



TOHOKU
UNIVERSITY

Annual Report 2018



TOHOKU FORUM for CREATIVITY





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In Issuing the Annual Report

Message from the President

Since its establishment in 1907, Tohoku University has continued its tradition of “Research First”, its philosophy of “Open Doors”, and its ethos of “Practice-Oriented Research and Education”, all of which have enabled us to produce leading figures and numerous research achievements. As one of the research universities that represent our country, Tohoku University was officially named a Designated National University in June 2017, which means our university was recognized as one of the country's top three higher-learning institutions, along with the University of Tokyo and Kyoto University, by the Japanese government. By not merely adhering to our past accomplishments, we will continue to advance our goals to “lead creation and innovation to world-class standards”, “provide opportunities to open up the future”, and by doing so “become one of the world’s 30 most respected universities”. At this opportunity, we created the Tohoku University Vision 2030.

One of the priority strategies in this vision is “Attracting Young Talent - Supporting & Fostering the Next Generation” and the TFC has invited world-leading scientists, including Nobel Laureates, to Tohoku University for extended stays in order to engage in joint research with junior researchers, and to participate in daily discussions with students.

Since its establishment in October 2013 and the construction of the “TOKYO ELECTRON House of Creativity” in March 2015, the TFC has hosted three or four Thematic Programs per year beginning in 2014 as Japan’s first international visitor research institute. In addition to the Thematic Programs, the TFC instituted a Junior Research Program in 2015. Other outreach activities since 2016 have seen significant progress as well. As the results of its activities in the past six years, the TFC holds an extremely important position within the research activities of Tohoku University. There are great expectations, both from within and outside the university, for what we can achieve in the near future. Therefore, we create this annual report to provide all stakeholders with an overview of the activities of the TFC.

Accordingly, we ask for your continued appreciation and cooperation with the Tohoku Forum for Creativity in the future.

Tohoku University President

Hideo Ohno



For Promoting the Tohoku Forum for Creativity's Programs

The Tohoku Forum for Creativity (TFC) holds many scientific programs every year in order to contribute to “the creation of the world’s highest standard of knowledge” and “leading the change to open up the future”, as outlined in the vision of President Hideo Ohno, Tohoku University.

The Tohoku Forum for Creativity’s Thematic Programs operate a number of academic activities in various fields of study based on fundamental research which are necessary for the existing of human society, in order to solve the challenge for creating the better future, and responding for the global development of academic knowledge. In each Thematic Program, invited world-leading researchers visit Tohoku University for a period of between one and three months to conduct collaborative research and present in workshops, conferences, and symposiums at the TOKYO ELECTRON House of Creativity and other campuses of the university. In this way, the TFC provides a highly suitable environment for researchers to collaborate at Japan’s first international visitor research institute. The TFC’s activities also aim to develop the next generation of global research leaders by creating a wide array of opportunities for talented junior researchers, including students, allowing them to interact and discuss their ideas with eminent scholars.

In 2018, the TFC hosted four Thematic Programs: “Frontier of Chemical Communication”, focusing on chemical biology and analytical methods for molecular communication; “Geologic Stabilization and Human Adaptations in Northeast Asia”, aimed at developing a new methodology of area studies; “String-Math 2018”, covering a wide range of string theory, quantum field theory, and related topics in mathematics; and “Tohoku Universal Acoustical Communication Month 2018”, in which the participants discussed the future of universal acoustical communication.

Since its establishment in 2013, the TFC has steadily progressed in carrying out its research mission for the last six years. We constantly reflect on the implementation of our strategies by considering what has been successful with up to this point and what we wish to create in the future.

I would like to take this opportunity to express my gratitude, not only for the great efforts of those involved in the promotion of these programs, but also for the invaluable support and cooperation that we have received from Tokyo Electron Limited since the very beginning of this project.

In the future, Tohoku University aims to contribute even more to facilitate international research and education. Accordingly, I ask for your continued cooperation and support.

Tohoku Forum for Creativity Director
Tohoku University Executive Vice President (for research)
Tadahiro Hayasaka

Message from the Director

Overview of the Tohoku Forum for Creativity

Mission

The Tohoku Forum for Creativity (TFC) is an international visitor research institute which was established in 2013 at Tohoku University to facilitate collaborative research. In order to identify important problems across all of the sciences and humanities, the TFC brings together both junior and senior researchers in a stimulating environment that promotes creative approaches to new and interdisciplinary research areas.

The TFC especially encourages junior researchers, such as graduate students and postdoctoral fellows, to participate in the thematic programs. Through discussions and close contact with distinguished researchers, including Fields Medalists and Nobel Laureates, junior researchers will be stimulated to develop their own original ideas and to eventually become pioneers in new research areas.

A Fellowship of Knowledge which Contributes to the Solution of the Major Issues Faced by Humanity

The TFC calls for thematic programs from throughout the world covering all academic domains, from the humanities and social sciences to the natural sciences. The TFC then selects themes for concentrated discussions over a three-month period, for which leading international researchers are invited to Tohoku University to develop new areas of research and to contribute to the solution of the major problems facing humanity, through joint research and the hosting of international symposiums. Furthermore, the TFC provides an ideal location for the promotion of interdisciplinary cooperation across a diverse range of research areas in order to tackle the increasingly advanced and complex issues facing society.

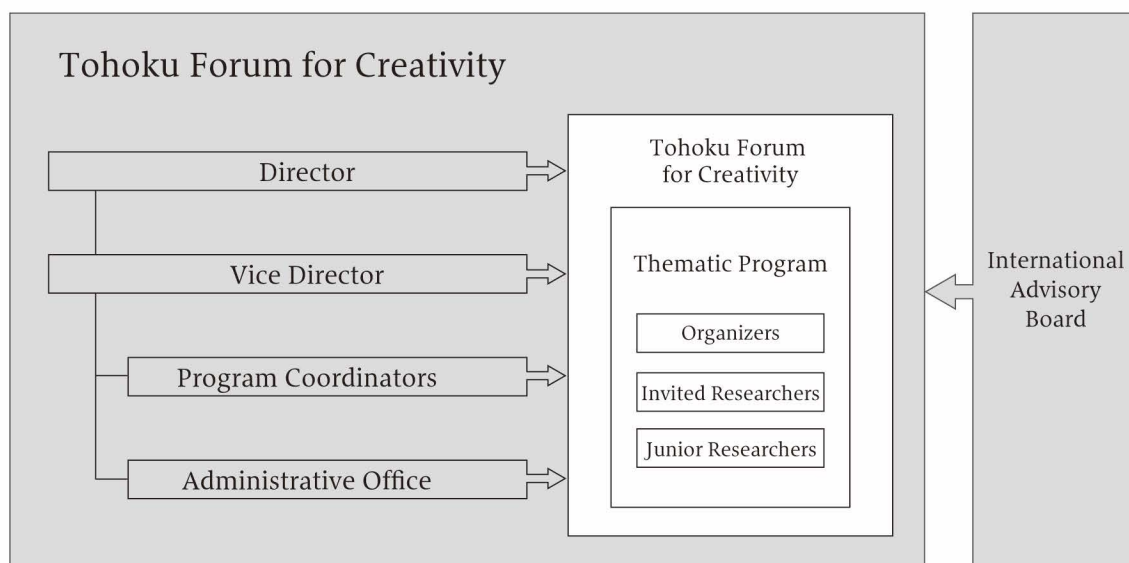
Educating Global Leaders to Build the Future of Humanity

The TFC will establish itself as a center for the cultivation of international research leaders, by promoting the participation of junior researchers from throughout the world in our thematic programs. In this way, the TFC will foster an environment in which young researchers can interact closely with world class researchers.

Contributing to Society by Sharing Academic Advances

The TFC provides opportunities for intellectual exchange between participating researchers and the general public, including the children who will lead society in the future, through the planning and hosting of public events. This initiative aims to promote the sharing of knowledge, further internationalization, and the development of a prosperous society, by providing opportunities for the public to interact directly with world-leading researchers.

Organization



Advisors

Special Advisor

In order to promote opportunities for intellectual exchange between participating researchers and the general public through the planning and hosting of events, the TFC invites special advisers to provide comprehensive advice to the activities of the TFC.

Tetsuro Higashi	Corporate Director, Corporate Advisor Tokyo Electron Limited
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International Advisory Board

The International Advisory Board was established as an organization to evaluate the proposed thematic programs gathered from throughout the world, and to provide advice on the activities of the TFC.

Arjen Doelman	Director of the Lorentz Center Lorentz Center, International Center for workshops in the Sciences
Peter Gruss	President/CEO Okinawa Institute of Science and Technology Graduate University
Yuko Harayama	Emeritus Professor Tohoku University
Mathias Kläui	Professor Institute of Physics, Johannes Gutenberg-University Mainz
Makoto Kobayashi	Nobel Laureate in Physics 2008 Honorary Professor Emeritus, High Energy Accelerator Research Organization
Kiyoshi Kurokawa	Professor Emeritus National Graduate Institute for Policy Studies
Takamitsu Sawa	Distinguished Professor Shiga University

Support for the Tohoku Forum for Creativity

This project hosts approximately three thematic programs per year, with support from the program for promoting the enhancement of research universities from the Ministry of Education, Culture, Sports, Science and Technology (MEXT). In order for this program to continue to aggressively tackle the challenges faced by society, we must create opportunities to communicate with society and our supporters in the private sector in order to gain their assistance in promoting our activities.

The TFC will continue to publish information widely throughout the world, and work to gain the understanding and support of numerous individuals and organizations.

Support was provided by the following corporations in FY2018.

- **Comprehensive Support for the TFC** • Tokyo Electron Limited
- **Support for the "Frontier of Chemical Communication" Thematic Program**
 - AOBA Foundation for the Promotion of Engineering
- **Support for the "String-Math 2018" Thematic Program**
 - The Clay Mathematics Institute
 - Japan Society for the Promotion of Science (JSPS)
 - The Kavli Foundation
 - Kavli Institute for the Physics and Mathematics of the Universe, University of Tokyo (Kavli IPMU)
 - Okinawa Institute of Science and Technology Graduate University (OIST)
 - Simons Foundation
 - THE TOKYO CLUB
 - Sendai Tourism, Convention and International Association
- **Support for the "Tohoku Universal Acoustical Communication Month 2018" Thematic Program**
 - Japan Advanced Institute of Science and Technology
 - Acoustical Society of Japan
 - Tohoku Chapter of the Acoustical Society of Japan
 - The Virtual Reality Society of Japan
 - Japanese Multisensory Research Forum
 - National Institute of Information and Communications Technology
 - The Kajima Foundation
 - Kayamori Foundation of Informational Science Advancement
 - Support Center for Advanced Telecommunications Technology Research, Foundation
 - Intelligent Cosmos Academic Foundation



A Message from our Sponsor

To develop a dream-inspiring society

Technological advancements in recent years has made our lives even more convenient and abundant. With the arrival of the IoT (Internet of Things) age, a wide range of devices have become connected over the internet, and it is expected this trend will continue to accelerate in the coming years.

At the same time, however, a number of global-scale problems faced by our society continue to deepen in severity, such as abnormal weather, natural disasters, international war and terror, water and food shortages, the population problem, and cyber-attacks. In 2015, the United Nations adopted the SDGs (Sustainable Development Goals), and while initiatives are spreading to tackle these various challenges at the global level, the world also looks to private enterprise to effectively leverage their economic resources with a mid-to-long term perspective, and contribute to the achievement of the SDGs through their business activities.

Tokyo Electron (TEL) has been a leading company of semiconductor and flat panel display (FPD) production equipment since its founding in 1963, and has continued to grow over the years. We have also continuously engaged with Tohoku University over many years in an industry-academic collaboration to develop both human resources and technology, focused on the semiconductor field. TEL also feels profound agreement with the goals of Tohoku Forum for Creativity (TFC) of Tohoku University, the first large-scale visitor research institute founded at a Japanese university, and has been a sponsor since its founding in 2013.

