

# **SingHealth and Duke NUS**

## **— Dementia Study Tour 2025—**

### **to Tohoku University and Tohoku University Hospital**

From July 7 to 11, 2025, a medical team of seven members from SingHealth and Duke NUS, leading comprehensive hospitals and universities in Singapore, visited Tohoku University and Tohoku University Hospital for a study tour. This tour was conducted by a multidisciplinary team consisting of five physicians from various fields, including neurology, geriatrics, psychiatry, and family medicine, one nurse, and one psychologist, to learn about the Japanese clinical system related to dementia and associated research.

As is the case in Japan, dementia is a condition that cannot be fully addressed through hospital-based medical care alone. It is also essential to consider care that supports patients' lives in their communities and to adopt a perspective that takes into account the overall health of the elderly population. Additionally, medical research to overcome or prevent dementia, which is a challenging disease, is crucial. Building organizations to support and advance such research and return its benefits to society is also indispensable. Japan is the world's longest-living nation and faces an aging population, making it one of the first countries to implement medical and social structural reforms to address these challenges. The Singapore team sought to learn from Japan's experiences in dementia care, support systems, and research through this study tour.

Furthermore, Tohoku University and Tohoku University Hospital were recognized as "University for International Research Excellence" in November 2024 for their world-leading research. In 2025, Tohoku University Hospital reorganized its International Medical Center. All aspects of dementia should be approached with an international perspective, aiming for global health and well-being. Tohoku University and Tohoku University Hospital are at the forefront of this trend. We are grateful to have been selected as a study tour destination by the Singapore team and have planned this tour to provide a multifaceted learning experience on dementia, involving numerous laboratories, departments, researchers, and staff.

July 7 (Monday)

**Shichigahama Town** in Miyagi Prefecture has been collaborating with the Tohoku University Medical Biobank Organization on a health promotion project since the 2011 Great East Japan Earthquake. Under the guidance of Professor Hiroaki Tomita (currently at the Department of Psychiatry and Neurology, Graduate School of Medicine, Tohoku University), who has been involved in mental health counseling services for the town's residents since the disaster, the first day of the study tour program began with the cooperation of the town mayor, Mr. Kaoru Terasawa, and other town officials and residents.



Picture: Upon arriving at Shichigahama International Village, we were welcomed by Mayor Terasawa and town officials.



Picture: Commemorative photo with members of the study tour from Singapore. Fourth from the right is Kaoru Terasawa, the mayor of Shichigahama Town; third from the right is Associate Professor Miharū Nakanishi; and third from the left is Professor Hiroaki Tomita.

Shichigahama Town received significant support from the Singapore Red Cross for the reconstruction of a childcare center damaged by the 2011 tsunami, and in 2016, Singapore's President Tan visited the rebuilt childcare center. As a result, Shichigahama Town gladly accepted the request from the Singapore Study Tour.

From Shichigahama Town, Mr. Inada from the Health and Welfare Division and Ms. Sonoyama from the Long-Life Society Division gave lectures on the town's characteristics and the health of its residents. In addition, Professor Hiroaki Tomita from the Department of Psychiatry at Tohoku University Graduate School of Medicine gave a lecture on "Public Mental Health after the Great East Japan Earthquake," and Associate Professor Miharū Nakanishi from the Department of Psychiatric Nursing at Tohoku University School of Medicine gave a lecture on "The Long-Term Care Insurance System." Both lectures were based on Japan's unique circumstances and those of this region, and the participants from Singapore asked many questions about Japan's system for supporting and caring for the health of its citizens, including those with dementia.



Picture: From left, in front of the flags of Japan, Singapore, and Shichigahama Town, presentation of commemorative gifts from the study tour. Second from the left is Ms. Sonoyama, a public health nurse from Shichigahama Town; third is Mr. Inada from the Health and Welfare Division, who created the study tour program; fourth is Dr. Laura Tay, the study tour leader; fifth is Iseki; and the two individuals on either side are coordinators for international relations who served as interpreters and were instrumental in facilitating the event.

Japan has a unique system called the Long-Term Care Insurance System. Within this framework, there is a program called "Long-Term Care Prevention Services" aimed at preventing the need for long-term care. This time, we had the opportunity to observe a fitness class for health promotion in the Yogai district of Shichigahama Town. Under the guidance of an instructor, dozens of elderly residents from the area participated in a variety of exercises set to music for two hours. Using



chairs, balls, and other equipment, the exercises were designed to allow each participant to perform them safely, taking into account individual differences. Emphasis was placed on movements that target the hip joints, which are often neglected in daily life. The class also included original exercises developed by Shichigahama Town, and participants from Singapore joined in as well. While attending this class is a wonderful experience for the participants, there is a challenge in that many residents, particularly men, are reluctant to participate, leading to a lack of exercise. Similar issues regarding non-participation have been reported in Singapore. Dementia, both physical and cognitive functions weaken, so it is essential to promote comprehensive health in the community both before and after the onset of dementia. These issues were discussed during a question-and-answer session between the Singaporean participants and town staff. We appreciate the residents who participated in the exercise class and the town staff.



