

NATIONAL UNIVERSITY CORPORATION

# TMDU | ANNUAL NEWS



TOKYO MEDICAL AND DENTAL UNIVERSITY

Vol.8 March 2016

CULTIVATING  
PROFESSIONALS WITH  
KNOWLEDGE AND  
HUMANITY





# Research: Wisdom for Living

One can argue that humanity's development since ancient times is due to continuous research.

Our hunter-gatherer ancestors "researched" how to generate surpluses from the bounty of nature.

During the agricultural revolution, people discovered how to apply new irrigation technology to settle in one area, while harnessing the power of livestock with the invention of the plow. Agricultural innovation brought surpluses that created new social structures.

Research has driven the course of human history through continuous technological innovation. Chariots enabled tribes to dominate neighbors. The development of weapons made of iron allowed for the subjugation of Bronze Age peoples further afield.

Research has enabled humans to live longer through the production of endless lifestyle-enhancing products and materials.

The accumulated fruits of research over the centuries are now making an unprecedented contribution to the wealth of human happiness.

We can characterize three distinct roles within today's world of medicine: those engaged in basic medical research; the physician scientist doing basic research while also continuing clinical practice; and the academic physician focusing on clinical research.

The traditional path into medical research involved dedicating one's life to basic research upon the completion of an undergraduate medical degree. In recent years, though, we have found the interest of many students shifting to the clinical side in their undergraduate years, even if they originally wanted to go into medical research. This trend has intensified with the advent of the new clinical training system in Japan.

The greater clinical focus among students is partly due to academic courses that do not adequately communicate the fascination of conducting research, and partly in the difficulty of incorporating the latest research results into teaching within the constraints of the curriculum and national examinations.

At TMDU, we have created original courses, such as the Project Semester, the Research Training Program, the Physician Scientist Program, the DDS-PhD Program, and the MD-PhD Program, to address these issues. The last-mentioned two

programs are still far from being fully implemented.

The conditions need to be right, in terms of research environment and livelihood, to cultivate the next generation of basic researchers. For one thing, we must help students feel the exhilaration of conducting research and getting desired results. That is one experience that we want every medical student to gain while at TMDU.

In addition to basic medical researchers, we at TMDU strive to foster two other types of university faculty, the physician scientist and the academic physician. The first refers to faculty members in fields where it is possible to balance clinical practice and basic research, and who therefore have an obligation to publish papers on basic research while engaging in clinical practice. The second refers to faculty members in fields that do not allow sufficient time for basic research due to busy clinical work, who are nevertheless expected at a minimum to publish papers in clinical research. In pursuing this path, we do our utmost to train professionals who possess a scientific mindset that enables them to avoid inattentive errors in the course of clinical practice while practicing at the highest level of medicine.

I am confident that everyone who graduates from TMDU has been thoroughly trained to be a clinical problem-solver and a superior health professional.

Yasuyuki Yoshizawa, President

NATIONAL UNIVERSITY CORPORATION

**TMDU** | **ANNUAL NEWS**

Tokyo Medical and Dental University

Vol. 8, March 2016

## C O N T E N T S

<b>Message from the President</b>	2
<b>Campus News</b>	4
<b>TMDU International Collaboration Centers</b> Chile/Thailand/Ghana	6
<b>TMDU International Exchange Center</b>	12
<b>FOCUS ON</b> <b>Cultivating Tomorrow's Researchers</b>	14

<b>Letters from Overseas Alumni</b>	20
<b>Reports by TMDU Overseas Students</b>	23
<b>Reports on Study Abroad Programs</b>	26
<b>Press Releases</b>	34
<b>Campus Information</b>	38



## Joint signing ceremony of joint degree programs

The joint signing ceremony for the commencement of our two joint degree programs (JDP) was held on November 26, 2015, in the Special Conference Room, M&D Tower 26th floor.



### What is JDP?

The JDP (joint degree program) is an academic program whereby Japanese and foreign universities jointly organize curricula and confer an academic degree on a person completing the curricula under the names of the presidents of the universities concerned.

The development of such a JDP will enable Japanese universities to offer wider educational and cultural experiences to students. In addition to the benefits above, the JDP will enable Japanese universities to offer more attractive, advanced or innovative academic programs that cannot be offered by a single university. This will make it possible for students to gain higher quality and value-added learning opportunities, resulting in universities, governments, companies and local communities acquiring talented and motivated human resources.

Furthermore, it will be highly significant to strengthen Japanese universities' international presence and contribute to improving higher education at an international level.

### Background of JDP

It is the educational philosophy of Tokyo Medical and Dental University (TMDU) "To train medical professionals with a rich international quality". In order to enhance global competitiveness, TMDU has cooperatively worked and cultivated

long-lasting relationships with University of Chile (Chile) and Chulalongkorn University (Thailand) to establish the JDP since August 2012.

Before the "Standards for Establishment of Universities" was amended in November 2014, previous Japanese laws and regulations prohibited Japanese universities from establishing JDPs with foreign universities. This amendment allowed Japanese universities to jointly establish an International Cooperative Department or Major (IC-D/M) with foreign universities in order to set up and operate JDPs.

In response to this change in the relevant law, TMDU applied to MEXT for permission to establish the JDP in March 2015. Based on the results of the MEXT screening, we were granted approval to establish two IC-D/M JDPs on June 15, 2015, for the first time in Japan.

### Outline of the JDPs at TMDU

- ① **Graduate School of Medical and Dental Sciences, TMDU and University of Chile/Clinica Las Condes Joint Degree Doctoral Program in Medical Sciences Degree: "Ph.D. in Medicine (Doctor of Philosophy in Medicine)"**  
Enrollment period: April 2016  
Enrollment capacity: 3 students  
Standard course term: 5 years

Requirements: Applicant must hold a valid, unrestricted medical license in Japan or Chile to practice medicine, as well as a licensure for either surgical or internal medicine.

Major educational research fields:

- Upper Gastrointestinal Surgery
- Colorectal Surgery
- Gastroenterology

Education

- 1) All classes are taught in English. Clinical instruction is conducted in either Spanish or Japanese.
- 2) Subjects offered by both universities will be taught at University of Chile.
- 3) Research guidance will be conducted in both Chile and Japan.
- 4) Clinical instruction will be conducted separately; it will be conducted in Japan for a student holding a Japanese medical license. However, it will be conducted in Chile for a student holding a Chilean medical license.

Human Resource Development Goals

- 1) Professionals who possess the required technical skills to be recognized as a clinical expert in the fields of upper gastrointestinal surgery and gastroenterological surgery; including advanced training in colorectal surgery, gastroenterology, endoscopy and advanced use of advanced diagnostic equipment.
- 2) Professionals who possess academic knowledge in the fields of pathology, molecular biology, genetics, epidemiology, public health, clinical research and biostatistics.
- 3) Professionals who possess a high potential to become an independent basic-clinical researcher in the fields of esophageal, stomach and colorectal cancer (gastrointestinal oncology), with a capacity to become a leader of national/international clinical research projects upon completion of course.

### ② Graduate School of Medical and Dental Sciences / TMDU and Chulalongkorn University International Joint Degree Doctoral Program in Dental Sciences Degree: "Doctor of Philosophy in Dental Sciences"

Enrollment period: August 2016

Enrollment capacity: 3 students

Standard course term: 5 years

Application qualifications: Applicant must hold a valid, unrestricted licensure for dentistry.

Major educational research field: Orthodontics

Education

- 1) All classes are taught in English.

- 2) Subjects will be taken at the institute providing them.
- 3) Research guidance will be conducted in both Thailand and Japan.
- 4) Clinical instruction will be conducted in Thailand.

Human Resource Development Goal

Our human resource development goal is to foster talented dentists who can be global leaders, utilizing knowledge and techniques in the field of dentistry, especially orthodontics, not only in Japan and Thailand but also in South-east Asia.

### The joint signing ceremony

The ceremony was attended by representative VIPs from concerning universities and organizations.

From University of Chile, Professor Ennio Vivaldi, Rector, Professor Manuel Kukljan, Dean, Faculty of Medicine, and Miguel O'Ryan, Director of International Relations. From Clinica Las Condes (CLC), which is a cooperating educational hospital, Mr. Gonzalo Grebe, Chief Executive Officer, Dr. Marcos Goycoolea, CLC Board Representative, Dr. López Francisco, Chief, Coloproctology Department in CLC, and Dr. Juan Pablo Torres, Director of Research in CLC, took part in the ceremony.

From Chulalongkorn University, Dr. Suchit Poolthong, Dean of Faculty of Dentistry, Dr. Prom Auychai, Deputy Dean for International Affairs and Public Relations, Dr. Smorntree Viteeporn, Director of JDP in Orthodontics, and Dr. Chintana Sirichompum, Head of Orthodontic Department, took part in the ceremony.

The President of TMDU, Prof. Yasuyuki Yoshizawa, delivered the opening address.

After the signing of both programs, addresses by Dr. Vivaldi, Mr. Grebe, and Dr. Poolthong were delivered. The congratulatory addresses were then delivered by the 3 special guests, Mr. Patricio Becker, Minister Counselor, Embassy of Chile in Japan, Mr. Bhkavat Tanskul, Minister, Royal Thai Embassy, Tokyo, and Mr. Yutaka Tokiwa, Director-General, Higher Education Bureau, MEXT.

Dr. Takashi Ohyama, Former President of TMDU, and Mr. Tetsuji Miyamoto, Director, First Southeast Asia Division, Ministry of Foreign Affairs of Japan, were also invited as guests of the ceremony.

In the opening address, President Prof. Yoshizawa spoke of TMDU's vision of "Cultivating Professionals with Knowledge and Humanity, thereby Contributing to People's Well-being." He also expressed his high expectations for the joint degree program to serve as a springboard for TMDU graduates to spread their wings, and actively serve abroad in the world as medical and dental professionals.



# Expanding TMDU Network in Latin America; Academic, Educational and Clinical Collaboration

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

**Tatsuyuki Kawano**  
MD, PhD  
Professor, Gastrointestinal  
Surgery, TMDU

**Takuya Okada**  
MD, PhD  
Assistant Professor  
Gastrointestinal Surgery, TMDU

**IN 1968, PROFESSOR** Tadashige Murakami, former professor of surgery at TMDU, visited Chile to give a lecture on gastric cancer. This was the start of a long relationship between TMDU and Chile. In the 1970s, the Japan International Cooperation Agency (JICA) launched a project for the early detection of gastric cancers in order to reduce their high mortality rate. The Gastric Cancer Center in Santiago was founded in 1977 at Hospital Paula Jaraquemada (now the Hospital Clinico San Borja Arriaran), and this center has long played a major role in the project. TMDU also dispatched numerous experts there to support the prevention of gastric cancer. The Gastric Cancer Center was later renamed the Chilean-Japanese Institute for Digestive Diseases, and it still contributes to maintaining the health of the Chilean people.

## Colorectal Cancer Screening in Chile, Supported by TMDU

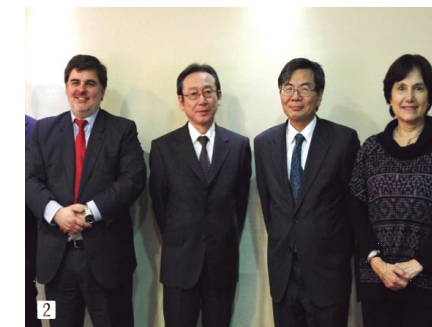
In Chile, the mortality from colorectal cancer has been increasing in the last two decades, and the need for colorectal cancer screening has grown rapidly. Based on a proposal from Dr. Lopez of the Clinica Las Condes (CLC), one of the biggest and most advanced hospitals in Chile,

approval was given to start a screening project for colorectal cancer. In view of the long history between TMDU and Chile, our university was invited to supervise the project. In 2009, the Ministry of Health of Chile, CLC and TMDU signed a collaboration agreement for colorectal cancer screening, and the Latin American Collaborative Research Center (LACRC) was established at CLC in 2010. TMDU has continuously sent experts in pathology, endoscopy and research to LACRC. From 2012, PRENEC (the Prevention Project for Neoplasia of Colon and Rectum) has been implemented in three major cities, Punta Arenas, Valparaiso and Santiago. More cities are planning to join the project in the near future. The Japanese method using immunological fecal occult blood test and colonoscopy has been adopted for the detection of colorectal cancer.

The Chilean-Japanese Institute for Digestive Diseases at Hospital San Borja Arriaran is the headquarters of PRENEC in Santiago. The institute also serves as a training center for endoscopy. Many Chilean doctors have taken a training course in endoscopy, acquiring the skills required for colorectal cancer screening with colonoscopy. The Institute's endoscopy unit has been renovated for PRENEC, with extensive support from the Japanese Embassy in Chile.

## LACRC members and University Activities in 2015

LACRC is staffed by experts from the pathology, endoscopy and research departments of TMDU, and various doctors have been involved in their work in Chile. As of 2015, LACRC is operated by five TMDU doctors; Dr. Hiroshi Kawachi (pathologist, March 2012 to March 2015), Dr. Maki Kobayashi (molecular biologist, July 2012 to March 2015), Dr. Takuya Okada (endoscopist, April 2013 to March 2015), Dr. Masahiro Tsubaki (endoscopist, October 2014 to Septem-



① Colonoscopy training for Chilean doctors by Dr. Tsubaki and Dr. Okada

② Ms. Carmen Castillo, Minister of Health of Chile, Mr. Naoto Nikai, Ambassador of Japan to Chile, with LACRC staff

③ LACRC staff visited Ministry of Health of Ecuador

ber 2015) and Dr. Tomoyuki Odagaki (endoscopist, since November 2014).

## Public Releases of PRENEC Results in Medical Journal and Congress

PRENEC's colorectal cancer screening system has achieved magnificent results.

From June 2012 to July 2014, a total of 10,575 asymptomatic participants were screened by PRENEC. 107 cases of CRC were detected, amounting to 1.01% of all participants, whereas the detection rate by the previous screening system in Chile was 0.2%. Furthermore, most of CRCs detected by PRENEC were early intramucosal cancers without risks of metastasis, and these lesions were treated successfully by endoscopy.

These results have been announced in various medical media. Dr. Okada published an article on the PRENEC outcome in the journal "Cancer", one of the most prestigious journals in medicine (DOI: 10.1002/encr.29715). Dr. Tsubaki made a presentation at an international congress, the World Congress on Gastrointestinal Cancer, in Barcelona. Further papers on topics concerning the PRENEC results are being prepared for publication.

## Expanding TMDU-PRENEC Network

PRENEC and the supporting activities of TMDU are recognized as an essential health promotion initiative for the Chilean people. Dr. Tsubaki and Dr. Odagaki met Ms. Carmen Castillo, Minister of Health of Chile, and the Minister expressed her gratitude to TMDU doctors for their activities. TMDU and the Chilean doctors worked as a team to secure the support of the government of Chile, and thus the TMDU-PRENEC network continues to expand as more cities and districts are scheduled to participate in this project.

TMDU has also endeavored to promote the same screening system to other Latin American

countries, in association with the Japan International Cooperation Agency (JICA) and the International Cooperation Agency of Chile (AGCI). In August 2015, the first meeting on this cooperative activity took place in Santiago, and LACRC members and TMDU professors, Dr. Kumagai and Dr. Ito, gave lectures to doctors from Chile, Ecuador and Colombia.

## Projects in Ecuador and Paraguay

TMDU came to an agreement regarding a cancer screening program with the government of Ecuador in 2012. At that time, a pilot project for colorectal cancer screening was being carried out at National Hospital Pablo Arturo Suarez in Quito, with clinical and project management support from TMDU. LACRC sent doctors from Chile to Ecuador several times, for discussions and to make suggestions about the cancer screening system. In a notable academic initiative, the Ministry of Health of Ecuador holds annual medical congresses in Quito, and TMDU professors are regularly invited as presenters. In Paraguay, TMDU agreed to a direct request from the President of Paraguay for support for the colorectal cancer screening project. Dr. Kawachi from TMDU attended a signing ceremony for the agreement held in Asuncion in June 2013.

④ Meeting of cancer screening in Latin-American countries by JICA and AGCI



Conclusion of an agreement for colorectal cancer screening between the Chilean Ministry of Health, CLC and TMDU





# Strengthening relationships between TMDU and Universities in Southeast Asia

CU-TMDU Research and Education Collaboration Center, Thailand

Yoko Kawaguchi

DDS, PhD  
Professor, Oral Health  
Promotion, TMDU

## Joint Degree Program

TMDU and Chulalongkorn University (CU) signed an academic agreement establishing a Joint Degree Program in Dental Science on November 26, 2015. This is a new PhD program focused on orthodontics. This program will be implemented in August of 2016. This is the first time for both of the Faculties of Dentistry, TMDU and CU to establish a joint degree program. It is expected that students in this joint degree program will become leaders of dental science in Southeast Asia as well as Japan.

## Providing information to overseas students about studying at TMDU

In 2015, TMDU provided information about our school, especially the graduate school, to potential candidates of our Ph.D. program twice in Southeast Asian area. The first occasion was at the 6th International Congress on Adhesive Dentistry in Faculty of Dentistry, Mahidol University, in Bangkok, Thailand, January 31 and February 1, 2015; and the second one was at meetings of the South East Asia Association for Dental Education (SEAADE) and International Association for Dental Research Southeast Asia Division (IADR SEA) in Bali, Indonesia, held from August 12 to August 15, 2015. Many participants stopped by the TMDU booth to listen to explanations given

by TMDU staff, especially international students. International students described their own experiences and student life at TMDU. A total of 250 visitors from Asia, Africa, the Middle East, and other regions visited the TMDU booths.

## Student Exchange Program School of Health Care Sciences, Faculty of Medicine

Three 3rd-year undergraduate students from School of Health Care Sciences, Faculty of Medicine and one 1st-year graduate student from postgraduate school, TMDU received training at the Faculty of Allied Health Sciences, CU from August 26 to September 10, 2015, under the Re-Inventing Japan Project.

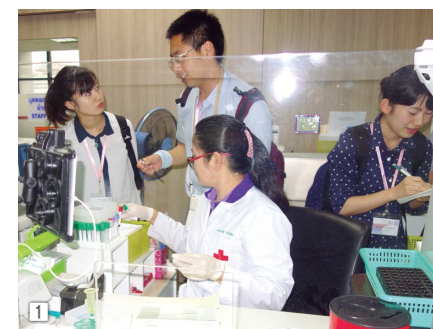
## Project Semester Program School of Medicine, Faculty of Medicine

Two 4th-year undergraduate students from the School of Medicine received training in the Faculty of Medicine, Chulalongkorn University, June 2 to November 13, 2014, as part of the Project Semester Program.

These student exchange programs will contribute to an expanded medical science network between TMDU and universities in Southeast Asia in the future.

## Health Seminar and Consultation for Japanese Residents

TMDU conducted a health seminar for Japanese residents in Thailand at Bangkok General Hospital with co-sponsorship from Bangkok General Hospital on June 13, 2015. Assoc. Prof. Nobuhide Hirai, Director of Student Support Office, Health Administration Organization, TMDU, Assist. Prof. Keiichi Hosaka from Cariology and Operative Dentistry, Graduate school, TMDU and Dr. Thiravud Khuhaprema, Visiting Professor of TMDU and Director of Wattanasoth Cancer Center of



- ① Student Training program at the Faculty of Allied Health Sciences, Chulalongkorn University
- ② Discussion session of ASEAN Dental Forum
- ③ Signing ceremony of Tri-University Academic Consortium at Chulalongkorn University

Bangkok General Hospital gave presentations in the health seminar.

Also TMDU conducted a health seminar and dental consultation for Japanese residents in Indonesia at Jakarta Japanese School in collaboration with Jakarta Japanese School on July 27, 2015. Junior Assoc. Prof. Dr. Zusei Kanno, Assist. Prof. Haruko Fujita, Assist. Prof. Shinji Kuroda, Assist. Prof. Yuriko Komagamine from Graduate School, and Assoc. Prof. Katsuji Onoda, Assist. Prof. Noriko Hiraishi, Mr. Tomoki Mihara of Section Head and Mr. Yusaku Shindo from International Exchange Center, TMDU attended this seminar and consultation.

## Dental E-learning Seminar

On June 13, 2015, a dental e-learning seminar was conducted at the Faculty of Dentistry, University of Medical and Pharmacy at Ho Chi Minh City in Vietnam. Many academic staffs from the dental school attended. In the seminar, Prof. Atsuhiko Kinoshita, Director of the Institute for Library and Media Information Technology, Assistant Prof. Masayo Sunaga from the Institute for Library and Media Information Technology and Assist. Prof. Naoko Seki from the TMDU Postgraduate School introduced the idea of e-learning, explained its utilization, and gave instruction on how to create software.

## 21st Anniversary of Faculty of Dentistry, Srinakharinwirot University

The Faculty of Dentistry at Srinakharinwirot University had its 21st Anniversary Meeting of the Faculty on August 24, 2015. Prof. Keiji Moriyama, Dean of Faculty of Dentistry, TMDU gave a special lecture to nearly 100 dental doctors from the university and other organizations.

## ASEAN Dental Forum

On May 22, 2015, the first meeting of the ASEAN Dental Forum was held at Chulalongkorn

University. Prof. Junji Tagami, TMDU Executive Director and Executive Vice President, was invited and presented on TMDU's activities at the university and at other universities in the ASEAN region.

## Tri-Universities Academic Consortium Agreement between TMDU, CU and Beijing University (BU)

The signing ceremony of the Tri-University Academic Consortium Agreement between TMDU, CU and BU was held at Chulalongkorn University on May 20, 2015. The agreement was signed by three deans. At same time a two-day workshop opened and 19 students and 9 academic staff from TMDU, such as Prof. Junji Tagami, Executive Director and Executive Vice President and Prof. Keiji Moriyama, Dean of Faculty of Dentistry, TMDU, attended and made presentations.

## Executive Director and Executive Vice President Prof. Junji Tagami received an honorary doctorate from Mahidol University

On September 7, 2015 Executive Director and Executive Vice President Prof. Junji Tagami was awarded an honorary doctorate for development of dental scientists from Mahidol University. He received honorary doctorate from Her Royal Highness Sirindhorn at the awarding ceremony in Mahidol University.



- ④ Awarding ceremony of an honorary doctorate at Mahidol University

Signing ceremony of Joint Degree Program in Dental Science



# The Research Partnership between TMDU and Noguchi Memorial Institute for Medical Research, Ghana: New Project under the AMED Scheme

Ghana-Tokyo Medical and Dental University Research Collaboration Center

Nobuo Ohta

MD, PhD  
Professor, Environmental  
Parasitology, TMDU

## Project re-started in West Africa

Our international research collaboration project between Japan and Ghana started in 2008 as part of the Program for Founding Research Centers for Emerging and Reemerging Infectious Diseases, sponsored by the Ministry of Education, Culture, Sports and Technology (MEXT), Japan, and became the Japan Initiative for Global Network on Infectious Diseases (J-GRID) program with a minor modification in the scheme. J-GRTID project has completed in the end of Japanese fiscal year of 2014, and the program has restarted as a new project sponsored by AMED, a new agency for supporting biomedical research in Japan. The main focus of AMED/J-GRID program is to promote research collaboration with counterpart researchers in developing countries, which is expected to yield innovative outputs such as new drugs, new diagnostics, and/or vaccines. Information sharing with National Institute of Infectious Diseases is also a strong request from AMED. Under the basic concept, our new AMED-J-GRID project has started to promote research collaboration with

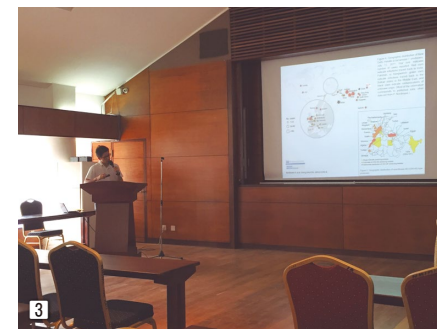
Ghana.

Our counterpart in Ghana is the Noguchi Memorial Institute for Medical Research (NMIMR). Through discussion with NMIMR counterparts, we agreed to continue our collaboration partnership; further, a new MOU was signed by the representatives from NMIMR, Professor Koram (picture) and TMDU, President Yoshizawa. Dr. Mitsuko Ohashi, Project Lecture of TMDU has been dispatched to Ghana as the Team leader, and three research subjects have been on-going at NMIMR under her guidance.

According to AMED policy, the new AMED/J-GRID project is recommended to invite other Japanese laboratories, and as a result, researchers from NIID, Nagasaki International University and Fujita Health Science University have joined our TMDU team.

## New research subjects added to the AMED/J-GRID project in Ghana

Research subjects implemented in the new project have been changed from former J-GRID project. Three subjects are considered: (1) Dengue and/or Chikungunya fever, (2) Diarrheal diseases due to enterovirus, bacteria and protozoa, and (3) drug-development for parasitic diseases from Ghanaian plant extracts. Dengue fever is a infectious disease that threatens to re-emerge in Japan. It is possible to import Dengue fever from tropical countries including Africa. There is no tight evidence whether Dengue fever is endemic in the West African subregion, and our research on Dengue/Chikungunya fever in Africa is critical to disease prevention in Japan. Diarrheal diseases are important health problems both in developing and developed countries. Epidemiological information should be shared globally, and our research collaboration in Ghana on this subject can make an important contribu-



tion. There is still not enough surveillance data available on diarrheal diseases. Also, molecular epidemiology is underway. The third subject is drug development against tropical parasitic infections, almost all of which are categorized as Neglected Tropical Diseases (NTD). Considering that no safe and effective drugs for NTDs are still available, our project on drug-development is highly innovative. We have already obtained promising drug candidates isolated from Ghanaian plant extracts, targeting African trypanosomiasis, leishmaniasis, schistosomiasis and/or malaria.

## Partnership with NMIMR and more

Since the independence of Ghana in 1957, cooperation between Japan and Ghana has been undertaken on various aspects of social and scientific development. In the field of health sciences, NMIMR was established by the support from Japanese Government in 1979. Since then, many collaborative projects between Japanese institutions and NMIMR have been implemented. As mentioned above, TMDU became a NMIMR partner in 2008. Since then, various cooperative activities have been performed not only in research, but also in education and human development. From TMDU, there is a program to dispatch undergraduate students to NMIMR for a few months to gain experience conducting research in developing countries like Ghana. Such programs give our medical students opportunities to see health problems in developing countries, which may influence the future course of their medical careers. It has been decided to re-start the student dispatch project from the school year of 2016, and 4 students have been nominated to visit NMIMR. Graduate students of TMDU have also visited NMIMR. In addition to medical science, young Ghanaian students are interested in Japanese

culture, and it was an impressive event when a TMDU student introduced Karate exhibition to Ghanaian colleagues (picture). Although Ghanaian gentlemen are in general not heavy drinker, but they know Japanese rice wine. "Dr. Noguchi Cup", product of a company in Fukushima is a popular souvenir from Japan (picture).

From NMIMR, TMDU accepted young and talented researchers as PhD students under the scholarship program of the Japanese Government. In the last 5 years, 7 PhD students from NMIMR received support to join Graduate school of TMDU. Recently, applicants from Ghana have expanded, including young persons not belonging to NMIMR. The specialties of those students are not necessarily the field of infectious diseases, but students of neuroscience or pharmacology from other Ghanaian institutions. This seems to indicate that our Japan-Ghana partnership is expanding, with the TMDU-NMIMR partnership at the core.

NMIMR belongs to the College of Health Sciences of the University of Ghana. The College of Health Sciences is composed of seven Schools, including the School of Medicine and Dentistry, School of Public Health, School of Nursing and others. Along with NMIMR, it is very beneficial to have a partnership with those schools. The partnership is expected to promote scientific and personnel exchanges with those schools in the future. For future planning, we were able to see and talk with Professor Naa Adamafio, Dean of International Exchange, University of Ghana (picture). Based on partnership of TMDU with NMIMR, we agreed that a more intense exchange would be mutually benefit. In this sense, our partnership between TMDU and NMIMR can be deeper and broader one covering various fields of medical sciences. Our Ghanaian colleague are anticipating the next step in the partnership.



1 Koram director

2 Visiting Prof. Adamafio at International Exchange Centre of University of Ghana



3 Seminar given by TMDU researcher at NMIMR

4 Joint research on mosquitoes at NMIMR

5 Karate exhibition by TMDU student



# 7th TMDU International Summer Program (ISP2015) Report

The 7th International Summer Program was held from August 28th to September 3rd, 2015. The purpose of this program is to raise the profile of TMDU in the world and at the same time promote international understanding within TMDU. This year 32 participants from 16 countries all over Asia participated in ISP2015. In the program, the participants were involved in a variety of activities, both academic and cultural, such as attending lectures and presentations, and visiting TMDU departments.

## Kazuhiro Yonemoto

Assistant Professor,  
International Exchange Center,  
TMDU

## David Cannell

Associate Professor,  
International Exchange Center,  
TMDU

**“GLOBALIZATION” HAS BECOME** a critical buzzword in discussions concerning the role of universities in Japan. The International Exchange Center (IEC) here at TMDU organizes and hosts a variety of events and activities, including ISP, with the understanding that being global means being able to be “connected and collaborative” with others across social, cultural, and linguistic borders. In this respect, ISP has played a pivotal role in bringing not only students from abroad but also TMDU students together for fascinating and thought-provoking conversations.

In an effort to make ISP more effective and meaningful, IEC took a more “student-centered” rather than “teacher-centered” approach to the program. We established the student-run Student Working Group comprised of 14 TMDU Japanese and international students, along with the Faculty Working Group chaired by Prof. Junji Tagami, Executive Director / Executive Vice President of Education and International Student Exchange, whose focus was on supporting student activities. We were pleased to see that the student-run approach, in which students shared responsibility

for hosting ISP2015 events, did much to foster student autonomy.

One of the highlights of ISP2015 was the Student Symposium. This two-day symposium was organized and facilitated by the Student Working Group. The purpose of this symposium was to engage TMDU students in conversations with students from all over Asia. The Student Working Group worked very hard, starting in February of 2015, to prepare for the symposium.

The symposium included two lectures by Prof. Takashi Zaitzu (Oral Health Promotion) and Prof. Md. Sofiqul Islam (International Exchange Center), and oral and poster presentations by ISP participants and TMDU students, which showcased their hard work and considerable talents in academic research. Moreover, the student presentations provided an opportunity for participants to exchange ideas and information as well as to expand their networks socially and professionally. In addition, many TMDU students kindly joined in helping organize the program and provide useful information as presenters. The results of the questionnaire survey indicated that the symposium



① Participants from China asking a question at TMDU Faculty and Institute Introductions

② A participant from Indonesia giving her presentation at the ISP2015 Oral Presentation

③ A participant from Bangladesh giving his presentation at the ISP2015 Poster Presentation

participants very much appreciated the chance to learn about the research of others and find out more about TMDU and life in Japan directly from current Japanese and international students. TMDU students and faculty members also pointed out that the symposium provided a wonderful opportunity for participants to present their work to an international audience.

Another key change this year was the decision to expand the laboratory visit portion of the program. Thanks to TMDU students who volunteered to help guide participants on campus, as well as thanks to the various departments that welcomed program participants, we were able to offer tailored tours to departments that participants were interested in. With the increased amount of time for lab visits, program participants were able to learn significantly more about departments and the research they conduct. Both participants and department staffs mentioned that they were able to communicate with each other about what the participants were interested in and what the departments could offer.

This year more company visits were added to ISP2015. The participants chose a company to visit based on their personal interest. The compa-

nies ranged from Horiba (Japan Analytical Scientific Instruments Show), Dai Nippon Printing, GC, Shimadzu Corporation to SONY (TMDU Open Laboratory).

The participants also responded favorably to the other components of ISP2015, which had been successful in previous years. Socializing opportunities such as the Welcome Party were devised to create a space for networking, exchange, and friendship among the participants and TMDU students. ISP also provided various opportunities for learning about Japanese culture, including a visit to Kanda Myojin Shrine and Origami Kaikan. In addition, the members of A Cappella Circle sang Japanese songs and those of Taiko Club performed Japanese martial arts at the Farewell Party, which added lots of fun and excitement to the party.

The ISP program is now bearing fruit. At the symposium, we were pleased to present Best Presentation Awards to an alumni of the ISP program who is also a current TMDU student. In addition, we are very proud that three alumni of the ISP program have already graduated with a degree from TMDU, and many other alumni are now studying hard at TMDU while being passionate about contributing to the globalization of TMDU.

## ISP2015 Working Group

Prof. Junji Tagami (Chair), Prof. Akinori Kimura, Prof. Shoji Yamaoka, Prof. Masanobu Kitagawa, Prof. Takashi Ono, Prof. Hiroyuki Kagechika, Prof. Kenji Kawashima, Prof. Takeshi Tsubata, Prof. Ikuko Morio, Prof. David Richard Cannell, Prof. Kazuhiro Yonemoto, Mr. Takashi Yoshida

ISP2015 participants at the Welcome Party



TMDU students performing Japanese martial arts at the Farewell Party



ISP Participants at the ISP2015 Lab Visit (Dentistry)

General information about the ISP can be found at:

<http://www.tmd.ac.jp/english/international/program/isp/index.html>

The voice of the participants can be found at:

[http://www.tmd.ac.jp/english/international/artis-cms/cms-files/IEC\\_Newsletter\\_3\\_2015.pdf](http://www.tmd.ac.jp/english/international/artis-cms/cms-files/IEC_Newsletter_3_2015.pdf)





Special Feature

# Cultivating Tomorrow's Researchers

Japan suffers from a shortage of people going into basic medical research despite its world-class medicine. To help address this issue, Tokyo Medical and Dental University (TMDU) has developed programs for students ranging from second-year undergraduates to those pursuing doctorates, in order to cultivate future researchers. In this feature, we introduce some of our students and their research experience at TMDU.

## • Overview of Programs

# Seamless research environment to cultivate Future medical researchers

### School of Medicine courses:

#### Research experience from Year 2

TMDU offers medical undergraduates four possible degree routes involving medical research.

The Research Training Program is offered to students during a five-year period, from Year 2 to Year 6. A Project Semester (PS) is mandatory during Year 4. The Physician Scientist Program starts in Year 5. Students can also opt to do the three-year MD-PhD Program before starting their Year 5 clinical clerkship.



Prof. Hiroshi Asahara  
(Chair, PS Committee; Head, Working Group Overseeing Research Training and Physician Scientist Programs, School of Medicine, Faculty of Medicine)

Unique to TMDU, the Research Training Program gives undergraduates credited medical research experience as early as their second year. Students join one of 15 research laboratories to conduct research outside regular class hours, and make poster presentations on their results at the academic year-end.

Professor Hiroshi Asahara says the program offers benefits beyond the actual research experience.

“In the old days, medical students were often enthusiastic about taking up research at a lab even if it was not mandatory but there are few such students nowadays. We created the Research Training Program to give students more structured support for actual research. It generates spontaneous learning opportunities and also cultivates skills such as team-building that prove valuable in later studies and clinical clerkship.”

### Two programs for future researchers

TMDU offers the Physician Scientist Program and the MD-PhD Program as alternative pathways for students who aspire to be fully fledged medical researchers after having completed the Research Training Program. Both enable medical students to conduct research from as early as Year 5, but differ in the way the research is combined with other studies.

In the Physician Scientist Program, students are assigned to conduct lab-based research outside of regular class hours while still continuing their Year 5 & 6 clinical clerkships. Next they study for a PhD in graduate school before continuing research as an assis-



Prof. Sachiko Iseki  
(Research Project Module Coordinator)

tant professor.

Under the MD-PhD Program or DDS-PhD Program, students first obtain a PhD before starting a clinical clerkship. The three-year PhD program starts after completion of Year 4, following which students return to the Year 5 clinical clerkship path. It is also possible to continue research by combining elements of the MD-PhD Program with the Physician Scientist Program.

In addition to these programs, the School of Medicine offers a Project Semester (PS) as a five-month course during the second half of Year 4. The compulsory PS course aims to imbue students with the necessary scientific perspective for both basic research and the clinical field.

Many students use the PS opportunity to study at one of TMDU's overseas affiliated institutions such as Imperial

College London or Chulalongkorn University in Thailand.

Prof. Asahara elaborates, “What kind of research you do or will do is a critical consideration in the careers of many Western researchers. Research experience can directly affect your future medical career. Gaining good medical research experience as an undergraduate is valuable even if your ultimate goal is to be a physician”.

### School of Dentistry courses: Research Project in Year 4

The School of Dentistry offers hands-on research to students to foster the development of research dentists. Analogous to a Project Semester, the mandatory 7-week Research Project in Year 4 starts in June and can be extended into the August summer vacation. It can be done at an overseas affiliated institution. Non-dentistry placements within the School of Medicine or at other Japanese research institutions are alternative possibilities.

Introductions and placement preparations begin from February in Year 3 to maximize the benefits of the Research

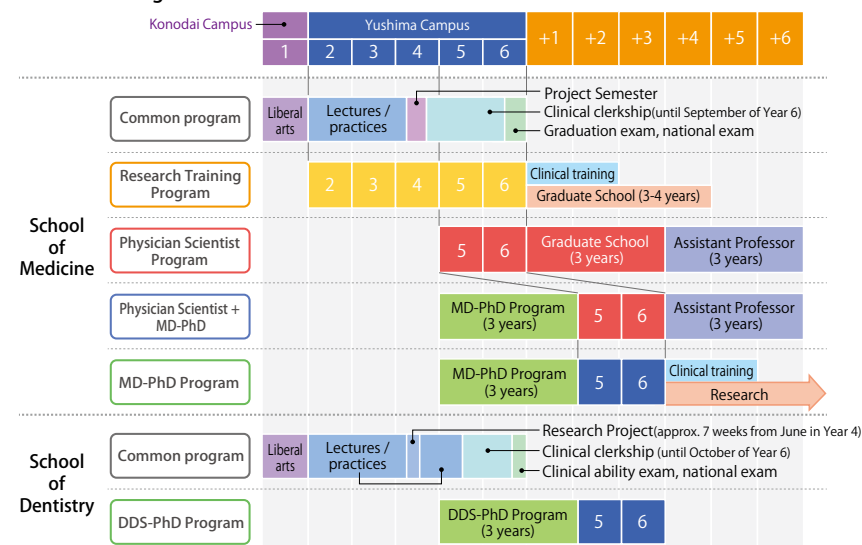
Project. Students spend April and May in Year 4 studying experimental approaches, presentation methods, statistical analysis, and other essential research-related skills. Students receiving high marks for poster presentations can be granted eligibility to present their findings in Year 5 or Year 6 at conferences or other prestigious research events.

Professor Sachiko Iseki says more dentistry students have expressed interest in pursuing a career in research since TMDU introduced the Research Project program.

Prof. Iseki: “While the 2- to 3-month program does not allow students to play a formal laboratory role, the hands-on experience is valuable for sparking interest in research. We are fortunate to have excellent students at TMDU who take the research program seriously. I think it opens them up to the novel possibility of research as a career and their potential suitability for it.”

The dentistry research program not only shows students an alternative career path, but also is useful for cultivating the skills, knowledge and research awareness needed in clinical dentistry.

### • Diverse Programs to Cultivate Tomorrow's Researchers



The School of Medicine offers the Research Training Program for M2-M6 students, a mandatory Project Semester (PS) for M4 students, and the Physician Scientist Program starting in M5. All students in the School of Dentistry undertake the Research Project for seven weeks from June in D4. After completing the fourth year, students can opt to pursue a PhD at graduate school: MD-PhD Program (School of Medicine) and DDS-PhD Program (School of Dentistry).

## Roundtable on Project Semester

# Fascinating world of research glimpsed through Project Semester in the UK

Professor Sara Rankin of Imperial College London, Professor Kazuki Takada, Director, Office for Global Education and Career Development of TMDU, and Ms. Mako Itadani, a TMDU student who spent her Project Semester (PS) in the UK, had a roundtable discussion, focusing on the benefits of PS and future prospects.



(From left) Prof. Kazuki Takada, Prof. Sarah Rankin, and Ms. Mako Itadani

**Prof. Takada:** Ms. Itadani, you spent your PS at Professor Rankin's laboratory last year. How did it go?

**Ms. Itadani:** I worked with a PhD student during my PS, and he taught me everything from techniques and experiments to how to construct and write a thesis.

**Prof. Rankin:** He is also a medical student. He took time out from his medical degree program to do his PhD. He is an excellent student.

**Prof. Takada:** Besides PS, TMDU offers several programs to nurture physician-scientists, including the Physician Scientist Program. What approaches does Imperial College take?

**Prof. Rankin:** In the UK, Imperial College is

different from many universities. It has an additional year to obtain a bachelor of science (BSc) degree in year four which is specifically dedicated to science study and research of their choice. We offer a number of different BSc programs.

**Prof. Takada:** Ms. Itadani, tell us about the physician scientists' seminars at Imperial College you attended.

**Ms. Itadani:** I attended several such meetings at which medical students and young clinicians talked about their future careers. I got to know about various courses and career paths. It was highly motivating. I met many different types of medical professionals, for example, physicians

who worked in conflict regions or space medicine scientists. I realized that physicians could display their capabilities in various fields.

**Prof. Takada:** Did your experience in the UK change your perspective concerning your future career path?

**Ms. Itadani:** After the PS I became very interested in doing research. I know it's tough and challenging but I would like to do clinical work and research at the same time in my career. I am interested in immunology and hematology because of the experience in Professor Rankin's lab.

**Prof. Rankin:** I am very much convinced that you will make a good physician-scientist.





Special Feature

# Cultivating Tomorrow's Researchers

## • Undergraduate Student Profiles

## First step on medical research path

Fourth-year undergraduates at TMDU undertake research either via Project Semester (PS) for medical students or the intensive research program run by the School of Dentistry. A total of 40 medical students participated in the Research Training Program that is offered to students from Year 2 onward in the 2015-16 academic year. We asked some TMDU students what they had learned from their glimpse into the world of research, and what influence it might have on their future careers.

### Keen on research before university, now even more interested in the research path

I have been interested in research since high school, and I selected TMDU because you get to do research from an early stage. The program began in Year 2, and I was able to extend the research that I did last year into my third year.

In the Asahara Lab, one research staff member provides support to a number of students. We plan each experiment and discuss the results with our advisor before repeating the cycle.

I studied basic genome editing techniques in Year 2, and in my third year I have been researching ways to stabilize RNA, which tends to disintegrate easily. It has been hard to read papers written in English with a dictionary always in one hand, but it has become more enjoyable as I have started to understand the material better.

I visit the lab once or twice a week after normal classes. The atmosphere is great, and it is easy to drop by at lunchtime or spend free time there. I was not able to visit that often in the first half of Year 2 because we were so busy attending autopsies. My lack of experience also prevented me from getting any useful data in Year 2 until

around November, but luckily I was able to get the data that I needed just in time to present my results in February.

One of my unexpected discoveries from doing research in my first two years here was the pleasure of performing simple procedures. It seems that I am good with my hands. The difficult thing about research is that you must figure everything out from square one, and you can end up with nothing if you make a mistake early on.

I plan to do a PS in Year 4 with the Asahara Lab as well, and I have already begun discussing the preparatory research with Prof. Asahara. PS requires deeper thought than the Research Training Program, and I am really looking forward to it.

### My Research Theme

The Year 2 research project successfully applied CRISPR genome editing techniques to excise the ABCD-1 gene and replace it with foreign DNA, a procedure with possible therapeutic applications.



[Research Training Program]

**Rino Toyoshima**

(School of Medicine, Year 3)  
Field: Systemic regenerative medicine  
Asahara Research Team

## Analysis of real clinical data to develop new diagnostic method

The 6-month intensive PS program was a critical period of research for me, although I originally had no interest in research. I had found that hepatobiliary and pancreatic surgery was one of the most interesting areas in the lectures on clinical medicine, which is the reason why I chose Prof. Tanabe's lab.

My research is focused on developing new imaging methods for diagnosing neuroendocrine tumors, which are a rare disease. We needed to analyze actual patients' data, so first I had to learn how to read diagnostic scans and other clinical records. I joined fifth and sixth grade medical students in clinical clerkship for a month, and spent my spare time learning to read CT and MRI scans. I also had a chance to enroll in medical rounds with students on clinical clerkships, which was another very valuable experience.

PS was my first experience of medical

research. The learning environment was fantastic. Three doctors of surgery kindly guided me in each steps of my research. The graduate students and other staff in the lab were willing to listen to me and discuss ideas I had about the research. The research finally proposed novel non-invasive diagnostic techniques, and Dr. Kudo suggested presenting the results at a medical congress next year.

I have not yet decided if I want to go into medical research, but, whatever I do, I'm sure that the knowledge I have gained about imaging diagnostics and statistics will be helpful.

### My Research Theme

The research focuses on the development of new imaging biomarkers for evaluating the prognosis of neuroendocrine tumors based on contrast-enhanced CT scans taken during surgery.



[Project Semester]

**Hirofumi Yamada**

(School of Medicine, Year 4)  
Field: Hepatobiliary/pancreatic surgery  
Tanabe Lab

## Valuable research experience gained in multidisciplinary UK laboratory

My studies at TMDU kindled a desire in me to do research into intractable conditions, and I could not wait to take part in the Year 4 research project. I began preparing in late August of Year 3 by learning about basics for experiments once or twice a week with the Iseki Lab.

I did my long-awaited three-month research project at Oxford University in the UK, from June to August. In our laboratory we had people from over ten different countries. My research involved using mice to evaluate treatment methods for rare conditions.

I found that I would often receive advice from lab members who were conducting research in other fields, which helped me become aware of different perspectives. Having researchers from varied fields in one place also made me appreciate the importance of language

ability and communication skills.

The research was a painstaking process involving many hours or days spent creating samples, but the experience made me keener than ever to conduct research that could benefit many people. Now I want to gain more clinical experience, figure out which field I want to specialize in, and find the right graduate school. Doing research overseas has also made me think that going to a graduate school outside Japan could be a realistic possibility.

### My Research Theme

The research focuses on the use of chromosomal antibodies for hypoxic-ischemic encephalopathy in newborns, a condition still lacking any effective medical treatment.



[Research Project]

**Marie Kobayashi**

(School of Dentistry, Year 4)  
Field: Molecular embryology  
Iseki Lab





Special Feature

# Cultivating Tomorrow's Researchers

## • Graduate Student Profiles

## Perspectives of young basic researchers

Many of the students graduating from the Faculty of Medicine and Faculty of Dentistry at TMDU advance to clinical training and will serve in the clinical field. We asked some of the graduate students delving deep into their chosen topics as basic researchers why they had chosen graduate school and what they hoped to do in the future. Some are focused purely on research, while others are conducting research alongside their clinical studies.

### Year 2 research experience leads to interest in taking 3-year PhD

I was in the process of obtaining qualifications as a medical technologist and as a cytotechnologist, and in the future I wanted to work in the field of pathology. So I enrolled in TMDU's Faculty of Medicine as a first-year student so that I could study to become a pathologist.

I studied hard with the goal of becoming a pathologist, but my experience in the human pathology lab as part of the Research Training Program in Year 2 sparked my interest in research. In Project Semester in Year 4, I took part in a joint research project with Australian National University on the functional analysis of novel proteins. I then had to choose between continuing research at graduate school or doing the Physician Scientist Program. I knew that Year 5 clinical clerkship would cut into the time I could spend on research, so I decided to enroll in the MD-PhD Program so that I could continue to pursue the research that I had started in PS more intensively.

It was hard not to be able to graduate alongside the students with whom I had spent my first four years at TMDU, but I find being able to spend ev-

ery day on research into the functional analysis of proteins very fulfilling. I feel that I have a lot of support from senior graduate students, pathology lecturers, pathology lab technicians and from my family, and that this environment will help me succeed. I am looking forward to the remaining two years of my PhD.

As a doctor, ideally I would like to make an international contribution to oncology by conducting basic research into mechanisms of carcinogenesis and discovering related therapeutic targets, while also being involved in clinical diagnosis as a pathologist. When I finish the MD-PhD Program, I still have a long way to go, including completing clinical training, passing the national medical exam, and doing initial training. I am determined to do my best.

#### My Research Theme

Focusing on the functional role of proteins in the  $\gamma$ -glutamyl cycle, the research applies approaches from molecular biology and histopathology to examine links with inflammation and carcinogenesis.



[MD-PhD Program]

**Yuriko Wada**

(1st Year PhD)

Field: Human pathology  
Eishi Lab

### Electing to do PhD after graduating to pursue goal of allergy research

I was always interested in research as an undergraduate, and I wanted to combine research with studying medicine. Switching to the Physician Scientist Program in Year 5 and having to do clinical clerkship alongside other Year 5 students was tougher than I imagined. At that stage you cannot spend all your time on research, and I felt for a time that I might be falling between two stools.

I often hear people say that it is easier to succeed in research when you are young. That was one of the reasons why I decided to do a PhD on the Physician Scientist Program rather than spending two years doing further clinical training.

I chose immunology and allergy as my field of research partly because I have suffered from atopic dermatitis myself. Ultimately I would like to have my own research laboratory, but the main goal is to discover treatments for allergy suf-

ferers. That was why the Year 5 & 6 clinical clerkship were also important to me, and why I worked hard to complete the work in parallel with my research.

The attractive features of the Physician Scientist Program include eligibility for scholarships and the early experience of presenting results at conferences. This means you can receive active support as a researcher even as an undergraduate. I am still at the basic research stage, but I hope to build on this experience to help many people as a medical researcher.

#### My Research Theme

The research analyzes a possible model for atopic dermatitis based on elucidating the polarization of Th2 cells caused by the interaction of dendritic cells with basophil leukocytes.



[Physician Scientist Program]

**Kensuke Miyake**

(2nd Year PhD)

Field: Immunology and allergy  
Karasuyama Lab

### I want to apply what I gained from research in my future career as a dentist

I wanted to be a dental surgeon when I enrolled at TMDU. I was not aware of research at that time, and had not thought about going to graduate school, but now I have returned to the Iseki Lab where I did the intensive research course. Our research is into gene expression and control in embryonic development, specifically genes responsible for formation of the choroid plexus—the parts of the cerebral ventricles that produce and secrete cerebrospinal fluid—and other parts of the brain's vascular architecture.

Research is about elucidating processes and applying trial and error repeatedly to find the answers. It involves working things out for yourself starting from scratch, a process that helps to broaden your knowledge. The

very nature of research means that my experience as a researcher will be valuable in my future work as a dentist.

I completed a master's degree in engineering at another university before coming to TMDU. So I was already familiar to some degree with experiments and research. However, I think undertaking graduate research at TMDU has helped me better understand research techniques and approaches from other fields.

I hope to remain involved with research as a dentist. I am also certain that the scientific perspective that I have acquired through my research activities will be of use as new medical treatments and technologies are developed.

[Basic Dental Research]

**Yoshinori Yokoyama**

(2nd Year PhD)

Field: Molecular embryology  
Iseki Lab

#### My Research Theme

The research uses a wild-type mouse model to study the Foxc1 gene, which affects the formation of the choroid plexus and cranial blood vessels and is thought to play a role in hydrocephalus.



**TMDU graduates are active at the forefront of their field in countries worldwide. Studying abroad helped them deepen their knowledge as healthcare professionals, benefiting both their field and patients in every corner of the globe.**

## Letters from TMDU Overseas Alumni

### Letter 01

### My story with the three generations of Orthopaedic professors in TMDU

**Zhiwei FANG**

Emeritus Professor of the Department of Orthopaedic Oncology in Peking University Cancer Hospital



**IT'S BEEN MORE** than twenty years since I first went to study in the Department of Orthopaedic Surgery in Tokyo Medical and Dental University (TMDU). Over that period, I visited TMDU multiple times and had the good fortune to work with three different generations of professors.

My first experience studying at TMDU was in October of 1991, when I was appointed as a government-funded exchange student by the Chinese Ministry of Education. My mentor was Professor Kohtaro Furuya, who was an expert in the treatment of bone and soft

tissue tumors. After six months of study at TMDU, Professor Kohtaro Furuya introduced me to Dr. Noriyoshi Kawaguchi in the Department of Orthopaedic Oncology at the Cancer Institute Hospital of Japanese Foundation for Cancer Research (JFCR). Professor Kawaguchi was a famous expert in sarcoma treatment, and his theory of surgical margin was renowned in the field of bone and soft tissue tumor. I benefited a lot from the six-month study, and my understanding of sarcoma treatment was greatly improved. After one year, with Professor Furuya's recommendation I



On July 21, 2015, the conference hall in TMDU which was built for memorializing Professor Akio SUZUKI.

went to study at the Department of Pathology in the Japanese National Cancer Center Hospital for another half year. After that I went back to Peking University First Hospital in April of 1993.

My second time studying at TMDU was in April 2000 when I was admitted to a four-year doctoral program as a self-financed student. My mentor at that time was Professor Kenichi Shinomiya, who taught me how to develop a serious and rigorous attitude and nurture a practical and innovative spirit in the academic field. Under his instruction, I overcame various difficulties in my study and life and was the first student to be awarded a doctoral diploma that year.

In 2004, I was appointed as a professor at Tianjin University Cancer Hospital. In 2007, I was appointed as a professor at Peking University Cancer Hospital (PUCH) and built up the Department of Orthopaedic Oncology at



(From left) Dr. Manabe, Dr. Matsumoto, Me, Dr. Furuya, Dr. Kawaguchi

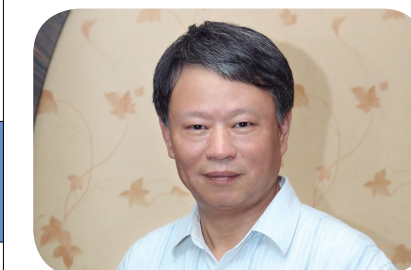


On August 31, 2002, Professor Kenichi SHINOMIYA visited Peking University First Hospital

Knowledge and Humanity thereby Contributing to People's Well-being".



In September of 2011, the China-Japan Bone Soft Tissue Tumor Cooperation was set up in PUCH.



Shuixian Qian

turned to Shanghai Jiaotong University (formerly SSMU) where I worked as chief doctor and professor in the department of vascular surgery.

Back in Shanghai, drawing on knowledge and experience gained in Japan, I was involved in many artery disease treatment programs, such as carotid endarterectomy, abdominal aortic aneurysm, and extended profundaplasty. Recognizing the desirability of cultivating a truly international perspective and of strengthening friendship and mutual understanding between the peoples of China and Japan, Professor Iwai and I founded the Shanghai-Tokyo Angiology Research Symposium (STARS). Its purpose is to serve as an effective forum, encouraging young doctors to participate in communication between the two countries. The symposium is an annual event, alternating between Shanghai and Tokyo. The 13th Shanghai-Tokyo symposium will be held in Tokyo next autumn. Through academic exchanges, friendships among surgeons have been enhanced and the gap in vascular surgery between our two countries is disappearing. We learned a lot of advanced technology and ideas from doctors in Japan.

the hospital. The department has now become well-known in China for its sarcoma treatment center.

Since 1993, I have maintained close contact with TMDU. Below are several photos taken during this period.

On July 21, 2015, I met the Department of Orthopaedic Surgery's current director Professor Atsushi Okawa when I visited here again. Over these past twenty years, I've witnessed TMDU's

rapid development. TMDU has trained a lot of Chinese doctors. Many teaching and research offices of TMDU have kept in close contact and sponsored exchanges with different Chinese universities and hospitals.

Now, as an emeritus professor, I still continue to practice clinic and surgical operation, as well as teach students. I would like to send my best wishes to TMDU: "Cultivating Professionals with

### Letter 02

### Unforgettable experience studying at TMDU



**Shuixian Qian**

MD, PhD, Department of Vascular Surgery, Shanghai First People's Hospital, Shanghai Jiaotong University

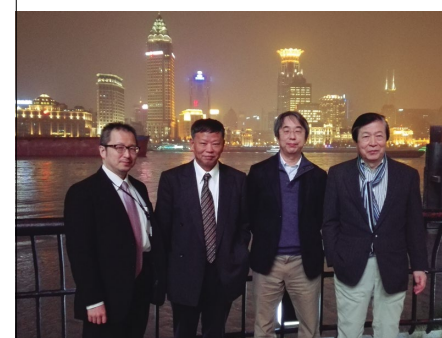


**AFTER GRADUATING FROM** Shanghai Second Medical University (SSMU) in 1978, I worked as a resident surgeon at Shanghai Ninth People's Hospital, where I immersed myself in hard work and tried to learn as much as I could. Noticing the large number of patients with varicose venous ulcers coming to the outpatient department, I became interested in vascular surgery. While pursuing a master's degree in vascular surgery at SSMU, I read widely about vascular surgery practiced overseas, including many articles on vascular surgical auto-vein transplantation, popliteal artery entrapment syndrome, etc., by Professor Takehisa Iwai, who subsequently was one of my teachers at TMDU. I received my master's degree in 1986 and was appointed attending surgeon.

As the Chinese saying goes: It is better

to travel ten thousand miles than to read ten thousand books. China was opening up to the world and I wanted to see as much of it as possible. So I headed to TMDU, an institution admired throughout the world.

While living in Japan, in addition to the challenge of studying, my life was full of fun. I learned Japanese, cultivated an appreciation of Japanese art, culture and history, enjoyed delicious Japanese cuisine, and visited several beautiful cities. From the first day to the last, I enjoyed my stay in Japan. I am grateful to Professor Iwai and Professor Mitsuo Endo, and to everyone else at TMDU who encouraged me and took such good care of me. I learned a lot and was the first author of more than 20 scientific papers published in Japanese and U.S. journals. After receiving a PhD degree from TMDU in 1996, I re-



Post-symposium snap with fellow participants in Shanghai



In Kyoto, first time at an international conference



I noticed that academic communication alone is insufficient. Broader participation in people-to-people exchanges is needed to foster friendly relations. That is why I am active in the Shanghai Oversea Returned Student Association, currently serving as senior vice chairman. We offer free services to make life easier for Japanese residing in Shanghai, including free medical consultations for the past seven years, as well as

a hotline for health problems. I am fortunate to have had so many opportunities to return to Tokyo to see friends at TMDU. We organize more than 30 China-Japan friendship activities each year, including seminars on political and economic issues, education, culture, business, and manufacturing. In particular, in 2014 I was a member of a Chinese delegation of 20 people to the disaster-hit Fukushima area. We visited hospi-

tals, nursing homes, food processing plants and other institutions, learning about the reconstruction efforts and receiving a warm welcome from local government officials and local people, as well as coverage in news media.

Experience and knowledge gained through study abroad should be shared with others, in order to contribute to international friendship. Let's work together hand in hand to create a better future.

#### Letter 03

## TMDU broadened my intellectual horizons and encouraged me to innovate



**Dr. Fadi Salameh**  
Fadi Salameh MD. Phd.  
Head of SALAMEH Endoscopy Private Clinic



**IT HAS BEEN** more than ten years since I graduated from the PhD course at TMDU. The first memory that flashes to my mind when I recall those days as an enthusiastic young doctor from Syria, searching for the best place to continue my studies in Japan, is of my first visit to TMDU to discuss enrolling in the PhD course with Professor Iwai, who was head of the Surgery One Department. I will never forget his kind smile and shining intelligent eyes while we were talking about Syria. He was well informed about the region from where I come, the Middle East, and was also knowledgeable about Syria. After our meeting, I strolled around the Ochanomizu campus where I saw many foreign doctors who were working there. I

said to myself, "This is the international environment where I should study." In the days that followed I was proved right. The international students office at the university was very active and supportive. The information about the enrollment procedure was clear and simple, with everything available in English.

After six months as a research student, I began my PhD studies in the field of esophageal gastroenterology. I was fascinated by the technology and devices used for endoscopic mucosal resection (EMR). Indeed, I tried to develop a few myself.

One day, Dr. Tatsuyuki Kawano, my supervising professor, called me to a meeting with a representative of a Japanese medical company to discuss the



Written- Fadi Salameh

possibility of the practical use of one of the EMR devices that I was developing. We concluded at the end of the meeting that my device needed more development before it could be used, but I was not discouraged about the result, because just having the opportunity to discuss my device with a medical device manufacturer was like a dream come true. It could never have happened without the great support and help of the medical and administrative staff of TMDU.

That kind of support is what distinguishes TMDU from many other universities. Studying at TMDU not only broadens your intellectual horizons but also offers young doctors many opportunities to innovate, which is wonderful.

After graduating from TMDU, I received a scholarship for two years from the Japan Society for the Promotion of Science (JSPS) for a postdoctoral course.

I wanted to have my own clinic and in 2010 I managed to open one in the heart of Damascus, the capital of Syria.

I was hoping to settle in Syria with my wife and children but unfortunately the war started in Syria and I decided to return to Japan.



Reception room at my clinic in Damascus, Syria



The examination room at the clinic

## Reports by TMDU Overseas Students

**International students from Asia, Africa, the Middle East, North America, and just about everywhere else in the world are studying at TMDU. What are they studying? What are their aspirations? International students currently at TMDU report on their life here.**

## Reports by TMDU Overseas Students

#### Report 01

### The TMDU Journey so far...



**Kofi Dadzie Kwofie**  
Department of Environmental Parasitology  
TMDU (from Ghana)



**"INTELLIGENCE, PLUS CHARACTER**—that is the goal of true education." Martin Luther King Jr.'s words embody my perception of what a holistic education should be and also describe what I find at TMDU.

I come from Ghana on the Gulf of Guinea within the western bulge of Africa. I am a first-year Environmental Parasitology doctoral student at TMDU. Previously, I studied biological sciences and clinical microbiology in both un-

dergraduate and master's degree programs at Kwame Nkrumah University of Science and Technology, one of Ghana's most prestigious universities. As an undergraduate, I undertook internship programs during my summer holidays at the Noguchi Memorial Institute for Medical Research (NMIMR), a notable research center named after the famous Japanese researcher, Dr. Hideyo Noguchi, who died in Ghana while working on yellow fever. I discovered



With fellow students of the Disease Prevention Science Course  
(During a study tour of the Toshiba Science Museum)



Smiling toward a bright future  
(At the entrance ceremony for international students)

my passion for research at NMIMR, subsequently becoming a research assistant there.

As a young biomedical research scientist at NMIMR, I was involved in a few research projects on infectious diseases with protozoan causes such as malaria, trypanosomiasis, leishmaniasis and toxoplasmosis. I developed a particular interest in issues concerning infectious diseases affecting Africa and the world at large. At NMIMR, which is a major collaborator with TMDU, I received mentorship and acquired skills and values while working with expert Ghanaian and Japanese researchers. Among those researchers was my current PhD supervisor, Prof. Nobuo Ohta, who has inspired and encouraged me. My desire to pursue a PhD degree at TMDU was stimulated by my admiration of the manner in which my immediate supervisors, Dr. Mitsuko Ohashi and Dr. Irene Ayi (alumnus of TMDU), conducted their research, paying attention





With Japanese language kenshu classmates

to every detail in their quest for excellence.

It was a dream come true when I finally arrived in Japan in October 2015. I had become a student at TMDU. My feelings were a mixture of exhilaration and anxiety. My first impressions of TMDU fulfilled my high expectations, virtually confirming the positive standpoint I always had concerning TMDU. Despite the generally cold weather, the love shown me by staff and students in my department keeps me warm. My initial anxiety has been dissipated by the excitement and passion with which both students and staff in my department conduct their research. One thing I have noticed is the slight difference in studies being conducted in Ghana and

in Japan: whereas most studies in Ghana focus on disease epidemiology, those in Japan tend to focus on basic research. TMDU's commitment to cultivating professionals with knowledge and humanity is vividly seen in the contents of our weekly Global Leadership Program (GLP) lecture series. These lectures are opportunities to meet experts in different fields related to global disease prevention using a multifaceted approach. I look forward to acquiring important skills and ideas in these areas and hope to effectively combine them in combating the menace of infectious diseases in Africa and elsewhere through high-quality research.

Life outside the laboratory gets better



Receiving a warm welcome from staff and students of the Environmental Parasitology Section

with every passing day. The language barrier was initially one of the hurdles I had to clear, but the Japanese language kenshu course has helped me appreciate everyday Japanese culture, and also equipped me with a few Japanese phrases to enable me to get around. I have also been able to make a lot of good friends. I believe these associations will provide a strong foundation for future international research collaboration.

Finally, when I look to the future, I am confident that after four years at TMDU I will be a better person than I was when I arrived here.

To everyone who is helping me make my dream a reality, I say: Doomo arigatou gozaimashita!!!



Anastasiya Blizniuk

In Belarus, dentists are very busy providing treatment, usually seeing 20-30 patients a day. I thought there must be a better way of improving oral health, and that was the main reason I decided to pursue a postgraduate degree in dental public health.

But why Japan? Japan and Belarus are as much as 8000 kilometers apart. But



Group photo of Oral Health Promotion Department at a conference in Tsukuba

then again it happened that during my high school years I discovered the books of Haruki Murakami—and that is how my fascination with Japan started. Later I began seriously studying the Japanese language, and no matter how busy I was, attended classes for more than three years. Later it would be my Japanese teacher who introduced the MEXT scholarship program to me. Living in Japan was a dream for me, so I thought my chances were slim. Nevertheless, I gave it a try—and it was the best decision in my life!

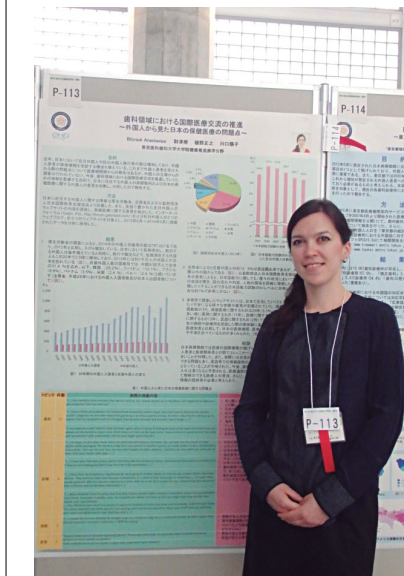
I knew there was a national health insurance system in Japan, which greatly improved people's health over the past 50 years, and so I was eager to learn more. During an Internet search, a TMDU research database helped me to de-

cide. The department where I will spend the next 4 years is called Oral Health Promotion. Promoting health instead of dealing with disease consequences—that was exactly what I wanted to do. Together with the fact that TMDU is a long-established dental school with a good reputation, this made the university my first choice. The paperwork was smooth and fast, and in April of 2012 I arrived in Japan to start a new chapter of my life.

Japanese science and technology are well known, and thus I had high expectations of TMDU; but the actual PhD Program was even better. The research facilities in TMDU were perfect. I had everything I needed to do my research, from the best scientific journals to up-to-date statistical software. But the



Enjoying azaleas at Nezu Temple together with department members



Poster presentation at Japanese Society for Oral Health conference

most important thing was the atmosphere in the department. Professor Kawaguchi was always there to help us not only with academic, but also with personal matters. This is especially important for foreign students, and I was really lucky to be surrounded by kind and patient teachers. With their help I was able to participate in many international conferences and published several papers in prestigious journals.

My friends say I have changed a lot since living in Japan. Besides research, I learned much about personal interaction and hard work. Not only the health care system, but also people who provide care are very important, and I think Japanese people are the best example of patience and respect for others. Studying in TMDU gave me a unique experience: helping with the undergraduate course, participating in health education activities, taking part in a thorough cleanup of the university clinic with dentists and other staff, seeing the cherry blossom together with our department members... I learned much more than dentistry, I got a rare chance to know this country and its people. I think Japan has made me a better person, and I am grateful to every one of my Japanese and non-Japanese friends, colleagues, and teachers who supported me along the way.

## Report 02

# More than just knowledge: experiencing Japan through TMDU PhD program



Anastasiya Blizniuk  
Department of Oral Health Promotion  
TMDU (from Belarus)



**THE DECISION TO** study in Japan was one of the most difficult in my life—but I have never regretted it. Back in Belarus, I had a successful career, working as head of the dental division of a district hospital and as chief dental officer of a region with a population of sixty thousand people just 3 years after graduating from the Dental Faculty of Belarusian State Medical University in

2006. Besides administrative duties, I was practicing as an oral surgeon. The job was not easy, often challenging and tiring, but at the same time highly fulfilling. I knew that my job was important for people coming to the hospital every day, and that was a reason to work even harder. However, the longer I worked as an oral surgeon, the more I realized the importance of prevention.





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  
Studying on the other side of the world



Atsuna Matsumoto  
5th year student, Faculty of Medicine  
Project Semester in Chile



**HOLA, ¿COMO ESTAN** ustedes? For my fourth-year Project Semester, I spent a half year in Chile conducting research and investigations. Although more than a year has passed since I came back to Japan, I still clearly remember my five months in Chile, which were some of the best days of my life.

I belonged to a laboratory in the Urology Department of Clinica Las Condes (CLC), the most prestigious

private hospital in Chile. Three students, including myself, studied in the hospital, while three others belonged to different laboratories at the University of Chile. My supervisor, who specializes in genetic polymorphism related to a marker for prostate cancer, suggested that I study the “detection of single nucleotide polymorphism (SNP) related to the serum level of prostate specific antigen (PSA) in Chilean patients.” By determining the effect of



Farewell party with laboratory members

the SNP on the PSA level, we may be able to avoid unnecessary biopsies. I extracted DNA out of serum samples from Chilean populations with high PSA levels, performed polymerase chain reaction (PCR), had the samples evaluated for SNP detection, and finally analyzed the results.

The laboratory environment at CLC was quite different from that of Japan in terms of facilities, availability of resources, and so on; further, I was told that the labs at Universidad de Chile were different from both CLC or Japanese laboratories. Overall I had a good time in the lab forming productive relationships with the lab members, and, as a result, at Urology Congress of Chile in 2015 my mentor won second prize for her poster presentation.

Another aim of mine in visiting Chile was to get to know Latin America, especially its medical and cultural aspects. Clinica Las Condes was somehow different from the normal Chilean hospital, so I personally asked my friends if there was a chance I could



Ceremony with Ms. Akie Abe

take a look at other hospitals. Eventually I was able to observe other medical settings: a medicine class in the university that included a bedside lecture and an outpatient setting in a diabetes hospital. I also went to several local hospitals to see what they were like. I met some Japanese who were dedicating themselves to the development of medicine in Chile, including doctors from TMDU, and I made friends with medical students from Universidad de Chile. The way the medical students work and study inspired me a lot. I always tried to communicate, stay aware, and grab every chance, which ultimately led to the wonderful opportunities I had in Chile.

The time I spent in Chile had a huge impact on my life. Life in Chile was totally different from what I knew in Japan, exceeding all expectations, and made me realize my own ignorance and arrogance. I am in debt to the many Chilean friends I made there for their assistance and generosity. Some of them didn’t speak English well but we became close, trying to help each other, showing new things, and spending fun time together. I realized the importance of mutual efforts to understand one another.

When we work as doctors, either in or outside Japan, we have to communicate with people from a wide range of backgrounds. There are many things we can-



With friends at a Chilean festival

not learn in life if we never step outside our normal environment, and so my life in Chile meant a lot to me, showing me something important that I was missing. Finally I want to deeply thank everyone who supported me to make my stay such an unforgettable experience. ¡VI-VA CHILE!

Report 02  
Clinical clerkship at Canberra Hospital, Australia National University



Kuniyo Sueyoshi  
6th year student, Faculty of Medicine  
Project Semester in Australia



**ON A VISIT** to a sanctuary for injured animals, located an hour outside Canberra, I was warmly welcomed by a huge pig who showed me his belly while rolling around on the ground. The sanctuary, which is a safe harbor for injured chickens, kangaroos, sheep, and other animals, covers a large tract of land that includes several hilly areas. It is owned and run by an office lady in Canberra, and is well known as a place where academic research and politics meet together. The Canberra area is home to such interesting organizations, making me feel quite lucky to study medicine at Canberra Hospital at Australia National University (ANU).

The clinical clerkship at Canberra Hospital features long case and short case. In long case a student performs a full medical examination of a patient and then makes a presentation to a senior doctor within a limited time,

while in short-case he/she performs a physical examination and then receives feedback from a doctor AND the patient. In both cases, medical students can walk around the medical wards and freely choose patients to assess, often going beyond one’s own department. The flexibility and elective nature of these two case systems seemed to be important for effective learning and effective communication among students.

I was enrolled in the clinical clerkship in the Gastroenterology and Immunology Departments. The Gastroenterology Department at Canberra Hospital is especially strong in liver disease research. At the time new molecular target drugs for hepatitis were coming to the market, so I was lucky to witness how medical research saved people who would have died without the help of the drugs. Doctors in the department were passionate about teach-



With a big pig in a sanctuary

ing students; I cannot count how many times doctors said “For the sake of students, this means...” even in joint meetings with other departments. I especially appreciate Prof. Geoff and Narci who listened attentively to my long case presentations, made incisive comments, and repeatedly told me that “the best way to care for patients is to think what we would do if the patient is our own mother or father”. In the Immunology Department, I couldn’t help but be surprised at the variety of rare diseases. In the outpatient clinic, there were people with rare immune-system conditions such as Vogt-Koyanagi-Harada disease, Sweet’s disease, Autoimmune hemolytic anemia, Still disease, GPA and so on. Everyone told me to watch out for Prof. Matthew, who he is the smartest and the most terrifying person in the hospital because he is always posing puzzling questions to students with horrible smile. Honestly speak-



ing, I agree with them, he is terrifying; I also suffered from his riddles about IgG4-related diseases. At the same time, though, I learned a lot not only about autoimmune diseases, but also from his sincere attitude toward patients whose health condition needs to be managed over a long time span.

Overall, I love the idea that TMDU students can join ANU clerkship and vice versa. They gain a firm knowledge of common diseases and learn “what medicine to prescribe” or “how often follow up is needed.” We TMDU students know pathophysiology and can interpret test results about a wide range of diseases including relatively rare ones. Learning accelerates when we face a different thing in quality from

what we usually see. In that sense, I found discussing about patients in the wards with ANU students to be very

meaningful to both of us. I am sure a clinical clerkship in Canberra is an opportunity you won’t want to miss.



With ANU students after clerkship (They love burgers and hot chocolate!)

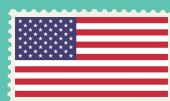
### Report 03

## Seeing the best place is the best learning



**Takayasu Mori**

Part-time Assistant Professor, Department of Nephrology  
Research program in U.S.



**IT’S TRUE WHAT** they say about “Seeing is believing”. In these days when information resources are easily available using various devices such as the internet, we can share the same information wherever we are. Even in Ja-

pan, we can also obtain various kinds of equipment required for research, which are comparable to those found in other countries. Under these circumstances, what would be the advantages of studying abroad for scientific re-



Takayasu Mori

search?

I moved to Seattle with my family in October 2015 to learn more about the analysis method of next-generation DNA sequencing (NGS) under Dr. Michael Bamshad who is the professor of the Division of Genetic Medicine at the University of Washington. Although Seattle is called a “rainy city,” it is extremely nice here because it is not so cold in winter and is relatively cool in summer. Obviously, the University of Washington is one of the leading universities in the US, having produced seven Nobel Prize winners, and has strong ties to Harvard University and its affiliated institutes. The Bamshad Lab has adopted, ahead of other researchers in the world, the leading technology of genomic research aimed at the elucidation of the genetic disorders, and is vigorously performing genetic analysis. Here at the University of Washington, a



The lab members in Bamshad lab

major genetic disease analysis consortium called Centers for Mendelian Genomics (CMG) has been formed in conjunction with Yale University and Baylor-Johns Hopkins University. At CMG, researchers are analyzing a large number of DNA samples collected from all over the world and publishing many significant results. The lab I belong to is small in scale but includes many talented people with fine personalities. It is hard to believe that such a small number of people are capable of supporting large projects. I am devoting myself to studying computational skill while at the same time actually playing a part in the analysis work pipeline. I think this is a very favorable environment in terms of research skill training and also in the sense of cross-cultural communication.

In particular, the NGS is a state-of-the-art technology which is still evolving. The technology does not seem to have caught on in Japan yet. Even though my life studying abroad has just begun, I have already experienced ma-

This is me operating the UNIX system for NGS analysis



ny occasions on which I recalled the words “Seeing is believing.”

Unfortunately the number of people in Japan who are willing to study abroad seems to be steadily decreasing. One of the reasons may be due to the soaring costs required for living and studying in US due to the downturn in the domestic economy. Under these circumstances, “The JSPS Strategic Young Researcher Overseas Visits Program for Accelerating Brain Circulation” grant plays a very large role. As a researcher I realized that study experience at such a leading-edge institution would be abso-

lutely ideal for researchers such as myself. This grant enables us to participate in such critical opportunities. I believe that winning this grant through keen competition can lead to future promotion of basic research, especially in clinical departments in TMDU.

I am willing to bring a lot of new technology back to Japan, and I am proud to contribute to the future of advanced research. I would sincerely like to appreciate the many people who had supported me in studying abroad. Now I am enjoying this opportunity very much and am really excited.

### Report 04

## Similar but different, different but similar



**Kana Sasai**

3rd year student, School of nursing  
Study program in Finland



**I STAYED IN** the peaceful city of Seinäjoki, Finland, for 18 days this past summer, where I joined a program coordinated by Seinäjoki University of Applied Sciences (SeAMK). Our group of Japanese students visited SeAMK, local hospitals, a nursing home, a home care office, a health care center for maternity and children, and facilities for children with disabilities. Fortunately, I was able to have a homestay experience. In fact, one of the main reasons why I applied to TMDU was the exchange program in Finland as I had long had a strong desire to visit Northern Europe.

One of the reasons I had long wanted to visit Northern Europe was my interest in its state welfare program, commonly called a “cradle to grave” welfare state. I originally had been interested in the way Japanese society behaves toward people with disabilities. Then I wondered how disabled people were treated and studied in a welfare state. In high school, I decided to analyze the social background and circumstances of people with disabilities in Japan for my graduation research.

I had a great time during my stay, and learned that there are not only differences but also similarities between Fin-



With my host family.

land and Japan. Some people tend to think that Northern Europe has the perfect welfare system, but I heard that Finnish people also feel anxious about their economic situation and human resources in the near future due its super-aging society. Japan also struggles with the same challenges of a super-aging society, which potentially brings the two countries together in collaboration to overcome such challenges. As for the national insurance system, social welfare in Scandinavian countries, including Finland, features the so-called “high benefits for high burden” system,





With instructors after the workshop at a facility for children with disabilities.

which entails high consumption tax and near-free social services and benefits. By contrast, the Japanese system is more like a “high benefits for low burden” system, which is an interesting point of difference we Japanese should consider for future generations.

The most impressive experience I had in Finland was a workshop held by a Chilean instructor and his colleagues. Our group of Japanese students joined with students who study social services at SeAMK and children with disabilities. We had exciting exercises like dances, gymnastics, self-introductions, conversations, experiments, or improvised plays, and really enjoyed that. At the end of the workshop, the

teacher passed a red clown nose to each participant and then told us to wear it. His message was to notice that we are not so different from each other regardless of nationality, handicapped or non-handicapped. It was ex-



With a professor and students at SeAMK after making presentations about Finnish and Japanese systems for elderly care.

actly the same as my own feelings, and reminded me of my research in high school.

My study abroad trip to Finland made me think about my future career. My wish to study abroad, perhaps in Northern Europe, became stronger through this opportunity. I would like to understand how social systems affect local people, patients, and people with disabilities, which would help me to become a registered nurse who is able to imagine and support the lives of patients and their families after they go back home.

Finally, I would like to express my gratitude to teachers and all of the staff members who supported this exchange program. I also appreciate all of the people who have supported me in Finland. I will make use of this experience in order to deepen my study of nursing.



With a student of AHS

completely different. Many residents suffered from certain kinds of physical pain or parasitic infection. It was obvious that those situations were caused by poor knowledge about hygiene and inadequate living environments. I was shocked to discover such a large medical disparity between the town and rural

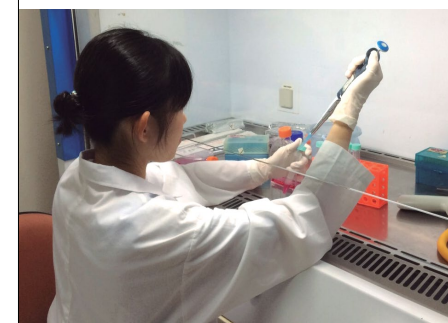


Interview with residents

areas in Thailand. This visit was a part of a community health class, so students interviewed residents about their health conditions and living environments, then performed medical examinations (blood pressure, blood sugar, hematocrit, urine, and stool test) manually as part of their practical training. The surprising thing was that the results of those examinations were officially sent to the community hospitals later, and doctors would visit residents if needed.

On weekdays, I visited two laboratories at AHS, one committed to research on Thai traditional medical herbs and the other to HIV. At the Thai herbs lab, researchers have found that an herb called *Acanthus ebracteatus* has a certain efficacy for neuroprotection. They allowed me to culture plant cells. In Japan, many medical technologists are engaged in medical research, but they rarely do experimental research on

plants, so it was new to me. At the HIV lab, they analyzed the specimens from the patients suspected of having HIV. This was my first time to see a large-scale laboratory dedicated solely to HIV. One student told me that there was a great pandemic of HIV/AIDS in the 1980s. In the 1990s, the government carried out a campaign to eradicate AIDS, which has reduced the morbidity rate to around 1%. Still, HIV/AIDS is a popular topic for medical research. Through visiting these two laboratories, I felt keenly that the research topics that



Culturing plant cells

needed to be studied differed from country to country.

On the whole, my visit to Thailand gave me a unique experience at Chulalongkorn University. To be honest, when I first heard that my department had a program in Thailand, I thought I would learn little from Thailand because I presumed that everything in Japan is better than in Thailand. However, I was wrong. Through my stay in Thailand, I learned that each country devises unique ways to improve its health and medical conditions. Although it's true that Japan is more developed than Thailand, the passion for medical development is at the same level. The most important thing is to have an attitude of mutual understanding regardless of whether or not we are living in developed countries.

I have had the good fortune to participate in all of the study abroad programs available to students in the Department of Healthcare Sciences. In addition to Thailand, I visited Finland, Nepal, and Laos in the past year. The reason why I decided to go those countries is because I wanted to know whether Japanese medical technologists can contribute to our globalized world. Now my answer is “Yes”, because the skill and knowledge of medical examination can be used all over the world, and Japanese medical technologists are well trained.

In closing, I appreciate all of the people who supported me through this program and I hope many medical technology students will show an interest in the same kinds of programs.

## Report 05

### Fruitful experience in Thailand



**Miyako Kakinuma**  
3rd year student, School of Medical Technology  
Study program in Thailand



**LAST SUMMER**, I participated in the study abroad program in Thailand. Along with three other students, I visited a number of hospitals and the Faculty of Allied Health Science (AHS) of Chulalongkorn University, and spent time with AHS professors and students.

While observing major hospitals in Bangkok, I found that there is almost

no difference between medical standards in Thailand and in Japan. The citizens in Bangkok seemed healthy and appeared to have a high level of hygiene. However, on weekends, when we visited a rural area in Saraburee Prefecture located to the north of Bangkok, with medical technology students of AHS, I found that the situation was

## Report 06

### Study at the University of Michigan, School of Dentistry



**Yukiko Takatsuna**  
4th students, Faculty of Dentistry  
Study program in U.S.



**I STUDIED FOR** two weeks at the University of Michigan in the United States. The duties of dental hygienists

are different in Japan and the U.S. Dental hygienists in the U.S. mainly do periodontal treatment. They can both



University of Michigan, School of Dentistry

take an X-ray and administer local anesthesia. Also they can remove sutures.





My family in the U.S.

I heard some people say they plant to open their own clinical practice but that depends on the particular state they practice in; apparently, they wouldn't be able to open their own clinic in the state of Michigan.

During my stay, I took many classes such as local anesthesia, periodontal disease, sutures, social work, and scientific research. I also observed student's clinic, radiology, and periodontics at the University of Michigan (UM). I would like to note several things. First, I participated in training for senior students who were learning about how to remove sutures. In Japan, students are not allowed to remove sutures, so it was very interesting to me. Second, I observed student clinical practice. Though the students are in the same grade as me, they are good at using hand scalers since students start their clinical practice in their sophomore year at the University of Michigan. Dental hygiene

documentation at UM is different than at TMDU. While we use the acronym "SOAP" to indicate the following words—Subject, Object, Assessment, and Plan—UM uses "CHIPS" to refer to Calculus, Hygiene, Inflammation, Periodontal tissue, and stable or not. I believe that "CHIPS" is more systematic than the one we use at TMDU.

I also had the opportunity to observe the private dental office of Dr. Johns. He lived in Okinawa for 20 years before coming to Michigan. He works mainly at his dental office but also works at the University of Michigan twice a week. His clinic is organized for general dental practice. He is able to perform treatment of caries, tooth extraction, and dental implant.

In conclusion, I studied a lot of things on my visit to the US. Dental hygienists and dental hygienist students at the University of Michigan have a lot of knowledge and are highly motivated.



Senior Students at the University of Michigan

That really excited me. I could study positive points both in Japan and in the U.S. In the U.S. dental hygienists mainly perform periodontal treatment. On the other hand, dental hygienists in Japan can practice oral health care under the guidance of a dentist in a patient's home or at a hospital. (In Michigan, dental hygienists must obtain a special permit to practice oral health care.) I think dental hygienists in Japan have much better opportunities in regards to really helping patients. The medical expense in the U.S. is not covered by insurance. It is the same as the oral treatment. This is because of not only the differences between the Japanese medical system and the U.S. medical system, but also because the dental care needs are different. My visit to the US greatly influenced my views of being a dental hygienist. I am very grateful to all those who supported me in this program.

## Report 07

# Report of overseas study in Sweden



**Yukina Ono**  
4th year students, Faculty of Dentistry  
Study program in Sweden

**STUDYING ABROAD AT** an overseas dental institution has long been one of my dreams, and has motivated

my daily study of English. Fortunately, last year my dream came true when I was selected as an awardee for



With my teacher

overseas training program, two years after being accepted into the Course

for Oral Health Engineering.

In recent years, digital dentistry (CAD/CAM) has developed rapidly, and Implantology in particular has gained deeper traction in Europe than in Japan. The University of Gothenburg is the birthplace of implant technology developed by Dr. Branemark who is a pioneer of osseointegration. Furthermore, Sweden is famous for its advanced studies of odontopathy, and for its government-provided services for preventive dentistry starting from childhood. For these reasons, I chose University of Gothenburg in Sweden as a visiting university and I participated in the dental laboratory program at the Institute of Odontology for a month in March of 2015.

During my time in the Dental Technology Course, I undertook mainly dental laboratory training and attended classes for manufacturing metal ceramics and implant prosthesis. In the beginning, I encountered difficulties fabricating the ceramics and prosthesis because the fabrication methods were different from those used at TMDU. The teacher asked me if this was the best I could do, which made me depressed. But his words also kin-

dled a fire in me to do better. After that, I constantly asked my classmates and teachers about laboratory techniques in order to improve my skills and performance. Consequently, when I showed my teacher the finished prostheses, he praised me and said that they were of a superior quality and could be used on patients. I was extremely glad to hear that. Through this training, I realized that I am getting a high-level education at TMDU and I felt grateful to my teachers there.

Regarding Swedish customs, I was strongly impressed by "fika," which is a coffee break taken frequently. During fika, the teachers enjoy chatting with their friends and taking a break from their work in the classroom. I think this custom should be introduced into the workplaces of Japanese dental technicians because they hardly take a break and need time to relax and communicate with each other.

In addition to the dental laboratory training, I visited private dental clinics and dental laboratories in Gothenburg. I observed dental treatments at Branemark Clinic where mainly im-



The prostheses which I fabricated

plant treatment was performed in a very clean treatment room. Being interested in maxillofacial prosthesis, I also visited a dental hospital where I saw a nasal prosthesis fabricated by Dr. Kerstin. Though facial prosthesis is not popular in Japan because Japanese people do not prefer artificial things, the prosthetic products of Dr. Kerstin looked surprisingly real. I was really impressed with the high quality of her facial prosthesis technique.

During the last week, I gave a presentation to the students and teachers about Japanese culture, including an outline of TMDU and the situation of Japanese dental technicians. It was really hard for me to make a long presentation in English, but it was a great opportunity to challenge myself. Before this study abroad, I was not confident about myself, but I noticed that my own actions changed my way of thinking.

As mentioned above, I was able to have a great time and learned lots of things such as dental laboratory work and education in Sweden, as well as the Swedish work style. The time I spent at Gothenburg made my mind stronger and cultivated a desire to challenge myself even more.

Finally, I would like to express my sincere gratitude to my teachers at TMDU and GU for giving me this wonderful opportunity and to my friends for supporting me and frequently staying in touch with me via email during my study abroad.



With dentists at Branemark Clinic and a dental student



## DNA/RNA heteroduplex oligonucleotide for highly efficient gene silencing

**HETERODUPLEX OLIGONUCLEOTIDE (HDO)** is a brand new oligonucleotide drug, pioneered by researchers of Tokyo Medical and Dental University, Osaka University and ISIS. HDO is found to be significantly potent at reducing expression of the target RNA, and also effectively improves the phenotype in disease models. In addition, the high potency of vitamin E-conjugated HDO results in a reduction of liver dysfunction. HDO technology was anticipated as a basic technology of molecular targeted therapy. The results are scheduled for publication online in "Nature Communications" on August 10th.

"Two major types of RNA targeting oligonucleotide drugs are currently being developed as therapeutic platforms for reduction of target gene expression; short interfering RNA (siRNA) and RNase H dependent antisense oligonucleotides (ASO), says corresponding author Takanori Yokota, MD, PhD, professor of department of Neurology and Neurological Science at Tokyo Medical and Dental University.

Like most medical drugs, methods which further increase potency of oligonucleotide drugs and improve safety and tolerability are highly desirable. The insufficient delivery, poor cellular uptake of oligonucleotides and their inefficient access to target RNA are major impediments to in vivo silencing. Here we developed a novel short DNA/RNA heteroduplex oligonucleotide (HDO). HDO has a structure different from double-stranded RNA used for siRNA and single-stranded DNA used for ASO, and different functional molecular mechanisms from siRNA or ASO in the cells. HDO is composed of DNA/locked nucleic acid (LNA) gapmer as ASO, and different functional molecular mechanisms from siRNA or ASO in the cells. HDO is composed of DNA/locked nucleic acid (LNA) gapmer as ASO and its complementary RNA (cRNA). When  $\alpha$ -tocopherol (vitamin E) as drug delivery moiety conjugated to ASO directly, its silencing effect is reduced because conjugated lipid interferes the mechanisms of ASO. On the other hand, when  $\alpha$ -tocopherol is conjugated to cRNA of HDO,  $\alpha$ -tocopherol can improve delivery of HDO to the liver, making the gapmer DNA strand active by its release from HDO due to cleavage of cRNA by cellular nuclease (figure)"

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Toc-HDO is significantly more potent at reducing the target messenger RNA

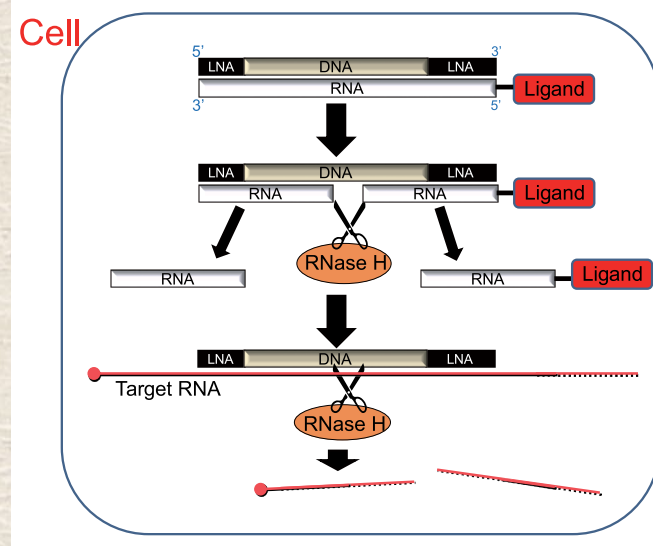


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compared to the parent ASO. Effective Dose 50 (ED50), which means the dose required 50% reduction of target gene Toc-HDO targeting Apolipoprotein B (ApoB) mRNA (ED50, 0.038 mg/kg), was 22.2 times more potent than the parent ASO (ED50, 0.841 mg/kg) in the liver. In addition to lowering ApoB mRNA, the Toc-HDO can reduce serum low-density lipoprotein (LDL)-cholesterol with the pharmacological effects lasting more than one month based on a Toc-HDO injection of 0.75 mg/kg without the need for an ASO injection. Furthermore, highly potent the suppression of the target messenger RNA is observed not only in rodents but also non-human primates."

Mipomersen, the first oligonucleotide drug, was approved by FDA, though not by EU due to liver toxicity. The high potency of Toc-HDO results in reduction of liver dysfunction observed in the parent ASO with the same silencing effect is probably due to a smaller administered dose of nucleotide.

These results suggest that DNA/RNA heteroduplex can serve as the basic technology of the oligonucleotide drug, and opens up a new horizon for human gene therapy as a novel class of oligonucleotide drugs. Our team is currently investigating more detailed mechanisms of HDO and application of ligand-conjugated HDO to another organs, including the brain. TMDU developed a brand new bio-bencher company called "RENA therapeutics" for clinical application of the HDO technology.



**Fig.1: Intracellular mechanism of DNA/RNA heteroduplex oligonucleotide (HDO).** Delivery ligand bound to the complementary RNA strand is cleaved by endogenous RNase H which recognizes DNA/RNA heteroduplex. This cleavage makes the DNA/LNA gapmer strand active.

## Discovery of novel gene mutations associated with lethal arrhythmias during exercise

**THE HEART HAS** changed its shape and function during the course of evolution. Creatures living under water have 2 chambers, one atrium and one ventricle, and electrical signals propagate uni-directionally. In contrast, creatures living on land have 4 chambers, two atriums and two ventricles: electrical signals propagate downward in atriums, while ventricles need to send blood into aortas located above the ventricles, and thus electrical signals have to propagate upward (reverse propagation). To achieve the reverse propagation of electrical signals, ventricles are equipped with a special conduction system called the "His-Purkinje system". The His-Purkinje system is a newly developed system found only in birds and mammals. Various clinical and experimental studies indicate that the His-Purkinje system plays an important role in the development of lethal arrhythmias and sudden deaths. However, it is unknown how the His-Purkinje system links to lethal arrhythmias.

Irx3 is a transcription factor present only in the His-Purkinje system in the heart. Irx3 activates the transcription of Scn5a encoding the cardiac sodium channel and Cx40 encoding a gap junction channel present mainly in the His-Purkinje system. Scn5a and Cx40 are known to be responsible for the fast conduction of the His-Purkinje system. Thus, Irx3 is a key transcription factor

determining the fast conduction of the His-Purkinje system. We examined the relationship between Irx3 and lethal arrhythmias in mice and humans.

In Irx3<sup>-/-</sup> mice, surface electrocardiogram (ECG), and contraction and relaxation of the heart were normal in the baseline. Thus, Irx3<sup>-/-</sup> mice have apparently normal hearts in the baseline. Continuous ECG monitoring revealed advanced atrio-ventricular (AV) block and frequently occurring non-sustained ventricular tachycardias (VTs), only during the night, an active phase of mice. We challenged exercise stress and a sympathetic nervous system agonist. Both challenges induced the development of AV block and non-sustained VTs. An ex vivo optical mapping during a sympathetic nervous system agonist application revealed the impairment of the reverse propagation of electrical signals and rapid conduction in the ventricles.

Next, we investigated whether IRX3 genetic defects also cause arrhythmias in humans. In 130 patients with idiopathic ventricular fibrillation (VF) and 250 controls, we sequenced exons of IRX3. We found two novel IRX3 mutations in idiopathic VF patients, but none in controls. We also found a common IRX3 variant in three idiopathic VF patients (2.3%) and the same common variant in one control (0.4%). In those five patients with IRX3 mutations or variant, VF occurred related to physical activities. We confirmed in in-vitro experiments that those



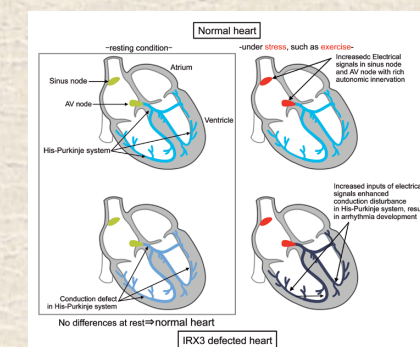
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IRX3 mutations or variant decreased the expressions of SCN5A and CX40.

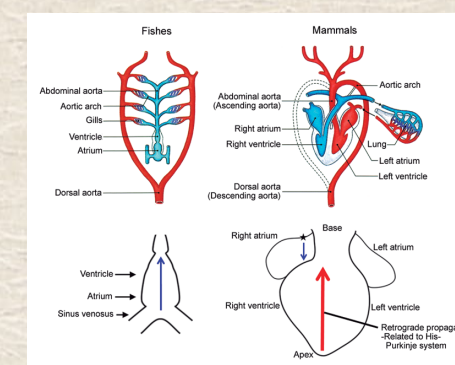
Sudden death due to VF related to exercise occurs in about one out of 10,000 individuals with normal hearts. Some genetic diseases, such as long QT syndrome and arrhythmogenic right ventricular cardiomyopathy, are implicated in the cause of sudden death related to exercise. Our data adds the genetic dysfunction of IRX3, a transcription factor specifically expressed in the His-Purkinje system, as a possible cause of sudden death related to exercise. The His-Purkinje system is equipped to improve cardiac function during the course of evolution in birds and mammals. Its genetic defects produce exercise-related lethal cardiac arrhythmias as an apparent evolutionary trade-off.

### References

Koizumi A, Sasano T, Kimura W, Miyamoto Y, Aiba T, et al. Genetic defects in a His-Purkinje system transcription factor, IRX3, cause lethal cardiac arrhythmias. Eur. Heart J. 2015 (in press).



**Fig.2: The possible mechanism of exercise-related arrhythmias by IRX3 genetic defects** Upper: Normal hearts. Lower: IRX3-defected hearts. Left: Resting condition. Right: Under stress, such as exercise. In the resting condition, the functions of the heart with IRX3 genetic defects cannot be distinguished from that of the normal heart (lower left). Under stress, such as exercise, increased inputs of electrical signals into the His-Purkinje system manifest the conduction disturbance, resulting in the development of arrhythmias.



**Fig.1: Evolution of the heart and the ventricular conduction system.** Upper: Evolution of the heart from fishes with 2 chambers to mammals with 4 chambers. Lower: Evolution of the cardiac conduction system from fishes with uni-directional propagation to mammals with the retrograde propagation in the ventricle.



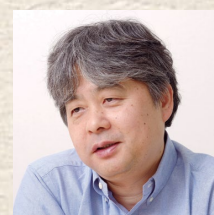
## Cloning-free CRISPR/Cas9 system

**THE MOUSE HAS** become the most commonly used animal in the biological and medical sciences because its genome can be specifically modified with nucleotide precision. Recent advances in genomic microarray and next generation sequencing technologies have identified many variants associated with common and complex human diseases. To determine whether these variants are causal for human diseases, we need to investigate their biological function. One possible approach is the use of genetic mouse models incorporating the identified variants. However, traditional gene targeting in embryonic stem (ES) cells, although suitable for carrying any desired genetic modifications, is laborious and time-consuming. The development of clustered regularly interspaced

short palindromic repeat (CRISPR)/CRISPR-associated endonuclease (Cas) is revolutionizing genetic engineering in the mouse. This technology depends on the cell processes triggered by the DNA double strand break (DSB) in specific DNA sequences (Fig. 1). The non-homologous end-joining (NHEJ) pathway, which repairs DNA damage in the absence of template DNA, results in the introduction of random insertions or deletions that disrupt gene function. In contrast to NHEJ, homology-directed repair (HDR) uses a DNA donor template with homology to the DSB site to achieve precise homologous recombination. This method provides exciting and groundbreaking opportunities, enabling direct and rapid gene targeting in fertilized mouse eggs, with

no need for ES cells. Using in-vivo genome editing, genetically engineered mice can be created in months rather than years.

A flood of studies using CRISPR/Cas-mediated in-vivo genome editing have reported the production of knock-out mice and knock-in mice carrying single nucleotide substitutions combined with oligo DNA donors. In contrast, there has been only one report on the successful production of knock-in mice carrying reporter gene cassettes, essential tools for analyzing complex tissues such as brain in vivo, and the efficacy of the targeted insertion of the reporter gene was only about 10%. The low success rates of gene cassette

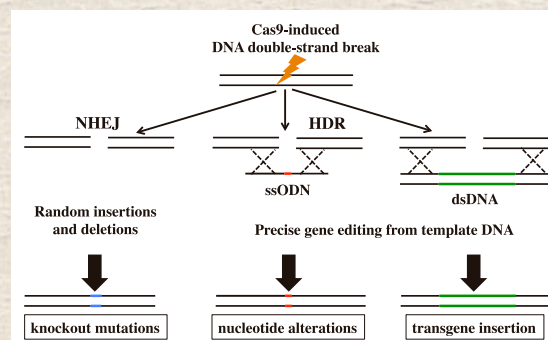


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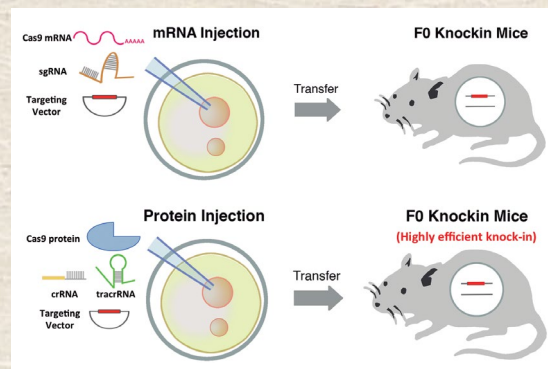
knock-in limit the applicability of CRISPR/Cas-mediated in-vivo genome editing.

I have now overcome this issue by developing innovative highly efficient CRISPR/Cas system, which resulted in targeted insertion of long gene cassettes including enhanced green fluorescent protein (EGFP), into the mouse genome of fertilized eggs with an efficiency factor of up to approx. 50% (Genome Biol. 16:87, 2015). I reproduced the natural state of CRISPR/Cas system, which consists of three components—Cas9 protein, chemically synthesized crRNA, and tracrRNA—instead of the commonly used two-component system which consists of Cas9 mRNA and sgRNA, leading to extremely high efficiency (Fig. 2). The cloning-free CRISPR/Cas system further provides highly convenient and accurate gene modification, and its successful transmission to the next generations.

This improved CRISPR/Cas system will be useful for a variety of applications, including creation of humanized mice for modeling of genetic diseases, drug metabolisms, immunity, and infectious diseases. Further, accurate targeted insertion will improve the safety of gene therapy in human patients in the future. Taken together, our streamlined cloning-free CRISPR/Cas-mediated in-vivo genome editing system provides highly efficient and extremely convenient one-step generation of knock-out and knock-in animals, leading to acceleration of in-vivo functional genomic research.



**Fig. 1: Cas9-induced genome editing**  
NHEJ, non-homologous end joining; HDR, homology-directed repair; dsDNA, double-strand DNA; ssODN, single-stranded donor oligonucleotides



**Fig. 2: The standard and cloning-free CRISPR/Cas9 system**  
A: The standard CRISPR/Cas9 system  
B: Cloning-free CRISPR/Cas9 system, which leads to super efficient targeted insertion of a long targeting vector into mouse genome.

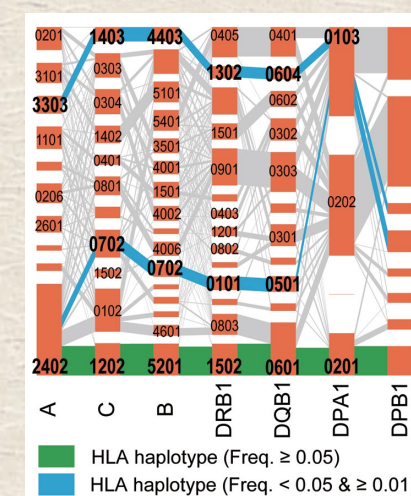
## HLA imputation methods and its application to Graves' disease in Japanese

**GENETIC VARIANTS IN** the major histocompatibility complex (MHC) region explain large components of genetic background for various diseases and biomarkers. The MHC region is one of the most polymorphic loci in the human genome, and includes multiple human leukocyte antigen (HLA) genes. While risk fine-mapping of the HLA gene variants contributes to elucidation of genetic architectures of diseases, it has been challenging due to the complex structures of the regions. To this end, we constructed a new population-specific HLA reference panel of Japanese ancestry as a largest dataset ever ( $n = 908$ ). In the panel, genotype data are available for the three class I HLA genes (HLA-A, HLA-B, and HLA-C) and four class II genes (HLA-DRB1, HLA-DQB1, HLA-DPA1, and HLA-DPB1), as well as single nucleotide polymorphisms (SNPs) densely genotyped using multiple commercial microarrays.

Using our reference panel, we can conduct highly accurate in-silico imputation of the HLA allele genotypes of

the pre-existing genome-wide association (GWAS) data. Additionally, we conducted trans-ethnic comparisons of the linkage disequilibrium (LD) and haplotype structures of HLA variants using our Japanese reference panel and previously constructed East Asian and European panels. We applied two novel methods, an entropy-based LD measurement ( $\epsilon$ ) and a visualization tool to capture high-dimensional variables (Disentangler). The symbol  $\epsilon$  represents the normalized entropy difference in the haplotype frequency distributions between LD and linkage equilibrium (LE). Disentangler is a graphical tool designed for visualizing high-dimensional haplotype data across multiallelic genetic markers such as HLA alleles. Our analysis demonstrated population-specific features of HLA allele genotype LDs. In particular, we found that the Japanese population had a relatively stronger LD between HLA genes compared with other populations, which was characterized by one Japanese-specific common long-range HLA haplotype running through the entire MHC region (Fig. 1).

Finally, we applied HLA imputation to a large-scale GWAS data of Graves' disease (GD) in Japanese ( $n = 9,003$ ).



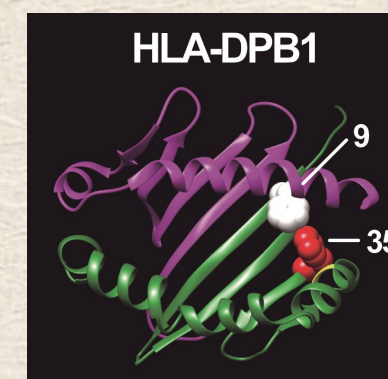
**Fig. 1: HLA allele structure of the Japanese population**  
Using multiple BIG DATA analyzing methods, we identified that the Japanese population had one Japanese-specific common long-range HLA haplotype spanning the entire MHC region (colored in green).



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GD is a disorder of the immune system that results in the overproduction of thyroid hormones, and it affects approximately 2% of the global population. While GD is known as a heritable trait and contribution of the HLA genes to GD genetic risk has been suggested, detailed fine-mapping analysis has not been conducted so far. Comprehensive statistical analysis, including a stepwise conditional analysis and a multivariate regression analysis, identified that amino acid polymorphisms of the multiple class I and class II HLA genes independently contribute to the risk of GD (HLA-DPB1, HLA-A, HLA-B, and HLA-DRB1). Of these, the amino acid position 35 of HLA-DPB1 demonstrated the strongest impact on disease risk (odds ratio = 1.4,  $P = 1.6 \times 10^{-42}$ ; Fig. 2). It is interesting that independent genetic risk has been identified as both class I and II HLA genes despite their different roles in autoimmunity. Considering strong odds ratios of these identified risk HLA gene polymorphisms, our findings should contribute to disease onset predictions based on personal genome data.

In summary, our analysis clearly illustrates the value of population-specific HLA reference panels for MHC risk fine-mapping. We are now applying our HLA imputation method to additional diseases through internal and international collaborations. The Japanese HLA reference panel is publicly available from the Japanese Genotype-phenotype Archive (URL: <https://ddbj.nig.ac.jp/jga/viewer/view/study/JGAS0000000018>).



**Fig. 2: HLA-DPB1 amino acid positions with Graves' disease risk**  
Application of the HLA imputation method to Japanese Graves' disease GWAS data identified that specific amino acid positions of HLA-DPB1 confer disease risk.



## TMDU ranked #1 in the Nation and #6 in the World in Dentistry by QS World University Rankings

**THE NEW QS** World University Rankings by subject was published on April 29, 2015.

Tokyo Medical and Dental University (TMDU) is ranked #1 in Japan and #6 in the world in dentistry.

The QS World University Rankings by Subject, published on April 29, 2015, based on the QS (Quacquarelli Symonds) World University Rankings which are published at the beginning of the academic year, highlight the world's top universities in 36 individual subjects, based on academic reputation, employer reputation and research impact (Fig.1).

In this ranking, TMDU distinguishes itself in dentistry where it is ranked #1 in Japan and #6 in the world. (Fig.2).

In Medicine, TMDU is ranked #4 in Japan and #101-150 in the world.

Further information about QS University Rankings is available at [topuniversities.com](http://topuniversities.com).



Fig.1  
QS World University Rankings by Subject

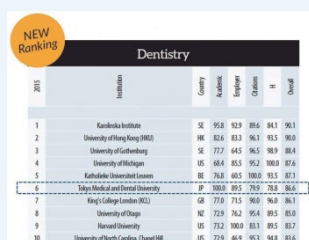


Fig.2  
QS World University Rankings by Subject: Dentistry

## TMDU ranked #1 in the National Rankings and #12 in the World's Best Small Universities Rankings

**TIMES HIGHER EDUCATION** (THE) published World's Best Small Universities on January 25th, 2016.

Tokyo Medical and Dental University (TMDU) is ranked #1 in Japan and #12 in the "World's Best Small Universities" category.

TMDU is a relatively "small" university, given the number of students (2,872, as of May 2013) attending. However, we have two university hospitals, several research centers, includ-

ing the Institute of Biomaterials and Bioengineering, Medical Research Institute and others, in addition to our graduate and undergraduate schools, which have state-of-the-art facilities.

TMDU has achieved its high ranking in the various university rankings, including THE, thanks to its high number of citations per research papers and high ratio of faculty staff to students.



## TMDU ranked #2 in Japan and #7 worldwide among the Top 100 universities with best student-to-staff ratios

**TMDU RANKED HIGHLY** in a global survey of over 1,000 universities published on February 22, 2016 by Times Higher Education (THE), the pre-eminent UK publication covering higher education. THE ranked TMDU #2 in Japan and #7 worldwide on its list of the top 100 universities with the lowest ratios of students to faculty/staff.

The THE survey used student numbers at the start of May 2013, at which time TMDU had a total student body of 2,872 (composed of 1,454 undergraduates and 1,418 graduates). The 727 faculty at that time produced a student-to-faculty/staff ratio for TMDU of 3.3—the #7 best ratio by international comparison. TMDU provides a multifaceted education to undergraduates and graduate students, in part because support faculty/staff from hospital, research and other facilities supplement faculty/staff in offering educational and research guidance to students.

In the World University Ranking published by THE in October 2015 (a survey of over 1,000 universities of all sizes), TMDU was #7 in Japan and in the lowest quintile of the 1st 500 institutions. In the World's Best Small Universities published by THE in January 2016, TMDU ranked top in Japan and #12 worldwide. These results testify to the high quality of the university education provided by TMDU by international standards.



Source: Times Higher Education website  
<https://www.timeshighereducation.com/student/news/top-100-universities-best-student-staff-ratio>



### Cover of this issue

Get off at JR Ochanomizu Station, which is just out of view to the right of the scene depicted in the cover illustration, leave via the Ochanomizubashi Exit and head north, and you will soon see TMDU's Yushima Campus. The original Ochanomizu Bridge over the Kanda River constructed in 1891 was the first iron bridge designed by a Japanese.

## EDITORIAL SUMMARY

**WE ARE PLEASED** to send you Vol. 8 of TMDU Annual News, with highlights of TMDU's international activities and campus events for the 2015-2016 academic year. President Yasuyuki Yoshizawa talks in **Message from the President** about the importance of being research minded and focuses on three types of university faculty fostered in TMDU as a comprehensive medical university: basic medical researchers, physician scientists, and academic physicians. In line with the thoughts expressed by President Yoshizawa, the details of TMDU's programs for students ranging from undergraduates to graduates to cultivate future researchers are provided in **FOCUS ON** by Professor Hiroshi Asahara, Project Semester Committee Chair and Professor Sachiko Iseki, Research Project Module Coordinator. Professor Sarah Rankin of Imperial College London, one of TMDU's overseas affiliated institutions, joins the roundtable with Professor Kazuki Takada, Director of Office for Global Education and Career Development of TMDU and Ms. Mako Itadani, a TMDU student who spent her project semester of Imperial College London.

In **Campus News**, we highlight the joint signing ceremony for the commencement of two joint degree programs (1) between TMDU and University of Chile and its affiliated hospital Clínica Las Condes and (2) between TMDU and Chulalongkorn University which have been approved for the first time in Japan by Ministry of Education, Culture, Sports, Science and Technology (MEXT).

In addition, we have reports from each of our three International Collaboration Centers, where TMDU faculty, staff, and students interact with international colleagues: Latin American Collaborative Research Center, reported by Professor Tatsuyuki Kawano and Assistant Professor Takuya Okada; Chulalongkorn University-TMDU Research and Collaboration Center in Thailand, reported by Professor Yoko Kawaguchi; and Ghana-TMDU Research Collaboration Center by Professor Nobuo Ohta. This issue also provides **Reports on Study Abroad Programs** from TMDU students and **Letters from Overseas Alumni** from graduates who tell us about their careers after graduation.

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

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*Open Windows Leading to the Global World*

*TMDU's activities are reported through the open windows to the world.*

*The window represents TMDU as the Global base for its speedy exchange of information.*

# TMDU

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