The TFC gathers top researchers from around the world, including winners of the Nobel Prize and the Fields Medal, and has advanced research in a variety of fields that seek to support a sustainable society. Based on the TEL's corporate philosophy of, "We strive to contribute to the development of a dream-inspiring society through our leading-edge technologies and reliable service and support," we will leverage our partnership with the TFC, and by fusing highly diverse academic expertise with the resources of our company, create new value in society to further achieve our mission.

With this program serving as forum to create opportunities for leading young researchers to connect with the world, we will contribute to the development of globally aware human resources.

It is our sincere wish that by serving as a highly influential forum gathering world-class knowledge from around world, the Tohoku Forum for Creativity of Tohoku University will make a major contribution to the development of an abundant society.

Tokyo Electron Limited
Representative Director, President & CEO

Toshiki Kawai

TOKYO ELECTRON House of Creativity

Construction was completed on the TOKYO ELECTRON House of Creativity in March 2015 at the Tohoku University Katahira Campus, to serve as the center for the TFC. The TFC aims to use this center as the principle location for the realization of "building a community of wisdom where people gather together, learn, and create, with an open doors to the world."

*Tokyo Electron Limited provided immeasurable support for the construction of this facility.





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Thematic Program | May 2018 – October 2018

Frontier of Chemical Communication

The theme of the program: Chemical Communication is newly defined as a system for inducing certain bio-functions through multiple molecular interactions. We have already studied chemical biology to elucidate bio-functions by molecular interactions between single molecules. However, there is a limit to understand the bio-functions in living systems because multiple interactions exist in the living systems. Therefore, we need a new research field that can elucidate complex molecular interactions existing between small molecules, small and large molecules, and large molecules, as well as with cells, organs, and tissues to transfer information. Recently, analytical methods for molecular communication have been extensively developed in the field of functional molecules in material sciences. We are going to communicate chemical biology and analytical methods for molecular communication to create Chemical Communication that enables the analysis of multiple molecular interactions at micro to macro levels in the living systems.



Important Goals and Degree of Achievement

The goals and significance of the program: Chemistry can be used for the design and synthesis of such molecules with the potential to control many key bio-functions. The discovery of complex, structurally diverse, and assembled molecules could lead to the generation of unprecedented bio-functions produced by Chemical Communication. We invited key contributors from both research fields of chemical biology and analytical methods for molecular communication. During the symposium, we discussed discovering mechanistically new antitumor agents and antibiotics against drug-resistant bacteria based on relatively large, structurally complex, diverse, and assembled molecules; we have been on the forefront of the world. We learned molecular interactions in both bioactive natural products and highly functional assembling molecules. Among them, we got a hint to discover new bio-functional molecules, which would create growth in this emerging industry. We achieved the original purpose sufficiently.



Program Organizers



Takayuki Doi (Professor, Graduate School of Pharmaceutical Sciences, Tohoku University)
Prof. Doi completed his doctorate course at Graduate School of Science and Engineering, Tokyo Institute of Technology. Doctor of Engineering. His major is organic synthesis. He took his current position after working as a postdoctoral scientist at Columbia University and as Assistant Professor and then Associate Professor at Tokyo Institute of Technology. He received the Pharmaceutical Society of Japan Award for Divisional Scientific Promotions (2013).



Hirokazu Arimoto (Professor, Graduate School of Life Sciences, Tohoku University)
Prof. Arimoto completed his doctorate course at Keio University. Doctor of Agriculture. His major is chemical biology. He took his current position after working at Asahi Glass Company, as postdoctoral research scientist in University of Pennsylvania, as Assistant Professor in Shizuoka University and Associate Professor at Shizuoka University and Nagoya University. He received the Chemical Society of Japan Award for Creative Work (2015).



Mitsuo Umetsu (Professor, School of Engineering, Tohoku University)
Prof. Umetsu completed his doctorate course at Tohoku University. Doctor of Engineering. His major is protein engineering. He took his current position after working as JSPS Postdoctoral Fellow for Research Abroad at Leiden University, Assistant Professor and Associate Professor at Tohoku University. He received the Incentive Award, Society of Chemical Engineers, Japan (2005).



Minoru Ueda (Professor, Graduate School of Science, Tohoku University)
Prof. Ueda completed his doctorate course at Nagoya University. Doctor of Agriculture. His major is chemical biology in plants. He took his current position after working as Assistant Professor, Lecturer, and Associate Professor at Keio University. He also joined Life Science in Tohoku University as Professor. He was awarded by the Japanese Society for Chemical Regulation of Plants (2013).



Akihiro Morita (Professor, Graduate School of Science, Tohoku University)
Prof. Morita got his Ph.D. at Kyoto University. His major is theoretical and computational chemistry. He took his current position after working as an Assistant Professor in Kyoto University and an Associate Professor at the Institute for Molecular Science. He got the Chemical Society of Japan Award for Creative Work (2012) and the International Investigator Award of the Japan Society for Molecular Science (2016).



Hirohiko Kono (Professor, Graduate School of Science, Tohoku University)
Prof. Kono completed his doctorate course at Tohoku University. Doctor of Science. His major is theoretical chemistry. He took his current position after working as postdoctoral research scientist at Arizona State University, Assistant Professor at Yamagata University, and Associate Professor at Tohoku University. He was awarded by the US National Science Foundation (2014).

Program Highlights

The interdisciplinary elements of the program: There is an opportunity to touch on a wide range of leading-edge research results in research areas that are the basis of chemical communication, such as visualization of methods in chemical biology, analytical methods for molecular assembly, molecular simulation based on computational science, and structural analysis of molecular assembly. For overseas invited scientists who have stayed for about three weeks, we conducted research presentations and discussions in the 5 to 10 laboratories with dozens of young scientists and graduate students. In addition, the scientists who stayed for a few days to a week also took time other than lectures and were divided into multiple laboratories, each with several young scientists and students to have a research discussion. These have provided a good opportunity for young scientists and graduate students to interact with world top researchers and to experience a research environment. In summer school, graduate students mainly invited overseas graduate students together with worldwide young scientist for lectures, planned and managed the international symposium, and developed international friendships.

Specific Strategies for International Research Exchange

Dr. Paolis, invited from the University of Rouen (France), had not only seminars but also lectures at graduate schools and discussions with young scientists and graduate students in several laboratories. He accepted one of the graduate students to do research in his laboratory. Professor Searcey, who was invited from University of East Anglia (UEA, UK), not only gave a lecture at the symposium, but also gave another lecture to introduce the research of UEA's faculty members. In addition, Professor Ganesan (UEA) spent a three-week stay giving a seminar, lectures to graduate students, and discussions with young scientists and graduate students in several laboratories. As a result, we have started joint research, dispatching doctoral students to UEA, and starting student acceptance from UEA. Furthermore, we reached the conclusion of the student exchange agreement between Tohoku University and UEA. Professor Waldmann and Professor Clever were invited from Technische Universität Dortmund (Germany) to introduce the university, send out doctoral course students, and conduct joint research.



International Training for Young Personnel

In order to establish a continuous relationship for creative education for young scientists and graduate students, we actively set up discussions with top global researchers. Not only listening to the research content of top-level researchers, but also directly speaking and discussing the research content of young researchers themselves, they experienced the research discussions that are actually conducted in overseas laboratories, and became active in the world awareness as a researcher appeared. Researchers who decided to study abroad also appeared. University of East Anglia is also considering exchanges among young faculty members. In addition, invited researchers may offer a lecture tour for Tohoku young scientists in surrounding universities.



Principle Invited Researchers



Jérôme Lacour

(University of Geneva, Switzerland)

Professor of Chemistry, Dean of the Faculty of Science. Recipient of Werner Prize and Medal in Swiss Chemical Society (2002) and Grammaticakis-Neuman Prize in French Academy of Sciences (2005).



Herbert Waldmann

(Max-Planck-Institute of Molecular Physiology and TU Dortmund, Germany)

Director at the Max-Planck-Institute of Molecular Physiology, and Professor of Organic Chemistry at TU Dortmund. Recipient of Otto-Bayer-Award (2001), Emil Fischer Medal of the GDCh (Gesellschaft Deutscher Chemiker) (2012), and Honorary Doctorate (Dr. h. c.) bestowed by Leiden University, NL (2014).



Nicolas Winssinger

(University of Geneva, Switzerland)

Professor of Organic Chemistry, NCCR Chemical Biology. Recipient of JSPS fellowship (2017), Xinda Lectureship (2015), and INPI Innovation Trophy (2012).



A. Ganesan

(University of East Anglia, UK)

Professor and Chair of Chemical Biology at UEA's School of Pharmacy, Director of Postgraduate Research and Head of the Healthy Ageing research theme in UEA.



Guido Clever

(TU Dortmund, Germany)

Professor for Bioinorganic Chemistry. Recipient of Otto Hofmann Foundation prize for pre-diploma, Dr. Sophie Bernthsen Fonds prize for diploma, and ADUC Prize 2012 (Young Investigator Award) of the German Chemical Society.



Xiaoguang Lei

(Peking University, China)

Professor of Chemical Biology. Recipient of CCS-BASF Young Investigator Award (2018), Tetrahedron Young Investigator Award in Bioorganic and Medicinal Chemistry (2017), Organic Chemistry Frontier Emerging Investigator Award (2016), and National Distinguished Young Investigator Award (2016).



Johan Hofkens

(KU Leuven, Belgium)

Professor in Department of Chemistry. Recipient of JSPS fellowship (2012), Proteomass Scientific Society Award (2016).



Heather C. Allen

(Ohio State University, USA)

Professor of Chemistry and Biochemistry. Alexander von Humboldt Research Award (2014), the American Chemical Society National Award for Encouraging Women into Careers in the Chemical Sciences (2013).

Strategies Following the Completion of the Program

A student exchange agreement has been concluded with University of East Anglia, and an inter-university symposium is going to be held in a large framework, not only chemical communication but also other research areas, and the exchanges of graduate students and faculty members will be promoted. We will make an application to JSPS to get an exchange fund.



Thematic Program | June 2018 – March 2019

Geologic Stabilization and Human Adaptations in Northeast Asia

Northeast Asia is one of the coldest regions of human geographical distribution on our planet and is the home to the Pole of Cold in the northern hemisphere. How did the human population adapt to the harsh environment, in light of hominoid biological evolution having occurred in tropical Africa? Some scholars argue that the specific regional evolution of northern Mongoloids circa 20,000 years ago was the key for survival in cold regions as the body surface area of these early humans was smaller, thus helping regulation of body temperature. However, archaeological findings suggest there were many other human populations that moved and spread across the north. The key for survival was the cultural adaptation. Human behaviors and notions formed and changed as a result of human-environment interaction involving migrating peoples; these included environmental perception, tool making and foraging capacities, animal domestication, social organizations, and belief-ideology systems. This program aims to provide an exchange of knowledge in international academic collaboration, bring together experts from the geochemistry, ecology, history, and anthropology of Northeast Asia and develop a new methodology of area studies.



Important Goals and Degree of Achievement

This program aimed to improve mutual relationships among scientists in geology, archaeology, anthropology and religion through the organizing of 4 interdisciplinary key workshops.

(1) Continental Amalgamation and Stabilization of Northeast Asia: Stories before the Stone Age (WS3): It aims to establish a framework for collaboration between geology and archaeology research focusing on stabilization and evolution of orogenic movement in Northeast Asia.

(2) Variabilities in Prehistoric Human Cultural Adaptations in Northeast Asia: The Initial Upper Paleolithic, the Last Glacial Maximum, and the Post-Pleistocene Adaptations (WS2): It aimed to share the latest cases in Russia, Mongolia, Korea and Japan, and explore the possibility of new research topics.