Photo: A scene from an exercise class, one of the preventive care programs in Yogai area, Shichigahama Town

Shichigahama Town boasts an excellent facility called "Shichigahama International Village." This facility is located in a blessed natural environment of sea and hills, and it also has a history of international exchange as the first place in Japan where a resort for foreigners was established. Taking advantage of this, on July 7, we were able to hold an exchange event at Shichigahama International Village with the kind assistance of two coordinators for international relations. We were blessed with clear weather, and the view from the international village, overlooking the beach and sky, was breathtaking. This provided a far more memorable experience than visiting the typical tourist spots.



Photo: View of the Pacific Ocean from the hall in Shichigahama International Village



Photo: Tour of the Shichigahama International Village facilities





Photo: Singapore team members at Shichigahama International Village



Photo: Commemorative photo at Shichigahama International Village Hall

July 8 (Tuesday)

## **Meeting with Professor Naoto Ishii, Dean of the Graduate School of Medicine and the School of Medicine, Tohoku University**

The Singapore team mentioned that their visit to the elderly care program in Shichigahama Town, Miyagi Prefecture, revealed universal challenges common to Singapore in preventing social isolation. Participants expressed interest in the system built and collaborated with Tohoku University, as a core institution in the region. They are interested in the active involvement of Tohoku University in initiatives.



Photo: Commemorative photo with Professor Naoto Ishii (second person from the right in the front row)

July 8 (Tuesday)

**Meeting with Professor Hideo Harigae, Hospital Director of Tohoku University Hospital; Professor Yukio Katori, Director of the International Medical Center at Tohoku University Hospital; and Professor Atsuhiro Nakagawa, Design Head of the Experience Design & Alliance Office (EDAS-TUH) at Tohoku University Hospital**

A meeting with the Singapore team was held at the Open Bed Lab (a problem-solving research and development demonstration field) of Tohoku University Hospital. Professor Harigae and Professor Katori expressed their welcome to the visit to Tohoku University Hospital, followed by an introduction to the hospital's system, which aims to address various medical issues in a socially and practically meaningful way while striving to remain open on an international level. Professor Nakagawa discussed the various initiatives being undertaken by medical institutions. These initiatives aim to serve as a platform for creating businesses that combine problem-solving and economic scale. The goal is to address the mismatch caused by the declining working-age population and the increasing diversity of issues arising from an aging society. A participant commented that bio-design is precisely what is needed in Singapore, which is also facing an aging urban society, to achieve healthy lives for all.



Photo: Commemorative photo with seven visitors from Singapore at the Open Bed Lab. From right: Professor Atsuhiro Nakagawa, Professor Yukio Katori, Professor Hideo Harigae, Mr. Wilbur Koh, tour leader, Dr. Laura Tay, Dr. Adeline Ng, Dr. Sinead Wang Zhen, Dr. Vanessa Mok, Ms. Janis Tye, Dr. Simon Ting, and Chifumi Iseki.





Photo: Exchange of opinions between Professor Nakagawa and visitors from Singapore



Photo: Exchange of opinions with Hospital Director Hideo Harigae and Deputy Hospital Director Yukio Katori

July 8 (Tuesday)

## **Professor Atsushi Hozawa and Professor Shunji Mugikura The Tohoku University Tohoku Medical Megabank Organization (ToMMo)**

The Tohoku University Tohoku Medical Megabank Organization (ToMMo) was established with the aim of rebuilding regional medical care and supporting the health of people in the areas affected by the Great East Japan Earthquake on March 11, 2011. To date, over 150,000 residents have participated in this project, which is one of the largest Japanese biobanks (a repository of medical and genomic information). Recently, Singapore has also established a national biobank, and there was particularly high interest among tour participants in advance. Professor Hozawa provided an overview of the organization and answered questions from Singaporean participants regarding recruitment methods for biobank registration and the continuation of research. Dr. Mugikura presented large-scale data on brain MRI and cognitive function, providing vital medical information for biobanks, which sparked discussions with participants who sought to learn about dementia from various perspectives. The participants were given a tour of the Medical Biobank Building, including the examination rooms for a health checkup and brain MRIs.



Photo: During the exchange of opinions with visitors from Singapore regarding the Tohoku University Tohoku Medical Megabank Organization (ToMMo), questions were also raised about the three-generation cohort.



Photo: Information on the ToMMo Building was explained by Prof. Hozawa



Photo: Explanation from Prof. Mugikura regarding brain MRI examinations in health checkups



July 8 (Tuesday)

## Department of Behavioral Neurology and Cognitive Neuroscience, Tohoku University Graduate School of Medicine

The staff of this department, which also offers courses in neuropsychology, behavioral neuroscience, and clinical medicine for dementia, gave a lecture on organizing the symptomatology and disease knowledge necessary for examining and caring for patients with dementia.

### Assistant Professor Kazuo Kakinuma

Regarding language symptoms, which are considered difficult to diagnose, participants shared recordings of patients' speech and writing provided by Dr. Kakinuma and learned how to interpret these symptoms. Since language symptoms significantly impact the forms of communication, participants, including nurses and family physicians, expressed interest in the topic. By comparing the lecture content with their own experiences with patients, participants were able to engage in deeper reflection on language symptoms.



Photo: The lecture by Dr. Kakinuma

### Lecturer Chifumi Iseki

A lecture was given on "idiopathic normal pressure hydrocephalus (Hakim's disease)," a disease classified as dementia but one for which physicians are not particularly experienced in treating, even on an international scale. The lecture covered imaging diagnosis, epidemiology, and key treatment points based on long-term community-based cohort studies. Participants from Singapore raised the issue that the prevalence of imaging diagnosis is likely lower in Singapore than in Japan. Mr. Hirotaka Ito of Fujifilm also introduced image analysis technologies by AI for the automatic analysis of Hakim disease images (Yamada S et al., 2024), which drew the attention of the participants.



Photo: The lecture by Dr. Iseki

July 9 (Wednesday)

## Smart-Aging Research Center

### Professor Yasuyuki Taki

Professor Yasuyuki Taki presented the status of brain screening with MRI in Japan, along with an overview of the laboratory's research. As brain checkups outside of a hospital are not routine in Singapore, a comprehensive discussion and exchange of opinions took place regarding participant recruitment and the potential effects and impacts that can be expected. Furthermore, Singapore team visited the laboratory's MRI facilities and showed a strong interest in expanding the use of MRI beyond its current clinical applications.



Photo: The lecture by Prof. Yasuyuki Taki

### Assistant Professor Keishi Soga

Under the theme of "smart aging," he aims to create new social value through collaboration between industry and academia. Specifically, lectures were given on research conducted at the Smart-Aging Research Center on "the relationship between diet, nutrition, hydration, and the gut and their impact on the brain" and "the effects of music and digital technology on the brain." Currently, in collaboration with a startup company originating from this laboratory, he is also working on integrating exercise and IoT devices, which has attracted significant interest in both the support system and research content. During a facility tour of the laboratory, which includes a music classroom, participants asked many questions about how the facility is operated.





Photo: The lecture by Dr. Soga

In addition, during the tour of the laboratory facilities, we were greatly assisted by **Drs. Michio Takahashi and Takuji Kawamura** of the Smart-Aging Research Center provided guidance and participated in the exchange of opinions.

## Tour of Outpatient and Inpatient Services at the Department of Aging Research and Geriatric Medicine, Tohoku University Hospital

Guided by **Dr. Hae Woon Baek**, the Singapore team observed outpatient and inpatient services in the Department of Aging Research and Geriatric Medicine, where they observed actual patient interviews and examinations. Particularly, since the new anti-amyloid  $\beta$  antibody drug with novel mechanisms, which has been administered in Japan since 2024, became available in Singapore around June 2025, participants raised many practical questions about the drug's efficacy, how to explain about the choices of treatment to patients and their families, how to confirm patients' willingness to continue treatment, leading to active discussions. They also observed the actual procedure for administering the drug via intravenous infusion.

During the ward tour of the same department, general questions about inpatient care in Japan were raised. Participants also asked questions about the Japanese medical education system and student life at Tohoku University, where the medical students who accompanied them on the tour were.



Photo: Observation of outpatient treatment by Dr. Baek

## Associate Professor Taizen Nakase

Dr. Taizen Nakase provided an explanation on the use of anti-amyloid  $\beta$  antibody drugs in the Department of Aging Research and Geriatric Medicine, including patient education, drug prices, and treatment efficacy. Active discussions were held with the Singapore team, who plan to use this drug for the first time.



Photo: Lecture by Dr. Taizen Nakase



Photo: Participants from Singapore and students of Tohoku University School of Medicine gathered around Dr. Taizen Nakase



## **Assistant Professor Toshimi Ogawa**

Research aimed at solving problems associated with Japan's aging population and nuclear family structure was introduced. In particular, it was noted that half of the elderly population does not engage in social activities, indicating a lack of social participation. Dr. Ogawa and her team have launched an international research project called the Japan-Europe Joint Virtual Coaching System (e-ViTA, EU-Japan VIRTUAL COACH FOR SMART AGEING), which aims to promote smart aging. They are conducting pilot experiments using robots and IoT to encourage the elderly to participate in their local communities. During the event, participants who are interested in caring for people with dementia and the elderly in their communities engaged in a question-and-answer session with Dr. Ogawa.



Photo: Lecture and discussion with Dr. Ogawa and Dr. Du

## **Assistant Professor Yegang Du**

His development of a robot to support social participation for older people was introduced. This unique dharma-shaped robot supports daily life by providing information tailored to the user's interests and preferences. Participants from Singapore engaged in lively discussions on challenges for social implementation and designs for collaboration with local communities and companies.



Photo: Lecture by Dr. Du

## **Lecturer Yasuko Tatewaki**

## **Assistant Professor Benjamin Thyreau**

Research on human brain image analysis centered on magnetic resonance imaging (MRI) was introduced. To date, the laboratory has developed various software tools, including deep learning algorithms based on brain images from over 2,000 individuals, enabling the estimation of volume changes in the hippocampus and gray matter, as well as the detection of microbleeds. Currently, the laboratory is developing new measurement methods for dementia-related diseases, which drew significant interest from participants. During the Q&A session, it was confirmed that Japan has an unparalleled high prevalence of MRI and brain check-ups, contributing to the advanced state of brain imaging research.

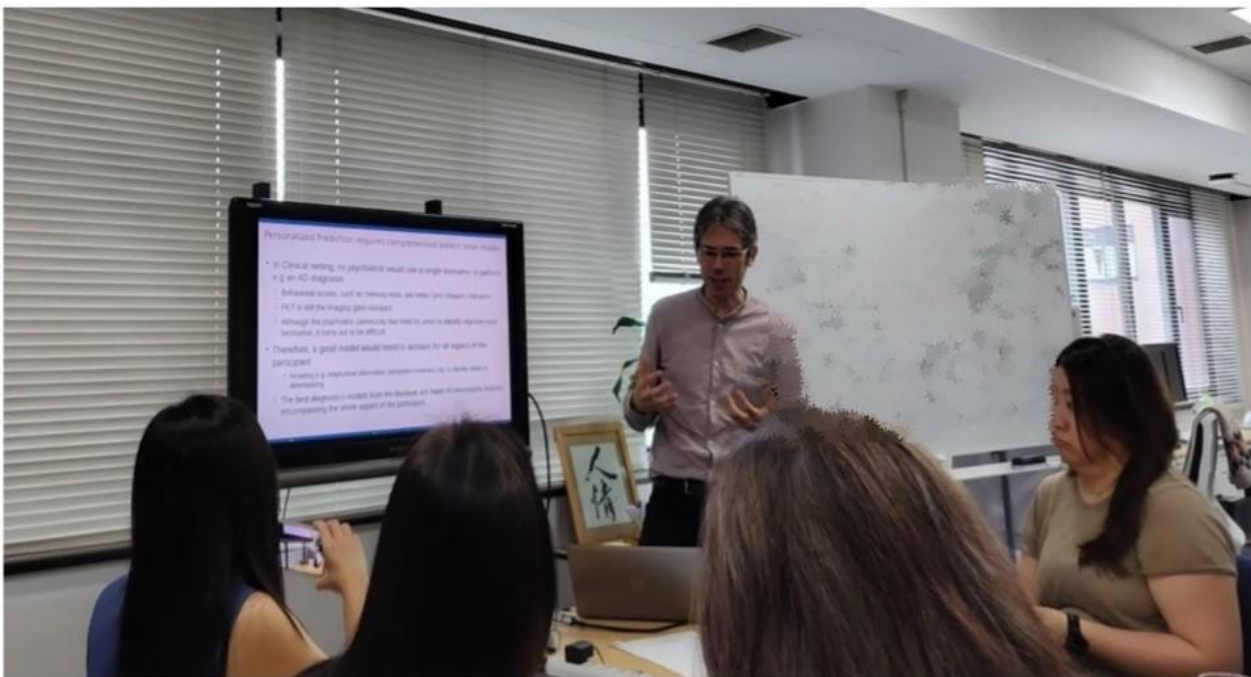


Photo: The lectures by Drs. Tatewaki and Thyreau



July 10 (Thursday)

**Professor Yukio Katori**  
**Department of Otolaryngology, Head and Neck Surgery, Tohoku University, and Director of International Medical Center, TUH**

The Singapore team visited the specialized outpatient clinic, "Hearing Clinic," at the Department of Otolaryngology and Head and Neck Surgery, Tohoku University Hospital, where they toured the examination rooms and audiology testing facilities, guided by **Dr. Takeshi Sato**, a Speech-Language Hearing Therapist. The participants had the opportunity to experience ear sound radiation testing. Professor Katori gave a lecture on the increasing prevalence of hearing loss in recent years, the established link between hearing loss and cognitive decline, and other related topics, followed by a question-and-answer session. Particular attention was drawn to the differences in subsidy systems for hearing aid purchases between Singapore and Japan. In Singapore, all elderly individuals can receive assistance for hearing aid purchases through funds such as the Senior Mobility and Enabling Fund (SMF). On the other hand, Japan's subsidy system for hearing aid purchases is not a nationwide system. Still, it varies by municipality, resulting in regional disparities and challenges of complex information for the elderly. Additionally, it was noted that elderly individuals with hearing loss have a reduced ability to ignore background noise. Therefore, without proper prescription and adjustment of hearing aids, older people may not be satisfied with the hearing aid, which is an issue common internationally.



Photo: At the Hearing Clinic, TUH



Photo: Lecture by Prof. Katori and discussion with participants



Photo: Singapore team gathered around Professor Yukio Katori

July 11 (Friday)

**Director Masashi Aoki**  
**Clinical Research, Innovation and Education Center (CRIETO),**  
**Tohoku University Hospital**  
**(Professor, Department of Neurology, Tohoku University School of**  
**Medicine)**

After a greeting by Professor Masashi Aoki, Lecturer **Funasaka** and Assistant Professor **Yamada** introduced the center's system and examples of research promotion. Participants from Singapore asked questions about research promotion systems and their cycles (e.g., the duration of projects) at the national or university level. Additionally, since there are currently no international joint research projects between Japan and Singapore SingHealth and Duke NUS, the meeting concluded with the hope that the two countries and Tohoku University will collaborate to plan such initiatives in the future.



Photo: Explanation by Professor Masashi Aoki





Photo: Commemorative photo with participants from Singapore who visited CRIETO

July 11 (Friday)

**Professor Emeritus Kyoko Suzuki, Tohoku University  
(Former Professor, Department of Behavioral Neurology and  
Cognitive Neuroscience, Graduate School of Medicine, Tohoku  
University)**

Professor Kyoko Suzuki delivered a lecture on how neuropsychological examinations and approaches can enhance dementia diagnosis and inform clinical research, sparking a discussion among participants. For example, she introduced the development of diagnostic tests utilizing visual misperception, a characteristic symptom of Lewy body dementia, for differential diagnosis, as well as research on various cognitive impairments. She also presented research findings on Japanese-specific writing disorders associated with neurodegenerative diseases. Neurologists and psychologists from Singapore actively asked questions about examinations and tests. While dementia research is dominated by findings from Western languages, both Japan and Singapore have non-Western languages as their native languages. Participants reaffirmed the importance of capturing language-specific symptoms and linking them to diagnosis and research. The meeting concluded with concrete proposals for deepening exchanges among researchers.



Photo: Singapore participants and Professor Kyoko Suzuki (fourth from left)

## Finally,

Thanks to the support of all those involved, including the instructors of each course, we were able to welcome seven friends from Singapore on a study tour to Tohoku University and Tohoku University Hospital. Sixth-year medical student Haruki Anjo and third-year medical student Shinichiro Kato participated in the tour themselves and assisted the participants from Singapore. The staff of the Department of Behavioral Neurology and Cognitive Neuroscience at Tohoku University Graduate School provided detailed administrative support, including encouragement, arrangements, and program preparation.

Above all, we would like to express our gratitude to the Singapore team for choosing Tohoku University and Tohoku University Hospital as the destination for their study tour. This opportunity arose from the connection between Chifumi Iseki and Dr. Simon Ting Kang Seng, a Singaporean neurologist. The team members shared the following message: "We did not know much about Tohoku University before the tour, but we were impressed by the scale and continuity of its research, as well as its ability to build relationships with society and the local community and implement its research into society. We look forward to continuing our exchanges with Tohoku University, Tohoku University Hospital".

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