Tohoku University School of Medicine Archive

GREETINGS

To the Cutting Edge of Medical Education and Research
Developing International Multidisciplinary Medical Researchers Who Contribute to the Advancement of Medicine in Japan and across the World

Tooru Shimosegawa
Dean of the Graduate School of Medicine and the School of Medicine

Profile
1979  Graduated from the Tohoku University School of Medicine.
1982  Joined the 3rd Department of Internal Medicine of the Tohoku University School of Medicine; studied at medical institutions in the U.S. including the Medical School of Oklahoma State University and the Medical School of Illinois State University; and served as a professor at the Tohoku University School of Medicine from 1998.
2002  Became Deputy Director of the Tohoku University School of Medicine and, in 2012, Director of Tohoku University Hospital.
2015  Became the Dean of the Tohoku University School of Medicine.
He specializes in gastrointestinal diseases in general.

Mission
Under the principles of “Research First,” “Open Door,” and “Practice Oriented,” Tohoku University aims to raise the quality of research through interchanges of competent human resources and give back accomplished results to society. Respecting this spirit of the university, we recruit human resources from diverse areas and drive unique advanced research that contributes to the advancement of medicine. The mission of the Tohoku University School of Medicine is to contribute to enhancing human health and medicine both at home and abroad by fostering excellent medical researchers capable of working internationally and practitioners with high levels of medical knowledge and skill as well as a rich sense of humanity.

History
Tohoku University, a landmark of the City of Sendai famous for its large number of schools, is a historic national university that was established in 1907 as Japan’s third higher education institution. It boasts a long history and a host of outstanding achievements recognized both domestically and internationally. The Tohoku University School of Medicine has an even longer history, dating back to 1817 when Sendai Domain separated Sendai Domain Medical School from its historical academic institution called “Yokendo” and built a free dispensary (an equivalent of today’s university hospital). It was reorganized in 1872 as Miyagi Prefectural Medical Institution. After Tohoku Imperial University was founded in 1907, the institution was converted to Imperial Medical University in 1915. While undergoing several name and organizational changes as time went by, it has evolved as a top-level organization for medical education, research, and practice in Japan, handing down its tradition from generation to generation.

Education and Research
The Tohoku University School of Medicine consists of two departments: School of Medicine and School of Health Sciences. The School of Medicine provides medical education for training doctors, and the School of Health Sciences is devoted to developing nurses, radiological operators, and laboratory technicians. Currently, the capacities of the School of Medicine and School of Health Sciences are 135 students and 144 students, respectively. The Graduate School Division of Medicine, newly established under the new educational system in 1955, formed the Master of Disability Sciences Course in 1994 in addition to the Master of Medical Sciences Course in 1994 in line with the policy giving priority to graduate schools of medicine. The facility development was completed in 1999. Furthermore, the Master of Medical Science Course was established in 2003, followed by the Master of Health Sciences Course launched in 2008. In 2010, a doctor’s course was introduced in Health Sciences as well, making master’s and doctor’s programs available in all the Schools of Medical Sciences, Disability Sciences, and Health Sciences. And, in 2015, the School of Public Health was opened as the fourth school in order to provide richer graduate school education in response to social needs.
The Tohoku University School of Medicine aims to develop human resources who have an inquisitive mind and a sense of purpose in medicine and who are capable of autonomously finding and solving problems. The school is also devoted to fostering world-class medical researchers willing to tackle unknown issues, as well as healthcare specialists and who have state-of-the-art expertise. The Tohoku University School of Medicine boasts a variety of teaching staff and a large number of competent research staff, covering almost all research areas of medical science, and admits more than 200 students to its doctor’s and master’s courses every year. Moreover, the school cooperates with the Institute of Development, Aging and Cancer and the Graduate School of Biomedical Engineering for graduate school education, as well as with Tohoku University Hospital for medical school education, providing education in a vast range of areas.

International

In the spirit of the “Open Door” principle of the university, the Tohoku University School of Medicine accepts many students from abroad. The school has inter-faculty academic exchange agreements with universities and other schools overseas and is actively promoting international exchanges with those institutions, the central role being played by the Division of International Education and Exchange to which dedicated teaching staff members are assigned. It is driving international exchanges by offering scholarships to foreign students and accepting them, as well as through programs for sending the university’s researchers and students abroad. Also, in May 2013, the school signed an exchange agreement with the NIH of the U.S., which offered to collaborate in research with Tohoku University after the Great East Japan Earthquake, and had a joint symposium called “NIH-Tohoku University-JSPS Symposium” in Sendai, Japan. A larger second joint symposium, “NIH-Japan-JSPS Symposium 2014,” was held at the NIH in Bethesda, U.S., in November 2014. A third symposium is scheduled to take place in 2016. The Tohoku University School of Medicine plans to work closer with the NIH and other foreign research institutions in the future to build a foundation for internationalization.

Global center of medical education and research

As stated above, the Tohoku University School of Medicine has been active in promoting the internationalization of education and research. Beginning in fiscal 2012, students and young researchers were sent abroad through the “Internationally Competitive MD Researcher Development Program” adopted in the university reform promotion project of the Ministry of Education, Culture, Sports, Science and Technology, called “Fostering Global Physicians - Reform of Medical Education by Balancing Basic Research and Clinical Practice,” and the “Seeding Program for Original Research Seeds of Young Researchers in the Medical Sciences” selected for the “Strategic Young Researcher Overseas Visits Program for Accelerating Brain Circulation” of Japan Society for the Promotion of Science. Now, these students and researchers are coming home one after another, expanding networks of contacts across the globe. Moreover, in order to make research results widely known not only in Japan but around the world as well, the Division of International Education and Exchange and the PR Office are working closer to enhance the school’s ability to publish information worldwide.

Reconstruction and future

The Tohoku region whose center is located in Miyagi Prefecture sustained devastating damage by the Great East Japan Earthquake that took place on March 11, 2011. While the disaster inflicted enormous harm on Tohoku University as well, people mainly from Tohoku University Hospital - graduate students, young researchers, doctors, and medical specialists - played active roles in many fields such as health and medical support to the affected areas. Tohoku University is still committed to university-wide all-out efforts toward the reconstruction of the Tohoku region, one of them being the International Research Institute of Disaster Science, which was founded soon after the disaster as one of Tohoku University’s disaster reconstruction projects. Also, as projects for rebuilding community medicine, the Comprehensive Education Center for Community Medicine and the Tohoku Medical Megabank Organization were established. Furthermore, in 2013, the Tohoku University School of Medicine, Tohoku University Hospital, and Medical Megabank Organization jointly set up the “Center for Reconstruction of Community Medicine” in the university hospital. By actively promoting these disaster reconstruction projects in an organized manner, the Tohoku University School of Medicine intends to continue to play a central part in supporting Tohoku’s regional medicine and to contribute to building a community medical system and improving its environment, developing doctors and practitioners with a strong will to take an active role in community medicine and assisting them in their careers, and helping the reconstruction of healthcare services in the affected areas and the establishment of an emergency response system for future disasters. In 2014, the No. 6 building of the School of Medicine and the building for the Tohoku Medical Megabank were completed. And, in 2015, the renovation of the Seiryo Kaikan building into the Seiryo Auditorium was finished, thus completing the facility development of the Seiryo Campus. The Tohoku University School of Medicine will evolve much further in the future through intense collaboration with Tohoku University Hospital and the Tohoku Medical Megabank Organization. Japan’s medical science, healthcare, and welfare hinge on students studying to become doctors and practitioners and young medical researchers. By promoting top-level medical education and research, we strive to develop human resources who open up a new horizon for future medical science and healthcare and contribute to the advancement of medical science and healthcare both at home and abroad.

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Title and affiliation in the articles are those at the time of interviews.
In response to increasing diversification and complexity in health issues, as well as changes in society, together with rapid advances in clinical research and genome science, among others, the Tohoku University Graduate School of Medicine will open its School of Public Health in April 2015.