(3) Northern Modes of Foraging and Domestication as an Interaction among Humans, Animals, and Geography (WS4): The purpose was to examine northern environmental and cultural adaptation in human history based on the latest results of anthropology, archaeology and animal genetics. A new theory of adaptation to the extreme north was evolved.

(4) Natural Disaster and Religion/Mythology (WS1): This workshop aimed to reassess this heritage on the global level, and to link to future insights by collaborating with natural sciences. The myths of natural disasters and historical facts contained in them could be evaluated from the natural science's point of view.

The member of the program agreed to advance the interdisciplinary research project in Northeast Asian human history.

Program Organizers



Hiroki Takakura (Professor, Center for Northeast Asian Studies and Graduate School of Environmental Studies, Tohoku University)

Prof. Takakura completed his Ph. D. in Social Anthropology. He got the Daido Seimei Area Studies Award (2012), and was nominated as a vice chairperson of the Social & Human Working Group, International Arctic Science Committee (2015-2017), and as a foreign member of Sakha Republic Academy of Science in Russian Federation from 2018.



Kaoru Akoshima (Professor, Graduate School of Arts and Letters, Tohoku University)

Prof. Akoshima completed his doctorate course at the Department of Anthropology, the University of New Mexico. He took his current position in 2000 after working as a research associate, lecturer, associate professor, and professor at the Graduate School of Arts and Letters, Tohoku University. His primary publications include "The Primitive Age in the North", 2015, and "The Future of the Past", Keiso Shobo Publishing, 2018.



Yoshitaka Kanomata (Associate Professor, Graduate School of Arts and Letters, Tohoku University)

Assoc. Prof. Kanomata completed his doctorate course at the Graduate School of Arts and Letters, Tohoku University. He took his current position after serving as a vice director at the Shirakawa Analysis Center, Institute of Accelerator Analysis Ltd., as an assistant professor and associate professor at the Graduate School of Arts and Letters, Tohoku University. His primary publications include "Tohoku Culture Materials Series, No. 9", Tohoku Cultural Research Room, 2016.



Toshiaki Kimura (Professor, Graduate School of Arts and Letters, Tohoku University)

Prof. Kimura completed his doctorate course at the Graduate School of Arts and Letters, Tohoku University. He took his current position in 2014 after working as a visiting research fellow at Harvard University, as an associate professor at Hirosaki University before joining Tohoku University. His primary publication includes "Stratification in Cultural Contexts: Cases from East and Southeast Asia" Trans Pacific Press, 2013.



Florian Stammler (Visiting Professor, Center for Northeast Asian Studies, Tohoku University/ Professor, Arctic Centre, University of Lapland)

Prof. Stammler received his Doctor of Philosophy from Max-Planck-Institute. He took his current position as a research fellow at the University of Cambridge. He has received research project grants more than 1.5 million EUR on topics related to Arctic indigenous people's culture and industrialization.



Tatsuki Tsujimori (Professor, Center for Northeast Asian Studies, Tohoku University)

Prof. Tsujimori is a geological scientist. He has received several honors, including the Fellow of the Geological Society of America, and Fellow of the Mineralogical Society of America. He is an editorial member of six international journals.



Hitoshi Yamada (Associate Professor, Graduate School of Arts and Letters, Tohoku University)

Assoc. Prof. Yamada completed his doctorate course at the Ludwig Maximilian University of Munich. His primary publication includes "New Introductory Book on Mythology: Shin Shinwagaku Nyumon", 2017, "Eater of Unusual; Food: Ikamono-gui", 2017 and "Neck Cutting of Religious Ethnography: Kubikarino Syuukyouninzokugaku", 2015.

Program Highlights

The four core workshops had exciting presentations centered on their areas of specialization, and the cross-disciplinary discussions were held.

① In Continental Amalgamation and Stabilization of Northeast Asia: Stories before the Stone Age (WS3), Professor Shigenori Maruyama (Tokyo Institute of Technology) gave an exciting keynote speech entitled "Global Climate Change in the Past and Near Future: A Geological Perspective". Moreover, a session "Second Continent beneath Asia" shared new ideas on the "second continent" with cutting-edge knowledge from geology, seismology and geoneutrino physics.

② In Variabilities in Prehistoric Human Cultural Adaptations in Northeast Asia: The Initial Upper Paleolithic, the Last Glacial Maximum, and the Post-Pleistocene Adaptations (WS2), Professor Sergey Gladyshev (Russian Academy of Sciences) discussed that taking the case of the Saisekijin (Sazare blade), it is an indicator of the late Paleolithic complex. In the discussion, Saisekijin technology has a relationship with the last glacial period and the ways in which the technology would decline due to climate change was discussed.

③ In Northern Modes of Foraging and Domestication as an Interaction among Humans, Animals, and Geography (WS4), Professor David Anderson (University of Aberdeen) introduced an ethnography on human and animal ecological knowledge. Through a discussion, the leading domestication scholars theorized the acculturation of nature by managing wildness, thus overcoming the classical anthropological theory of domestication in terms of trust and domination.

④ In Natural Disaster and Religion/Mythology (WS1), Professor Lihui Yang (Beijing Normal University) discussed the destruction and resurgence of the world inscribed on the natural disasters found in Chinese mythology. And also, it was discussed that these perspectives be reviewed on a global scale in collaboration with natural sciences.

Specific Strategies for International Research Exchange

Our goals of this program are to enhance the academic exchange with Russian and European universities and to establish international projects for interdisciplinary Northeast Asian Studies. Through the program, we deepened the academic collaboration with European University (St. Petersburg), Novosibirsk State University, and Far Eastern Federal University (Vladivostok). The archaeology group decided to continue the international workshop in the following year and to start the discussion of a collaborative excavation plan. The religious studies group is invited for a special contribution of their papers to a Russian international journal. We also implemented academic exchange with scholars of University of Aberdeen (UK), Durham University (UK), and University of Lapland (Finland). The anthropology group invited the visiting professor from University of Lapland in the period of the program (3 months) and vice-versa University of Lapland sends us an invitation of the same term for a visiting fellowship. Through the exchange even in the preparation period, the anthropology group agreed to establish an international joint research project with University of Aberdeen which was successfully adopted in the UK-Japan Exchange program (RSRC-AHRC, 2019). We can also build the exchange with Harvard University and University of California, Berkeley. The group of religious studies simultaneously organized the 12th International Conference of Comparative Mythology with one of the key workshops and familiarized many foreign scholars with interdisciplinary Northeast Asian Studies. The religious studies group decided to edit a special volume on their workshop in the Tohoku Journal of Religious Studies where many speakers would contribute. The anthropology group also agreed to publish an edited volume with an internationally well-known publisher.

International Training for Young Personnel

We organized 4 seminars and 2 workshops especially for promoting the exchange between young scholars and invited both domestic and international scholars besides the four key workshops. The young scholars had the opportunity to present their works in front of the invited scholars during the workshops. Some invited scholars had special lectures to the younger scholars and graduate students. The ratio of participation of young scholars is 53% among 347 attendees as the total number of participants. Two graduate schools (Arts and Letters and Environment Studies) treated key workshops as one among the special lectures in their curriculum. As a result, we started to discuss the feasibility of continuation of some workshops and seminars with the invited scholars from abroad. In addition, in terms of strategic purpose enhancing the academic exchange with Russian Universities, we also organized a special workshop for young scholars in both countries. Then some Russian universities sent us an invitation program for scholars and graduate students. The program had the effect of internationally training young scholars.

Principle Invited Researchers



David Anderson

(University of Aberdeen, Scotland)

One of the leading Arctic anthropologists, with numerous achievements on the anthropology of Siberia and human history of the Arctic. He received 2.5 million EUR from the ERC for leading an advanced grant 2012-2018 entitled "Emplacing Human-Animal Relations in the Circumpolar North."



Michael Witzel

(Harvard University, USA)

Professor at Harvard University. A well acknowledged authority of the "Veda". Author of "The Origins of World Mythology among Others".



Inna Safonova

(Novosibirsk State University/ Siberian Branch of the Russian Academy of Sciences, Russia)

A geological scientist who has worked on the Pacific-type orogenic belt. Currently, she is one of the most active female geoscientists receiving a 'Megagrant'.



Józef Szykowski

(University of Wrocław, Poland)

Professor at University of Wrocław. A specialist of archaeology in ancient Latin America. His international research projects were conducted in Peru, Colombia, Bolivia, Germany, and Mongolia. He has been an Honorary Citizen of Mollendo, southern Peru since 1994.



Andrey V. Tabarev

(Institute of Archaeology and Ethnography, Siberian Branch of Russian Academy of Sciences, Russia)

Head of division of Foreign Archaeology. A specialist in ancient cultures of the Pacific Rim, lithic technology, ancient art and rituals, and social reconstructions in archaeology.



Junko Habu

(University of California, Berkeley, USA)

An international archaeologist who is focusing on Circum-North Pacific Ocean and East Asia. She has many achievements of Anthropology and Archaeology on hunter gathering, small and sedentary societies.



Hugh Beach

(Uppsala University, Sweden)

An internationally well-known professor in the anthropological study of the Arctic. Among his many achievements, his works on the history and politics of the indigenous Sami people of Sweden are the most outstanding. His popular book "A Year in Lapland" was published in several editions in several languages.



Yuri Berezkin

(European University at Saint Petersburg, Russia)

Professor at European University. Nominated as "distinguished scholar" of Russia. His huge database of myth motifs all over the world is accessible online.



Shigenori Maruyama

(Tokyo Institute of Technology, Japan)

Professor of geological sciences, specialized in studies of the Earth's history evolution and the origin of life. His scholarly accomplishments have received several honors, including the GSA Honorary Fellow, AAAS, and the Shiju Hōshō (Medals with Purple Ribbon).



Lihui Yang

(Beijing Normal University, China)

Professor at Beijing Normal University. Expert in both mythology and folkloristics. The most-known disciple of Zhong Jingwen, the father of Chinese Folkloristics. Author of "Handbook of Chinese Mythology" and many other authoritative books.

Strategies Following the Completion of the Program

The organizers confirmed the feasibility of interdisciplinary area studies on Northeast Asian Human History and agreed to build a coordinating platform. They have started trying to organize an interdisciplinary research seminar or workshop and the program for young scholars in order to further promote the dialogue among geology, archaeology, anthropology and religious studies. Based on these activities, we would like to establish a networking platform for Northeast Asian Studies.





Thematic Program | June 2018 – March 2019

String-Math 2018

The core of this thematic program was the international conference “String-Math 2018”, held in June 2018. Including the Fields Medalists Edward Witten and Shing-Tung Yau, we invited the world’s leaders in this field, as well as young researchers, to this conference organized by us, to discuss the problems of particle physics and the related mathematics. The keynote talks of this conference were presented by speakers ranking within the world’s top 27, including the Fields Medalists Shing-Tung Yau, who is a professor at Harvard University, and Edward Witten, who is a professor at the Institute for Advanced Studies in Princeton. As a preparation of students and young researchers for this international event, we organized seminars and an international spring school of the Graduate Program on Physics of the Universe (GPPU) entitled “String and the Universe” before the “String-Math 2018” conference. After the “String-Math 2018” conference we organized a workshop “Discrete Approaches to the Dynamics of Fields and Space-Time”, and a follow-up workshop “String: T-duality, Integrability and Geometry”. In order to reach out to a more general audience, we organized a public lecture held by the Fields Medalist Professor Shing-Tung Yau, entitled “A brief history of Calabi-Yau manifolds related to string theory”, and a special lecture on the 5th Anniversary of the Tohoku Forum for Creativity (TFC) held by one of the organizers, professor at Caltech and director of the Kavli IPMU Hiroshi Ooguri, entitled “The Man from the 9 Dimensions”.



Important Goals and Degree of Achievement

In this thematic program many new problems and their research methods for solving them were proposed and we expect that the researchers who participated in this thematic program and related activities will develop the theory and produce new results. Also, many participants from abroad visited Sendai and thus contributed to the promotion of the international exchange in the Sendai area. Especially, by the support of THE TOKYO CLUB students and young scientists of the future generation from Asian countries such as China, Korea, India, Vietnam, Cambodia, etc., could participate in the thematic program. This created an interaction among Japanese and foreign students and young researchers. At this occasion students from abroad became interested in studying at a Japanese university.



Program Organizers



Hiroshi Ooguri (Director, Kavli Institute for the Physics and Mathematics of the Universe (Kavli IPMU) / Professor, California Institute of Technology)

Prof. Ooguri completed his Master course of Kyoto University and received the degree of Doctor of Science at the University of Tokyo. He worked as a researcher at Institute for Advanced Studies in Princeton, as an associate professor at the University of Chicago, and as a professor at the University of California, Berkeley. In 2007, he became the first Fred Kavli professor at Caltech. He was awarded the Eisenbud Prize for Mathematics and Physics, the Humboldt research award, the Nishina Memorial Prize, and the Hamburg Prize.



Masahiro Yamaguchi (Professor, Graduate School of Science, Tohoku University)

Prof. Yamaguchi completed his doctor course in the University of Tokyo. He took his current position at Tohoku University from 2003. His research field is Theory of Elementary Particle Physics, especially in physics beyond the standard model and early universe. He was awarded the Nishinomiya-Yukawa Memorial Award.



Koji Hasegawa (Associate Professor, Graduate School of Science, Tohoku University)

Assoc. Prof. Hasegawa completed his master's degree and received a doctor of science from Nagoya University. He took his current position from 2013. He published the books entitled "Linear Algebra" and on "New Textbook in Ordinary Differential Equations" with K. Horihata.



Satoshi Watamura (Associate Professor, Graduate School of Science, Tohoku University)

Assoc. Prof. Watamura completed his doctor course in the University of Tokyo. He worked as a postdoctoral JSPS fellow at the Yukawa Institute of Theoretical Physics, Kyoto University, and as a postdoc at CERN (Switzerland) and from 1986 to 1987 at Karlsruhe University (Germany). In 1987 he became an assistant professor at Tohoku University, College of General Education, and was promoted to an associate professor at Faculty of Science and in 2007 to his present position.

Program Highlights

The core of the present program is the international conference “String-Math 2018”, led by the Fields Medalist Edward Witten, which is an international conference held every year by the world’s leading researchers in the field of string theory and related mathematical physics. This time this international conference was held in coordination with the international conference “Strings 2018” held at the Okinawa Institute of Science and Technology (OIST) in Okinawa, and as a result many participants from abroad joined.

Since many of the world’s leading researchers in this field were invited, many researchers from Japan also joined. We can say that with this event we succeeded to raise the international reputation of the activities of the TFC. Since the students and young researchers at Tohoku University actively participated in the discussions and exchange of research ideas with the world’s top researchers, one can say that they were strongly inspired by this event. This time, we tried to encourage especially young researchers from Asia and supported around 20 young participants. With this effort we succeeded to stimulate the exchange of ideas among young scientists on an international level.



Specific Strategies for International Research Exchange

This event is a first step to organize and enlarge the international research network in string theory and the research fields related to this subject.

For the international conference, we could cooperate successfully for organization with the Kavli IPMU and the OIST in Okinawa. We were supported by the Kavli Foundation, the Simons Foundation and The Tokyo Club, and this fact also shows that our activities were recognized on an international scale.

Also, we could draw the attention of many researchers in this field to the activities of TFC. Moreover, the fact that we were asked to host in 2020 the international conference “Kavli Asian Winter School on Strings, Particles and Cosmology” by the Kavli Foundation is a result of the present thematic program.

International Training for Young Personnel

Without doubt we can say that the students and young researchers must have been very stimulated by attending such a conference where the world’s leading researchers gather and discuss the frontier developments of their subject. Young researchers could directly discuss with the scientists leading in the field and receive advice on research from them. We expect that this interaction will push forward the research activities of the young generation. It also gave them awareness about the research centers abroad and the possibility to proceed with their own research within the international community. This time we could invite young scientists from Asia and their enthusiastic engagement in science had a strong impact on the Japanese students and young researchers. This stimulated an intensive exchange of ideas among this generation and we expect that they will become good future competitors.

Principle Invited Researchers



Edward Witten

(Institute for Advanced Study, Princeton, USA)

Professor at Institute for Advanced Study, Princeton. From 1980 to 1987 he was a professor at the Physics Department of Princeton University. In 1990 he was awarded the Fields Medal. In 1995 he proposed the M-theory hypothesis which gave a strong impact on the string theory society.



Cumrun Vafa

(Harvard University, USA)

Professor at Harvard University. His main research contributions are the statistical derivation of the black hole entropy using the D-brane in the superstring theory, 3-dimensional Calabi-Yau manifold, the Gromov-Witten invariants and Mirror symmetry. In 2008 he was awarded the Dirac Medal of the ICTP, in 2016 he received the Heineman Prize for Mathematical Physics and in 2017 was awarded the Breakthrough Prize in Fundamental Physics.



Shing-Tung Yau

(Harvard University, USA)

Professor at Harvard University. He is the founder of the Calabi-Yau manifolds. In 1981 he was awarded the Oswald Veblen Prize in Geometry, in 1982 the Fields Medal, in 1991 the Humboldt Research Award, in 1994 the Crafoord Prize and in 2010 the Wolf Prize in Mathematics.



Hiraku Nakajima

(Kavli IPMU, the University of Tokyo, Japan)

Principal Investigator at Kavli IPMU/ Professor of the University of Tokyo. His research field is representation theory and complex geometry. In 2000 he was awarded the Spring Prize of the Mathematical Society of Japan, in 2003 the Cole Prize in Algebra, in 2006 the Second JSPS Prize, and in 2014 the 104th Japan Academy Prize.



Jeffrey Harvey

(University of Chicago, USA)

Professor at University of Chicago. He is one of the leading researchers in the field of string theory. He proposed the heterotic string. He is a fellow of the American Physical Society and the American Academy. He is appointed to the Board of Trustees of the Institute for Advanced Studies, Princeton.



Gregory Moore

(Rutgers University, USA)

Professor at Rutgers University. He made major contributions to the study of D-branes on Calabi-Yau manifolds. In 2014 he was awarded the Dannie Heineman Prize for Mathematical Physics, and in 2015 the Dirac Medal from ICTP. He is also an advisor member of Springer's Encyclopedia of Mathematical Physics.



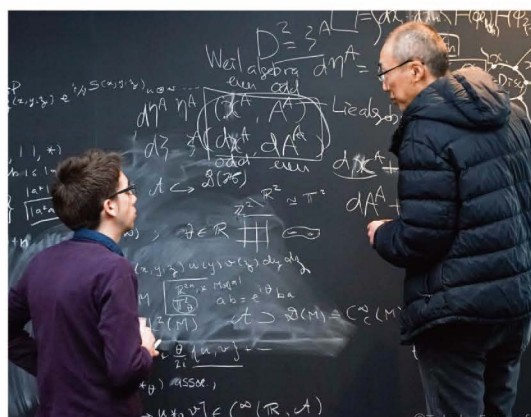
Mirjam Cvetič

(University of Pennsylvania, USA)

Professor at University of Pennsylvania. In 1987 she became assistant professor of University of Pennsylvania, in 1994 promoted to associate professor and in 1999 to her present post (Fay R. and Eugene L. Langberg Endowed Chair). Her field is superstring theory and M-theory.

Strategies Following the Completion of the Program

The strategy of the present thematic program is to construct an international network of researchers working in the superstring theory and related fields, especially in particle physics and mathematical sciences such as geometry and algebraic geometry. The platform for this purpose is the String-Math 2018 conference of this thematic program and the Strings 2018 conference at OIST in Okinawa. Our strategy is to use these two international conferences held in Japan to put the next generation of Japanese researchers on the springboard and to produce world leading researchers from Japan.





Thematic Program | October 2018

Tohoku Universal Acoustical Communication Month 2018

Sound has played a fundamental role in communications since the dawn of society and the rise of spoken languages. With the advent of technology, we devised methods to record sounds and to transmit them over long distances. Nowadays, sound plays a central role in smart assistants and immersive 3D and extended reality platforms.

The theme of this program is the future of “universal acoustical communication.” It brought together world-class researchers and young scientists throughout a Universal Acoustical Communication Month. The program revolved around an International Symposium with keynotes from distinguished researchers and contributed poster presentations. The Symposium was complemented by a series of satellite seminars in specialized topics. These included invited and tutorial lectures by distinguished researchers as well as selected young scientists.

Important Goals and Degree of Achievement

The main goal of this program is to contribute towards the future of “universal acoustical communication” in our society. To this end, researchers from five related fields (brain sciences, perception, hearing, speech processing and spatial sound) converged in an International Symposium and four satellite seminars to exchange ideas and propose new research trajectories. During the span of the program, Tohoku University started new collaborations with the University of Cambridge and the University College London.

In specific terms, the satellite seminars provided a venue for all interested participants to learn about the latest research topics from tutorial lectures by distinguished scientists and selected Invited Young Lecturers.

Participation totals were as follows:

1. Seminar on music, sound, speech and artificial intelligence: 34 participants (22 from within Japan, 12 from abroad)
2. Seminar on psychology and brain sciences related to hearing and multisensory processing: 121 participants (99 from within Japan, 22 from abroad)
3. Seminar on brain, hearing and speech sciences for universal speech communication: 72 participants (46 from within Japan, 26 from abroad)
4. Seminar on the spatial aspects of hearing and their applications: 49 participants (30 from within Japan, 19 from abroad)

The International Symposium at the core of the program included keynote lectures by leading researchers, the opportunity for exchange through a panel discussion and a poster session featuring mid-career and young researchers as well as contributed presentations from students. The Symposium attracted a total of 137 participants (100 from within Japan, 37 from abroad) with 74 presentations (49 by scientists from Japan, 25 by foreign scientists).

In the context of the program's objectives, the events led to important exchange of academic ideas and opportunities for new research between recognized and young scientists both within Japan and abroad. Participation numbers and their balance between local and foreign scientists also illustrate the success of the program.

Program Organizers



Yôiti Suzuki (Professor, Research Institute of Electrical Communication, Tohoku University)

Prof. Suzuki received his Ph.D. from the School of Engineering, Tohoku University in 1981. He was appointed as a Professor in the Research Institute of Electrical Communication, Tohoku University in 1999. He worked as president of the Acoustical Society of Japan from 2005 to 2007. He was awarded the Prize for Science and Technology in the research category of the Commendation for Science and Technology by the Minister of Education, Culture, Sports, Science and Technology in 2016.



Brian C. J. Moore (Emeritus Professor, University of Cambridge)

Prof. Moore received his Ph.D. in experimental psychology from the University of Cambridge. He is a fellow of the Royal Society and member of the Academy of Medical Sciences. He is a leading researcher in the field of acoustic perception and the science and technology behind universal acoustical communication.



Masato Akagi (Professor, Japan Advanced Institute of Science and Technology)

Prof. Akagi received his Ph.D. from the Tokyo Institute of Technology in 1986. He worked as a researcher in Nippon Telegraph and Telephone Corporation and the Advanced Telecommunications Research Institute International before being appointed as a Professor in 1999. He was awarded the Sato Prize Paper Award by the Acoustical Society of Japan in 2011.



Akinori Ito (Professor, School of Engineering, Tohoku University)

Prof. Ito received his Ph.D. from the School of Engineering, Tohoku University in 1986. He worked in Yamagata University and Boston University before joining the Graduate School of Engineering, Tohoku University as an Associate Professor in 2002 before being appointed as a Professor in 2010. He was awarded the Best Paper Award in the International Conference on Natural Language Processing and Knowledge Engineering in 2008.



Tetsuaki Kawase (Professor, Graduate School of Biomedical Engineering, Tohoku University)

Prof. Kawase graduated from the Tohoku University School of Medicine in 1982. He worked in Massachusetts Eye and Ear of the Harvard Medical School and the Tohoku University Hospital before being appointed as a Professor in the Graduate School of Biomedical Engineering, Tohoku University in 2008. He is a councilor in the Oto-Rhino-Laryngological Society of Japan, the Japan Ontological Society and the Japan Audiological Society.



Jiro Gyoba (Professor, Graduate School of Arts and Letters, Tohoku University)

Prof. Gyoba received his Ph.D. from the Graduate School of Arts and Letters, Tohoku University in 1981. He worked as an Associate Professor in the Faculty of Arts, Shinshu University and the School of Letters, Kyushu University before being appointed as a Professor in the Graduate School of Arts and Letters, Tohoku University in 2002. He is a member of the Japanese Psychological Association, the Japanese Psychonomic Society, the Japanese Society for Cognitive Psychology and the Institute of Electronics, Information and Communication Engineers.

Program Highlights

In addition to establishing collaborative efforts between Tohoku University and leading research institutions around the world, the Tohoku Forum for Creativity held a number of academic events which included:

International Symposium: Featuring 18 keynote lectures by distinguished scientists, panel discussions, and oral presentations from young researchers and students. Special lectures were provided by Prof. Brian C.J. Moore on computational models for sound quality, and Prof. Yôiti Suzuki who explained the public address system used during natural disasters and emergencies. Keynote sessions focused on topics such as brain sciences, artificial intelligence, 3-D sound, speech and hearing. Music was provided by the Tohoku University's Symphony Orchestra.



Satellite Seminars: Four seminars were held in 2018. The first seminar centered on music, sound speech and artificial intelligence, featuring two keynote lectures, three lectures by young scientists, and a tutorial lecture given by Prof. Fred Juang on speech coding and automatic speech recognition. The second seminar focused on psychology and brain sciences relating to hearing and multisensory processing. This seminar included four tutorial lectures given by Prof. Maria Chait and Prof. Charles Spence and a poster session by young scientists. The third seminar focused on brain, hearing and speech sciences, with 11 keynote lectures, 11 presentation by young researchers, and a tutorial lecture by Prof. Brian C.J. Moore. The final seminar focused on the spatial aspects of hearing and their application, featuring 15 keynote lectures, 5 presentations by young scientists, and a tutorial lecture by Prof. Craig Jin on digital processing of 3D spatial sound information.

Specific Strategies for International Research Exchange

This program focused on bringing together researchers in different fields from all over the world in order to advance the science and technology needed for truly universal acoustical communication. The multidisciplinary nature of the program, as well as the vast range of distinguished and invited researchers who participated in it, formed a solid basis to encourage academic exchange and open the doors to students and young researchers through tutorial lectures, panel discussion and poster sessions. Throughout this program it was possible to establish new collaboration venues between Tohoku University and the University of Cambridge, as well as the University College London. This was reflected not only in special and keynote lectures given during the main events, but also as extended stays by distinguished researchers. Finally, proceedings for the events were handed over to Acoustical Science and Technology, the English Journal of the Acoustical Society of Japan to be considered for publication in an open-access special issue.

The visibility of open-access publications by distinguished researchers, the academic exchange spaces created throughout the event for discussion between leading experts and young scientists, and the new collaboration venues between Tohoku University and other institutions abroad are the key to richer international research exchange needed to achieve universal acoustical communication.

International Training for Young Personnel

An important part of the Universal Acoustical Communication Month was its Invited Young Lecturers program. The program was open to doctoral students and those who obtained their Ph.D. within the last 10 years. The program covered transportation and accommodation expenses in full, as well as waving registration fees for the International Symposium.

Another important aspect was the creation of discussion spaces for young researchers to exchange ideas with distinguished scientists. One of such spaces was a panel discussion held during the International Symposium. The panel brought together a multidisciplinary array of experts to discuss the open problems and their views for the future of their respective fields in the context of universal acoustical communication. This discussion, given as a message for the younger generation, was complemented through a total of 7 tutorial lectures.

Principle Invited Researchers



Charles Spence

(University of Oxford, UK)

A leading researcher in the field of multisensory perception processes and founder of the highly-regarded International Multisensory Research Forum. He was awarded the 10th Experimental Psychology Society Prize and the Friedrich Wilhelm Bessel Research Award.



Hedwig Gockel

(University of Cambridge, UK)

A leading researcher in the field of hearing including basic perceptual mechanisms and application of their understanding to the evaluation of hearing abilities.



Craig Jin

(The University of Sydney, Australia)

A recognized scientist in the fields of digital signal processing for 3D audio. He was awarded the National Recognition in Australia, 2005.



Junfeng Li

(Chinese Academy of Sciences, China)

A young researcher with a large number of contributions in the field of speech and acoustic signal processing. He is an Editorial Board Member for the Speech Communication journal.



Torsten Dau

(Technical University of Denmark, Denmark)

His research is hearing technology, especially in human sound perception in complex acoustic environments and quantitative modeling of the auditory signal processing in the hearing process. Honorary Award from Ulrik Brinch Foundation, 2014.



Andrew Oxenham

(University of Minnesota, USA)

A recognized researcher studying the basic processes at the ear and brain for the understanding of acoustic information. He has worked in the development of hearing aids, cochlear implants and automatic speech recognition.



Yi-Wen Liu

(National Tsing Hua University, Taiwan)

A young researcher with numerous achievements in the modeling of the inner ear and the auditory brainstem, as well as speech and audio signal processing, hearing aids and cochlear implants.



William Yost

(Arizona State University, USA)

A world-class researcher who has gained attention by publishing over 335 reports, articles and books in the field of auditory science and in particular in behavioral neuroscience. He has been named president of the Acoustical Society of America and chairman of the Ear, Nose and Throat Research Association.

Strategies Following the Completion of the Program

The key idea behind the program is the observation that speech and sound are at the core of communication between people or as an interface between users and a computer system. Further, hearing is a fundamental and complex part of our multimodal perception of the world. For these reasons, universal communication systems, enabling a rich and natural communication experience regardless of obstacles such as age, distance and environment, are necessary to improve our quality of life.

During this program, emphasis was given on the importance of starting new multidisciplinary collaborations towards the future of universal acoustical communication. These events brought together a generation of distinguished world research leaders and the next generation of young scientists. This program was successful in its goal in providing a venue for the generation of discussions and exchanges in a multidisciplinary environment. This program however, would only be a starting point. In the future, we will continue collaborating with the researchers who converged in Tohoku University for the Universal Acoustical Communication Month and hope other participants will also continue its discussion.



Other Activities | August 31, 2018

Falling Walls Lab Sendai 2018

A presentation competition was held jointly with the Falling Walls foundation of Germany for junior researchers aged 18 or above on August 31, 2018. 2018 marked the fifth year of the preliminary competition, which was first held in the Asian region at Tohoku University, featuring participation by 35 individuals from Tohoku University and others. All contestants presented their cutting-edge research or business model in 3 minutes, and the top three participants were awarded and dispatched to Berlin on November 8 to enter the final round.

The TFC conducted the coaching sessions for the applicants and the training sessions for the three winners in order to improve their presentation skills.

Quattro Seminars

The TFC regularly holds a series of seminars referred to as the “Quattro Seminars”, which focuses on topics in the areas of humanities and the social sciences. The seminars are a collaboration project between the University Research Administration, the Tohoku Forum for Creativity Collaboration project and Tohoku University, and seek to deepen collaborations between the four schools of humanities in Tohoku University by exploring interdisciplinary research themes. The seminars have been held five times in 2018 and is open to the public. Participation of up to 150 researchers were recorded, as researchers were able to utilize the seminars as an opportunity to engage in vigorous discussion and strengthen interpersonal connections.

*The term Quattro means “4” in the Italian language, representing the four faculties at Tohoku University: Faculty of Arts and Letters, the Faculty of Education, the School of Law, and the Faculty of Economics. The series is hosted by the TFC and the URA center.



Other Activities | March 2, 2019

Discovery Event for Aspiring Female Scientists

The Discovery Event for Aspiring Female Scientists was held on March 2, 2019. As many as 11 female high school students actively participated in this event, which was aimed at female students interested in enrolling at Tohoku University. It consisted of lectures by talented female researchers in the fields of environmental sciences, ophthalmology, as well as lectures from the university's young female scientists. In addition, the event included group discussions, providing valuable opportunities for participants to talk with other female students from across Japan.



Other Activities | May 2018 – March 2019

Emerging Perspectives Program

The TFC has carried out the Emerging Perspectives Program since 2017, to plant the seeds for future Thematic and Junior Research Programs via seminar lectures by researchers from various fields. During the 2018 academic year, the following events were held, “Acceleration for Solving Optimization Problem by Quantum Annealing - Optimization by Natural Phenomena for Optimal Society”, “Fusion with Mathematical Neuroscience of Mutually Exclusive Control of a Distributed and a Central Nervous System 2 - 3” and the “TFC Fusion Research Seminar #9 - #13”. In addition, Dr. Martin Peters, Editor-in-Chief of Springer's Mathematics, Computational Science and Engineering Division, was invited to hold a special lecture entitled “Innovation in Mathematics Publishing at Springer”.



Other Activities | June 23, 2018

The Man from the 9 Dimensions

Lecturer: Hiroshi Ooguri

Professor at the California Institute of Technology and Founding Director of the Walter Burke Institute for Theoretical Physics, Senior researcher at the University of Tokyo Kavli Institute for the Physics and Mathematics of the Universe, Director of the Aspen Center for Physics

“The Man from the 9 Dimensions” by Prof. Hiroshi Ooguri was held as a special lecture on the 5th anniversary of the Tohoku Forum for Creativity, as part of the Thematic Program 2018 String-Math 2018. This lecture offered the opportunity to become familiar with cutting edge physics research through a lecture and screening the film, The Man from the 9 Dimensions, for which Prof. Hiroshi Ooguri served as a science advisor.

In his lecture, Prof. Ooguri explained superstring theory, which is the foundation of astrophysics that forms the scientific background for this movie and is also the core of his own research. The screening provided viewers the chance to witness the insightfulness of Prof. Ooguri’s film.

Although there was seating for 90 viewers, participation over-exceeded room capacity, demonstrating the immense interest in the film and research topic.



Special Lecture on the 5th Anniversary

Other Activities | July 29, 2018

Genome Editing

Lecturer: Jennifer A. Doudna

Professor at the University of California, Berkeley

As one of the events held as part of the 5th anniversary of the Tohoku Forum for Creativity, we held an international symposium on genome editing, which has brought revolutionary change to medical and life science research.

Prof. Doudna took to the stage to give a keynote speech. Prof. Yoshizumi Ishino of Kyushu University, renown for discovering DNA base sequences that is key to genome editing, presented his research at this event. In addition, there were presentations by Prof. Mikiko Siomi, the University of Tokyo, Prof. Asako Sugimoto, Tohoku University, and Dr. Masanobu Morita, Tohoku University, and also young researchers from Tohoku University presented several flash talks.

There were approximately 200 participants, and there were also opportunities for our young researchers to interact with the lecturing professors, including Prof. Doudna.





Other Activities | December 7, 2018

Thought Axis and Education that Make it Possible to Implement Research Outcomes in Society:

From the Perspective of the Humanities and Social Studies

Lecturer: Haruaki Deguchi

President of Ritsumeikan Asia Pacific University (APU)
Trustee, Vice-Chancellor of the Ritsumeikan Trust

“Thought Axis and Education that Make it Possible to Implement Research Outcomes in Society: From the Perspective of the Humanities and Social Studies” was held as a special lecture on the 5th anniversary of the Tohoku Forum for Creativity.

President Deguchi, Ritsumeikan Asia Pacific University (APU) gave this lecture explaining the reasons for the decline of Japan’s competitive power and the role that education institutions should play, a topic about which he feels strongly from his various experiences as a practical businessman and an educator. This lecture provided an opportunity to consider policies that can help develop Japanese universities as a growth industry.

Following the lecture, students and public participants were able to participate in a question and answer session with him.

of the Tohoku Forum for Creativity



Other Activities | January 11, 2019

Tohoku Forum for Creativity Premium

Lecturers:

Masayuki Yamamoto

Professor, Executive Director of Tohoku Medical Megabank Organization, Tohoku University

Kunio Inoue

Professor, Director of Research Center for Neutrino Science, Tohoku University

“Tohoku Forum for Creativity Premium” was held in the Nihonbashi Life Science Hub with the aim of making the activities of the TFC widely known.

Prof. Masayuki Yamamoto, Executive Director of Tohoku Medical Megabank Organization, Tohoku University and Prof. Kunio Inoue, Director of Research Center for Neutrino Science, Tohoku University took the stage as lecturers - Prof. Yamamoto spoke on the topic of “The Challenge of Future-orientated Medical Care: Aiming for Rustproof Bodies,” and Prof. Inoue lectured on “The Structure of the Earth as Investigated Through Neutrinos and the Origins of the Substance of the Universe”. The lectures explained to the general public, Tohoku University’s cutting edge research as one of the world’s leading academic and research institutions.





Support for Young Researchers | March 2017 –

Leading Young Researcher Overseas Visit Program

This Program is one of the central pillars in transforming the research environment at this university, with support from the program for promoting the enhancement of research universities from the Ministry of Education, Culture, Sports, Science and Technology (MEXT) in 2013, implemented by the Tohoku Forum for Creativity in cooperation with the University Research Administration Center, Tohoku University. The program deploys junior researchers (researchers and faculty under the age of 40, as well as graduate students in the second semester of their doctoral programs and postdoctoral fellows at our graduate schools) overseas to cultivate leadership and an international viewpoint. The strategic deployment of highly motivated, outstanding junior researchers to excellent universities and research organizations overseas helps those researchers develop into leaders in the international academic world, and helps create new currents of academic research. Through the program, we expect to strengthen the presence of our junior researchers, and of the university, by taking the opportunity to participate in new elite academic research communities and leveraging the research results and interpersonal networks thereof to achieve future leadership in the relevant domains. For this reason, we prioritize selection of submissions from junior researchers that clearly state the positioning of this program in the formation of their careers and as strategy for improving this university's research capabilities. Normally, we support mid-term overseas studies of periods from six months to one year. The program of 2018 sent 12 junior researchers to overseas research organizations. Furthermore, presentations were held upon their return, and further follow up is provided to help cultivate those individuals as superb global leaders.

Visiting institute : Stanford University (USA)

Research theme : Study of optical MEMS and its application systems

Visiting Period : February 21, 2018 – February 20, 2019

Visitor : Takashi Sasaki (Assistant Professor, School of Engineering, Tohoku University)

Project Outcome

Optical isolators using a new optical principle based on time and space modulation of the refractive index had been studied with Professor Olav Solgaard at Stanford University. The optical isolator has a characteristic that the light transmittance changes depending on the traveling direction of light. The optical isolator is an essential device for stable operation of the laser optical system, and the research on integration on a semiconductor chip has been intensively studied. It has been shown that by using the new optical principle, it is possible to fabricate an isolator without the use of special materials, but there is a fundamental limit of the optical characteristics in the conventional devices. A new drive principle, process design and device structure design had been made to solve the optical limitation problem on the conventional devices. Through the activity at Stanford such as taking sophisticated nanophotonics lectures that are difficult to have at other universities and seminars by prominent researchers visiting Stanford on a daily basis, discussing with highly motivated researchers about the study of achievable isolators and with the professor on a weekly basis, the analysis methods and the process technologies that could be expected to make significant progress in the future were obtained. Finally, the realistic device design which has the new driving method had been developed.



Further Development and Networking

The analysis technology newly obtained at Stanford University is applicable not only to the isolator structure but also to various phenomena, and has become important methods for obtaining solutions that have been difficult to solve in the past. These methods can also be applied to research at Tohoku University. In addition, based on the mask design for the semiconductor process which has been designed during the stay, the process for making the device is in progress, and we plan to evaluate the prototype device in the future.

Visiting institute : University of California, Los Angeles (USA)

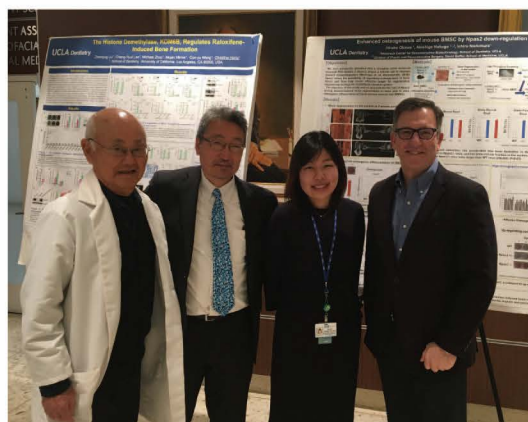
Research theme : Investigation of vascular calcification mechanisms using iPS cell-derived vascular tissue

Visiting Period : February 28, 2018 – February 28, 2019

Visitor : Hiroko Okawa (Clinical Fellow, Tohoku University Hospital)

Project Outcome

I stayed as a visiting scholar at Weintraub Center for Reconstructive Biotechnology at the University of California, Los Angeles (UCLA) Dental School for one year from March 2018 with the support of this program, and researched with Professor Ichiro Nishimura. Professor Nishimura conducts translational research aimed at regenerating maxillofacial tissues such as skin, blood vessels and jaw bones for patients. I participated in comprehensive tissue regeneration research using stem cells with Professor Nishimura, since I have been involved in research related to the development of jaw bone regenerative treatment using iPS cells at Tohoku University. Focusing on the relationship between stem cell differentiation and the circadian controlled genes, we started a project on stem cell differentiation research. In addition, as a co-author, three papers were published during this program. Many young researchers were gathered from around the world at UCLA Dental School and the Weintraub Center, and they improved themselves through friendly rivalry. I believe that working at UCLA will lead to the future development of my career.



Further Development and Networking

I presented my research project at the International Association for Dental Research (IADR) held in Vancouver in June 2019 and the American Society for Bone and Mineral Research (ASBMR). After this program, I continued to further develop stem cell research as a postdoctoral researcher in Professor Nishimura's lab. In the laboratory, I got the opportunity to teach students and gain experience in education. In addition, I would like to expand my network while maintaining the good relationship with the researchers in the same field acquired last year. When I visited Japan recently, I had an opportunity to speak about my experiences of working abroad for dental students and graduate students of Tohoku University who are interested in studying abroad. This program is expected to further increase the number of young researchers who will become academic leaders from Tohoku University.

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Thematic Program

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- 36 Geologic Stabilization and Human Adaptations in Northeast Asia
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- 38 Tohoku Universal Acoustical Communication Month 2018

Other Activities

- 38 Emerging Perspectives Program
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Support for Young Researchers

- 41 Leading Young Researcher Overseas Visit Program

Invited Researchers List

Invited Researchers

[Program Code:2018FCL]

Frontier of Chemical Communication

A. Ganesan (University of East Anglia)
 Heather Allen (Ohio State University)
 Antoine Amestoy (University of Bordeaux)
 Mieko Arisawa (Tohoku University)
 Noah Burns (Stanford University)
 Guido Clever (TU Dortmund)
 Fabian Dingfelder (University of Zurich)
 Siti Masturah binti Fakhruddin (Tohoku University)
 Zainab Fatima (Tohoku University)
 Chang Fu (Tohoku University)
 Sven Grundmann (Goethe University Frankfurt)
 Takeharu Haino (Hiroshima University)
 Hiroyuki Hakamata (Tohoku University)
 Itaru Hamachi (Kyoto University)
 Hisako Hashimoto (Tohoku University)
 Johan Hofkens (KU Leuven)
 Kumi Y. Inoue (Tohoku University)
 Shintaro Ishida (Tohoku University)
 Yuya Ishizaki (Tohoku University)
 Kaori Itto (Tohoku University)
 Tomoki Iwama (Tohoku University)
 Kiyoto Kamagata (Tohoku University)
 Naoki Kanoh (Tohoku University)
 Ayumi Kawasaki (Tohoku University)
 Haruhisa Kikuchi (Tohoku University)
 Hiroshi Kumigashira (Tohoku University)
 Kihyeon Kwon (Tohoku University)
 Jérôme Lacour (University of Geneva)
 Xiaoguang Lei (Peking University)
 Shin Mizukami (Tohoku University)

Eiichi Nakamura (University of Tokyo)
 Mina C. Nakhla (Baylor University)
 Jiang Nan (Tohoku University)
 Aurapat "Fa" Ngamthiporn (California Institute of Technology)
 Paul E. Ohno (Northwestern University)
 Michaël De Paolis (Université de Rouen, IRCOF-COBRA)
 Yoko Saikawa (Keio University)
 Naoki Sannodo (Tohoku University)
 David Sarlah (University of Illinois)
 Tetsu Sato (Tohoku University)
 Yusuke Sato (Tohoku University)
 Tsukasa Sawato (Tohoku University)
 Mark Searcey (University of East Anglia)
 Chen Shen (Tohoku University)
 Yumiko Suzuki (Sophia University)
 Noriko Taira (Tohoku University)
 Yousuke Takaoka (Tohoku University)
 Kazuo Takimiya (Tohoku University, RIKEN Center for Emergent Matter Science)
 Chikashi Toyoshima (University of Tokyo)
 Hirokazu Tsukamoto (Tohoku University)
 Parth Vashisht (Victoria University of Wellington)
 Herbert Waldmann (Max Planck Institute of Molecular Physiology)
 Nicolas Winssinger (University of Geneva)
 Jianyun Wu (Tohoku University)
 Shiki Yagai (Chiba University)
 Tsutomu Yamabayashi (Tohoku University)
 Tomoaki Yamada (Tohoku University)
 Guohao Yuan (Tohoku University)
 Yu Zhang (Tohoku University)

[Program Code:2018NEA]

Geologic Stabilization and Human Adaptations in Northeast Asia

Deming An (Chinese Academy of Social Sciences)
 David Anderson (University of Aberdeen)
 Masataka Ando (Shizuoka University)
 Ryūichi Aoki (Tohoku University)
 Shuangyue Bao (Tohoku University)
 Gina Lee Barnes (University of London)
 Ilona Bausch (Kokugakuin University Museum / Sainsbury Institute for the Study of Japanese Arts & Cultures)
 Hugh Beach (Uppsala University)
 Yuri Berezkin (European University at Saint Petersburg)
 David T. Bialock (University of Southern California)
 Václav Blažek (Masaryk University)
 Uyanga Bold (Mongolian University of Science and Technology)
 Aleksandar Bošković (Institute of Social Sciences & University of Belgrade)
 Emilia Chalandon (Kwansei Gakuin University)
 Moonsup Cho (Seoul National University)
 Signe Cohen (University of Missouri)
 Martín Cuitzeo Domínguez Nuñez (CIESAS)
 Eijirō Dōyama (Osaka University)
 Steve Farmer (Palo Alto)
 Lisa Fujiwara (University of Tokyo)
 Haruka Fukunagi (Tohoku University)
 Sergey Gladyshev (Russian Academy of Sciences)
 Akira Goto (Nanzan University)
 Junko Habu (UC Berkeley)
 Joseph Harris (Harvard University)
 Hasmik Hmayakyan (Institute of Oriental Studies)
 Yoshiyuki Iizuka (Academia Sinica)
 Kaori Ishii (Tohoku University)
 Yukio Isozaki (University of Tokyo)
 Aytalina Ivanova (North-Eastern Federal University)
 Joanna Jurewicz (University of Warsaw)
 Juha Kantanen (Natural Resources Institute Finland)
 Hirofumi Kato (Hokkaido University)
 Bong-Youl Kim (Dongguk University)

Takeshi Kimura (University of Tsukuba)
 Sachie Kiyokawa (Kobe University)
 Mare Kõiva (Estonian Literary Museum, Folklore Department)
 Shiaki Kondo (Hokkaido University)
 Sakurako Koresawa (Tohoku University)
 Sergey Krivonogov (Russian Academy of Sciences)
 Štěpán Kuchle (Masaryk University)
 Kyong-Woo Lee (Institute of Korean Prehistory)
 Marcin Lisiecki (Nicolaus Copernicus University)
 Seán Martin (Edinburgh Napier University)
 Shigenori Maruyama (Tokyo Institute of Technology)
 Attila Mátéffy (University of Bonn)
 Kazuo Matsumura (Wako University)
 William F. McDonough (University of Maryland / Tohoku University)
 Louise Milne (University of Edinburgh & Edinburgh Napier University)
 Koko Nango (Kobe University)
 Hiroya Noguchi (Hokkaido Museum of Northern Peoples)
 Boris Oguibénine (University of Strasbourg)
 Yuka Oishi (National Museum of Ethnology, Japan)
 Sunil Parab (Joseph Campbell Foundation & Shilva Institute of Ayurveda and Research & Sindhu Veda Research Institute)
 Daniel Pastor-Galán (University of Salamanca)
 Petr Podalko (Aoyama Gakuin University)
 Alexander Popov (Far Eastern Federal University)
 Anastassia Rechkalova (Novosibirsk State University)
 Inna Safonova (Novosibirsk State University)
 Katsuhiro Sano (Waseda Institute for Advanced Study (WIAS))
 Shiro Sasaki (National Museum of Ainu Culture)
 Ai Sasaki (Tohoku University)
 Michal Schwarz (Masaryk University)
 Irina Sedakova (Institute of Slavic Studies)
 Dmitry Shabanov (Novosibirsk State University)
 Guanghai Shi (China University of Geosciences)
 Viktoriia Slugina (Novosibirsk State University)
 Charles Stépanoff (École pratique des hautes études, Laboratoire d'anthropologie sociale)

Józef Szykalski (University of Wrocław)
 Andrey Tabarev (Russian Academy of Sciences)
 Yōichi Takahashi (Tohoku University)
 Kai Tateuchi (Tohoku University)
 Khatuna Tavdgiridze (Georgian American University)
 Keiko Tazawa (Ancient Orient Museum)
 Yoshinori Tojo (National Museum of Ethnology)
 Gregory P. Trencher (Tohoku University)
 Asami Tsukuda (Kyoto University)
 Marina Valentsova (Institute of Slavic Studies)
 Lucie Vinšová (Masaryk University)

Elena Voytishek (Novosibirsk State University)
 Kuo-Lung Wang (Academia Sinica)
 David Weiss (Rikkyo University)
 Michael Witzel (Harvard University)
 Nataliya Yanchevskaya (Princeton University)
 Lihui Yang (Beijing Normal University)
 Makoto Yokomichi (Kyoto Prefectural University)
 Ryu Yoshimura (Tokyo Metropolitan University)
 Emma Zhang (Hong Kong Baptist University)
 Dapeng Zhao (Tohoku University)

[Program Code:2018SRM]
 String-Math 2018

Du Thi Hoa Binh (Quy Nhon University)
 Seramika Ari Wahyoedi (Institut Teknologi Bandung)
 Seyedeh Maryam Noorbakhsh (Science Beam Institute)
 Tran Dinh Phung (Quy Nhon University)
 Mohammed Abouzaid (Columbia University)
 Mina Aganagic (UC Berkeley)
 Konstantin Aleshkin (SISSA / Landau ITP)
 Anuar Alias (University of Malaya)
 Shinichiro Ando (University of Amsterdam)
 Fabio Apruzzi (UNC Chapel Hill & Upenn)
 Nima Arkani-Hamed (Institute for Advanced Study)
 Jin-Beom Bae (KIAS)
 Rodrigo Barbosa (University of Pennsylvania)
 Maissam Barkeshli (University of Maryland)
 Aditya Bawane (Sogang University)
 Michael Bershadsky (Renaissance Technologies)
 Lakshya Bhardwaj (Perimeter Institute for Theoretical Physics)
 Pierre Bielavsky (University of Louvain)
 Peter Bouwknegt (Australian National University)
 Francis Brown (University of Oxford)
 Sergio Cecotti (SISSA)
 Kyoung-Ho Cho (Sogang University)
 Dongwook Choa (Seoul National University)
 Andrei Constantin (Uppsala University)
 Mirjam Cvetič (University of Pennsylvania)
 Claudia de Rham (Imperial College London)
 Ron Donagi (University of Pennsylvania)
 Marco Fazzi (Technion)
 Dan Freed (University of Texas at Austin)
 Masayuki Fukuda (University of Tokyo)
 Mocho Go (Kavli IPMU, University of Tokyo)
 Jumpei Gohara (Tokyo University of Science)
 Antonella Grassi (University of Pennsylvania)
 Jie Gu (Ecole normale supérieure)
 Masashi Hamanaka (Nagoya University)
 Jeffrey Harvey (University of Chicago)
 Falk Hassler (University of Oviedo)
 Weiqiang He (Tsinghua University)
 Yu-Chien Huang (Massachusetts Institute of Technology)
 Noriaki Ikeda (Ritsumeikan University)
 Nafiz Ishtiaque (Perimeter Institute for Theoretical Physics)
 Patrick Jefferson (Harvard University)
 Qingyuan Jiang (CUHK)
 Toshitaka Kajino (National Astronomical Observatory of Japan and Beihang University)
 Monica Jinwoo Kang (Harvard University)
 Mikhail Kapranov (Kavli IPMU)
 Taigen Kawano (Kyoto University)
 Christoph Keller (ETH Zurich)
 Yoshio Kikukawa (University of Tokyo)
 Kohei Kikuta (Osaka University)
 Hyunmoon Kim (Seoul National University)
 Ctirad Klimčik (CNRS, Marseille)
 Zohar Komargodski (Simons Center)
 Georgios Korpas (Trinity College Dublin)
 Naotaka Kubo (YITP, Kyoto University)
 Craig Lawrie (ITP Heidelberg)
 Yasunori Lee (Kavli IPMU, University of Tokyo)
 Si Li (Tsinghua University)
 Yifan Li (Tsinghua University)
 Ling Lin (University of Pennsylvania)

Luca Lionni (Kyoto University)
 Yolanda Lozano (University of Oviedo)
 Chen-Te Ma (National Taiwan University)
 Marcos Mariño (University of Geneva)
 Eduardo Martin-Martinez (University of Waterloo)
 Nobuyuki Matsumoto (Kyoto University)
 Takaki Matsumoto (University of Tsukuba)
 Fakhereh MD Esmaili (University of Hyderabad)
 Victor Mikhaylov (Simons Center)
 Bivudutta Mishra (BITS-Pilani, Hyderabad Campus)
 Gregory Moore (Rutgers University)
 Kevin Morand (Sogang University)
 Sanefumi Moriyama (Osaka City University)
 David Morrison (UC Santa Barbara)
 Hisayoshi Muraki (Sogang University)
 Hiraku Nakajima (Kavli IPMU, University of Tokyo)
 Yusuke Nakajima (Kavli IPMU, University of Tokyo)
 Andrew Neitzke (University of Texas, Austin)
 Tomotoshi Nishino (Kobe University)
 Eoin Ó Colgáin (APCTP)
 Suguru Okumura (Kyoto University)
 Yi-Wen Pan (Uppsala University / Sun Yat-sen University)
 Tony Pantev (University of Pennsylvania)
 Jeong-Hyuck Park (Sogang University)
 Shah Parth Mukeshbhai (BITS-Pilani)
 Leonardo Rastelli (Stony Brook University)
 Junichi Sakamoto (Kyoto University)
 Yuhō Sakatani (Kyoto Prefectural University of Medicine)
 Gauranga Samanta (BITS-Pilani)
 Matsuo Sato (Hiroshima University)
 Yuji Sato (University of Fukui)
 Antonio Sciarappa (KIAS)
 Kenta Shiozawa (Kitasato University)
 Hongfei Shu (Tokyo Institute of Technology)
 Yuji Sugimoto (Osaka City University)
 Sotaro Sugishita (Osaka University)
 Haoyu Sun (UC Berkeley)
 Kaiwen Sun (SISSA)
 Benjamin Sung (Northeastern University)
 Alex Takeda (UC Berkeley)
 Jörg Teschner (University of Hamburg)
 Masaki Tezuka (Kyoto University)
 Yukinobu Toda (Kavli IPMU)
 Sunil Tripathy (Indira Gandhi Institute of Technology)
 Cumrun Vafa (Harvard University)
 Benoît Vicedo (University of York)
 Christophe Wacheux (IBS-CGP)
 Yinan Wang (Massachusetts Institute of Technology)
 Jacob Winding (KIAS)
 Edward Witten (Institute for Advanced Study)
 Xiaomeng Xu (MIT)
 Koji Yamaguchi (Tohoku University)
 Hikaru Yamamoto (Tokyo University of Science)
 Masahito Yamazaki (Kavli IPMU)
 Fei Yan (University of Texas at Austin)
 Shing-Tung Yau (Harvard University)
 Shuichi Yokoyama (YITP, Kyoto University)
 Matthew Young (Chinese University of Hong Kong)
 Seunsook Yu (POSTECH)
 Hong Zhang (Chinese Academy of Sciences)

[Program Code:2018UAC]**Tohoku Universal Acoustical Communication Month 2018**

Irwansyah (Kumamoto University)	Yu Masago (Chuo University)
Ercan Altinsoy (TU Dresden)	Qinglin Meng (South China University of Technology)
Takayuki Arai (Sophia University)	Sebastian Merchel (TU Dresden)
Serkan Atamer (TU Dresden)	Daisuke Morikawa (Toyama Prefectural University)
Pascal Barone (CNRS Brain & Cognition)	Masanori Morise (University of Yamanashi)
Roberta Bianco (UCL Ear Institute)	Seiji Nakagawa (Chiba University)
Owen Brimjoin (Oculus Research/FRL)	Momoka Nishimura (Doshisya University)
Maria Chait (University College London)	Keita Noguchi (Muroran Institute of Technology)
Yu Chen (Tianjin University of Technology)	Hidehiko Okamoto (International University of Health and Welfare)
Inyong Choi (University of Iowa)	Satoshi Okazaki (Kyoto City University of Arts)
Michael Cohen (University of Aizu)	Akira Omoto (Kyushu University)
John F. Culling (Cardiff University)	Makoto Otani (Kyoto University)
Torsten Dau (Technical University of Denmark)	Sho Otsuka (Chiba University)
Giovanni Di Liberto (Centre national de la recherche scientifique, ENS)	Andrew John Oxenham (University of Minnesota)
Shin'ya Fujii (Keio University)	Kenji Ozawa (University of Yamanashi)
Waka Fujisaki (Japan Women's University)	Xiuyuan Qin (Chiba University)
Yuta Furukawa (Sophia University)	Charalampos Saitis (Technical University Berlin)
Shigeto Furukawa (NTT CS Laboratories)	Nobuyuki Sakai (Tohoku University)
Hedwig Gockel (University of Cambridge)	Maki Sakamoto (University of Electro-Communications)
Yuta Hashimoto (University of Toyama)	Sakriani Sakti (Nara Institute of Science and Technology)
Masanori Higuchi (Kanazawa Institute of Technology)	Hayato Sato (Kobe University)
Lise Hobeika (Institut de Recherche et Coordination Acoustique/Musique)	Mika Sato (Hannover Medical School)
Akio Honda (Shizuoka Institute of Science and Technology)	Josef Schlittenlacher (University of Cambridge)
Justine Hui (Speech Communication Lab, Sophia University)	Aleksander Sęk (Adam Mickiewicz University)
Kazunari Ikeda (Tokyo Gakugei University)	Kaoru Sekiyama (Kyoto University)
Shu Imaizumi (University of Tokyo)	Junjie Shi (Tohoku University)
Erin Ingvalson (Florida State University)	Charles Spence (University of Oxford)
Toshio Irino (Wakayama University)	Tsukasa Suenaga (YAMAHA Co., Ltd.)
Sachi Itagaki (Doshisya University)	Yukiko Sugiyama (Keio University)
Yuki Ito (Doshisya University)	Henna Tahvanainen (Research and Development Division, Yamaha Music Instruments)
Craig Jin (University of Sydney)	Hirokazu Takahashi (University of Tokyo)
Fred B.H. Juang (Georgia Institute of Technology)	Mamoru Takano (Tokyo Metropolitan University)
Chihiro Kambayashi (Tokai University)	Yuta Tamai (Doshisya University)
Toru Kamekawa (Tokyo University of the Arts)	Ryusuke Tanaka (University of Electro-Communications)
Hideki Kawahara (Wakayama University)	Ryo Teraoka (Tohoku University)
Shunsuke Kidani (JAIST)	Hiroki Terashima (NTT Communication Science Laboratories)
Sungyoung Kim (Rochester Institute of Technology)	Jorge Trevino (Tohoku University)
Yuki Kitagishi (Kansai University)	Chia-huei Tseng (Tohoku University)
Birger Kollmeier (Carl von Ossietzky University of Oldenburg)	Minoru Tsuzaki (Kyoto City University of Arts)
Ilkka Kosunen (Tallinn University)	Yuta Ujii (Chuo University)
Takuya Koumura (NTT Communication Science Laboratories)	Masashi Unoki (Japan Advanced Institute of Science and Technology)
Shoichi Koyama (University of Tokyo)	Julian Villegas (University of Aizu)
Kei Koyama (RION Co., LTD)	Haonan Wang (Ritsumeikan University)
Andrej Kral (Hannover Medical University)	Shiori Watanabe (Kyoto City University of Arts)
Shunya Kurachi (Toyama Prefectural University)	Yuko Watanabe (Tokyo Denki University)
Kyogu Lee (Seoul National University)	Katsuhiko Yamamoto (Wakayama University)
Junfeng Li (Chinese Academy of Sciences)	Shin'ya Yamamoto (National Institute of Advanced Industrial Science and Technology)
M. Charles Liberman (Harvard University)	Daiki Yamasaki (Kyoto University)
Yi-Wen Liu (National Tsing Hua University)	Dingding Yao (Chinese Academy of Sciences)
Tapio Lokki (Aalto University School of Science)	William Yost (Arizona State University, College of Health Solutions)
Kei Maeda (Tohoku University)	Bin Zhao (JAIST, Tianjin University)
William L. Martens (University of Sydney)	

[Program Code:2018EPP] Emerging Perspectives Programs

Daisuke Ando (Tohoku University)	Masayuki Ohzeki (Tohoku University)
Bo Ewald (D-Wave International)	Martin Peters (Mathematics, Computational Science and Engineering Springer-Verlag)
Yoshiaki Hayashi (Tohoku University)	Olivier Pironneau (Sorbonne University)
Timo Huttula (Finnish Environment Institute (SYKE))	Masayoshi Terabe (DENSO)
Akio Ishiguro (Tohoku University)	Ichiro Tsuda (Chubu University)
Hiroaki Kobayashi (Tohoku University)	Aiko Yakeno (Tohoku University)
Hajime Mushiaki (Tohoku University)	Kotaro Yasui (Tohoku University)
Mitsuyuki Nakao (Tohoku University)	Takashi Yokoyama (Recruit Communications)
Hidetoshi Nishimori (Tokyo Institute of Technology)	

[Program Code:2018OA] Other Activities

Polina Anikeeva (MIT)	Haruhiko Bito (University of Tokyo)
Takafumi Aoki (Tohoku University)	Ritchie Chen (Stanford University)
Yui Arimatsu (UNESCO)	Haruaki Deguchi (Ritsumeikan Asia Pacific University)
Masahiko Asano (Takushoku University)	Jennifer A. Doudna (University of California Berkeley, Howard Hughes Medical Institute)

Hiroshi Fujiwara (BroadBand Tower, Inc. and Internet Research Institute, Inc.)
 Tadahiro Hayasaka (Tohoku University)
 Kunio Inoue (Tohoku University)
 Yoshizumi Ishino (Kyushu University)
 Jean-Yves CAVAILLÉ (ELYTMAX)
 Mei Kobayashi (NTT Communications)
 Irene Lin (Goertek Technology Japan)
 Ko Matsui (Tohoku University)
 Masanobu Morita (Tohoku University)
 Masao Ogaki (Keio University)
 Hideki Ohira (Nagoya University)
 Naoto Okihara (Global Supply Chain Division, TOKIN Corporation)

Tadashi Onodera (KDDI Corporation)
 Noriko Osumi (Tohoku University)
 Matthieu Py (EURAXESS Japan)
 Haruo Saji (MISORA Observatory, Biei Local Museum "MISORA")
 Yuzuru Sato (Hokkaido University)
 Mikiko Siomi (University of Tokyo)
 Asako Sugimoto (Tohoku University)
 Toshiyuki Tabata (Laser Systems and Solutions of Europe (LASSE))
 Norio Takada (Keio University)
 Kenji Toma (Tohoku University)
 Masayuki Yamamoto (Tohoku University)

Thematic Program 2018 | Program Code: 2018FCL

Frontier of Chemical Communication

[Event] The 1st International Symposium on Chemical Communication in Tohoku University

- Date: Monday, October 31, 2016
- Venue: Aoba Science Hall, Science Complex C, Aobayama North Campus, Tohoku University

[Event] Special Lecture by Prof. Michaël De Paolis

- Date: Wednesday, May 23, 2018 – Thursday, May 24, 2018
- Venue: [May 23] Lecture Room (Large), [May 24] Small Lecture Room 1 : Main Lecture Hall, Graduate School of Pharmaceutical Sciences, Aobayama North Campus, Tohoku University
- Participants: 120

[Event] The 2nd International Symposium on Chemical Communication

- Date: Monday, May 28, 2018 – Tuesday, May 29, 2018
- Venue: Aoba Science Hall, Science Complex C, Aobayama North Campus, Tohoku University
- Participants: 152

[Event] Special Seminar by Prof. Mark Searcey

- Date: Thursday, May 31, 2018
- Venue: Lecture Room (Large), Main Lecture Hall, Graduate School of Pharmaceutical Sciences, Aobayama North Campus, Tohoku University
- Participants: 80

[Event] Special Lecture by Prof. A. Ganesan

- Date: Tuesday, July 17, 2018, Thursday, July 19, 2018 - Friday, July 20, 2018
- Venue: [July 17] Lecture Room (Large), [July 19 – 20] Lecture Room (Middle) : Main Lecture Hall, Graduate School of Pharmaceutical Sciences, Aobayama North Campus, Tohoku University
- Participants: 150

[Event] Special Seminar by Prof. Guido Clever

- Date: Monday, July 30, 2018
- Venue: Lecture Room (Large), Main Lecture Hall, Graduate School of Pharmaceutical Sciences, Aobayama North Campus, Tohoku University
- Participants: 80

[Event] Summer School

- Date: Monday, August 27, 2018 – Tuesday August 28, 2018
- Venue: Science Lecture Hall, Graduate School of Science and Faculty of Science, Aobayama North Campus, Tohoku University
- Participants: 310

[Event] The 3rd International Symposium on Chemical Communication

- Date: Monday, September 10, 2018 – Tuesday, September 11, 2018
- Venue: Sendai International Center, Conference Building 3F, Shirakashi Conference Room
- Participants: 133

[Event] Special Lecture by Prof. Heather C. Allen

- Date: Tuesday, October 16, 2018
- Venue: Chemistry Lecture Hall, Aobayama North Campus, Tohoku University
- Participants: 30

Thematic Program 2018 | Program Code: 2018NEA

Geologic Stabilization and Human Adaptations in Northeast Asia

[Event] Workshop 1: Natural Disaster and Religion/Mythology

- Date: Tuesday, June 5, 2018
- Venue: TOKYO ELECTRON House of Creativity 3F, Lecture Theater, Katahira Campus, Tohoku University
- Participants: 30

[Event] Workshop 2: Variabilities in Prehistoric Human Cultural Adaptations in Northeast Asia: The Initial Upper Paleolithic, the Last Glacial Maximum, and the Post-Pleistocene Adaptations

- Date: Saturday, August 4, 2018 – Sunday, August 5, 2018
- Venue: Room 317 3F Graduate School / Faculty of Arts and Letters Building, Kawauchi Campus, Tohoku University
- Participants: 21

[Event] Workshop 3: Continental Amalgamation and Stabilization of Northeast Asia: Stories before the Stone Age

- Date: Thursday, February 21, 2019 – Friday, February 22, 2019
- Venue: TOKYO ELECTRON House of Creativity 3F, Lecture Theater, Katahira Campus, Tohoku University
- Participants: 69

[Event] Workshop 4: Northern Modes of Foraging and Domestication as an Interaction among Humans, Animals, and Geography

- Date: Thursday, February 21, 2019 – Friday, February 22, 2019
- Venue: [February 21] TOKYO ELECTRON House of Creativity 3F, Lecture Theater and 2F Seminar Room, AIMR Main Building, Katahira Campus, Tohoku University
[February 22] 2F Seminar Room, AIMR Main Building, Katahira Campus, Tohoku University
- Participants: 75

[Related Event] The 12th The International Conference on Comparative Mythology “Myths of the earth and humankind: Ecology and the end of the world”

- Date: Friday, June 1, 2018 – Monday, June 4, 2018
- Venue: [Conference day 1] Komyoji Temple [Conference day 2-4] TOKYO ELECTRON House of Creativity 3F, Lecture Theater, Katahira Campus, Tohoku University
- Participants: 65

[Related Event] Religious and Cultural Workshop “How politics eats religion? Characteristic of Roman Catholic Church in contemporary Poland”

- Date: Tuesday, June 12, 2018
- Venue: Lecture Room, 8F, Graduate School / Faculty of Arts and Letters Building, Kawauchi Campus, Tohoku University
- Participants: 30

[Related Event] Workshop for young archaeologists “From Handaxes to Arrowheads. Human Evolution and Increased Complexity”

- Date: Monday, July 23, 2018
- Venue: Room 317, 3F, Graduate School / Faculty of Arts and Letters Building, Kawauchi Campus, Tohoku University
- Participants: 16

[Related Event] The Workshop for Variabilities in Prehistoric Human Cultural Adaptations in Northeast Asia: The Initial Upper Paleolithic, the Last Glacial Maximum, and the Post-Pleistocene Adaptations, Part II

- Date: Wednesday, February 13, 2019
- Venue: TOKYO ELECTRON House of Creativity 3F, Lecture Theater, Katahira Campus, Tohoku University
- Participants: 25

[Related Event] Japan Russia Workshop “Asian Studies at NSU and TU” IV

- Date: Monday, February 18, 2019 – Tuesday, February 19, 2019
- