structural damage due to the earthquake, but had to rely on its own power generator for electricity due to widespread power outages throughout Sendai. Computed tomography scanners could not be used and only some of the medical equipment, such as basic X-ray machines and emergency blood testing equipment, could be operated. Some of the operating rooms were still

ter areas and providing necessary goods and equipment.

Immediately after the earthquake, we registered 13 dentists responsible for personal identification in order to help confirm the identity of disaster victims in response to requests from the police. In the affected areas, the community dental health care system suffered serious damage since hospitals and clinics were damaged or washed away. Therefore, based on requests from local dental associations and the Ministry of Health, Labor and Welfare, we sent dental teams from TMDU to the affected areas.

These dental teams provided emergency dental treatment to the victims by making rounds at each shelter. They also distributed oral hygiene supplies and performed oral health education and oral care as necessary. It was very difficult to provide dental treatment where there was no dental equipment such as dental chairs, and insufficient water and electricity, but everybody's smile after treatment made us feel relieved.

There is no privacy at a shelter, and life there is very uneasy and stressful. The rice balls and bread distributed at the first stage are low in nutrition and do not provide a balanced diet. In addition, inadequate cleaning of the teeth and dentures due to the lack of water and oral hygiene supplies results in poor oral hygiene, which will lead to or worsen dental diseases. Furthermore, we are worried about the increased risk of aspiration pneumonia in the elderly or those who require nursing care. Adequate daily oral care is necessary for them. Since problems with one's teeth and oral cavity affect food intake, immune resistance and maintenance of health, it is necessary to detect dental problems early and manage them appropriately.

As of January 11, 2012, 10 months after the Great Eastern Japan Earthquake, a total of 15,844 people are dead and 3,450 people are missing. In the affected areas, very few buildings or houses have been demolished or repaired. A mountain of rubble remains, and a lifeline has not been restored completely in some areas. In short, life in the affected areas is still very difficult.

It will take long time for the affected areas to recover and for the people there to return to normal life. The oral health needs of a community are thought to change over time, so TMDU plans to offer a variety of ways to respond appropriately to those needs.

We pray for the souls of those who were victimized by the Great Eastern Japan Earthquake. In addition, we express our sincere sympathy to all those who were affected by the earthquake and we pray for early recovery and reconstruction in the affected areas.

the March 11, 2011 Disasters




1 Staff at ER Center responded ceaselessly, as there were casualties in Tokyo as well. 2 There was a major traffic jam in Tokyo, but we did not encounter even one car on the Metropolitan Expressway. 3 A medical examination site in an area with severe damage 4 Damage from the tsunami 5 Dispatched members returned to Tokyo after rescue operation.

functional, but only minor surgeries could be performed. The vast majority of the hospital staff assembled at the hospital and worked without sleep from the time the disaster struck. Patients with injuries directly caused by the earthquake and tsunami, such as fractures of the pelvis, spinal cord injuries, and lower leg compartment syndrome, arrived at the hospital within 24 hours of the initial disaster. The vast majority of these patients were also affected by hypothermia as a result of having been exposed to the elements while waiting for rescue. After the first 24 hours, the majority of patients also suffered from diseases incurred after evacuation.

The Japan DMATs, which were developed after the Great Hanshin-Awaji Earthquake, were designed to provide life-saving medical treatment (such as medical stabilization of severely injured patients in the most affected areas and medical evacuation outside of the devastated area) for crush syndrome and severe injuries commonly seen after earthquakes. In this disaster, DMATs led by emergency care physicians and trauma surgeons were able to get into the disaster area during the ultra-acute phase and many were able to swiftly mobilize and swing into action. However, due to the nature of the tsunami, there were not as many critically injured patients requiring the life-saving treatment as had been envisioned, and the activities of the DMATs were limited.

On the other hand, more than 300,000 victims who lost their homes and all their possessions in the tsunami were forced to live in harsh conditions at evacuation shelters. There is a great need to provide medical care to these evacuees and that need will be a long-term one. Systems must be established for providing medical care in the aftermath of a tsunami disaster that strikes an urban area, and these systems need to be different from those established for managing the situation that results from a conventional earthquake.

More Intensive Collaboration and Exchange for Research Promotion and Development of Human Resources

Ghana-Tokyo Medical and Dental University Research Collaboration Project

Nobuo Ohta
MD, PhD
Professor of Environmental Parasitology, TMDU

THE GHANA-TMDU COLLABORATION

Project has been implemented under the support of the Ministry of Education, Culture, Sports, Science and Technology (MEXT), Japan, since 2008 for the purpose of research promotion on emerging and re-emerging infectious diseases and also of development of human resources in the field of infectious diseases. The project is also part of J-GRID (Japan Initiative for Global Research Network on Infectious Diseases), which is led by Professor Yoshiyuki Nagai. TMDU established a research center in collaboration with the Noguchi Memorial Institute for Medical Research (NMIMR), University of Ghana, and two faculty members are dispatched there from TMDU. We are at the mid-term of the 2nd phase of the J-GRID program, which is the time point at which research activities are expected to be maximized, according to the program road map.

As a research collaboration project, our activities should be evaluated by the quality and quantity of the scientific outcomes achieved. NMIMR is the center of medical research in the West African sub-region, and we share the same scientific mind as our Ghanaian counterparts. Professor Eiji Ido is a virologist specializing in HIV/AIDS, and he is coordinating joint research with Department of Virology of NMIMR. One of the important themes currently being pursued is the monitoring of the efficacy of drugs used for HIV-positive individuals in Ghana, which was introduced as a WHO guideline on the basis of research on European patients. The outcome from the analysis of this subject is of direct benefit for Ghanaians because the research will lead to better HIV/AIDS control measures being used in Ghana.

As his second main subject, Professor Ido is promoting research on the molecular aspects of virus evolution by using HIV samples collected in various areas in the African continent. He has established many footholds through his field research in Africa, and his work is contributing to the monitoring of the appearance of new and unexpected viral strains with higher virulence through genetic recombination of viral genome. As for the third research subject of virology, hemorrhagic viral infections are now under the consideration. Ebora, yellow fever and dengue fever are endemic in Africa, but epidemiological information has not yet been elucidated in detail. Moreover, three patients with Lassa fever were reported in Ghana in the end of 2011. Considering those situations, surveillance of viral hemorrhagic fever seems to be one of the most urgent subjects in Ghana and also for Japan.

Dr. Takashi Suzuki, Associate Professor of Parasitology, is researching African trypanosomiasis. Safe and effective drugs have not yet been developed for the human African trypanosomiasis (HAT) pathogen. Parasite genes controlling "movement" are targets for drug development, and several proteins encoded by those genes are candidates of new drugs for HAT. Furthermore, although trypanosomiasis is a Neglected Tropical Disease (NTD), Dr. Suzuki has shown that tsetse flies in Ghana, intermediate hosts for African trypanosomes, are infected with African trypanosomes in an unexpectedly high frequency, and transmission of the parasites seems to be more common compared to our former assumption. Among insect-borne diseases, malaria is the most important infectious disease in Ghana. Although

Memorial Garden for Dr. Noguchi in Accra.

1 The main entrance of NMIMR.
2 Research supervision in the Parasitology Laboratory. Dr. Takashi (left) and Mitsuko Suzuki (right)
3 Dr. Ido is instructing a Ghanaian researcher in HIV research.

many malaria research projects are ongoing at NMIMR, our unique collaboration focuses on vector mosquitoes. Our new parasitology project starts to develop gene-manipulated mosquitoes that have a reduced malaria-transmitting capacity. Innate immunity of anopheline mosquitoes against malaria parasites has been studied, and gene-manipulated mosquitoes with enhanced expression of anti-parasite proteins could prove effective in blocking malaria transmission. For this purpose, the insectary of NMIMR was improved, and new experimental systems for mosquito research are being transmitted from Japan to Ghana.

A new activity in our joint research center at NMIMR is issuing our "News Letter". This publication is written in Japanese because its main scope is to introduce Ghana to Japanese people. The News Letter is put out as a monthly issue via web-based distribution. Contents of our News Letters include scientific progress in our research collaborations, reports of scientific meetings related to our research projects, and introduction of Ghanaian events, tradition, culture and foods and fashion. Many readers are interested in Ghanaian life style, and Ghanaian foods such as *fufu* and *wache* were becoming familiar to Japanese. Through these reporting activities, we expect that our research collaboration project will be understood in more detail and will be supported not only by researchers, but also by people who are outside the infectious disease research field.

Exchange of young students and researchers from the both sides should be promoted more strongly. From Ghana, TMDU has invited two NMIMR staff researchers, and also five young researchers have made short-term visits to TMDU. The latter five researchers belong to the Science and Technology Research Partnership for Sustainable Development (SATREPS) project, which is implemented under the budget of JST and JICA; however, TMDU is responsible for planning, coordinating and implementing the collaboration project with Ghanaian side. On the other hand, TMDU medical students are scheduled to be dispatched to NMIMR as an educational activity as part of their "Project Semester" portion of the Faculty of Medicine curriculum. In the 2011 school year, six students in all were nominated: three for parasitology research and three for virology research. These students will stay at NMIMR for four to seven weeks. During their stay, Professors Ido and Suzuki will guide their research, medical training and daily living in Ghana. Mutual exchange is very important in our project. For Japanese students and young researchers, experience at the front line of infectious diseases will undoubtedly be highly motivational for their interest in research, and it cannot be ignored that such experiences are not available in Japan.

As this is the fourth year of our research collaboration project, we need to expand and intensify our exchange with our Ghanaian counterparts both in research and human relationship. Ghana is geographically distant from Tokyo, but we are convinced that true collaboration is deepening through our face-to-face interaction, and that our two dispatched researchers are accomplishing their difficult missions. Finally, I have to let the people of Japan know that our Ghanaian friends gave their warm hearts to support us after March 11, 2011 and that donation boxes were seen in various places in Accra.

Ghanaian warm hearts : Call for donation to support the big disaster of March 11, 2011.

Transfer Japanese Knowledge and Techniques to Doctors in Chile and the Greater Latin American Region

Latin American Collaborative Research Center,
Tokyo Medical and Dental University, Santiago, Chile

Yoshinobu Eishi
MD, PhD
Professor of Human Pathology, TMDU

The Latin American Collaborative Research Center (LACRC), located within Clinica Las Condes (CLC) in Santiago, Chile, has been operating since May 2010 as one of TMDU's overseas activity centers. LACRC is managed in collaboration with CLC, the University of Chile, the Ministry of Health of Chile, and the Chilean-Japanese Institute of Digestive Diseases, which is located within the Chile's largest national hospital, Hospital Clinico San Borja Arriaran.

LACRC Activities

Dr. Takashi Ito, a human pathology specialist, and Dr. Tetsuro Nishikage, an esophageal and general surgeon, were posted to LACRC in 2011. Their mission is to work on the national colorectal cancer screening program in clinical practice (endoscopy and pathology), do research, and improve the educational training of young Chilean doctors. They were joined in December 2011 by Dr. Kouji Tanaka, who will take over Dr. Nishikage's position in early February 2012 (Fig.1).

Dr. Ito has been engaged in research activities and pathological diagnosis at CLC with the aim of standardizing different diagnostic criteria between Japanese and Chilean pathologists. Drs. Nishikage and Tanaka are working with CLC doctors to train young Chilean doctors working in CLC and San Borja Arriaran Hospital in diagnostic total colonoscopy procedures and endoscopic mucosal resection methods (Fig.2). As they are surgeons, they also assist with surgical operations held in these hospitals.

Symposium and Training Course

TMDU dispatched a delegation composed of three professors of clinical medicine (Drs. Kenichi Sugihara, Tatsuyuki Kawano, and Masakazu Nagahori) and three professors of basic medicine (Drs. Kyoichi Nakamura, Hiroshi Hukamachi, and Yoshinobu Eishi) from August 13 to 25, 2011 to Chile and Ecuador. These TMDU professors (Fig. 3) participated in a symposium and training course held at CLC over a three-day period, with the aim to transfer Japanese knowledge and techniques to doctors in Chile and the greater Latin American region.

At the symposium, Dr. Fernando Fluxa, an organizer of the conference, included a special session to introduce the history and legacy of the Chilean-Japanese Institute of Digestive Diseases, which was established 20 years ago with support from JICA and TMDU. Some Latin American doctors in the audience were alumni of the Institute, where they took a training course to learn endoscopic and pathologic techniques and increase their knowledge of digestive diseases, focusing especially on gastric cancer. They showed their appreciation for the teaching of Drs. Pedro Llorens and Kyoichi Nakamura (Fig.4) at the Institute with a warm round of applause.

The First Visit of TMDU Mission to Ecuador

On the way from Chile to Japan, TMDU mission members visited Quito, the capital city of Ecuador, to discuss TMDU's support for implementation of a national colorectal cancer screening project in Ecuador. A pilot study will be started in Pablo Arturo Suarez Hospital, the largest national hospital in Ecuador from February 2012. This study is supported by a budget from the Ministry of Public Health and involves more than 5,000 asymptomatic people in Quito. TMDU's mission visited the Pablo Hospital and met with the Vice-Minister of Public Health, the Director of Pablo Hospital, the Japanese ambassador to Ecuador, and the director of JICA in Ecuador. The mission members also visited University of the Americas and Central University of Ecuador where many TMDU-JICA training course graduates are now

1 TMDU staff members (from right, Drs. Ito, Nishikage, and Tanaka) at LACRC in January 2012 with a LACRC secretary (far left, Ms. Rieko Shinomiya), in front of the CLC hospital.