The School of Public Health will consist of eight divisions and offer two departments. The Department of Health Informatics and Public Health course will be made up of four divisions: Epidemiology, Biostatics, Medical Informatics, and Medical Genetics. The Department of Health Administration and Public Health course will also have four divisions: Health Administration and Policy, Environmental Health Sciences and Molecular Toxicology, Forensic Medicine, and Medical Ethics. In addition, the following divisions will cooperate the School: "Disaster Public Health" of the International Research Institute of Disaster Science; and "Personalized Prevention and Epidemiology" and "Genomic Medicine Support and Genetic Counseling" of the Tohoku Medical Megabank Organization.

The School of Public Health will develop personnel who can:

(1) Promote studies and practices in areas related to public health (for example, researchers, administrative officials, and health and medical care consultants in each field).

(2) Promote clinical research (for example, physicians, dentists, and researchers who can take the lead in clinical research; and high-level clinical research supporters and administrators such as biostatisticians and data managers).

(3) Promote the fusion and development of genome science and studies of public health (for example, genome epidemiologists, biostatisticians, certified genetic counselors, and researchers into medical ethics and medical policies related to the effects of genome science on society and medical care).

The Master’s Program of the School of Public Health will offer four courses:

(1) General course: The basic course to be offered by the School. The students will first acquire a common base, called the "grounding in public health", and then pursue high-level expertise in their desired departments.

(2) Course to train high-level clinical research administrators: Students will follow a course to become data managers, project managers, pharmaceutical specialists, IT specialists, and others to support clinical research.

(3) One-year course to train physicians and dentists for clinical research: Physicians and dentists will be educated in the skills needed to take the lead in clinical research. After completing the course, the students will conduct clinical research in the doctoral course of their desired clinical specialty.

(4) Course in public health and genetic counseling: Students will follow a course to become certified genetic counselors (*certified jointly by the Japan Society of Human Genetics and the Japanese Society for Genetic Counseling).

The Master of Public Health (MPH) degree, which will be awarded to the students upon their successful completion of the School’s course, is highly regarded internationally. We at this School would like to produce large numbers of MPH graduates who go on to be successful around the world.
On October 23 and 24, 2014, an international symposium was held at the National Institutes of Health (NIH) of the United States, located in the suburbs of Washington DC. This symposium was held as the second round of the NIH-Tohoku University-JSPS Symposium, which was held in Sendai in May 2013 as a part of NIH’s support for the recovery from the Great East Japan Earthquake. More than 250 people attended this year’s symposium including many researchers at the NIH. Thirty-six scientists from Tohoku University traveled to the NIH to attend this symposium, including invited speakers and poster presenters.

The symposium started with the opening remarks given by Dr. Michael Gottesman (Deputy Director of NIH), Dr. Noriaki Ohuchi (Dean of the Tohoku University Graduate School of Medicine), and Dr. Osamu Shimomura (Director of the Japan Society for the Promotion of Science (JSPS), Washington Office). The theme of this symposium was “Highlights from the Frontiers of Biomedical Science from NIH and Japan”, and lectures were given by the researchers representing NIH and Japan in five plenary sessions: Disease and Metabolism, Stem Cells and Regeneration, Host Immunity and Microbes, Transcriptional Regulation of Innate Immunity, and Imaging of Cellular and Protein Dynamics. In these sessions, the invited speakers from Tohoku University, Prof. Kazuhiko Igarashi (Dept. of Biochemistry) and Prof. Noriko Osumi (Dept. of Neurogenesis), stood on the platform. On the morning of Day 2, the session related to "Recovery from the Great Tohoku Earthquake and Fukushima nuclear plant disaster" was held. Prof. Shinichi Kuriyama (Epidemiology) and Prof. Yoshio Hosoi (Lab. for Radiation Biology) of Tohoku University, as well as Dr. Kiyohiko Mabuchi (NCI) of NIH, gave presentations on tendency of the disease observed in the affected areas, the Tohoku Medical Megabank Project, and the impact of the Fukushima nuclear power plant accident on the thyroid gland. In order to enable close communications between the researchers of NIH and Tohoku University, three workshops were held in the form of seminars. In one of the three workshops, Dr. Thomas Waldmann (NCI), the leading figure in immunology, gave a lecture, which was followed by a lively discussion.

In the poster session, 41 researchers of the NIH and 24 researchers from Tohoku University made presentations on molecular biological studies, and exchanged their opinions. Since people-to-people exchange of the young researchers is one of the keys to strengthening scientific relationship with NIH, Tohoku University supported the travel expenses of its 19 talented young researchers. These young researchers visited the laboratories of NIH, and we hope this experience expanded their horizons and would result in global research exchange between young researchers in the future.

NIH and Tohoku University have further strengthened their relationship through the two symposiums, and the next symposium will be held in Sendai in 2016. Tohoku University is willing to contribute a relationship between Japan and NIH in the biomedical research field.
For five days from March 14 through 18, 2015, the Third UN World Conference on Disaster Risk Reduction was held in Sendai. The aim of the conference was to mitigate the human and physical loss and social and economic chaos caused by natural disasters through concerted international action. Continuing on from the first conference, held in Yokohama (1994), and the second, which was held in Kobe (2005), the third conference was conducted to discuss international frameworks for disaster prevention and disaster risk reduction.

The Graduate School of Medicine and its related faculties participated in the public forum by hosting exhibitions, symposiums, and other events.

In the Tohoku University recovery action gallery, the Comprehensive Education Center for Community Medicine and the Tohoku Medical Megabank Organization held an exhibition on projects for rebuilding community medicine. This attracted a great number of people.

On March 14, a symposium entitled “How we managed cancer patients after the Great East Japan Earthquake?” was held. This symposium was hosted by the “Tohoku Cancer Professional Training Promotion Plan,” consisting of personnel from the four universities, Tohoku University, Yamagata University, Fukushima Medical University, and Niigata University, which are the locations of the central medical institutions providing “cancer care” in the prefectures most heavily affected by the Great East Japan Earthquake (Miyagi and Fukushima) and neighboring prefectures (Yamagata and Niigata). The outcomes of the activities implemented to date were presented, such as a report on the impact of the earthquake on cancer care.

The “Tohoku University Guided Tour / Medical Research Facilities - Reconstruction of Community Health Care and Advanced Medical System -” presented an overview of the facilities at the Tohoku Clinical Skills Laboratory (Comprehensive Education Center for Community Medicine), while providing an explanation of how to use each simulator, while a tour was made of the facilities of the Tohoku Medical Megabank Organization.

The main conference hosted by the United Nations attracted about 6,500 people from UN member states, international organizations, local governments, and other organizations, 187 countries in total, while the public forum attracted 156,082 people in total, making it the largest conference ever held not only in Sendai, Tohoku, but also in Japan.
The Sakura Science Plan is a program announced by the Japan Science and Technology Agency, an independent administrative institution, in April 2014. The purpose of this program is to invite young people from Asia to become trainees and thus become familiar with the universities and research institutes in Japan, so that outstanding young people from other Asian countries can interact with entities in Japan. The Tohoku University Graduate School of Medicine is participating in this program, with the goal of inviting 30 short-term trainees in collaboration with the Tohoku Tabunka Academy Foundation (TTA), an incorporated foundation which supports foreign students coming to Sendai.

In seeking applicants, the Graduate School called on more than 12 institutes in other Asian countries including China, Korea, Vietnam, and Indonesia, mainly those collaborating with Tohoku University, to attract a wide range of outstanding young people. As a result, applications were received from 49 people, which far exceeded the limit. By evaluating the reasons for application and the contents of the application forms, all of which were written in English, and matching with their desired laboratories, 30 trainees were selected.

On the first day, Monday, August 18, a lavish opening ceremony was held, which was attended by Noriaki Ohuchi, Dean of the Graduate School of Medicine. Then, a four-day training program was conducted at the laboratories that the trainees had requested. The 20 such laboratories successfully implemented unique trainee-oriented programs to satisfy the trainees’ wishes.

Furthermore, by seeing the world’s most advanced biobank facilities with their own eyes, as well as the state-of-the-art research equipment at the Tohoku Medical Megabank Organization, the Tohoku University Clinical Skills Laboratory, and elsewhere, the trainees were introduced to the “Research First” principle of Tohoku University. Also, by touring the historic buildings on the campus, such as the Lecture Theater, where Lu Xun studied, they were able to sense the “Open Door” policy of Tohoku University. Over the weekend, the trainees visited Ishinomaki, one of the areas affected by the Great East Japan Earthquake and tsunami, and toured Ishinomaki’s Red Cross Hospital.

On Monday, August 25, the day on which the trainees would leave Sendai, a reporting session was held by the trainees, followed by a get-together with the teachers. After the completion of their training, some trainees started preparing for the Graduate School entrance exam, while others were interviewed by local media about the short-term training that they had received at Tohoku University. There are signs that this short-term training will produce further results. By continuing to offer this type of short-term training in the future, the Tohoku University Graduate School of Medicine is expected to gain further recognition throughout Asia, prompting more foreign students to visit it in the near future.
## NEWS

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June, 2014-January, 2015

Inter-Faculty Academic Exchange Agreements Signed with Four Educational Institutions

The Graduate School of Medicine and the School of Medicine have agreements with overseas educational institutions on joint researches, exchange student programs, etc. (inter-faculty academic exchange agreements) in order to promote the world’s most advanced education and research. In addition to the 13 existing partners, four institutions signed an exchange agreement with us in fiscal 2014.

- Faculty of Health, Medicine and Life Sciences of Maastricht University (the Netherlands)
  On June 9, a signing ceremony was held on the Seiryo Campus for the inter-faculty academic exchange agreement between the Faculty of Health, Medicine and Life Sciences of Maastricht University and the Graduate School of Medicine of Tohoku University. We will promote the creation of double-degree master’s degree programs.

- Faculty of Medicine of the University Hong Kong
  We signed an inter-faculty academic exchange agreement with each of the above institutions via mail.

- Future Convergence Research Division of the Korea Institute of Science and Technology (KIST)
  We signed an inter-faculty academic exchange agreement with each of the above institutions via mail.

- National Center for Nanoscience and Technology of China
  At a symposium conducted in Beijing, China, on January 18 and 19, 2015 to confirm and accelerate the progress of the joint research in the A3 Foresight Program, we signed an inter-faculty academic exchange agreement with our partner, the National Center for Nanoscience and Technology of China, and held a signing ceremony for the purpose of building a closer relationship with this organization. The agreement is expected to deepen our cooperation further in joint research efforts in the areas of nanoscience and medicine and international exchanges.

March 5, 2015

Second Japan-Russia Joint Medical Seminar

As part of the Re-Inventing Japan Project activity, “Creation of innovative leaders for new Japan-Russia relations,” organized by the Ministry of Education, Culture, Sports, Science and Technology, Tohoku University and Lomonosov Moscow State University co-hosted a Japan-Russia joint medical seminar on the Seiryo Campus with the aim of promoting joint research efforts in medicine and international research exchanges. This was the second seminar following the first one that took place at Lomonosov Moscow State University on December 10, 2012, and it was the first time that the seminar was held at Tohoku University.

The seminar started with opening speeches by Noriaki Ohuchi, Dean of the Graduate School of Medicine and Prof. Egor Barzelyuk of Lomonosov Moscow State University’s Faculty of Medicine, followed by presentations by representatives from the two universities. Prof. Naoto Ishii, Prof. Masahiro Kozuki, Prof. Kazuhiko Igarashi, and Prof. Hitoshi Oshitani, all from our school of medicine, came on stage and engaged in an exchange of views among about 50 participants including medical teaching staff and students.

The delegation members of Lomonosov Moscow State University visited the facilities on the campus, including the Tohoku Clinical Skills Laboratory, Tohoku Medical Megabank Organization, and Tohoku University Hospital Advanced Medical Training Center. After that, they paid a visit to one of the areas affected by the Great East Japan Earthquake.

We are going to further promote collaboration in medical education and research between the two universities in a bid to make another joint seminar happen in the near future.
In September 2014, the third A3 International Conference was held in Sendai and Matsushima, centering on the program entitled “Nanoscale imaging and tracing of key molecular events in cancer biology using nanobiomaterials”, selected in 2013 by the Japan Society for the Promotion of Science (JSPS) as part of the A3 Foresight Program. The first A3 International Conference was held in Beijing, China in September 2013, followed by the second in Daejeon, Korea in February 2014. For the third conference, pioneering researchers were invited, nine from China and ten from Korea, as well as a large number of prominent researchers from Japan. There was a lively discussion concerning studies of nanobiotechnology over the two days. One goal of the A3 Foresight Program is that research institutes in Japan, China, and Korea should work together to create world-leading academic research hubs, while another important goal is the development of young researchers. Based on this principle, this conference provided sufficient opportunities for young researchers to make oral presentations. This conference has further strengthened cooperative ties between research institutes in Japan, China, and Korea; several Japan-China-Korea joint research programs in the field of nanobiotechnology have been implemented and are currently underway. The next conference is scheduled to be held in China in 2015. These three-country joint research programs are expected to produce worthwhile results.

Ms. Marie Josephine M. De Luna, Vice Chancellor for Academic Affairs of the University of the Philippines Manila, and Mr. Armando C. Crisostomo, Vice Dean, School of Medicine of the same university, visited the Tohoku University School of Medicine to discuss education programs and joint research and exchange views on future collaboration. Agreement was reached that the two universities should develop a closer relationship and promote exchanges of students and teaching staff.

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Delegates of CNRS-INSIS (Institut des sciences de l’ingénierie et des systèmes), INSA-Lyon (Institut National des Sciences Appliquées de Lyon), and ECL (Ecole Centrale de Lyon) from France visited Sendai to renew inter-university agreements. After a signing ceremony was held on the Katahira Campus, the delegates visited the Seryo Campus to see the freshly built No. 6 Building of the Medical School and other facilities such as Biomedical Research Core. This is expected to lead to increased exchanges with each of these schools.
July 29, 2014

Construction of the No. 6 Building of the School of Medicine and the Building for the Tohoku Medical Megabank Organization Now Complete

The construction of the No. 6 Building of the School of Medicine for the Tohoku Medical Megabank Organization on the Seiryo Campus was completed in the spring of 2014, and a ceremony commemorating its completion was held on July 29. The ceremony was attended by invited guests, including Mr. Yoshihiro Murai, Governor of Miyagi Prefecture, Ms. Emiko Okuyama, Mayor of Sendai, and Mr. Tsutomu Tomioka, Vice Minister of Education, Culture, Sports, Science and Technology, as well as by Mr. Susumu Satomi, President of Tohoku University, Mr. Noriaki Chuchu, Dean of the Graduate School of Medicine, and Mr. Masayuki Yamamoto, Executive Director of the Tohoku Medical Megabank Organization. After the ceremony, the buildings were shown to the attendees.

The No. 6 Building of the School of Medicine is an advanced research center, complete with a lecture hall, two conference rooms, and 16 group study rooms, which can also be used to promote small group education as well as for self-study by medical students.

The building for the Tohoku Medical Megabank Organization houses various kinds of research equipment, such as a next-generation sequencer for genome analysis, a supercomputer for processing large amounts of data, and NMR and MRI devices. Using these facilities, we seek to reconstruct medical services in the areas affected by the Great East Japan Earthquake and to realize medicine of the future.

May 29, 2014

Developing Outstanding Specialists Who Can Implement Preemptive Medicine

On May 29, the Tohoku University Graduate School of Medicine and Osaki Citizen Hospital concluded a basic agreement as well as an agreement concerning collaborative chairs, in order to lead the world as a hub for preemptive medicine research and medical care, develop outstanding specialists who can implement preemptive medicine research and medical care, and jointly promote research and education activities to satisfy the needs of society in areas where the population is aging rapidly.

In the northern part of Miyagi Prefecture, where the population is aging quickly, there are an increasing number of cases of diseases adversely affecting the healthy life expectancy of individuals and causing them to require long-term care (diseases such as cerebral vascular disease, dementia, bone and joint disease, and cancer). It has, therefore, become imperative to develop technologies for preventing such diseases in a preemptive manner so that they do not “break out”, in addition to curing those diseases when they arise.

To that end, the Tohoku University Graduate School of Medicine will establish a “program for the study of preemptive medicine for the northern part of Northern Miyagi” for the purposes of (1) promoting basic studies related to the analysis of the diseases adversely affecting the healthy life expectancies of individuals and causing them to require long-term care (diseases such as cerebral vascular disease, dementia, bone and joint disease, and cancer) and covering systems for predicting the development of diseases, (2) promoting basic studies related to the development of technologies for preemptive medicine, as well as translational research, (3) verifying the effect of preemptive medicine on local residents and deploying preemptive medicine to local communities, and (4) developing community-based physicians who can work on these projects and thus become well-versed in preemptive medicine.
Tohoku University Care Science Co-Creation Center Is Established

The Tohoku University Care Science Co-Creation Center (TUCSCO) was established on October 1, 2014, with restrained TUCSCO signs being mounted at the front gate of the building of the School of Health Sciences, Graduate School of Medicine, and also at the Director’s Office of the Tohoku University Hospital Division of Nursing.

The goal of establishing TUCSCO is to ensure that the nursing course of the School of Health Sciences and the Division of Nursing are flexibly connected to create next-generation care by bringing knowledge and skills together. The combination of nursing university and Nursing Division of hospital to establish a center has already been implemented in other parts of Japan. Nevertheless, TUCSCO aims to create new care science and go one step further by mutually drawing out the respective strengths of the Nursing Course and the Division of Nursing, extending and combining them as departments of Tohoku University, which upholds the “Research First” principle.

TUCSCO has established four departments to cover education, research, practice, and evaluation. Their roles are to develop next-generation leaders for research bases; to build multidisciplinary teams with people not only from nursing but also from other disciplines to create new arts of care; to aim for translational research whereby nursing seeds for clinical care can be discovered, incubated, and applied to nursing care that is useful in practice; and to share the results with the world.

This year, TUCSCO will start by constructing a foundation. Next year, TUCSCO intends to make its significance felt and, at the same time, take a step forward by acquiring competitive research funding. We encourage you to place great expectations on TUCSCO and watch over its progress.

Cardiac Rehabilitation Team Is Dispatched to TEDA International Cardiovascular Hospital

Masahiro Kohzuki, Professor of the Department of Internal Medicine and Rehabilitation Science, Chief of Tohoku University Hospital Rehabilitation Medicine, and Head of Internal Medicine and Rehabilitation Medicine, as well as four other staff members, were invited to the 2014 Binhai International Cardiac Rehabilitation Symposium, held from September 21 through 23 at the Tianjin Medical University TEDA International Cardiovascular Hospital, located in Tianjin City, China. There, he gave a lecture on rehabilitation after cardiovascular surgery and provided related coaching. This symposium was attended by many staff members from not only Tianjin Medical University and TEDA International Cardiovascular Hospital but also various other medical institutions. As such, the auditorium was full on all three days. The training, which was conducted in a hospital ward, was broadcast live in the auditorium. It has been decided that, in the future, Professor Kohzuki and Dr. Liu Xiaocheng, Director of TEDAICH, will jointly hold an annual symposium, inviting cardiac rehabilitation specialists from all over the world, as well as an annual skill conference focusing on coaching. The venue will be a “special medical zone” in China, with TEDA International Cardiovascular Hospital playing a central role in the project. As one of the largest cardiovascular hospitals in Asia, this hospital has 600 beds, 80 ICU beds, 40 CCU beds, and 16 operating theaters. It performs 2000 open-heart operations a year. There is no doubt that this hospital will be a model for cardiac rehabilitation in China, while the high-quality cardiac rehabilitation programs of Tohoku University are expected to spread world-wide.
April 7, 2014

White Coat Ceremony Is Refreshed

The white coat ceremony of Tohoku University School of Medicine has been held since April 2011 to congratulate the new fifth-year medical students, who are about to move on to the final stage of becoming physicians. The ceremony also put those fifth-year students, who will be participating in clinical training as members of a medical team, in the correct frame of mind to meet patients. Initially, the ceremony was held in a lecture room, but was modest in scale, being attended only by the Dean of Medical School and a few doctors, in addition to the fifth-year students. In 2014, the ceremony was completely overhauled and positioned as a ceremony whereby medical students could recognize their arrival at a turning point in the process of becoming a medical professional. The venue was changed to the Gonryo Memorial Hall and is now attended by the President of Tohoku University Hospital, the Director of Nursing, and the Director of Clinical Technology, who are invited as guests, as well as the Dean and the professors and doctors in charge of education, giving a total of more than 30 faculty members.

At this refreshed white coat ceremony, the attending professors present the students with a white coat embroidered with the logo of Tohoku University, and help them into it for the first time. The parents of the fifth-year students are also invited, and all of the first-year medical students, who have just entered Tohoku University, also attend. The ceremony gives the fifth-year students a sense of tense, while giving the first year students tangible realization that they have started a new life in medical school.

Fumiko Toyama, who made a speech as a representative of the fifth-year students, remarked, “The ceremony has made me aware that I will be becoming a physician in the near future, and that I have reached an important milestone in the journey towards my goal”.

August-September, 2014

"Lab Open House" Held for Graduate School Applicants

The Tohoku University Graduate School of Medicine held a "Lab Open House" for persons interested in going on to graduate school, with the laboratories being open during the summer and spring vacations, so that potential applicants could better understand the activities of the laboratories and research groups. One of the most important factors to be considered when going on to graduate school is the subjects of the research and the research environment, so that a person can decide whether they could lead a fulfilling life as a researcher. The Lab Open House offered opportunities for applicants to first match their schedules with those working in a laboratory, and then visit the laboratory, ask questions about the research content and life as a researcher, observe the goings-on in the laboratory, and perform simple experiments. One major feature of the Lab Open House was that teachers of the Graduate School offered a matching service to those applicants who had not been able to decide on which laboratory to visit, and recommended a specific department based on keywords.

At the first Lab Open House, held in the summer, there were fourteen participants, all of whom visited laboratories. Several of the participants were from other universities and faculties. The participants had a fulfilling experience, even though it was only for a short time.
"Where Do Ideas Come From?"
Seminar by Dr. Oliver Smithies, a Nobel Prize Winner

Dr. Oliver Smithies, who won the 2007 Nobel Prize in Physiology or Medicine “for the discoveries of principles for introducing specific gene modifications in mice by the use of embryonic stem cells,” held a seminar in the lecture hall on the first floor of the No. 6 Building of the Medical School on December 8, 2014.

As soon as Dr. Smithies began his lecture, the audience was fascinated by his speaking style with a touch of humor. He first talked about the place of his birth, Copley, explaining that there was a river called Calder in the village and that the education levels in the areas along the river were high. He noted that that was why this part of his country produced several Nobel laureates besides himself, such as John Cockcroft, Geoffrey Wilkinson, and John Walker. When he talked about research, he insisted that notebooks are superior to electronic media and explained it using the notebooks that he had used until now since he began experimenting for a degree.

During his post-doctoral period, he studied under Dr. David A Scott of Toronto University of Canada and developed a new electrophoresis method. Until then, the common practice had been to perform electrophoresis in a buffer mixed with starch powder and slice the gel into rectangles to extract and examine proteins. Dr. Smithies remembered his mother creating glue by boiling starch and came up with the idea of performing electrophoresis with a gel prepared by boiling starch and then staining the gel to visualize protein bands. He said that Edwin Southern, famous for the Southern blot, also got the idea of his invention from his childhood memory of a mimeograph machine, noting that people could be inspired by many things. Dr. Smithies advised the audience that students take up a unique subject that they find interesting for their doctor’s course in order to acquire “good scientific attitude.”

He said: “Students should start research in line with the idea of their mentor. Later, as students gain knowledge and experience gradually, they come up with their own ideas and a time comes for them to become independent. But they should keep in touch with their mentor.” Unexpected results are inevitable in research. According to Dr. Smithies, he succeeded in performing homologous recombination in cells after discovering non-homologous recombination of haptoglobin and then succeeded in creating a chimera mouse using embryonic stem cells. He said that, in this process, Dr. Martin John Evans was generous enough to give him embryonic stem cells and asserted that it is essential for scientists to “share” samples and information. He said: “The good you do for others is good you do yourself.”

Dr. Smithies flies an airplane as a hobby. He confessed that, when he flew for the first time, it was really scary. He noted that the same was true with research. Doing something new is scary, he said, but it is important for scientists to visit experts for advice and to learn from them. He concluded his lecture by showing a slide that said: “Knowledge can conquer the fear of the unknown.” The seminar, so crowded that some of the audience having to stand outside the hall, ended very successfully.
Lecture at TEDxTaipei

Takeshi Kanno (Doctor, Doctoral Course in Gastroenterology)

Dr. Takeshi Kanno, a graduate school student in Gastroenterology, was invited to TEDxTaipei, held in Taiwan on October 4 and 5, where he gave a lecture. At this year’s TEDxTaipei, held under the theme of “What matters now?” a large number of lecturers took to the platform to prompt the audience to think of the problems facing society today and thus promote the understanding of those problems.

When the Great East Japan Earthquake struck on March 11, 2011, Shizugawa public hospital at which Dr. Kanno was on duty was hit by the gigantic tsunami, but he nevertheless continued with his life-saving operations while staying with and supporting the surviving patients and evacuees before everyone was rescued by helicopter three days later. Because of his actions, he was selected as one of the Time 100 (an annual list of the 100 most influential people in the world) of the American news magazine “Time” in 2011. At TEDxTaipei, he gave a lecture entitled, “What We Have Learned from the March 11 Great East Japan Earthquake. Resilience: Power to Overcome Difficulties”, based on his experience of helping people survive despite the unexpected situation and his activities in the subsequent three and a half years.

At present, Dr. Kanno is studying the connection between psychological stress in times of disaster and peptic ulcer development at the Tohoku University Graduate School of Medicine while, at the same time, giving talks about his experiences and making efforts to prepare for disasters and enhance local healthcare.

- You can view the lecture on YouTube through the following link: http://tedxtaipei.com/talks/2014-takeshi-kanno/

Support for Science Communication

Ken Yasaka (Tohoku University S-Café Sugars)

As part of its social contribution efforts, Tohoku University opens “Tohoku University Science Cafe” once a month in the city of Sendai to provide citizens with an opportunity to participate in science communication. A group of student volunteers, S-Café Sugars, helps run this Science Cafe event. Ken Yasaka, a sixth-year student of the School of Medicine, has served as a member of S-Café Sugars for the past two years, engaging in activities to support the cafe.

On December 6, S-Café Sugars hosted “Science Cafe mini,” an event for giving presentations and holding discussions. The planning, preparation, advertisement, and site setup of the event are conducted by students alone. The 10th Science Cafe mini that day featured a 40-minute presentation on the theme of “Exploring Ways to Fight against Virus” in which information was given from the virological and public health perspectives. After the presentation, about 30 participants divided into groups enjoyed a game devised by students. Mr. Yasaka mainly contributed to the preparatory work, checking the content of the presentation for medical accuracy and preparing quizzes about viruses and infection diseases used in the game.

Mr. Yasaka said that these activities not only gave him opportunities to interact with students of other departments of the university. He felt that working with other students by utilizing one another’s knowledge and skills to create one thing gave him the kind of experience he would not have been able to obtain at school, thus broadening his perspective.
Training to Stay Fit Both Mentally and Physically with the Aim of Becoming a Doctor Helpful for Community Medicine

Daisuke Chiba (Tohoku University Sumo Club)

In 2014, Tohoku University Sumo Club made a number of remarkable achievements including the winning of the 32nd national intercollegiate sumo tournament for national and public universities and the team competition event in the 14th seven-university sumo tournament. One of the members who tremendously contributed to this impressive feat is Daisuke Chiba, a first-year student of the School of Medicine who is said to be the first medical student ever to join the sumo club.

Mr. Chiba, who was born and raised in a part of the country where sumo wrestling is very popular, took up this sport when he was an elementary school pupil. By the time he was in the third grade in junior high school, he was the captain of the school’s sumo club and won second place in the team competition event of the East Japan invitational tournament. When he was in junior high school, Mr. Chiba participated in a tournament celebrating the opening of a new sumo ring in Tohoku University where he met Ms. Makiko Uchidate, a playwright and writer, who is currently the general director of the university’s sumo club. In her essay book “February’s Snow, March’s Wind and April’s Rain Make May Even Brighter” (published by Ushio Publishing Co., Ltd.), Ms. Uchidate wrote that she sent him the university’s brochure to invite him to join the sumo club.

Mr. Chiba, who hopes to become a clinician after graduating, intends to work for his fast-aging home town community as a doctor. He sees sumo wrestling as a way to stay physically fit for his future career. While taking part in training sessions and tournaments, Mr. Chiba volunteers to support sumo tournaments and lessons that are held in the prefecture. Engaging in the local community actively through sumo, he is now on the path to becoming a doctor.

Bringing Smiles to Patients Is My Future Mission

Suzuka Iwase (Tohoku University Rakugo Club)

Suzuka Iwase, a second-year student of the School of Health Sciences, enjoyed doing stage performances in her teenage years - theatrical plays in junior high school and light music concerts in senior high school. But she had known little about Rakugo (Japanese sit-down comedy) until she entered the university. Nevertheless, when she participated in a recruiting event by the university’s Rakugo club, Ms. Iwase, talkative by nature, decided right away to join the club.

Comic stories of the Edo period constitute a large part of the repertoire of the Rakugo club. In addition to regular live performances at recruiting events, university festivals, recitals featuring classic Rakugo stories (new stories will be featured this year’s recital), graduation celebrating parties, etc., the club members give performances at many places outside the university for elderly people and children in local communities as well as for victims of the Great East Japan Earthquake living in temporary housing. Ms. Iwase has mastered Rakugo stories at a very fast pace for a member in her second year and is currently working on a seventh story. She says that, when she went on stage for the first time, her mind went almost blank. These days, she feels relaxed enough to overlook the audience and spot laughing spectators and sleeping ones. Ms. Iwase, who once got the most votes in a popularity contest in a joint recital with another university, is now leading the club as a mid-level member. Her stage name, Ainsha Tain, was given by one of the senior club members because she is studying to be a radiological technologist and has a photo of Einstein in her room. When she was a child, she had to spend some time in a hospital and it was a painful experience. She says that she hopes to utilize her vaunted conversation skills in her future career to relax patients before examinations and bring smiles to hospitalized patients at recreational events.
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|      | Simultaneous copy number losses within multiple subtelomeric regions in early-onset type2 diabetes mellitus | Professor Hideki Katagiri  
(Metabolism and Diabetes) |
|      | Reactive cysteine persulfides and S-polythiolation regulate oxidative stress and redox signaling | Professor Takaaki Akaike  
(Environmental Health Sciences) |
|      | Promotion of atherosclerosis by Helicobacter cinaedi infection that involves macrophage-driven proinflammatory responses | Professor Takaaki Akaike  
(Environmental Health Sciences) |
| May  | Leg extension power is a pre-disaster modifiable risk factor for post-traumatic stress disorder among survivors of the Great East Japan Earthquake: a retrospective cohort study | Professor Ryoichi Nagatomi  
(Medicine and Science in Sports and Exercise)  
Assistant Professor Haruki Momma  
(Graduate School of Biomedical Engineering) |
|      | Conformational Change in Transfer RNA is an Early indicator of Acute Cellular Damage | Professor Takaaki Abe  
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|      | Elevated Levels of Full-Length and Thrombin-Cleaved Osteopontin During Acute Dengue Virus Infection are Associated with Coagulation Abnormalities | Professor Toshio Hattori  
(Emerging Infectious Diseases) |
| Jul. | New BRAF knock-in mice provide a pathogenetic mechanism of developmental defects and a therapeutic approach in cardio-facio-cutaneous syndrome | Associate Professor Yoko Aoki  
(Medical Genetics) |
| Aug. | Establishment of cancer-specific monoclonal antibodies — killing cancer cells without side effects against normal cells — | Professor Yukinari Kato  
(Regional Innovation) |
|      | Low-intensity pulsed ultrasound induces angiogenesis and ameliorates left ventricular dysfunction in a porcine model of chronic myocardial ischemia | Professor Hiroaki Shimokawa  
(Internal Medicine)  
Associate Professor Kenta Ito  
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| Sep. | Timing of heart rate increase indicates laterality of seizure onset: useful tip for surgical indication of patients with temporal lobe epilepsy | Professor Nobukazu Nakasato  
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|      | Glycemic control in diabetic patients with impaired endogenous insulin secretory capacity is vulnerable after a natural disaster: Study of Great East Japan Earthquake | Professor Hideki Katagiri  
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(Tohoku University Hospital) |
|      | Insufficient Intake of L-histidine Reduces Brain Histamine and Causes Anxiety-like Behaviors in Male Mice | Professor Kazuhiro Yanai  
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The research group led by Professor Yukinari Kato, Department of Regional Innovation, established the platform to produce a cancer-specific mAb (CasMab). A newly established mAb, LpMab-2, demonstrated dual recognition of a sialylated glycopeptide of podoplanin. LpMab-2 reacted with podoplanin-expressing cancer cells, but not with normal cells, indicating that LpMab-2 is an anti-podoplanin CasMab without side effects. These findings are presented in Scientific Reports, published on October 1st.

Podoplanin, a platelet aggregation-inducing sialoglycoprotein, is expressed in many cancers including squamous cell carcinomas, malignant brain tumors, malignant mesotheliomas, and testicular tumors, indicating that podoplanin is an ideal protein for molecular targeting therapy. Targeting podoplanin, however, may lead to severe side effects because several physiological functions of podoplanin have been reported recently. Here, his group established anti-podoplanin CasMabs for killing cancer cells without side effects against normal cells. A newly established CasMab, LpMab-2, reacted with podoplanin-expressing cancer cells, but not with normal cells in immunohistochemistry. Therefore, LpMab-2 is a CasMab that is expected to be useful for molecular targeting therapy against podoplanin without side effects such as respiratory failure, renal failure, or lymphatic edema.
Timing of heart rate increase indicates laterality of seizure onset: useful tip for surgical indication of patients with temporal lobe epilepsy

Lecturer Kazutaka Jin, Professor Nobukazu Nakasato, and Professor Masashi Aoki's research group at Department of Epileptology and Neurology reported that onset time of heart rate increase was significantly earlier in right than left seizures in patients with temporal lobe epilepsy showing abnormal hippocampus. The results of this research were published in American Academy of Neurology’s official journal, Neurology, on October 7th.

Patients with temporal lobe epilepsy could be candidates of resective surgery of temporal lobe, if their seizures were drug-resistant. Seizure lateralization has been determined based on seizure semiology and electroencephalographic findings. However, it was often difficult to determine, and simple and precise examination has been needed to add these conventional methods. The aim of the present study was to clarify the difference of ictal heart rate changes between left and right temporal lobe epilepsy from the data analyses of long-term video EEG monitoring in Tohoku University Hospital. In this study, heart rate increase started earlier than EEG onset in right temporal seizures, whereas it started later than EEG onset in left temporal seizures.

Timing of heart rate increase can be a useful lateralizing sign of temporal seizures. This result supports previous hypotheses that the right cerebral hemisphere is dominant in the sympathetic network. Furthermore, it may be useful for early seizure detection as well as precise presurgical evaluation.

Figure legend:
Propagation pathway of seizure activity from right and left temporal lobe to heart.
Seizures arising from right temporal lobe make a direct effect on sinus node, pacemaker of heart, which results in earlier onset of heart rate increase. On the other hand, seizures arising from left temporal lobe first propagate to right temporal lobe, and then activate sinus node, which makes delayed onset of heart rate increase.
A research group led by Professor Hideki Katagiri (Medical Biochemistry) and Lecturer Junta Imai (Tohoku University Hospital, Department of Diabetes and Metabolism) has shown that post-disaster glycemic control to be particularly vulnerable to deterioration in diabetic patients with lower insulin secretion capacity, and that fasting serum C-peptide levels are the potential biological marker allowing highly disaster-vulnerable diabetic patients to be identified before a disaster occurs. These findings are presented in Diabetes Care, published on September.

In March 2011, the Tohoku district of Japan suffered the Great East Japan Earthquake. When treating numerous diabetic outpatients affected by this earthquake, we noticed that post-disaster glycemic control alterations varied among patients. Therefore, we speculated that predicting those diabetic patients whose glycemic control is vulnerable to an extreme situation such as a huge natural disaster is important for allocating limited medical resources effectively in times of great need.

We collected data on several metabolic parameters of 497 diabetic patients who had been followed at hospitals located in the devastated areas.

First, we divided the 497 diabetic outpatients into two groups, i.e., the improved and worsened glycemic control groups, based on HbA1c changes, and compared all examined parameters. Among these parameters, notably, fasting C-peptide levels alone were significantly lower in the worsened than in the improved glycemic control group.

Based on these results, we classified 130 subjects, into high, intermediate and low C-peptide groups according to a previous study. Analysis of covariance revealed that, after the earthquake, low C-peptide group showed greater deterioration of glycemic control than the high C-peptide group (Figure). Furthermore, trend analysis showed a clear correlation between lower fasting serum C-peptide levels and worsening of glycemic control (Figure).

Thus, fasting serum C-peptide levels are the first potential biological marker allowing highly disaster-vulnerable diabetic patients to be identified before a disaster occurs. Therefore, we recommend that physicians measure serum C-peptide levels under normal conditions and provide potentially disaster-vulnerable patients with effective information regarding post-disaster management in advance.
We produced a prototype real-time dosimeter that uses nontoxic phosphor for interventional radiology (IR) patients.

Although many patients benefit greatly from IR procedures, radiation-induced injuries have been reported in patients following IR procedures. Therefore, real-time monitoring of individual radiation doses is important to avoid such injuries. However, there is currently no feasible real-time patient dosimeter available for IR.

Although skin dose monitors (SDMs) were previously used for this purpose, SDMs were discontinued because they contained zinc-cadmium phosphor, a toxic substance.

A patient skin dosimeter (PSD) can also accurately measure radiation doses to the skin in real-time. However, the PSD sensor and cable are clearly visible on radiographic images, and thus severely impede the IR procedure.

Therefore, new technologies that enable real-time monitoring of the radiation doses received by IR patients are necessary.

The prototype real-time dosimeter consists of photoluminescence sensors (nontoxic phosphor, maximum four sensors), an optical fiber cable, a photodiode, and a digital display that includes the power supply. Our previous research found that Y$_2$O$_2$S:Eu,Sm is a suitable red-emission phosphor that is nontoxic and exhibits relatively high sensitivity. (Nakamura, Chida, et al. Med Phys 2014).

Like the SDM, the new dosimeter cable is not radiopaque on fluoroscopic images. The basic characteristics of the prototype real-time dosimeter are comparable to those of the previously used SDM. The novel real-time dosimeter can be equipped with multichannel sensors (maximum four sensors), whereas the SDM had only a single sensor. The multichannel sensors are one of the major advantages of the novel dosimeter because real-time patient dose measurements are available from four sensors simultaneously, enabling an accurate detection of the maximum radiation skin dose.

Therefore, we suggest that our prototype real-time dosimeter is superior to the SDM for measuring the radiation exposure dose to the skin during IR.

Fig. 1. New real-time patient radiation dosimeter (multichannel sensors).
Real-time dose measurements from up to four sensors are available simultaneously (two sensors shown).
Hematopoietic stem cells give rise to diverse types of blood cells through multiple stages of progenitors. A network of transcription factors (gene regulatory network, GRN) activates a cohort of genes, determining the choice of cell fate. According to the theory of “myeloid-based model” of hematopoiesis, each progenitor cell retains a potential to become myeloid cell irrespective of its final destination. Therefore, myeloid GRN and the other GRNs may compete with each other in progenitor cells. However, little has been known for the competitive interaction of myeloid GRN and that of B cells.

Mature lymphoid cells express the transcriptional repressor Bach2, which imposes regulation humoral and cellular immunity. While Bach1 is closely related to Bach2 in term of structure, its role in B cell development and hematopoiesis is largely unclear.

To examine whether Bach1 and Bach2 redundantly function in early B cell development, we generated Bach1- and Bach2-double deficient (Bach1−/−Bach2−/−) mice. We found a significant reduction in the total number of B220-positive B cells in the bone marrow of Bach1−/−Bach2−/− mice as compared to that observed in the bone marrow of WT, Bach1−/− or Bach2−/− mice. Overexpression of Bach2 and Bach1 in Ebf1−/− cells (pre-pro-B like cells) and single cell PCR analysis of CLPs revealed that Bach2 and Bach1 repressed the expression of genes important for myeloid cells (myeloid genes). Bach2 and Bach1 bound to presumptive regulatory regions of the myeloid genes. To elucidate the physiological relevance of Bach2 in CLPs, we used Bach2 reporter mice. We found that Bach2high CLPs showed rapid differentiation to pre-B cells and showed resistance to myeloid differentiation compared with Bach2low CLPs. Our results suggest that Bach2 functions with Bach1 to promote B cell development by repressing myeloid GRN in CLPs.

There have been many reports describing association of BACH2 gene polymorphism with immune diseases such as rheumatoid arthritis and Chron’s disease. Mutations of BACH2 gene have also been reported for leukemia and lymphoma. Our findings on the bifurcation of B cell and myeloid cell regulated by Bach2 will open new research opportunities to address molecular mechanisms of such diseases related to the immune system.
Research by Dr. Shinya Ohkouchi, the division of Respiratory Medicine and Occupational Health and his colleague has shown that protein hormone STC1 reduce endothelium reticulum stress (ER-stress) pulmonary fibrosis in Bleomycin-induced fibrosis mice. They published their work in Molecular Therapy on Dec 8th 2014. The incidence of idiopathic pulmonary fibrosis (IPF) occupies half of patients of idiopathic interstitial pneumonias (IIPs) and there is no effective therapy to improve prognosis of IPF, therefore the development of new promising therapies is required for patients. The first event of IPF pathogenesis is the damage of alveolar epithelial cells (AECs). Inappropriate repair of injuries induces endothelium reticulum (ER) stress in AECs. Continuous ER-stress changes the secretary status of AECs and increase the synthesis, and secretion of pro-fibrotic humoral factors including TGF-beta 1 from AECs [1]. TGF-beta 1 promotes the change from fibroblasts to myofibroblasts which is essential for the formation of fibrosis [2]. Recent studies show that Mesenchymal stem cells (MSCs) ameliorate fibrosis in bleomycin inhalation mice (IPF model mice) [3]. MSCs can reduce ER-stress of cells in microenvironment under harmful conditions however that mechanism is still unknown. In previous studies, we showed that MSCs secrete STC1 in a paracrine fashion under stress conditions, which improves the cell survival through the up-regulation of uncoupling protein 2 (UCP2) [4, 5]. In this study, we hypothesized and proved that STC1 derived from MSCs can reduce ER-stress and continuous TGF-beta 1 secretion from AECs through up-regulating UCP2. In conclusion, STC1 can reduce of fibrosis in lung in bleomycin inhalation mice through this mechanism (figure). Our results suggest STC1 inhalation therapy could become promising treatments for IPF.

References
Spring Conferment of Decorations The Order of the Sacred Treasure, Gold Rays with Neck Ribbon Is Given

Professor Emeritus Norio Taira (Molecular Pharmacology)

In the 2014 Spring Conferment of Decorations, Norio Taira, MD, PhD, professor emeritus, was awarded the Order of the Sacred Treasure, Gold Rays with Neck Ribbon. Norio Taira (who graduated in 1956) has been committed to education and research in pharmacology at the Tohoku University School of Medicine, has served as the Dean of the School of Medicine for two terms, has worked on the administrative operation and expansion of various institutions as a professor of the National Institution for Academic Degrees and University Evaluation of the Ministry of Education, Science, Sports and Culture, and has acted as a leader of the Japanese Pharmacological Society and of committees related to scientific administration. He has also been active in efforts ranging from the development of new medicines (such as calcium antagonists and potassium channel openers) to the spread of new treatments. He has made tremendous contributions worldwide to education and research in various fields of medicine and pharmaceutical science, as well as the development of medical welfare.

The Commendation for Science and Technology by the Minister of Education, Culture, Sports, Science and Technology 2014

Prizes for Science and Technology, Research Category

The clinical picture and the genetics of Moyamoya disease: Identification of the susceptibility gene RNF213.
Professor Shigeo Kure (Pediatrics) (Photo: Top Left)
Professor Teiji Tominaga (Neurosurgery) (Photo: Top Right)

Discovery of the Inter-organ Metabolic Information System
Professor Hideki Katagiri (Metabolism and Diabetes) (Photo: Middle Left)

Prizes for Science and Technology, Public Understanding Promotion Category

The community health support and the developmental enlightenment of the long-term health survey in the sparsely and disaster area
Professor Hideyasu Kiyomoto (Integrated Nephrology and Telemedicine) (Photo: Middle Right)

Prizes for Science and Technology, Development Category

Development of low-energy extracorporeal cardiac shock wave therapy for ischemic heart disease.
Professor Hiroaki Shimokawa (Cardiovascular Medicine) (Photo: bottom Right)
Associate Professor Kenta Ito (Innovative Cardiovascular Medicine) (Photo: bottom Left)
Reception of the American Heart Association Arthur C. Corcoran Memorial Lecturer Award

Professor Sadayoshi Ito (Nephrology Endocrinology and Vascular Medicine)

Professor Sadayoshi Ito, an expert on the kidney, hypertension, and endocrinology, received the Arthur C. Corcoran Memorial Lecturer Award at the High Blood Pressure Research Conference of the American Heart Association. He delivered a commemorative speech at the Council for High Blood Pressure Research held by the American Heart Association on September 10.

The American Heart Association is the world’s largest prestigious medical society dedicated to cardiovascular, renovascular, and cerebrovascular diseases. This award is given every year to researchers who have made outstanding achievements and contributions in the field of high blood pressure research. Dr. Corcoran (1909-1965) established a method of physiologically measuring the kidney functions such as the renal blood flow and glomerular filtration rate, thus contributing to the discovery of the mechanism of hypertension development through the kidney and endocrine secretion. The Arthur C. Corcoran Memorial Lecturer Award was created in 1977 to commemorate his remarkable accomplishment.

The award was presented to Professor Ito in recognition of his long years of commitment to the discovery of the mechanism of hemodynamics of the glomerulus and contribution to clinical research on high blood pressure. He is the third Japanese researcher to earn this award. Among the past award winners are distinguished researchers including Dr. Michael S. Brown, who was given the Nobel Prize in Physiology or Medicine two years after receiving the Arthur C.

Reception of the William Harvey Lecture Award

Professor Hiroaki Shimokawa (Cardiovascular Medicine)

At the European Society of Cardiology Congress (held from August 31 to September 3, 2014, in Barcelona, Spain), Professor Hiroaki Shimokawa, a leading researcher in the field of cardiovascular medicine, received the William Harvey Lecture Award.

The European Society of Cardiology (ESC) is the world’s largest society of cardiology with a membership of some 80,000. Circulation societies in 94 countries and regions around the world, including the Japanese Circulation Society, belong to the ESC.

The ESC gives an award to an outstanding researcher in each of the four fields of basic research, clinical research, epidemiology research, and intervention research every year. The Williams Harvey Lecture Award, which is presented to a researcher in the field of basic research, is a very prestigious award named after William Harvey (1578-1657), an English physician who discovered the circulation of blood.

Professor Shimokawa has been engaged for many years in basic and clinical research on coronary artery spasm considered to be a key factor causing ischemic heart disease. He is the first researcher in the world to discover that the molecular mechanism of coronary spasm derives from the increased activity of Rho-kinase, which serves as the molecular switch for vascular smooth muscle contraction. He also revealed that this mechanism is deeply involved in the pathogenesis of arteriosclerotic cardiovascular diseases, which has led to the ongoing worldwide efforts to develop a selective Rho-kinase inhibitor. Professor Shimokawa received the award, for the first time as a Japanese researcher, for his continuous achievements in basic and clinical research such as those mentioned here.
AWARDS

Winner of the Fifth JSPS Ikushi Prize of the Japan Society for the Promotion of Science

Kyohei Nakamura (4th year doctoral student, Graduate School of Medicine)

Kyohei Nakamura, a 4th year doctoral student at the time of nomination and now a staff member of the Department of Hematology and Rheumatology, received the Fifth JSPS Ikushi Prize from the Japan Society for the Promotion of Science (for fiscal 2014). The Japan Society for the Promotion of Science received a donation from the current emperor in November 2009, which marked the 20th anniversary of the emperor’s accession to the imperial throne, as a fund to support and encourage young researchers devoted to study and research in a tough socioeconomic environment. In response to the emperor’s intent, the organization launched the JSPS Ikushi Prize in 2010 to commend competent Graduate School Ph.D. students expected to contribute to the development of our country’s academic research in the future so as to encourage their willingness to study and research and nurture young researchers. Those eligible to receive the prize are graduate students in the areas of humane studies, social science, and natural science who have excellent academic records at the graduate school along with decent human qualities and who are committed to study and research activities actively and spontaneously.

On the winning of the prize, He said: "It is a tremendous honor to receive the Fifth JSPS Ikushi Prize. Receiving the prize has not only given me a great deal of joy but also made me feel the weight of responsibility. I am going to stay committed to my research with high aspirations in mind. And I would like to thank from the bottom of my heart the great mentors who have guided me all along."

Japan Student Services Organization’s Student of the Year Awards

On November 14, the Japan Student Services Organization (JASSO) announced the winners of the 2014 Student of the Year awards. This year, two students of the Tohoku University School of Medicine were awarded.

[Grand Prize/Culture and Art]
Hiromi Kumagai (6th year medical student, School of Medicine)
[Preventive medicine] She has been engaged in a forward-looking cohort study on the relation between the dietary pattern and the risk of colorectal cancer. It has been found that the greater the degree of the DFA pattern (high dairy consumption, high vegetable consumption, and low alcohol consumption) is, the lower the risk of colorectal cancer becomes. Her paper was published in an international academic journal and presented at an academic meeting in Japan.

[Encouragement Prize/Culture and Art]
Noriko Hashida (3rd year medical student, School of Medicine)
[Molecular robotics] She participated in the International Bio-molecular Design Competition in 2012 and 2013. Her team won the Grand Prize in 2012 with a drug delivery system using liposome. In 2013, they finished third with a liposome collapsing system using external stimulus. As the representative of the team, she gave the presentation in English.
<table>
<thead>
<tr>
<th>Year</th>
<th>Month</th>
<th>Awards</th>
<th>Name</th>
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<tbody>
<tr>
<td>2014</td>
<td>Jun.</td>
<td>Society of Nuclear Medicine and Molecular Imaging 2014 Image of the year</td>
<td>Associate Professor Nobuyuki Okamura (Pharmacology)</td>
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<td>Master21 Foundation Prize</td>
<td>Asuka Baba (4th year medical student, School of Medicine)</td>
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<td>Sep.</td>
<td>International Commission on Occupational Health: Work Organisations and Psychosocial Factors 2014 Congress BEST POSTER AWARD (STUDENT)</td>
<td>Yuya Shimojo (Doctoral Course in Nursing Education and Administration)</td>
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<td></td>
<td>Oct.</td>
<td>Society for the Study of Palliative Medicine in Tohoku, Encouragement award</td>
<td>Group of Lecturer Fumiko Kikuchi (Adult Health Nursing)</td>
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<td></td>
<td>Nov.</td>
<td>The 5th JAPAN GUT FORUM, Special prize for encouragement</td>
<td>Chinami Sugai (Doctoral Course in Adult Health Nursing)</td>
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<td>Japan Medical Association, Medical Research Encouragement award</td>
<td>Professor Toru Nakazawa (Ophthalmology and Visual Science)</td>
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<td>The 7th Meeting of Pan-Asian Committee for Treatment and Research in Multiple Sclerosis, Investigator Award</td>
<td>Assistant Professor Douglas Sato (Multiple Sclerosis Therapeutics)</td>
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<td>The 8th Meeting of Pan-Asian Committee for Treatment and Research in Multiple Sclerosis, Best Poster Award</td>
<td>Doctor Yoshiki Takai (Neurology)</td>
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<td>The 73th Annual Meeting of Japanese Society of Public Health, Outstanding Presentation Award</td>
<td>Assistant Professor Yasutake Tomata (Epidemiology)</td>
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<td>Society for Free Radical Research, Society Award 2014</td>
<td>Professor Takaaki Akaike (Environmental Health Sciences and Molecular Toxicology)</td>
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<td></td>
<td>Dec.</td>
<td>The 46th Physiological symposium in Tohoku, District Award</td>
<td>Asuka Baba (4th year medical student, School of Medicine)</td>
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<td>The 47th Physiological symposium in Tohoku, District Award</td>
<td>Akitaka Sasagawa (4th year medical student, School of Medicine)</td>
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<td>RSNA 2014 Award &quot;CERTIFICATE of MERIT&quot;</td>
<td>Toshiki Saitou (Doctoral Course in Medical Imaging and Applied Radiology)</td>
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<td>RSNA 2014 Award &quot;CERTIFICATE of MERIT&quot;</td>
<td>Professor Koichi Chida (Disaster Medical Radiology)</td>
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<td></td>
<td>The 27th Annual Meeting of the Japanese Society for Therapeutic Radiology and Oncology, Outstanding Presentation Award</td>
<td>Yoshihiro Haga (Doctoral Course in Radiological Examination and Technology)</td>
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<td>2015</td>
<td>Jan.</td>
<td>The 120th Annual Meeting of The Japanese Association of Anatomists and The 92nd Annual Meeting of The Physiological Society of Japan, Outstanding Presentation Award</td>
<td>Noriyoshi Takahashi (Doctoral Course in Radiation Oncology)</td>
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<td></td>
<td>Mar.</td>
<td>Japanese Society for Bacteriology, Asakawa Award</td>
<td>Asuka Baba (4th year medical student, School of Medicine)</td>
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<td>Professor Takaaki Akaike (Environmental Health Sciences)</td>
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The next thing I did was to promote internationalization in earnest based on one of the key strategies of the Tohoku University vision for "the establishment of a global educational environment." The NIH of the U.S. is the world’s largest medical research institution, and the lab where I studied 30 years ago is still active in cancer research. According to the NIH, it was unprecedented for the organization to hold a joint symposium outside the U.S. But the NIH was the first overseas research institution to offer a helping hand after the Great East Japan Earthquake. Strengthening collaboration with the NIH had been a dream I had cherished as a researcher, and I felt it was a mission that I should accomplish as the Dean of the Graduate School of Medicine. Seeing this dream come true filled me with deep emotions. Also, I think that co-hosting a symposium with the NIH helped drive it home that we have significantly recovered from the disaster and made a leap forward to become a world-class research institution.

I believe that, by continuing to hold international symposia for fostering young researchers and by producing world-class human resources, the Graduate School of Medicine will develop further.

Having served two terms over a three-year period, I am now leaving the position of Dean of the Graduate School of Medicine. I have addressed a number of challenges during my tenure, and I am grateful for the support that people offered me as I tackled those challenges one by one. I hope that Tohoku University will continue to attract many students and young researchers and provide even more opportunities for education and research activities.

Tohoku University is now receiving attention both at home and abroad. The School of Medicine and the Graduate School of Medicine must play a pivotal role for the university to keep this momentum going. My hope is that people at these schools will continue to make steady progress with the future of Japan and the world in mind.
ACCESS

Seiryo Campus

Access from JR Sendai Station

▶ Sendai City Buses
Sendai Station West Exit Bus Pool: Take a Sendai City Bus at bus stop #10 or #15.
Buses for Daigaku Byoin keiyu: about 20 minutes
North of the Daigaku Byoin-mae bus stop

▶ Sendai Subway
Take the subway bound for Izumi Chuo and get off at Kita-yoban-cho Station (about 5 minutes). From North 2 Exit the campus is a 15-minute walk to west.

▶ Taxi
About 10 minutes from the JR Sendai Station.

Cover Photo

The cover photo is one taken from the 2014 Yearbook of the School of Medicine. In the SGT training (tertiary clinical medicine training), which fifth-year students of the School of Medicine receive, trainees spend several weeks on each department in groups of seven or so over a one-year period. Group members receive the training together every day and become peers through friendly competition. The building behind us is the No. 6 building of the School of Medicine completed last summer.

Yearbook staff
Ms. Aiko Nishimura, a sixth-year student of the School of Medicine (third person from right)

Members of the yearbook staff who have worked devotedly for about a year to produce a yearbook.

Title and affiliation in the articles are those at the time of interviews.