2 TMDU Dr. Tetsuro Nishikage (center left) is shown demonstrating endoscopic mucosal resection procedures with Dr. Fernando Fluxa (center right), Director of CLC Endoscopy Center, to young Chilean doctors at the CLC hospital.

working in an academic capacity, including Dr. Jaime Acosta, the Director of the Postgraduate Institute. Dr. Acosta organized the ceremony in appreciation for TMDU's role in the previous training course for Ecuadorian doctors and support for the colorectal cancer screening. TMDU will support this project by dispatching TMDU professors for the annual meeting on the way from Chile and LACRC doctors for a short stay in Quito, and inviting Ecuadorian doctors to Chile for their training in San Borja Hospital.

National Colorectal Cancer Screening in Chile

A large sized colorectal cancer screening (10,000 patients per year) will be done in the San Borja Hospital. This screening is supported by a grant (USD$500,000) from the Ministry of Health. Two smaller screenings (serving a total of 6,000 patients per year) are supported by a budget from the local governments in Valparaiso, the parliamentary city of Chile, and Punta Arenas, Chile's most southern city, which has the highest mortality rate of colorectal cancer in Chile.

In these projects, all of the immunological fecal occult blood test samples will be collected and analyzed at the CLC laboratory, with the goal of standardizing pathological diagnostic criteria and total colonoscopy methods according to Japanese guidelines. Dr. Manalich, the Minister of Health, has proposed to make a new agreement between TMDU, Ministry of Health, and Chilean-Japanese Institute of Digestive Diseases in order to start the new project and to collaborate for training young colonoscopists in the training center within the Chilean-Japanese Institute in San Borja Hospital.

After the agreement, licenses for qualifying abilities to attend colorectal cancer screening program will be provided from LACRC and Ministry of Health to the doctors who have successfully completed their training course in the training center.

Japanese Research Grant for the Project

The first Japanese research grant to be approved by JSPS and supported by JICA for the collaborative research in connection with this project is entitled "Identification of environmental and genetic risk factors of colorectal cancer in Chilean population". Using this grant TMDU will dispatch Dr. Maki Kobayashi, a molecular biologist, to support research activities in LACRC from July 2012 for two years. She will work together with Dr. Hiroshi Kawachi, a TMDU human pathology specialist, who will start working in CLC from March 2012 with Kimihiro Takemura, a TMDU medical student in the MD-PhD course. They will collaborate with research staff in the oncology and genetic laboratories at CLC and the University of Chile.

3 TMDU mission members (from left, Profs. Eishi, Yoshida, Nakamura, Sugihara, Hukamachi, Kawano, and Nagahori) visited the University of Chile to discuss collaborative reseach and the student exchange program.

4 Profs. Pedro Llorens (left) and Kyoichi Nakamura (right) attended the TMDU-CLC conference held in August 2011, where the history and legacy of the Chilean-Japanese Institute of Digestive Diseases were introduced.

TMDU Project Semester

In October 2011 six TMDU medical students were dispatched to Chile. Three of the students went to CLC and three went to the University of Chile. During their five-month term they will do medical research as part of their project semester. These 4th year students are now working in CLC laboratories such as oncology and molecular genetics, pathology, and urology, and in University of Chile laboratories such as melanoma immunotherapy, neuroscience, and ulcerative colitis. These TMDU students are exchanging their knowledge and culture with Chilean students at their laboratories and with students who are studying Japanese at the University of Santiago. On January 11, 2012, the project semester students (Fig.5) presented their research results to the assembled Japanese and Chilean professors.

5 Six TMDU 4th year medical students (from left, Yuri Teramoto, Fumitaka Ihara, Yukiko Shigemasa, Fumina Sawayanagi, Ikuno Yamauchi, and Shohei Yamashita) have just finished giving formal presentations of their research at the CLC conference center.

New Video Conference System Helps Promote Activities at CU and TMDU

CU-TMDU Research and Education Collaboration Center, Thailand

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

President Ohyama Receives Honorary Degree

President Takashi Ohyama of TMDU was awarded an Honorary Degree from Chulalongkorn University (CU) for his longstanding contribution to CU in the field of education, research and clinical practice. After the conclusion of the Agreement of Academic Affiliation between both Dental Schools at TMDU and CU in 1991, many projects have been carried out between the two schools. In particular, the Japan/Thailand Core University Program in Dentistry of JSPS, which was conducted over 10 years from 1996 to 2005, became a trigger for active mutual exchange of faculty members and collaborative research. At the same time, the number of international students from CU to TMDU has increased dramatically. Currently, more than 20 faculty members who obtained a PhD from TMDU work actively at CU.

An Agreement of Academic Affiliation was also signed between both Medical Schools in 2009, and the CU-TMDU Research and Education Collaboration Center was established at CU in 2010. Such vigorous promotion of international exchange is truly due to the leadership of President Ohyama.

President Ohyama (right) receiving a CU Honorary Degree from Princess Sirinthon.

President Ohyama (right) was the only international recipient of an Honorary Degree.

President Ohyama also has participated in mobile dental services for dentistless areas in Thailand over the years, and has contributed to the improvement of oral health in Thailand. Every year, the Faculty of Dentistry at CU provides mobile dental services for poor northern Thai people, who cannot otherwise receive dental treatments, as a Royal Project. President Ohyama voluntarily participates in this project almost every year. He directly talks with people in Thai, makes dentures and gives dental treatments, and thus his conduct has been really appreciated.

As the international accomplishments that he has contributed to CU and Thailand privately and publicly are highly regarded, he was awarded an Honorary Degree from CU. On July 7, 2011, a grand ceremony was held at CU. TMDU Professor Takashi Ono and Dr. Jun Tsuruta accompanied the president. Princess Sirinthon gave the Certificate of Honorary Degree to three recipients. President Ohyama was the only international recipient. The ceremony was broadcast over the Internet from CU. On that day, as graduation ceremonies were also conducted and the CU campus had a festive mood.

New Video Conference System

A new Video Conference System (VCS) was installed in the CU-TMDU R&E Collaboration Center to smoothly conduct collaboration and communication between the two universities. Because the VCS has already been set up at several lecture rooms, auditoriums and the International Exchange Center in TMDU, it is possible to exchange much information through this system. Professor Atsuhiro Kinoshita (Institute for Library and Media Information Technology) has given critical support for the installation project of VCS.

The first broadcast was done between TMDU

1 An audience in Thailand virtually attends a lecture by Prof. Suda at TMDU's Tokyo campus.

2 Young Researchers' Meeting at CU.

3 Prof. Junji Tagami is a strong supporter of young researchers at CU and TMDU.

and the R&E Collaboration Center on June 2, 2011 when Professor Ikuko Morio (Director, International Exchange Center) and Dr. Tsuruta visited the R&E Collaboration Center in Thailand. One week later, a live broadcast from TMDU was attempted during a symposium with dentists from the Thai Ministry of Public Health, but there was trouble with the voice communication. After several adjustments, more than 20 programs, including seminars, symposiums and research meetings have been broadcast. The time difference between two countries is only two hours, which helps us to promote this international educational activity.

Particularly between the respective endodontic departments, the "TMDU-CU International Lectures of Tooth Pulp Biology and Endodontics for Graduate Students" was held and much information was exchanged each other using this VCS.

The audience at CU can participate in the lecture by watching a real time presentation on a big screen via the system. In a lecture by Professor Hideaki Suda (Pulp Biology and Endodontics), 25 PhD students of TMDU and 20 CU faculty members and graduate students attended and had fruitful discussions. These experiences suggest that large-sized lectures and hands-on workshops for clinical and basic education have great potential.

Regarding student exchange programs, Professor Yoshinobu Eishi (Human Pathology, Faculty of Medicine) and two medical undergraduate students of TMDU were able to meet and interview Dr. Kasaya Tantiphlachiva (Faculty of Medicine, CU) and talk about their plans before they visited Thailand.

The system features a sophisticated camera and audio equipment which enables smoother communication between two universities than the existing free video-chat systems can manage. The system will be applicable to various purposes in many fields, regardless of borders in the future.

Activities of the CU-TMDU R&E Collaboration Center

At present, the coordinator of the center is Assistant Professor Atiphan Pimkhaokham, a TMDU alumnus and faculty member of CU, but there is no full-time TMDU staff member yet. Dr. Jun Tsuruta (Dental Education Development) was the first researcher to stay at the CU-TMDU Center, from June through July in 2011. His research topic is "Dental education at the era of free-movement of dentists across the border." He had many chances to meet people who were deeply involved in dental education in Thailand in this center. Observation and discussion are two very important elements to improve dental education system in both universities.

On August 3, 2011, a "Young Researchers' Meeting" was held at the CU-TMDU R&E Collaboration Center. Two professional groups, Prosthodontics and Operative-Pedodontics, had a group discussion on their research topics. At the same time, in Tokyo, Professor Morio and Professor Kinoshita joined the meeting via VCS. All participants realized the importance of more involvement of the young generation for further collaboration.

Since the CU-TMDU R&E Collaboration Center is a well-equipped facility and its working environment for research is excellent, we greatly encourage more TMDU academic staff members to use this center in the future.

Participants of Young Researchers' Meeting

TMDU: Four young researchers and Prof. Junji Tagami (Dean), Prof. Hiroyuki Miura (Fixed Prosthodontics), Dr. Noriyuki Wakabayashi (Removable Partial Prosthetics), Dr.Tsuruta.
CU: Seven young researchers and Dr. Atiphan, Dr. Orapin and Dr. Bussayarat.

Flood Disaster in Thailand

From mid-October to December in 2011, Thailand suffered from devastating flooding throughout the country. CU is located in the center of Bangkok, but the university buildings could avert catastrophe fortunately. However, many homes of staff members, students and patients were damaged by the flood. Moreover, hospitals and universities were forced to close until January 2012. Some exchange programs between CU and TMDU were also cancelled or postponed. All the staff members and students in TMDU express our sincere sympathies to those who were affected by the flood and pray for the early recovery and reconstruction in the country.

International Summer Program 2011 was Successfully Held & Announcement of ISP2012

TMDU is continuously working to increase its international profile and serve the international community. In addition to sending students and faculty members to partner institutions such as Harvard and Imperial College and to our research centers in Ghana, Thailand and Chile, a key part of our internationalization effort is the recruiting of top students and researchers worldwide.

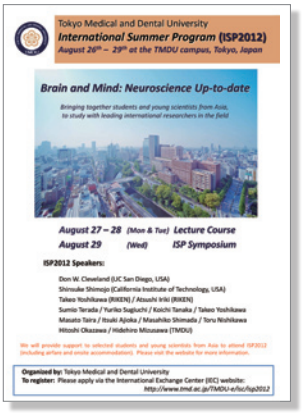
Tetsuya Taga
Professor, Department of Stem Cell Regulation, TMDU

Kevin Cleary
Associate Professor, International Exchange Center, TMDU

FOR THE PAST three years the TMDU International Summer Program has been an increasingly important part of our international outreach, as it annually brings approximately 25 students and young researchers to the TMDU campus for four days of lectures, lab visits, cultural introductions, social events and other activities. As of May 1, 2011, there were 211 international students studying at TMDU, and several of them are ISP alumni. Many ISP2011 attendees are in process of applying to one of our PhD programs, so we look forward to the ISP and its alumni having an even deeper integration with our graduate schools and university community as a whole in the coming years.

Assoc. Prof. Kevin Cleary assists Prof. Tetsuya Taga at the ISP2011 Orientation.

In late 2010, a working group to organize the 3rd International Summer Program, ISP2011, was convened and then managed under the leadership of Professor Sei Sasaki and Professor Kikuo Ohno, the outgoing and incoming Trustees of Planning/International Exchange, respectively. Professor Tetsuya Taga of the Department of Stem Cell Regulation chaired the ISP2011 Working Group, which included representatives from several departments, especially those involved with stem cell science and organ/tissue development and regeneration. The faculty and staff members of the International Exchange Center also participated actively in the planning of ISP2011. The working group finalized the theme, "Organ/Tissue Development and Regeneration: Fundamentals and Clinical Applications" and invited leading researchers such as Dolly's creator, Sir Ian Wilmut of the University of Edinburgh. We were very glad that all of the invited researchers and attendees decided to attend ISP2011, even though the situation in Japan was very problematic after the horrific earthquake and tsunami of March 11 and the consequent nuclear disaster. Despite the challenging situation, ISP2011 was successfully held from August 28 to 31, 2011 and was highly eval-



Tokyo Medical and Dental University

International Summer Program (ISP2012)

August 26th - 29th at the TMDU campus, Tokyo, Japan

Brain and Mind: Neuroscience Up-to-date

Bringing together students and young scientists from Asia to study with leading international researchers in the field

We will provide support to selected students and young scientists from Asia to attend ISP2012 (including airfare and onsite accommodation). Please visit the website for more information.

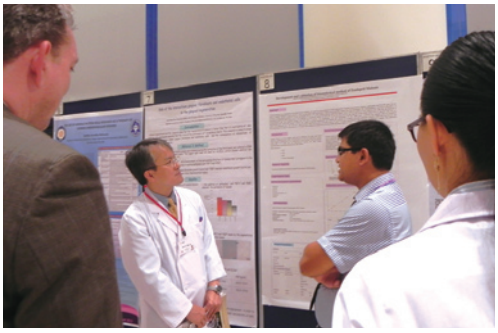
Aug. 27 - 28 (Mon & Tue)
Lecture Course

Aug. 29 (Wed)
ISP Symposium

Organized by: Tokyo Medical and Dental University
To register: Please apply via the International Exchange Center (IEC) website

http://www.tmd.ac.jp/TMDU-e/isc/isp2012

Two participants visiting Prof. Hajime Karasuyama's laboratory as part of their campus tour.



Prof. Ichiro Sekiya listening to a presentation by a participant at the ISP2011 Poster Session.

ISP2011 Working Group
Prof. Tetsuya Taga (Chair), Prof. Yuichi Izumi, Prof. Hajime Karasuyama, Prof. Akinori Kimura, Prof. Noboru Mizushima, Prof. Emi Nishimura, Prof. Ikuko Morio, Prof. Ichiro Sekiya, Prof. Akira Yamaguchi, and Prof. Kenji Yasuda.
Observers: Assoc. Prof. Kevin Cleary, Assoc. Prof. Matazo Izutani, Assoc. Prof. Koji Masuda, Assoc. Prof. Yoko Okita, Prof. Yoshihiro Takemoto, Prof. Takashi Yoshida.

uated by the attendees.

As with previous ISPs, ISP2011 consisted of a two-day Lecture Course, a Poster Session and an International Symposium. In addition to the lectures, participants particularly enjoyed a campus tour with laboratory visits to researchers whom the participants hoped to meet and the various social functions on offer, which afforded the opportunity for getting to know other invitees and presenters. In addition to Sir Ian Wilmut, featured speakers included Dr. Johan Hyllner of Cellartis, (from Sweden), Professor Jing Xiao of Dalian Medical University (China), and a full retinue of Japan-based researchers who are conducting leading-edge research in the field. ISP2011 also featured newly expanded lab visits, which allowed the participants and TMDU faculty/students to interact more freely than at previous ISPs.

Applications to ISP2011 were very strong, in quantity and quality. We received 69 applications from students and young researchers, who represented 16 countries throughout Asia. Happily, many previous ISP participants recommended this program to their colleagues. From all these applications, we selected 23 students and young researchers. We are also glad to report that the feedback from these participants was very positive; for example, 18 out of the 23 participants reported that "their interest in studying at TMDU became stronger" as a result of ISP2011.

At the Social Hour, which was held on the third evening of ISP2011, the invited participants, invited speakers and TMDU faculty and students gathered together at the Faculty Lounge on the top floor of M&D Tower. After President Takashi Ohyama officially welcomed the participants to the reception, the window shades were raised, revealing the stunning night view from the 26th floor. Everyone enjoyed a night of talking, eating and snapping pictures.

To maintain the momentum that the first three ISPs have created, it has been decided that ISP2012 will be held from August 26 to 29, 2012, with the theme "Brain and Mind: Neuroscience Up-to-date". ISP2012 is organized under the leadership of Professor Kikuo Ohno, the Trustee for Planning/International Exchange, and Professor Hidehiro Mizusawa of the Department of Neurology and Neurological Science, the chair of the ISP2012 Working Group. Detailed information on this, our 4th annual International Summer Program, is available from the website of the International Exchange Center. The website has full information on the first three ISPs, which helps students and young researchers across Asia learn more about this international outreach program.

Sir Ian Wilmut, Dolly's creator, addressing the International Symposium at ISP2011.

ISP2011 speakers and invited participants.

International Symposium with Specially Invited TMDU International Student Alumni

Education of international students is a key function of any university that desires to make an intellectual contribution to the global community. As of May 1, 2011, TMDU had 211 international students from 33 countries and regions. We can take great pride in our contribution to the cultivation of so many individuals from around the world through our international education efforts.

Ikuko Morio
DDS, PhD
Director, International
Exchange Center, TMDU

Greetings from
President Takashi Ohyama.

OUR INTERNATIONAL STUDENTS and alumni are both invaluable assets to TMDU. It is always a great pleasure and an honor to know of the active roles in research, education and service in medicine and dentistry that our international alumni are taking in their countries of origin or residence. In addition, we are fully aware that our international education efforts would not be complete without continuously supporting our international alumni throughout their careers. Based on our recognition of the importance of providing support for research collaboration, continuing education, and the establishment of a network of researchers and educators, TMDU has implemented various follow-up programs for our international alumni.

One of these programs is the "Young Researchers' Project in Medicine and Dentistry – Establishing a Network of Health Care Professionals in Southeast Asia", a program that has been supported by the Japan Society for the Promotion of Science (JSPS). Fortunately, we have succeeded in obtaining support from JSPS for this program since 2009, and in the past three implementations of this project, we were able to invite 42 young researchers, including those who earned their PhD degrees from TMDU, for stays of 15 to 90 days at our university.

Through these programs we were able to supply these young researchers with valuable opportunities for continuing instruction and research collaboration with our faculty. We also held seminars in Thailand on current topics in dental research and education through this program in 2009 and 2010.

In 2011, the third implementation of the program was held in close coordination with a project funded by TMDU that supported the invitation of alumni who graduated from TMDU but were not able to be supported by the previous JSPS programs. This implementation also featured an international symposium, entitled "Toward networking dental professionals in Asia", which was held at TMDU on October 6, 2011. More than 100 participants, including 29 dentists and researchers from seven foreign countries – Malaysia, Vietnam, South Korea, Republic of Indonesia, Mongolia, China and Thailand – attended the symposium. The researchers who were invited to this program are leaders who are playing an important role in dental education or in a dental society in their home country.

The interaction among the invited researchers and TMDU faculty, staff members and students at this symposium was very fruitful. In particular, the panel discussion allowed us to draw out and discuss new ideas and get hints on how to best grow as an international education provider and as a member of the global academic community. This kind of event also refreshes our relationships with our international alumni and provides momentum for the establishment of a network of dental professionals in Asia, both of which are conducive to attaining the goals of TMDU's international activities and strategies.

Invited alumni and organizers of the "Toward networking dental professionals in Asia" symposium.

Toward networking dental professionals in Asia

Organized by TMDU Faculty of Dentistry, Graduate School of Medical and D ung Research-ers' Project in Medicine and Dentistry
– Establishing a Network of Health Care Professionals in Southeast Asia – (3)

Date
October 6, 2011 (Thursday) 10:00 – 17:00

Venue
Tokyo Medical and Dental University, Faculty of Dentistry
Auditorium & Seminar Room (Poster Presentation), Dental Hospital South, 4F

Language
English

Program

10:00 – 10:30	Poster mounting, equipment display (Seminar Room)
	Opening MC: Yoshiaki Ono
10:35	**Greetings** Takashi Ohyama (President, TMDU)
10:40	**Greetings** Akihiko Satomi (Head, Overseas Fellowship Division, International Program Department, JSPS)
10:45	**Greetings** Junji Tagami (Dean, Graduate School of Medical and Dental Sciences, and Dean, Faculty of Dentistry, TMDU)
10:50	**Commemorative Photograph**
11:00	Presentation 1: "Challenges in international education at TMDU" Ikuko Morio (Director, International Exchange Center, TMDU)
11:30	Presentation 2: "Future direction of TMDU: Integration of medical and dental education" Kazuki Takada (Deputy Director, Center for Interprofessional Education, TMDU)
	Lunch Break
13:10 – 15:30	**Panel Discussion** Chair: Yoko Kawaguchi/Jun Tsuruta
13:10 – 13:20	Panelist 1: Haslina Rani From Malaysia; studied dentistry at TMDU at the undergraduate level
13:20 – 13:30	Panelist 2: Thi Hong Nguyen From Vietnam; was a short-term international student at TMDU Head of Department of Oral Pathology, University of Medicine and Pharmacy at Ho Chi Minh City
13:30 – 13:40	Panelist 3: Innim Park From South Korea; studied dentistry at TMDU at the graduate level Director, Goodface Dental Clinic, Seoul, Korea
13:40 – 13:55	Panelist 4: Sri Angky Soekanto From Indonesia; studied dentistry at TMDU at the graduate level Former Dean, Faculty of Dentistry, Universitas Indonesia
	Coffee Break
14:15 – 14:30	Panelist 5: Amarsaikhan Bazar From Mongolia; studied dentistry at TMDU at the graduate level Dean, School of Dentistry, Health Sciences University of Mongolia
14:30 – 14:45	Panelist 6: Weidong Niu From China; studied dentistry at TMDU at the graduate level Vice Dean, School of Stomatology, Dalian Medical University
14:45 – 15:00	Panelist 7: Narongsak Laosirisin From Thailand; studied dentistry at TMDU at the graduate level Dean, Faculty of Dentistry, Srinakharinwirot University
15:00 – 15:30	Q&A Session
15:30 – 16:30	**Poster Presentation on dental research, education, and service in each country** (Seminar Room)
18:00 – 20:00	**Information Exchange & Networking** (Building No.1 West 9F "Grill Saints")

The Panel Discussion featured seven alumni.

The display area for the Poster Presentation session.

Information Exchange & Networking session

Toast by Prof. Ikuo Morita (Trustee in charge of Research)

Dr. Harnirattisai from Thailand

Dr. Niu from China

Dr. Park from Korea

Dr. Luong from Vietnam

Graduate students who are active in the front lines all the countries of the world.
The great experience of studying abroad helps deepen your knowledge as a healthcare professional, benefiting both your medical field and international humanity.

Letters from TMDU Overseas Alumni

Letter 01

My precious moment in Japan

Paksinee Kamolratanakul
Chulalongkorn University
from Thailand

Working at Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, CU.

I HAD NEVER dreamt of studying abroad in Japan before I was proposed for the Monbukagakusho scholarship from the Faculty of Dentistry at Chulalongkorn University (CU), where I've worked as a staff lecturer since I received my bachelor's degree in dentistry in 2005. Our universities, CU and TMDU, have a long and close relationship. Part of our relationship is shown by an agreement between us that allows ten staff members (one person per year) from CU to study at TMDU, supported by Japan Society for the Promotion of Science (JSPS). My greatest honor is to be one of the ten people who have been/will be selected to join this contract.

I did not know how gorgeous Japan is until I first arrived at Japan in 2006. Although everything looks different from my country, I feel at home. Before my first step in Japan, I was welcomed by a professor in the maxillofacial department of TMDU, where I would eventually belong. Upon my arrival, I got a warm welcome from all staffs and senior students. It was my duty to take a Japanese language course for six months before applying for the graduate school. I realized what a friendship beyond frontiers is. We met international friends from various countries; Thailand, China, India, Germany, Jordan, Egypt, Syria. We became close friends easily because we were strangers but we wished to be a part of Japan and a part of each other by using our third language, Japanese.

Dinner with President Ohyama and TMDU professors.

While I was taking the Japanese course, I had to attend the oral surgery at an outpatient clinic and had duties in patient preparation and working as a ward assistant and in the operation room after my morning classes finished. I tried to learn Japanese from everywhere – my Japanese teachers, my colleagues, my seniors, my staffs, and even my patients. The more I learnt Japanese, the more friends I got and the more academic knowledge I gained. After finishing the course, I entered the Molecular Pharmacology department to begin research work in bone biology. The professor at this department was also kind to me. The staff and seniors supported me, guided me and helped me as I was really new for research.

My tutor was also my senior in the maxillofacial department. She greatly supported me, not only how to work in laboratory or how to begin my own research, but also she looked after me for

everything: lifestyle, how to live, where to go. All the members of the department taught me the basics of animal model research and cellular-molecular research, which I had never done before. Every morning, we had seminar and journal club in Japanese. I spent most of my time there with them, every lunch and some weekends, not just at the lab.

My four and a half years in Japan have been too short. I have been immersed in the culture and society and understand that not only I am in Japan, but also Japan is in me.

Letter 02

Being able to study in Japan and after returning to my home country, Indonesia

Sri Angky Soekanto
Indonesian Medical Council
from Republic of Indonesia

AFTER TRAVELING TO Japan a number of times with my family since 1975, I have always dreamt of being able to study in Japan. I finally got the opportunity to do so after I was accepted as a young lecturer at the Faculty of Dentistry, Universitas Indonesia, in 1986. I was able to pass the examination given by the Japanese and Indonesian governments, and was able to leave for Japan in 1988. My goal was to obtain a PhD at the best university in Japan. I was lucky enough to be able to study at TMDU, under the guidance of the late Professor Hideaki Ogura, who at that time held the position of Dean at the Faculty of Dentistry, TMDU.

I also received much help and support from the instructors, laboratory staff, and fellow doctorate students. I felt that our department had a real tradition of helping each other and trying to achieve maximum results. We were also given the opportunity to study the latest scientific developments, by yearly attending seminars. By attending these seminars all over Japan, from Hokkaido to Kagoshima, I also feel that indirectly experience Japanese culture.

I feel that my studies at TMDU have brought about a real change in my life, a change that has lasted until today. Not only I was lucky enough to receive the most up-to-date knowledge, but also I successfully achieved my career after returning to my own country as a result of gathered knowledge in TMDU, which I received outside the classroom or laboratory. The example and leadership shown by my advisers have made me stronger and more confident, both as an instructor and as a leader in my faculty back in Indonesia.

After I returned to my own country, I became a team member of the Total Quality Management Team, President's Office (UI), from 1996 to 1998. Apart from becoming an instructor, the main task in this capacity was to perform self-evaluation by accumulating data in order to prepare the university for the future development, particularly in the field of educational quality. Afterwards, in 1999, our faculty won a reputable project called "Quality for Undergraduate Education," a four-year grant provided by the government, awarded in order to improve the quality of education through competition. Up to the year 2003, I was the Executive Director of this project. This project was a real breakthrough for us, and enabled us to change the academic atmosphere and to improve our teaching-learning method. It's outcomes included an integrated curriculum, integrated clinical education, a competence-based curriculum using problem-based learning (2003 to present).

Meeting a Council from my country, with all the Deans from Faculties of Dentistry in the Mekong River Region.

Prof. Keiichi Ohya (my supervisor at TMDU) and I were in Hiroshima in October 2011.

Our subsequent pioneering achievements include: the first and only Faculty of Dentistry that received the national QUE project (1999-2003); among the first three Faculties of Dentistry in Asia to use the PBL method (together with HKU and Thamasat University) in 2003; the first Faculty of Dentistry to use a competence based curriculum in Indonesia (following the standards of the Indonesian Medical Council) in 2005; the first Faculty of Dentistry to be reviewed by SEAADE in 2005; the first Faculty of Dentistry in Indonesia to incorporate Minimal Intervention into the curriculum in 2005; the first Faculty of Dentistry in Indonesia to use Improved Community Based Curriculum in 2006; the first Faculty of Dentistry in Indonesia to use Integrated Clinic Education in 2007; and the first Faculty of Dentistry in Indonesia to implement Minimal Intervention in Clini-

cal Education in 2007.

At the moment, I occupy a position in the Division of Dental Education, at the Indonesian Medical Council (IMC). IMC was established in the year 2005, under Act No. 29/2004 on Medical Practice. It is an autonomous non-structural institution, and is responsible to the President of the Republic of Indonesia. The main function of IMC is to establish regulations on medical practice in Indonesia. Its specific duties include: Registration of Doctors and Dentists; Ratifying Education standards for Medical and Dental Schools, including standards of competencies for doctors and dentists; guiding and supervising medical practice in Indonesia. IMC has 17 members, who together represent the Ministry of Health, the Ministry of National Education, various professional organizations, the Association of Medical and Dental Schools, the Association of Hospitals and lay members. The organizational structure consists of a Medical Council and a Dental Council, each of which has three divisions, namely: the Division of Medical/Dental Education, the Division of Registration, and the Division of Medical Practice Supervision.

Also, I am in the process of forming an alumni association for dentists who have studied in Japan. It is my sincere hope that in the future we will be able to continue strengthening the connectivity between Asian dental education institutions, while sustaining and improving our networking activities.

Letter 03

TMDU and URUGUAY screening program for colorectal cancer

Eduardo Fenocchi
National Cancer Institute Uruguay
form Uruguay

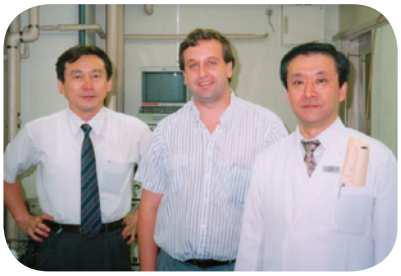
I MET PROFESSOR Nakamura and Professor Eishi in Chile, in 1995, while attending a JICA course at the Professor P. Llorens hospital. We talked about the high incidence of colorectal cancer in my country, Uruguay, and the possibility of setting up a screening program for that pathology by using a new test. This new test, the IFOBT, was introduced by Professor Eishi in his lecture. It was developed in Japan by Eiken Chemical company and detects occult blood in feces using an immunological reaction.

Since that time we began to work with Professor Eishi on a useful and applicable screening program for colorectal cancer in Uruguay, with the support of JICA and TMDU.

For this purpose, I visited Japan for 3 months in 1997, from July to October, and my activities there were centered in the Pathology Department and in the Endoscopy Department of TMDU. I also met with JICA staff members and with authorities of the Ministry of Foreign Affairs, as we tried to get a budget for our project.

I received individual training so nobody travelled with me on this visit to Japan. When I arrived in Tokyo I stayed at the Ichigaya Center, which was nearly empty at that moment (only four students were in the building). It was near the hospital but also was in a land with culture, language and transportation systems very different from what I was used to. But all the people in TMDU were kind, and tried to help me in the different activities. We had fun together, as well as receiving training in therapeutic endoscopy with Dr. Tsubaki at the Endoscopy Department and attending JICA's Pathology Course directed by Professor Nakamura. I remember the Pathology Department was at that moment in the old building but was soon moved to a new building, with new equipment, in a very nice area.

In a scientific-social weekend event, I visited Ito-shi with staff members and students from the Department of Pathology.



In the Endoscopy Unit with Dr. Tsubaki (left) and Dr. Takeshita (right)

Fortunately, the project was approved after all and in 1999 we could start with the activities of mass screening for colorectal cancer in Uruguay, setting up a Digestive Cancer Center at the National Cancer Institute of Montevideo, the capital of Uruguay. Since that moment to date, we receive funding from JICA and technical support from TMDU. The greater part of our staff participates in courses or activities of TMDU in the areas of Surgery, Endoscopy, Pathology and Oncology; of course some people from TMDU have visited our Center in Uruguay in these years. For example, Professor Eishi has come here four times, Professor Nakamura twice, and Noboru Ando and Jiro Kumagai one time each.

Our screening program is now going well all over our country, and a lot of

adenomas and cancers have been detected, also "de novo" cancer, one of the things I learn to find during my visit to Japan, applying chromoscopy and magnification endoscopy. With Professor Eishi we published an article in 2006 in the European Journal of Cancer Prevention about the results of the screening in Uruguay. At this moment it is the only National Program in all of Latin America. We are now "exporting" the knowhow related to this project. Argentina is undertaking a pilot study and Paraguay and Mexico are interested in using our experience.

I am glad to visit Japan and I appreciate so much the opportunity given to me by TMDU to stay there, to support the program and to now be part of this new project of extend the screening to other countries in an international collaboration named "South-South".

To all my friends, colleagues and staff members at TMDU, many thanks. I remember you with all my heart, all my days. I am very proud to be a JICA and TMDU alumni.

Letter 04

Learning more about the field of early neoplasia, I became interested in other related fields

Adolfo Parra-Blanco
Asturias Central University Hospital
from Spain

MY STORY IN Japan starts when I was 15 years old. My father suggested that I study Japanese. I accepted the challenge, and studied for two years until I entered medical school. That experience made me get in touch with Japan, its culture and people. When I finished my training in gastroenterology in Spain, I was willing to further my knowledge in endoscopy in Japan, and I was awarded with a Mombusho scholarship, and later on with a European Union postdoctoral grant. The topic for my training and research was "Endoscopic techniques for the diagnosis and treatment of early gastrointestinal neoplasms".

My host center was Showa University Fujigaoka Hospital, under the tuition of Professor Rikiya Fujita. With him and his team I started experiencing the proverbial and never over-emphasized Japanese hospitality and kindness, also their hard and perfectionist work. As I learned more about the field of early neoplasia, I became interested in other related fields, such as histopathological diagnosis. I was lucky to meet Professor Kyouichi Nakamura, a Professor in the Department of Pathology in TMDU at that time. He accepted me at his department as a visiting doctor, where I visited once, and later twice, a week, for two years.

My aim was not really to be able to make a diagnosis with a microscope by myself, but rather to improve my understanding of the relationship between endoscopy and pathology in the specific field of early neoplasia. For instance, I performed a study about histological and immunostaining features of minute gastric cancers (≤5mm in size). Also, thanks to Professor Nakamura once again, I was accepted by Dr. Fujii in Kashiwa and Tsukiji National Cancer Center to learn magnifying colonoscopy, a technique for which some knowledge of pathology is desirable.

With colleagues at Oviedo Hospital and some Japanese endoscopy experts.

My family at the Natural History Museum in London.

I must say that I really enjoyed my time at TMDU. Why? Most probably, because I met a great group of people, where everybody was important, from the Professor to the newest team member. Of course, the scientific level of the presentations, meetings, and discussions were very high. What I learned there was important for me, later on, as a gastroenterologist and endoscopist. I had an especially close relationship with Professor Nakamura, Professor Eishi, and Dr. Kumagai, but also many other people such as Suzuki-san, Andou-san, and other colleagues who I really appreciate and whose kindness I will never forget. Interestingly enough, many of our talks were in Spanish. This is because the educational relationship of this department with South America (mainly with Chile) was very strong. They taught me a lot about pathology, and I tried to help them with their Spanish. (although I must say that they were already pretty fluent!)

During my stay at TMDU, I had the chance to meet a great number of Japanese and foreign doctors, (mainly pathologists) who attended the special courses organized by JICA. Finally, my wife, a Brazilian nikkei, whom I met in Japan, was a Mombusho scholar in Od-

ontology at TMDU. Therefore, from several standpoints, I must admit that my experience in Japan changed my life.

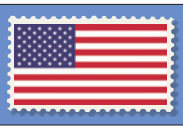
Altogether I spent four years in Japan. After my return to Spain in 1999, I worked in the field of endoscopy for 11 years in two large university hospitals. The first was in Tenerife (Canary Islands) and then in Oviedo (Asturias). My main topics of research have been: detection of flat colorectal neoplasms, chromoendoscopy, advanced endoscopic resection techniques, and screening for colorectal cancer with immunochemical fecal occult blood tests. For the latter issue, the support I received from TMDU (my special thanks to Professor Eishi) was of paramount importance for the success of the research. I cannot forget mentioning Dr. Eduardo Fenocchi, a leader of endoscopy in Uruguay, who is conducting a very important screening program in his country and who has helped us significantly. I first met him at TMDU, and has become a good friend ever since.

Right now there is a new turning point in my career and in my life – I will move to Santiago de Chile to become an Associate Professor in the Department of Gastroenterology of the Pontificia Universidad Catolica next month. My main goal there will be to increase the endoscopic detection of early gastric, esophageal, and colonic neoplasias. I was happy to learn that Professor Eishi and his group are collaborating with a Chilean institution to promote colorectal cancer screening. I'm very glad that our paths will cross again, and this time in South America!

Letter 05

Supported by people in New York, here I am

Miho Suzuki
Memorial Sloan Kettering Cancer Center
from USA



I CAME TO New York City approximately 13 years ago. I cannot clearly recall what made me come here. Now I have been working as a nurse practitioner for a year and a half, but when I left Japan I did not imagine that I would ever work in the US and speak English while doing so. I did not even know the existence of nurse practitioners. I might say that I just wanted to see how nursing was practiced in the US, because what I learned in the nursing program at TMDU, especially regarding nursing theories, was all from the US. Still I never planned to stay here this long. To be sure, I could not live here without support from people whom I encountered in New York.

I originally started going to an English language school attached to a college. One day, when I was walking on the campus of College of Staten Island, I found a tutor room. It is common for colleges in the US to provide tutors for academic writing, and students in the English language program could use the tutor room for free. Thus, I started to get one-on-one tutoring after school. One of the tutors was a newly graduated chiropractor, who was volunteering while waiting for his license. Since I told him that I was a nurse, he used medical contexts in my practicing English. He was very patient while I struggled with the language. Gradually, I gained confidence.

I obtained a registered nurse (RN) license in New York State while studying English. I wanted to work as an RN, but I did not know anything about hospitals in New York, and my visa status did not allow me to work. Thus, I enrolled in the PhD program in nursing at New York University. The faculty members were very supportive and I received full tuition, health insurance, and stipend. I am grateful that even after I finished the program, Dr. Norman, the program director at that time, and I are still friends, and the other faculty members kindly and promptly answer any academic questions I might have.

On Thanksgiving Day with the family of Dr. Norman, at her house.

With my current colleagues at work.

I missed the clinical environment when I was immersed in the academic setting as a doctoral student. Then, one of my classmates informed me about a hospital that would sponsor my green card (permanent resident status). I went to a job interview at this hospital and was finally able to work as an RN in a clinical setting. At work, I saw nurse practitioners who were rounding with physicians, prescribing medications, ordering tests, etc. I felt that they were more involved in patient care than RNs were. In the US, RNs just provide care as prescribed, while in Japan, RNs often discuss patient care with physicians.

And so, I became a nurse practitioner. I no longer routinely manipulate IV tubing and pumps or draw blood, but I am more responsible for a wide range of patient care. I work in the bone marrow transplant service at Memorial Sloan Kettering Cancer Center. Our patients are very sick, but I am impressed by their fighting spirit as they battle against their disease. I am actually encouraged by these brave patients. English is not my native language and I am sometimes unable to understand exactly what they are trying to tell me. Yet they trust me as a professional.

It is impossible to mention all people who have helped me over the years, but thanks to their support, here I am. I am trying to devote myself to learning, so that I will be able to repay them some day.

Letter 06

Imperial College TMDU exchange 2011

Yishi Tan
Imperial College
Exchange Program from UK

EVERY YEAR FOUR medical students from Imperial College London travel to TMDU for three months to complete a BSc project. Last year we were the lucky four (Kelly Ameneshoa, Andrew Gordon, Richard Newman, Yishi Tan) who were offered this placement. We were all thrilled to be offered this precious opportunity and here is a short story of our time in Japan.

It is common knowledge in the West that the Japanese are kind and polite; we soon realized what a massive understatement this is. From the moment our plane touched down we were overwhelmed by the Japanese sense of hospitality and kindness. It was unbelievable to see how everyone went out of their way to help us, something best demonstrated by the care we were shown during the Great Eastern Japan Earthquake and its aftermath.

The earthquake obviously affected our trip, in fact it almost abruptly ended it, but we were able to convince our professors in England that we were safe and were allowed to complete our trip.

With the TMDU students at their end of year conference.

And by the end some of us felt so attached to our lab teams that they felt like family to us, and Japan and TMDU felt like home.

We also formed many unforgettable friendships outside the labs. In our first weekend, we joined the 4th year medical students for their end of year conference. It was here we got to know many of the TMDU students who helped to make our stay so enjoyable. We were given a lot of useful information, ranging from the best noodle shop in Ochanomizu to the difference between SKE and AKB48.

Many memorable nights were spent in izakayas and karaoke bars, things which we were all frankly addicted to by the end of our stay. We also had the chance to sample some of the societies in TMDU, including the English Speaking Society, football club and chamber music group. It was certainly humbling to see the students' dedication and passion, both to their clubs and to their studies.

While we had to work extra hard on our projects due to the disruptions caused by the earthquake, we also had a chance to explore the stunning scenery that Japan has to offer. Weekend highlights included Hakone, where we spent a relaxing weekend, soaking in an onsen and sightseeing and Kamakura, where we all fell in love with the serene atmosphere and pristine temples. During the Easter holidays, our travel plans were significantly more hectic. The boys went skiing in Hakuba, whereas the girls visited the bathing snow monkeys in Jigokudani. We met up for a few days in Kansai before going our separate ways. Between us, we visited Hiroshima, Miyajima, the Hida mountains, Shikoku and Fuji-goko, to name just a few places.

After a night of karaoke with friends.

We hope it is clear that we all had a wonderful time over the three months we spent in Japan and we would like to thank all of those at TMDU who made it possible. Coming back to London has been a real bore. Often (I think I can safely say) we find ourselves nostalgically remembering the good times in Tokyo. And it almost doesn't seem real anymore.

Luckily we have many photos and most importantly very fond memories and lasting friendships to remember and maintain the experience. And, of course, we are all fluent in Japanese now.

There are a wide variety of exchange programs for young people at different levels.
TMDU students and young researchers improve their skills by participating in training programs abroad.

Reports of TMDU Students in the World

Report 01

Joining research projects, learning Spanish and Chilean culture

F. Ihara, A. Sawayanagi, Y. Shigemasa
4th year students, Faculty of Medicine
Project Semester in Chile

Written by Fumitaka Ihara

I belonged to the lab of immunology of the University of Chile. In this hospital, immunotherapy against melanoma is used to improve the prognosis of Stage Ⅲ / Ⅳ patients. My theme was "The Gap Junction contributes to the NK cells' cytotoxicity against melanoma cells". I did experiments with a Chilean teammate. If a better protocol or material could be found in a published paper, we had to discuss it with our professor or advisor, and sometimes we could chose it as a new way. Making experiments was so exciting that I had no trouble exchanging my opinions in English, and could enjoy searching for new methods from the published research.

Every member in this laboratory was very kind to me, and I miss them now. I could feel the Chilean atmosphere around the university. They introduced many typical Chilean places and foods like "completos" because there were many food stands around the facility where we worked. Additionally, on December 22, a Christmas party was held in the faculty yard. We exchanged presents, danced to Latin music, and ate barbecue. I will never forget this precious time or the friends I made in Chile, and greatly appreciate the opportunity I was given.

One of my friends took us to the San Cristobal Hill. After an hour-long climb to the top, we could see the beautiful face of Santiago.

We visited the Hospital Eduardo Pereira, one of the satellite hospitals for the pilot study of colorectal cancer screening program, with CLC doctors and Prof. Eishi and Prof. Yoshida of TMDU.

Written by Ayana Sawayanagi

In Chile, people speak almost only in Spanish, so as for daily life, we should communicate in Spanish. But some people can speak English well, and Chilean people are very kind, so when we had any trouble, they were very willing to help us. Regarding safety, I think Chile is a very safe country. Of course we should take care when we ride on the crowded train or when we walk on a street alone at night, but it is the same in Japan. If you act with the same care that you exercise in Japan, you should avoid any serious trouble.

Chilean food is very delicious, and Chile is justly famous for seafood like salmon. To be sure, the meat in Chile is very good too. As for sweets, Chilean people like "manjar". It is kind of cara-

The food in the left is "empanadas", and on the right is "pastel de choclo". Both of these are very typical Chilean dishes.

mel, but it's very soft. Also, many countries in South America have common dishes, even though the names are different. Chile is also famous for wine and "pisco". Chilean wine has a very good taste, and also the prices are cheap. Pisco is liquor made from grapes, but it's actually distilled liquor. A popular cocktail in Chile is "pisco sour", and it is very good.

Written by Yukiko Shigemasa

At Clinica Las Condes (CLC), I participated in a study that was undertaken at the Laboratory of Oncology and Molecular Genetics, which is a unit of the Coloproctology Lab. The study was entitled, "Study of the gene in Chilean families with polyposis syndromes", and the SMAD4 gene was one of the candidates being tested. During my project semester, my research topic was to find out if there were any relationships between developments of polyposis syndromes and mutations of the SMAD4 gene.

There were about 10 other people working at the laboratory. Two female researchers were my instructors. As I had never practiced the experimental methods which were needed for my study, they taught me about them with great patience. I had no troubles with communication because many researchers were fluent speakers of English.

There were some exciting events at my laboratory. When a member had a birthday, we always celebrated it with a birthday cake, and we also had a Christmas party and a Chilean-style barbecue in a yard. Other laboratory members were friendly and I could relax and enjoy the time we spent there.

My research life at CLC left nothing to be desired as we could work on our study with plentiful materials, with the latest machines, and of course with the wonderful people of Chile.

Members of the Laboratory of Oncology and Molecular Genetics; I'm in the middle of the front row. The lab members are all kind and cheerful, so the lab has a really homey atmosphere.

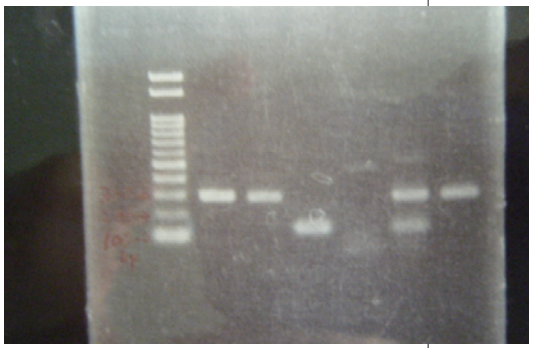
Report 02

No matter how hard the situation is in Ghana, our goal is the same

K. Wako, H. Matsuo, S. Shinchu
4th year students, Faculty of Medicine
Project Semester in Ghana

Written by Kentaro Wako

I am studying two subjects about malaria, in which pathogens are transmitted by mosquitoes. I'm approaching the disease from both the pathogen side and the mosquito side. In one subject, I've been investigating whether mosquitoes in Ghana have a resistance against major insecticides. What I want to see is a mutation of a gene, which gives mosquitoes such resistance. So, recently I've been doing PCR, in which I amplify specific genes and detect them. In these PCR experiments, I can judge the presence of resistance from the location of gene bands. First, I analyzed mosquitoes that were raised at the Noguchi Institute. I found that they have no resistance. Next, I'll analyze field-captured samples. I wonder if pesticide resistance is spreading in mosquitoes in Ghana. I'm interested in the results.



Pictures of mosquito genes amplified by PCR. One band locates between 100bp and 200bp, and the other locates in about 300bp. This reading means that this mosquito has no resistance.

We are enjoying passion fruits with our driver at the vegetable shop on the street.

What we do in Ghana is not only research. Of course we enjoy the local food, sightseeing, and exchanges with locals and visitors. We went to a park with members of the Parasitology Lab-

oratory, had barbecue, played football, and danced. Ghanaian people are very cheerful, and they speak to us with enthusiasm and good cheer. Thanks to them, my listening comprehension seems to be improving.

Written by Haruka Matsuo

We came to Ghana two months ago and are studying trypanosome. Trypanosome is a protozoan that is carried by tsetse flies. I am taking a part of the project that clarifies which genes are involved in the movement of the protozoan. This is the first time for me to do research, although the staff members at TMDU taught me basic knowledge of biology and the way to use some experimental materials. That practice time in TMDU was necessary and much appreciated not only because there are few doctors who can teach me in Ghana, but also because I could realize that studying in Japan is very comfortable.

Studying here seems hard. For example, power failures are all too common. When the power goes out, all the machines, including lights, PCR machines, electrophoresis machines, and refrigerators stop. The water supply also sometimes stops. We have to stop our experiments until the power comes back on. Also, icemakers don't work well, so research assistants use small refrigerators instead of ice sheets.

Pupae of "Anopheles gambiae". The left one is male and the right one is female. We can easily see the difference by looking at the tail.

This is our container insectary. We work here every morning and evening. It is very hot and humid in the container.

Though there are difficulties, staff members and research assistants come up with solutions and we can get wild samples that are not available at all in Japan. The staff members have promised us the chance to collect wild tsetse flies. I'm looking forward to it.

Written by Sayaka Shinchu

My research topic is malaria, especially in the mosquito stage. I am trying to make a transgenic mosquito and inhibit the transmission of malaria. I practiced injecting plasmid into the mosquito eggs and learned how to establish the transgenic strain in Japan. I enjoyed it and was really looking forward to studying in Ghana.

But when I went the insectary at NMIMR, there were no mosquitoes except only one tray of larvae, which had a bad smell. I was very surprised at this situation, but it is no use complaining about that. Joe, who is a responsible for our insectary, and I work together every day. It is now the dry season, which is called "harmattan", so we have many difficulties in maintaining the room temperature and humidity. It seems that every time we go to the insectary, some serious problem happens. Many larvae died because of the cool water temperature, and many adults died because of the high temperature. What is more, communication is not easy for us. Joe repeats the same things many times when I don't understand well.

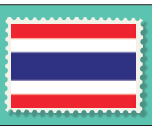
Indeed it is a difficult situation, but I'm really enjoying my work with Joe. The reason is that, no matter how hard the situation is, I feel our goal is the same.

This is a tsetse fly. I confirm their species and sex before doing DNA extraction.

Report 03

Study, Research, Sightseeing ! Our daily activities in Thailand

Yoko Taketani, Yuko Adachi
4th year students, Faculty of Medicine
Project Semester in Thailand



IN THE SECOND half of our 4th year, we have the opportunity to focus on research. There are many kinds of options. Fortunately, we had the chance to go to Chulalongkorn University (CU), Thailand. It was the first time for both of us to go abroad. We could watch, hear, feel, taste, and think many things that

At an operating room with my teacher.

we had never imagined before at all.

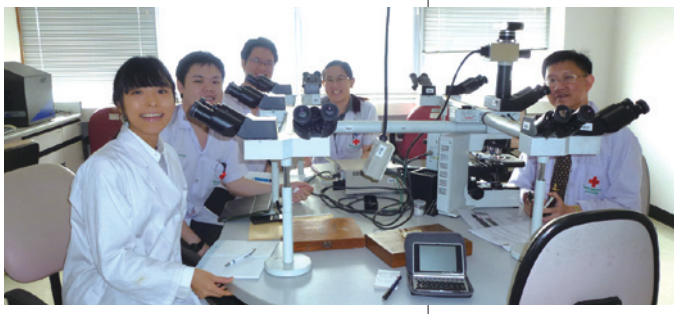
There are many unique characteristics of Thailand, and we think one of those is that many food wagons are along the street everyday. We can get quite a variety of foods at these wagons at small cost. Our friends took us there, and the various dishes on offer and how to order it in Thai. Thai people are very friendly and ask us to lunch and dinner for many times. Thanks to them, we can also enjoy our private activity very much. During the short term, we went to many shopping malls, weekend markets, the aquarium, small trips, and so on.

At CU, we belong to Department of Pathology, and Department of Surgery. Sometimes, we visit each other's department and share our research. Here, medical students start clinical practice from 4th year. With 4th year students and residents, we visited the operating room, went on doctor's rounds, and saw outpatients. In Thailand, upperclassmen guide lowerclassmen very well and they also guided us very kindly. Thai hospital room can accommodate very many patients, and the biggest room can accommodate more than ten. Some rooms don't have windows and are left out in the open, and I felt that Thai hygienic environment is inferior to Japanese. Thai doctors as well as Japanese seem to be very busy but they seem to have high motivation, so we want to follow their example, we think.

At the pathology laboratory, we learned basic skills for DNA extraction, PCR, and electrophoresis. We also

We go to dinner very often with our teachers.

A pathology discussion with a teacher and residents.



joined meetings and lectures with other residents. We can check slide glasses together, and doctors gave us lecture in English, very kindly and politely.

Last October, we went back to Japan temporarily because of the severe flooding in Thailand. CU is in the center of Bangkok, and this area didn't have any direct flooding. However, because severely flooded areas like Ayutthaya and northern Bangkok were shown on the news every day in Japan, many acquaintances made contact with us. We were very thankful to them and at the same time we were at a loss what to do. At the beginning of October, we were caught in a heavy thunderstorm from night to next morning, but the weather turned very fine by the end of October.

However, as the news about flood became extreme in Bangkok, we saw many sandbags piled up at all parts of the city, and water for drinking or cooking was put into special corners in at supermarkets and convenience stores. We were afraid that the situation would be similar to the aftermath of the Great Eastern Japan Earthquake. Because we can't understand Thai news, the only information we could get at first was the Japanese news on the Internet, and we were distressed by the lack of information. After Japanese professors came to Thailand, we were able to get to know Japanese who work in Thailand and Thai people who can speak Japanese. All of these people supported us very kindly.

In January, the floodwaters receded, and we could go back to Thailand and start our research again. Still, as the term was shortened, we want to redouble our efforts to do research, make more friends, and enjoy life in Thailand.

An official meeting between Chulalongkorn University and TMDU.

Report 04

Study at the international laboratory of Imperial College London

Nobuyuki Kondo
4th year student, Faculty of Medicine
Exchange program in UK

The South Kensington Campus of Imperial College London, where we studied.

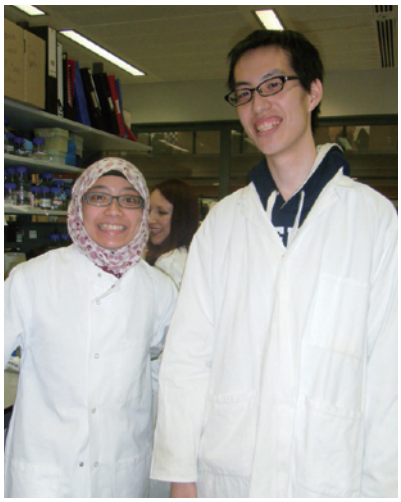
WE HAVE BEEN studying at Imperial College London as exchange students from last October. Staying and studying in the UK has been a very valuable and wonderful experience for me.

I chose invasion of skin cancer as my project. In metastasis of cancer, cancer cells destroy cell junctions so that they can move into other tissue or organs. My project focuses on the pathway of cell junction destruction. I am especially doing research on a new protein that was found by our laboratory so it interests me a lot. As I've never been in laboratory before, the members of my laboratory kindly taught me how to do experiments. To do lab work in English is not as hard as I thought it would be because the English used in laboratory is simple. Mainly I used molecular biological methods and I did lots of Western blots, which is used for probing the amount of proteins in cells, and learned that experiment itself is interesting but it takes a long time and demands much patience.

Now I'm struggling to write my report. British people like to draw a big picture and they are good at constructing articles. I've learned how to show figures persuasively and clearly. My supervisor gives me lots of productive advice, including correcting plenty of my mistakes. I greatly appreciate this precious chance to write an academic paper in English. My laboratory is quite international; we have researchers from England, Brazil, Brunei, Germany, India, Peru, Greece and Japan. The idea that people from different countries have a different accent and pronunciation when speaking English never really occurred to me before I came to the UK. I think one difficulty for Japanese in listening to English lays not only in native speed and connection between words but these accent differences. I want to accurately distinguish different accents someday. It was also a great experience to communicate with many people from many different backgrounds as well as to make friends.

As soon as I arrived in London, I noticed that such simple things as buying food at the supermarket, taking the underground and answering the phone were daunting. But as I got used to the living in London, everything in my life seems inspiring. I got interested especially in European history and culture. On December 26, Japanese people put away their Christmas decorations and start preparing for New Year such as "kadomatsu". But I found that even on January 3, there are Christmas decorations in London. So I did a search on Wikipedia and found that they celebrate Christmas until January 6, Epiphany. It's not because they are lazy.

My experience has widened my view extraordinarily. It is an easy thing to say, but I have found that it's very important to stay in different country. British people work efficiently effectively. Thus, although we finished our work each day, I still had much spare time and enjoyed watching musicals or football matches. I was able to see the beautiful Edinburgh Castle, the mysterious Stonehenge monument, and the magnif-



My friend from Brunei, she is a PhD student and taught me many experimental techniques.

My farewell party at the lab. The members of my lab sometimes go to lunch together.

We went to Wembley Stadium to watch the England vs. Spain football match.

icent Big Ben clock tower. I also had time to consider how I could spend my time effectively. In addition, I was astonished that they told me "It's up to you" so many times. I now feel how self-management is important.

Right now I completely have no idea how this experience will impinge on my career in the future, including whether I will do clinical medicine or research. However, this experience will definitely increase my future possibilities and make me much more proactive. I would like to thank everyone who organizes and supports this program.

Report 05

Seeing the difference in how health insurance systems are structured and operated

Akane Wada, Mayuko Fujii
4th year students, Faculty of Dentistry
Dental Elective Program at King's College

WE HAD THE wonderful opportunity to spend two weeks at King's College London in 2011. During our stay, we learned a lot about dentistry and cultural differences, and are very grateful to our hosts at King's College. Thanks to their hospitality and kindness in every area, we were able to make the most of our chance. We will always treasure our experience thanks to the support of all people at King's College and the Faculty of Dentistry at TMDU.

While at King's College, we visited some clinical offices as part of a Dental Elective program. We thought that there were only a few differences in clinical practice between King's College and TMDU until we visited there, for both UK and Japan have mature social systems and dental studies. However, we found that there were actually a lot of differences.

At the restorative dentistry clinic, we observed general dentistry. Patients who had been introduced by their home dentists with letters of introduction came to King's College to get a second opinion. In general the dentists interviewed and examined patients, gave some advice and perhaps a second opinion, and sent letters back to the home dentists. In some cases, for reasons of research or to provide a simple case for students, the patients were asked to let King's College treat them. A dentist we observed for two hours that day examined 6 patients, and decided that only one patient would be accepted for continuous treatment. Some patients were eager to enter treatment at the hospital, but the dentist firmly explained only selected cases were treated there. In contrast, at the TMDU dental hospital all patients can receive treatment, without letters of introduction, regardless of their condition.

At the Paediatric Dentistry clinic, we observed dental surgeries for children. We were surprised at how many teeth were extracted. One dentist extracted about 6 to 15 baby teeth per patient, and she treated 9 patients from 13:30 to 15:00. The operating room had three doors. One was for staff, another was an entrance for patients, and the other was an exit for patients. Patients, under intravenous sedation, were brought into the theatre through the second door, given local anesthesia, had their teeth extracted, and left through the third door. The operations were performed speedily and efficiently. At first we thought that the reason for the number of extractions was a traffic accident or some other trauma, but it was in fact because of caries.

At the Gordon Museum at the King's College Guy's Campus; many precious specimens are stored here. This museum is historic as well as housing many important items.

With the dental nurses at the Orthodontics Clinic. They are very cheerful.

At the Orthodontics clinic, we met dental nurses. Dental nurses are different from both dental hygienists and dental assistants in Japan. They assist dentists by leading patients to the dental chairs, chat with them until the dentist arrives, assist with the dentistry operation, and clean the dental units after use. These nurses were very cheerful and created a lively atmosphere. Some Japanese believe that clinics should be serious and solemn, but others feel nervous or fearful in such an atmosphere. Dental nurses help to relieve the tension, and are especially good for the latter people, we believe.

By observing dentistry as practiced overseas we were able to have an experience completely different to that which we would get by simply traveling abroad as tourists. In addition to our experiences at the clinic, we were able to open our eyes to many things, for instance, feeling the consciousness British people have for mouth care from the daily commodities sold all over a town, and seeing the difference in how health insurance systems are structured and operated.

London is a world-class city such as Tokyo and people of many backgrounds

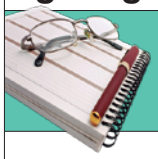
live there. We felt vividly how the diverse members of the population live together and how multiculturalism is present everywhere in London. Moreover, we saw people with various roles assume dental care in coordination from everyday dentistry to surgical treatment at KCL, and that made us consider how to provide a highly satisfying service to our patients more efficiently. Also, we felt that we needed to not only raise the level of medical treatment in Japan, but also to improve access to information and provide informed consent in both directions, by no means treating it as a one-sided proposition. We noticed the importance of cooperation in helping teamwork and a person develop. To take best advantage of our experience, we would like to improve our skill as much as possible and to do our best to improve the service we provide via dentistry, by keeping what we learned uppermost in our minds.

With a group of dental nurses. I was nervous because of my role in the hospital abroad, but felt at home with them.

KCL has five campuses, and we mainly visited Guy's Campus. This campus is situated next to London Bridge station and beside the Thames River. The riverside view was incredibly beautiful.

Report 06

The workers at Harvard are well-trained at giving a concise and logical presentation



Kazuaki Matsumoto
6th year student, Faculty of Medicine
Clinical Clerkship at Harvard Medical School

THANKS TO THE exchange program, I was able to complete a three-month clinical clerkship at Harvard Medical School hospitals. I rotated through three services, one month each, Hematology/Oncology at Massachusetts General Hospital (MGH), Neurology at MGH, and Newborn Medicine at Children's Hospital Boston (CHB). The consultation service of Hematology was the most demanding and enjoyable. It was also unique to the medical circles in America. This service is responsible for any benign hematologic issues consultations, such as hemolytic anemia, pancytopenia, Factor V Leiden. We received consultations from any services in MGH. My team consisted of an attending physician, a fellow and me.

Here is a report on a typical day's schedule: I arrive at the office at 6:30 and check the latest laboratory data of my patients, and then attend a morning conference at 7:00, in which we present case reports or discuss brand-new topics about the basic science of hematology and oncology. Next, I see my patients who were hospitalized in various wards, Neurology, General Surgery, General Medicine and Transplant Surgery. I listen to their complaints and note any changes, perform a quick physical examination and write a note in their chart. While writing a note, I would often receive a message on my pager from a fellow, saying something like "Hey, Kazu. New Patient: 27yM presented with pancytopenia in Neurology. Go and see him." I was never introduced to new patients before the fellow saw them. Then I go and see the patient, taking a complete history with physical findings. After examining the patient, I construct differentials, an examination schedule and treatment options while referencing UpToDate. I had to write up a consultation notes that were like the admission notes I wrote during my clerkship at TMDU. It was

With an attending physician and a fellow at NICU at CHB.

I am presenting my patient to the team during the morning round.

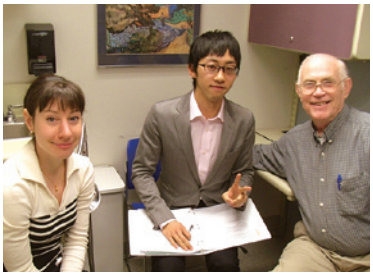
very demanding because, at TMDU, we students rarely see a new patient who has not yet been diagnosed or who needs to have their treatment options planned. At noon, I attend a luncheon seminar, as usual. The subject matter varied from case reports to lectures. The most impressive one was presented by the authors who wrote a case record for NEJM. So exciting!

After lunch, I show my case note to the fellow and present the patient. He gives me detailed feedback and presentation, then accompanies me as we visit the patients, new ones and previous ones. He repeats his history taking and physical exams, and gives more detailed feedback to me. Then an attending physician arrives and I present the patient to her. As you might expect, she provides even more detailed feedback. The two doctors make a treatment/examination plan, and then modify and sign off on my note, which was put on the medical chart for the primary team doctors to read.

Through this program, I realized that the students and doctors working at Harvard are really well-trained at giving a concise and logical presentation because they have many opportunities to give presentations due to the education and medical practice system I mentioned above. They can absorb vast amount of knowledge by making use of these opportunities. In addition to this, there are many more co-medicals, including nurse practitioners, registered nurses, IV nurses, whose work is only to draw blood and start IVs, and clerks. This variety of roles contributes to a reduction of residents' duties and allows more time for them to study. Students at Harvard are given a great amount of responsibility for a patient care, which I felt also facilitates their study process and enthusiasm.

I cannot adequately express my appreciation for the staff at TMDU enough, even with millions of words of gratitude, and I hope that through my experiences I will be able to contribute to the education of students in the future.

All the members of the exchange program, in front of Gordon Hall.



With a resident at MassGen and an Simulated Patient, at the orientation session.

Report 07

Study at Seinäjoki University of Applied Sciences in Finland

K. Sekimoto, M. Kimoto
3rd & 4th year students, Faculty of Medicine
Study program in Finland

AS A PART of a study abroad program and joint research, students of the School of Health Care Sciences have an opportunity to participate in a program held at Seinäjoki University of Applied Sciences (SeAMK), Finland. Over the past few years, many students have visited Seinäjoki and improved their skills. This year, we participated in this program from the end of August through mid-September, 2011.

Written by Kaori Sekimoto

3rd year student, Medical Technology

My goal for this program was to learn about Finland's medical system and to share cultural information by communicating with many people. During my three-week stay, I spent most of the time participating in meetings and studying at SeAMK laboratories and Seinäjoki Central Hospital. I had the opportunity to take part in discussions with many people from various fields, for example, nurses, preventive home visit researchers, economics teachers, engineers, and friends from many European countries. I was able to broaden my point of view on inter-cultural communication. It was a good chance to share ideas and to know about Japan. When I participated in Japan-Finland conference sponsored by his Excellency, Mr. Hiroshi Maruyama, Ambassador of Japan to Finland, I felt that cultural exchanges between two countries have been active recently and have good influence on each other. Since Finland has been successful in maintaining high standards in health care and education, we should absorb more strategies to build up better educational systems.

During my visit to Seinäjoki Central Hospital, I visited many laboratories and learned how specimens were ana-

Public Health Nurses of Kauhava, Manager of International Affairs SeAMK, a SeAMK professor, and TMDU students Mayumi Kimoto (left) and Kaori Sekimoto (right)

lyzed in hospitals in Finland. Since I have just started practical training in school, it was a very valuable experience for me to be able to accompany medical technologists and meet with patients. Learning new examination methods and practicing them, and helping to make specimens were challenging but rewarding tasks. Some of the tests required the utmost urgency, so I felt a sense of responsibility there.

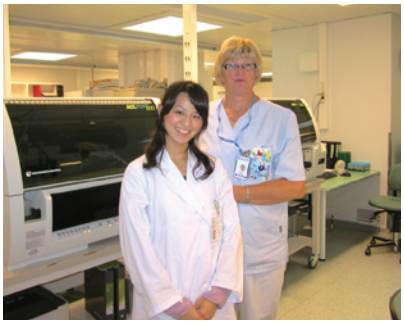
From all that I saw, I found that Finland is a wonderful country. This program had a big influence on me, and I am very pleased that I realized the importance of being an active learner in order to improve myself.

Written by Mayumi Kimoto

4th year student, Nursing Science

I stayed in Finland from August 31 to September 5, 2011. I am interested in preventive home visits for elderly people and studied this topic for my graduation thesis. In Finland, preventive home visits for the elderly people is carried out extensively, so my purpose in visiting Finland was to research the state of preventive home visits for the elderly patients and compare it to the situation in Japan. I conducted interviews with public health nurses, who are responsible for preventive home visits in Kauhava. They gave me their frank opinions, ideas and empirical data on the preventive home visit system for the elderly people. The data was very effective in helping me understand the state of the system of preventive home visits in Japan.

Meeting with Ms. Helli Kitinoja, SeAMK (left)



At Seinäjoki Central Hospital

I stayed with a local family and found how the lifestyle in Finland is differs greatly from that in Japan. For example, night comes so late in the summer that people in Finland enjoy the long daytime. I was surprised but I think it was nice custom. Moreover I visited several institutions, SeAMK, a nursery school, a home-visiting nurse station and so on. I learned a lot of things, including things outside my field of study. This experience expanded my knowledge and gave me diverse perspectives. Although my stay in Finland was too short, I could gain a lot of invaluable experiences.

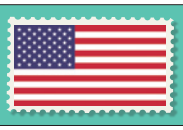
Finally, we would like to express our whole-hearted gratitude to all the people who supported our visit and gave us such a precious opportunity.

The SeAMK cafeteria

Report 08

Participate in fetal cardiac bypass experiments at Stanford University

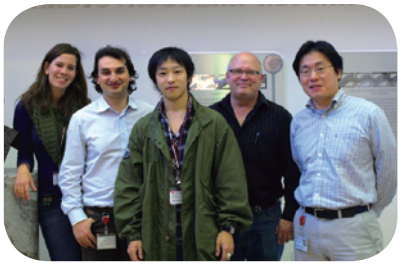
Kenta Furuhashi
4th year student, Faculty of Medicine
Project Semester in USA



AS A PART of my Project Semester activities, I had a chance to visit Stanford University, School of Medicine, Department of Cardiothoracic Surgery, Division of Pediatric Cardiac Surgery, from October 16 till December 5, 2011. In this article, I'd like to report my 1) background and motivation for visiting, 2) experiences and activities and 3) accomplishments obtained at Stanford University.

Background and motivation

As the place to do my Project Semester Research, I've chosen the Department of Artificial Organs, Institute of Biomaterials and Bioengineering, TMDU. At the time of my interview, Professor Setsuo Takatani, Chairman of the Department, told me that he'd been collaborating with Stanford University Department of Pediatric Cardiovascular Surgery by providing them with a *TinyPump*, a blood pump for pediatrics developed in his department, for fetal heart bypass



My lab colleagues: Juliette Albersen (student), Dr. Giuseppe, myself, Dr. Riemer, Dr. Kagawa (from left to right)

study in pregnant sheep since December 2010.

TinyPump's most unique feature is its extremely small priming volume, namely 5mL. There are characteristic conditions of the fetus stage that favor the use of *TinyPump*. One is the difference in the type of hemoglobin between a fetus and its adult host, which makes blood transfusion difficult. The other is the extremely small circulation blood volume. If a pump with a larger priming volume is used, the prime solution will cause severe hemodilution.

I wanted to learn more about fetal cardiac bypass study at Stanford University as well as at medical school in the US.

Experiences and activities

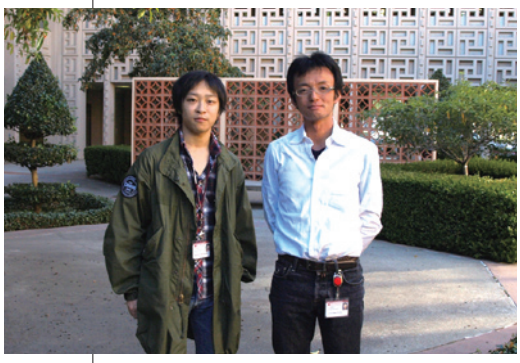
I was welcomed by the research team of Pediatric Cardiac Surgery, headed by Dr. R. Kirk Riemer. Fortunately there are two Japanese medical fellows, Dr. Hiroshi Kagawa from Jikei Medical College, the operating surgeon of fetal cardiac bypass experiments, and Dr. Yasuhiro Fujii, from Okayama University, the assistant surgeon who took care of me greatly.

I followed Dr. Fujii nearly everyday. On the days when we had no experiments, we usually studied in the library together. I read some books and papers about fetal cardiac bypass, such as "Hurst's The Heart" and "Langman's Medical Embryology." In addition, I did the "Kaplan Medical USMLE Step 1 Qbook" mainly to become familiar with English medical terms. On Monday and Wednesday mornings we usually had laboratory conferences. I occasionally attended the lectures given by faculty members Dr. Reddy, Dr. Hanley, and residents once a week.

I was given the chance to try suturing.

Fetal cardiac bypass experiments were performed on Tuesday and Wednesday, every other week, at UC Davis, which is 160km away from Stanford. Because pregnant ewes are at risk for Q fever, a kind of zoonosis, these animals can't be handled at Stanford University. At UC Davis I helped prepare for the operation, filling syringes with blood, normosol or saline, and doing all other preparatory activities.

I was also given the chance to open the abdomen using an electric cautery and to suture incisions. Both were my first times and really rewarding. Of course, I also observed the operations. Everything I saw was new to me, including seeing the uterus filled with a fetus, the fetus connected to placenta via umbilical cord, and the fetus's small heart.



With Dr. Fujii at the garden in front of the library, where we usually studied.

Accomplishments

Observing the fetal cardiac bypass experiments was a great experience. However I believe the best part of my visit was that I had a chance to see two Japanese young doctor's real life in the US Dr. Fujii told me about the current state of pediatric cardiac surgeons in Japan. I was shocked to learn that the training system for young surgeons in Japan is extremely poor. It is worse than I'd ever thought possible.

I realize that I'll have to choose my eventual department considering not only my interests but also the situation that we will be in 10 or 20 years from now. Going to the US might be one option. I'm not sure whether I will have any chances to go to the US in the future. But in any case, having seen how people live and work in the US will very likely help me make such a decision.

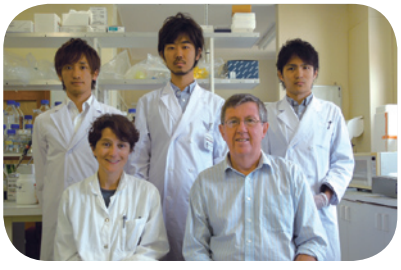
Finally, using this opportunity, I'd like to express my great appreciation to all people who helped my visit to Stanford. Thank you.

Report 09

My valuable experience at Australian National University

Yosuke Ojima
4th year student, Faculty of Medicine
Project Semester in Australia

ALL TMDU STUDENTS are required to undertake a six-month research project named Project Semester. I had the chance to go to the John Curtin School of Medical Research at Australian National University (ANU) as a part of my Project Semester. ANU is located in Canberra, the capital city of Australia.



Professor Philip Board and Ms. Jean Cappello taught us many things.

Canberra is a planned city built as the new capital between Sydney and Melbourne at the beginning of the 20th century. There is a large lake at the center of city, which was designed based on several geometric motifs such as circles, triangles and axis. The ANU campus is a very large and we can see rabbits, possums and many kinds of birds on the grounds. I did my research in the Molecular Genetics Laboratory under the supervision of Professor Philip Board. My work at the ANU was to purify proteins.

The outline of my experiment is as follows. Plasmids which contained the gene of the target protein were transfected into the competent cells (bacteria). I obtained the protein by culturing these cells that produce the target protein followed by cell lysing to break down the cell wall. However, this cell culture contained other mixed proteins, so I had to purify the protein I was interested in. Of course, not all procedures went smoothly. Sometimes my target protein precipitated out, against my wishes. When this happened, my supervisor gave me some appropriate advice. Finally, I obtained and purified the target protein. All the steps I had to take to get to that result required critical thinking and perseverance. I have adopted a researcher's mind by practicing these important values.

The people I met in Australia were very kind and welcoming. Professor Board drove me around Canberra and took me to Tidbinbilla National Park. I saw a lot of animals there, such as kangaroos and koalas. After that, he invited us to his house. I enjoyed a barbecue in his beautiful garden, enjoying some great Aussie beef! He also arranged a Canberra Hospital Tour for me, where I learned the differences between Australian hospitals and Japanese hospitals.

The striking new building that houses the John Curtin School of Medical Research, where we did our work.

Also, the PhD students were very kind. For example, they gave me many tips on life in Canberra. We did a lot of things together such as mountain climbing at Black Mountain, dinner at a Chinese restaurant and stargazing. The most memorable thing was to celebrate Chinese New Year. The party was held at Graduate House and we each brought a dish. We had dumplings, fried rice, chicken wings, curry and so on. We enjoyed all the dishes and the conversation. They also organized a farewell dinner for me.

January 26th is Australia Day. All Australians celebrate this holiday and many events were held at the lakeside. I enjoyed the free barbecue breakfast, the Flag Raising ceremony, the prime minister's speech, Flyover, Gun Salute and Dragon Boat race. Although Canberra is usually a quiet city, it becomes lively with people on holiday. The festival ended with fireworks by lakeside. I was impressed that Australians love their country deeply and patriotically on one hand and welcome multinational people warmly on the other.

Finally, I would like to express my deepest gratitude to all the relevant staff members and students at ANU and TMDU. In particular, I must thank Professor Board and Professor Yoshinobu Eishi gave me a wonderful opportunity, Ms. Jean Cappello who taught me a lot at the laboratory, and the PhD students who made my stay an exciting and memorable one.

Last but not least, many thanks to my classmates Shungo Aratake and Shohei Tsujino. We supported each other and worked together at ANU. I will never forget my days in Australia, and I would like to return to that great country someday.

Canberra is a planned city. This view of the beautiful city is from Mt. Ainslie.

The ANU campus is very large. I enjoyed the wonderful natural views available, such as this one.

Hair Follicle Stem Cells Provide a Functional Niche for Melanocyte Stem Cells

Emi Nishimura
MD, PhD
Professor,
Stem Cell Biology,
Medical Research
Institute, TMDU

IN MOST STEM cell systems, the organization of the stem cell niche is still largely unknown. Melanocyte stem cells (MelSC) and hair follicle stem cells (HFSC), which are originally derived from a completely different developmental origin, are located in the bulge area of mammalian hair follicles. While our previous studies indicated that the niche plays a dominant role in MelSC fate determination[1], the underlying mechanisms and the identity of niche cells for MelSCs are still unclear.

Our recent study published in *Cell Stem Cell* revealed that HFSCs provide a functional niche for MelSCs through transforming growth factor β (TGF- β) signaling to prevent premature hair graying[2]. To explore the roles of HFSCs as niche cells, we have focused on Collagen XVII (Col17a1/BP180/BPAG2), a hemidesmosomal transmembrane collagen and transforming growth factor β 1/2 (TGF-β1/2), both of which are preferentially highly expressed by HFSCs.

First, to examine the possible involvement of these two molecules in MelSC maintenance, we analyzed deficient mice of Col17a1 gene and Tgfbr2 gene. Tgfbr2 null mice show progressive hair graying but not hair loss[3], while Col17a1 deficient mice show premature hair loss as well as premature hair graying[2] (Fig.1).

Analysis of HFSCs and MelSCs of the Col17a1 null mice showed that Col17a1 is critical for maintenance not only of HFSCs but also of MelSCs, which do not express Col17a1 but directly adhere to HFSCs, through maintaining their quiescence and immaturity[2] (Fig.2). This potentially explains the mechanism underlying hair loss in human COL17A1 deficiency. Interestingly, Col17a1 deficient mice show defective TGF-β production by HFSCs[2]. TGF-β signaling is activated in MelSCs when they reenter the quiescent non-cycling state during hair cycles[3]. Therefore, we analyzed MelSCs in conditional Tgfbr2 deficient mice which lack TGF-β type II receptor specifically in the melanocyte lineage and found that Tgfbr2 is essential for the maintenance of MelSC immaturity and quiescence to prevent hair graying[2,3]. These data indicate that HFSC-derived TGF-β is a critical niche factor that regulates MelSC immaturity and quiescence.

Finally, forced expression of COL17A1 in basal keratinocytes, including HFSCs, in Col17a1 null mice rescues MelSCs from premature differentiation and restores TGF-β signaling, demonstrating that HFSCs function as a critical regulatory component of the MelSC niche through TGF-β signaling (Fig.3).

The interactions between different lineages of stem cells turned out to be crucial for cyclic regenerative growth of pigmented hair. This points to a complex but efficient crosstalk in stem cell niches. The maintenance of somatic stem cell populations by another type of somatic stem cells in a coherent cell mass might be a recurring strategy for somatic stem cell maintenance.

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Fig.1: Hair graying and hair loss found in a Col17a1-deficient mouse.

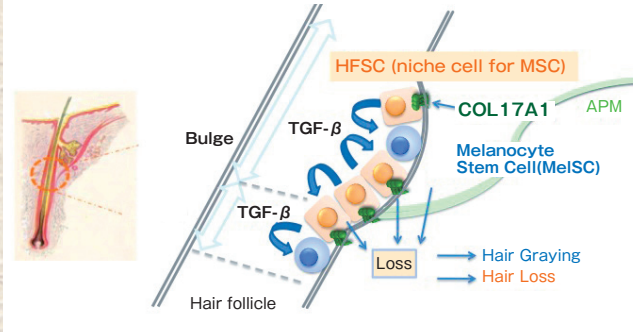

Fig.2: Mechanisms of stem cell maintenance in the hair follicle niche.

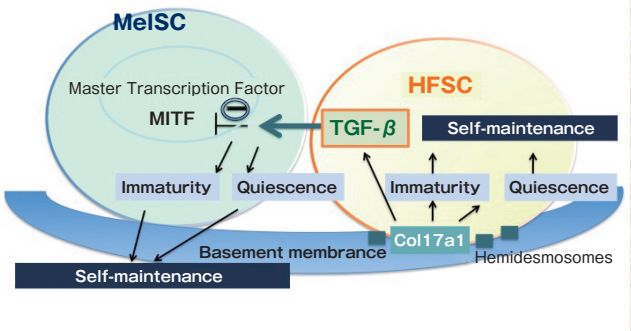

Fig.3: Stem cell regulation by stem cells in the hair follicle niche.

Autophagy Suppresses Spontaneous Tumor Formation

Noboru Mizushima
MD, PhD
Professor, Department of Physiology and Cell Biology, Graduate School of Medical and Dental Sciences, TMDU

WHILE ALL COMPONENTS of our bodies are constitutively synthesized, they are also constitutively degraded or eliminated. Whole organisms and even individual cells can maintain their function and freshness through recycling their own constituents (e.g. proteins and organelles) and can adapt to various internal and external changes.

Macroautophagy, which is usually called "autophagy", is one of the major degradation pathways in the cell along with the ubiquitin-proteasome system. In autophagy, intracellular components are sequestered by autophagosomes and then degraded upon fusion with lysosomes. Using autophagosome-indicator mice (GFP-LC3 transgenic mice) and conventional *ATG5* knockout mice, we have shown that autophagy is up-regulated during starvation and is critically important for maintenance of the amino acid pool. Autophagy is also essential for preimplantation development as the amino acid supplying system and for intracellular protein quality control, which has been suggested by studies using oocyte- and neural cell-specific *ATG5* knockout mice, respectively. Furthermore, autophagy is important for differentiation of erythroblasts and adipocites, elimination of intracellular microbes, and presentation of cytoplasmic antigens.

However, the long-term effect of defects in autophagy *in vivo* has never been systematically analyzed. Evidence using cell culture and allografted tumor models has suggested that autophagy is also involved in tumor suppression. However, results from currently available *in vivo* models have been limited. Because systemic deletion of autophagy genes causes embryonic or neonatal lethality, the role of autophagy in tumor suppression has never been tested *in vivo*.

To overcome these limitations, we generated mice with systemic mosaic deletion of *ATG5*, in which only a small population of cells were autophagy-defective in every tissue. These mice are viable for more than 19 months and develop multiple benign tumors only in the liver. Swollen mitochondria and oxidative stress and genomic damage responses were detected in the hepatic tumor cells. Liver-specific *ATG7* deficient mice also developed liver tumors, but their size was reduced by concomitant knockout of the *p62* gene (collaboration with Dr. Masaaki Komatsu, Tokyo Metropolitan Institute of Medical Science). Our study suggests that continuous autophagy is important for prevention of accumulation of abnormal mitochondria and *p62*, and thereby for suppression of spontaneous tumorigenesis particularly in the liver.

While we have shown that autophagy can be a tumor suppressor, other studies have also suggested that autophagy could support tumor progression and survival. In fact, tumor cell death can be induced by autophagy-inhibiting drugs such as hydroxychloroquine in combination with conventional chemotherapy, and clinical trials of autophagy-inhibiting drugs have begun in the United States. These two apparently opposed roles of autophagy are not mutually exclusive; generation of only benign tumors, not cancers, in our models suggests that autophagy may be required for progression beyond the benign state. This study also provides a novel tool to study autophagy in a non-biased way. Since autophagy is likely involved in a variety of physiological and pathological processes, the *ATG5* mosaic mice would be useful to explore novel roles of autophagy.

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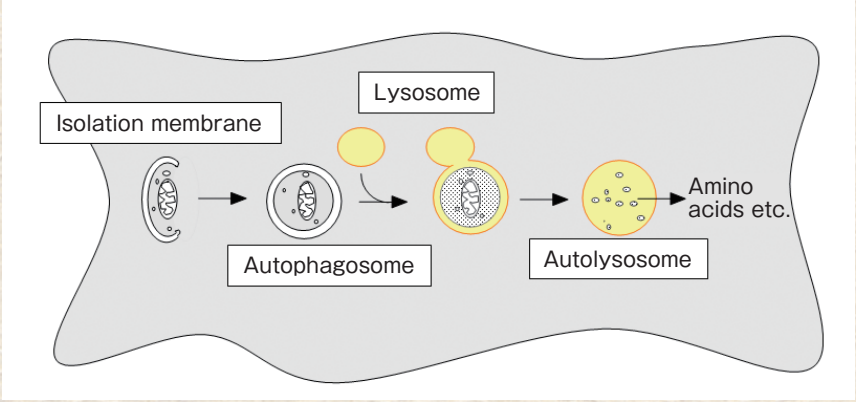

Fig.1: **The process of autophagy.**
A portion of cytoplasm, including organelles, is enclosed by an autophagosome. The outer membrane of the autophagosome fuses with the lysosome, and the internal material is degraded.

Fig.2:
Tumors formed in *ATG5* mosaically deleted mice.
Liver tumors are formed in mice with mosaic deletion of the *ATG5* gene (at 19 months).

A Single-Use, Centrifugal Type Assist Heart with Excellent Durability and Biocompatibility

Setsuo Takatani
PhD, DrMed
Professor, Artificial Organ Engineering, Institute of Biomaterials and Bioengineering, TMDU

IN JAPAN, A LAW governing organ procurement from brain death patients was approved in 1997, followed by the second heart transplantation in 1999. Since then, over ten years have passed, but because of a shortage of donor hearts the heart transplantation rate in Japan has been limited to about ten cases per year. The end-stage heart failure patients who need heart transplantation must wait over two years before transplantation. During this long waiting time, maintaining circulation relies on mechanical circulatory support devices (MCSD).

Currently three types of MCSD are available for clinical use in Japan. The first is the blood pump used in the cardio-pulmonary bypass for several hours during open heart surgery, the second is the percutaneous cardio-pulmonary support (PCPS) pump used for emergency treatment for approximately one week, and the third is an implantable blood pump which can be used for two years or longer, bridging to heart transplantation. However, we do not have an appropriate MCSD that can be used from one week to one month to safely support circulation for patients who are awaiting transplantation. Such devices not only sustain life, but also allow a diagnosis of how well the heart function can recover and whether or not the patients actually need a heart transplant, enabling better decisions on how to proceed with treatment.

Magnetically Levitated Centrifugal Blood Pump

To meet the requirements for a one-month blood pump, we have designed and evaluated the durability and biocompatibility of a magnetically levitated centrifugal blood pump, MedTech Mag-Lev, in calves. Fig.1 shows the overall design of such a system. A simple, X- and Y-axis active control that uses electromagnets, combined with passive control that uses permanent magnets, and a radial magnetic coupling drive mechanism were employed to implement a single-use magnetic levitation mechanism of a centrifugal pump. The pump head consists of top and bottom housings and an impeller-rotor. It has a priming volume of 23 mL and incorporates a secondary flow path of 0.3 mm width, allowing a better wash-out effect and anti-thrombogenecity. The pump can provide a flow of 4-5 L/min against 100 mmHg after load at 2000 rpm. The nominal peak-to-peak vibration of the impeller-rotor at 2000 rpm is around 20-30 micron with a power consumption of around 10-15 watts. The prototype system has been successfully tested in calves in the left ventricular assistance mode to demonstrate stable operation for duration of 60 days. Five calves survived to 60 days with normal hemodynamics and without any adverse effects on major organ function. In addition, the plasma-free hemoglobin level remained below 5 mg/dL. Autopsy findings revealed that there were no thrombi inside the explanted pump head and no signs of infarction in the major organs.

Clinical Applications

The MedTech Mag-Lev pump can be used in the area of cardio-pulmonary bypass during open heart surgery, percutaneous cardio-pulmonary bypass for the duration of three weeks, one-week to one-month circulatory support bridging to implantable assist hearts or heart transplantation. The MedTech Mag-Lev can contribute to extracorporeally and safely maintain circulation of heart failure patients for one-month or during the time in which the next treatment options can be explored and decided upon.

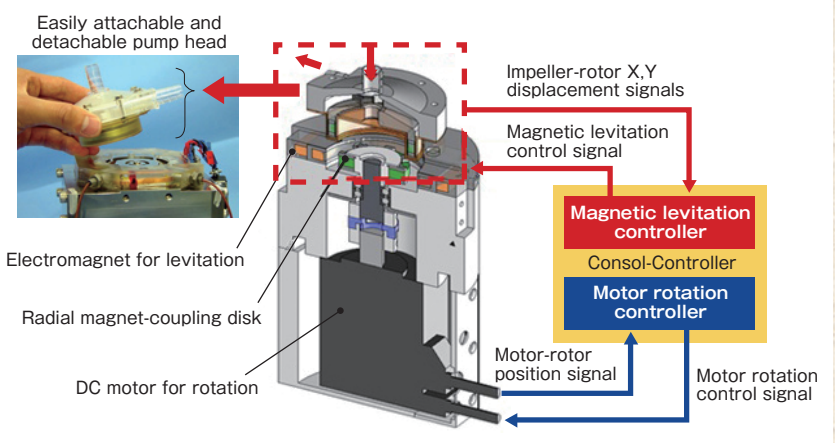

Fig.1: Schematic diagram of a single-use, magnetically-levitated centrifugal blood pump.

Fig.2: Newly assembled clinical console and motor-driver.

To the Future from the 60th Anniversary of IBB

Takao Hanawa, PhD
Director, Institute of Biomaterials and Bioengineering, TMDU

THE INSTITUTE OF Biomaterials and Bioengineering (IBB) of TMDU celebrated its 60th anniversary on April 1, 2011.

Regarding this event, I should first express my gratitude and respect to the retired IBB faculty and staff because of their great contribution to the development of our present institution. I keenly feel the significance of the 60-year history of IBB because the present state of our institution was made possible only due to the efforts and achievements of our predecessors. Therefore, I have a deep understanding of our responsibility in ensuring the future health of IBB through our current and future work.

The IBB currently contributes to diverse academic fields such as biofunctional molecules, biomaterials and biosystems via its position as a center of excellence of biomaterials and bioengineering. In fact, many IBB discoveries have been commercialized since the Institute of Dental Materials Research was established in 1951 and, after two reorganizations, became the IBB as currently constituted. From another perspective, the fields of research promoted at IBB are expanding rapidly as the significance of science, engineering, and pharmacology relating to medicine and life science in the decade has grown by leaps and bounds.

To be sure, artificial materials still have serious problems of biocompatibility and biofunction that must be solved with consideration of the various influences such materials have on the entire body. In medicine and life science, advanced abilities in diagnosis and sensing are areas that need immediate attention; the creation of new academic fields of medicine on the basis of micro devices is urgently required. The state of the art in these areas will move forward with the formation of a platform of micro devices for individuals, cells, and components and the development of a more sophisticated understanding of causes and effects and the general biosystem. In addition, it is necessary to put much effort into frontier research fields that encompass regenerative medicine and nanotechnology, and which include the research and development of materials and devices in liaison with life science researchers.

As described above, the recent progress made in biomaterials and bioengineering is remarkable. Therefore, the present structure of the institute is unfortunately not always appropriate to meet the rapidly changing and diverse demands from society, the academic world, and medical clinics.

In response to the new research environment and the needs of IBB stakeholders described above, the IBB will, effective April 2012, undergo its third reconstruction. The purpose of this reorganization is the optimal utilization and commercialization of materials and devices that contribute to medicine and dentistry and the promotion of medical and dental sciences through collaborations with medical and dental schools.

The front cover of the book published to commemorate the 60th Anniversary of the IBB.

Our final goal is to maintain the IBB's continuous contributions to society so that, in 40 years, a further evolved IBB can look back with pride on its 100th anniversary and look toward its next century of service.

Celebrating the Anniversary of TMDU's Foundation and the 2nd Homecoming Day

AS A PART of our effort to improve our brand strength and nurture our love for our university, we celebrated the anniversary of the foundation of our school on October 12 and held our 2nd Homecoming Day on October 16, 2011. In conjunction with our anniversary, we called for the students and school staff to clean up the campus for "My Campus Project". In addition, for the "Healing Green Project", President Takashi Ohyama planted plum and mountain cherry trees. In the afternoon, 18 staff members were awarded for their continuous service.

At the 2nd Homecoming Day celebration, a campus tour was held, featuring the new library in M&D Tower and the 26th floor Faculty Lounge. After the tour, Ikuo Kameyama, the President of Tokyo University of Foreign Studies, lectured on "The Power of Literature — Dostoyevsky" at the Memorial Lecture Hall of Akio Suzuki. The lecture was followed by a ceremony at which four professors were given the "Best Teacher Award" as a part of the "Doubling the Can-Do Spirit Project". After the award presentation, a convivial party was held at the Faculty Lounge with President Ohyama, professors emeritus, and alumni who were celebrating the 50th anniversary of the 17th graduating class of the Faculty of Dentistry.

Awardees at the award ceremony.

Participants at the Faculty Lounge.

EDITORIAL SUMMARY

WE ARE PLEASED to bring you the TMDU Annual News, Vol. 4, updating TMDU's international activities and campus events during the school year 2011.

President Takashi Ohyama gave a New Year's message on January 4, 2012 in which he highlighted goals and plans for the school year 2012 on the topics of 1) Operational subsidy and budget for facility improvements, 2) Integrative education of medicine and dentistry, 3) Review of the research organization and promotion of large-scale research projects, 4) Administrative operation policy of the university hospitals, and 5) Promotion of international exchanges/contributions.

Following the president's new-year's message, this issue covered the efforts and contributions of the TMDU's dental and medical teams in supporting recovery of the Tohoku area, which was hit by the massive earthquake of March 11, 2011.

The activities in the TMDU's international collaboration centers in Ghana, Chile and Thailand continued making further progress by more intensive collaboration and exchange for research promotion and development of human resources in Ghana, by transferring Japanese knowledge and techniques to doctors in Chile and the greater Latin American region, and by new video conference systems established with Thailand.

The International Summer Program (ISP) 2011 was successfully held during August 28 through 31, 2011. The symposium focused on Organ/Tissue Development and Degeneration: Fundamentals and Clinical Applications.

TMDU alumni living in Thailand, the Republic of Indonesia, Uruguay, Spain, America, and the UK sent letters describing their activities, while TMDU students who were dispatched to countries such as Chile, Ghana, Thailand, the UK, America, Finland, and Australia reported their exciting experiences overseas.

The press releases reported Professor Emi Nishimura's research on "Hair Follicle Stem Cells Provide a Functional Niche for Melanocyte Stem Cells". Professor Noboru Mizushima's research on "Autophagy Suppresses Spontaneous Tumor Formation" and Professor Setsuo Takatani's research on "A Single-Use, Centrifugal Type Assist Heart with Excellent Durability and Biocompatibility".

As campus information, we introduced the 60th anniversary of the Institute of Biomaterials and Bioengineering and the 2nd Homecoming Day, celebrating the anniversary of TMDU's foundation.

As the above activities demonstrate, TMDU is continually striving to improve health care around the world by "Cultivating Professionals with Knowledge and Humanity".

THE EDITORIAL OFFICE expresses many thanks to those who took special time in preparing articles for this issue. If you have any suggestions and news to be included in the future issues of TMDU Annual News, please feel free to contact the Public Relations office by e-mail (kouhou.adm@tmd.ac.jp).

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Open Windows Leading to the Global World
TMDU's activities are reported through its open windows to the world.
This window represents TMDU as a global base for its speedy exchange of information.

TMDU

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5-45, Yushima 1, Bunkyo-ku, Tokyo, Japan 113-8510
TEL: 81-3-5803-5011 FAX: 81-3-5803-0272
http://www.tmd.ac.jp/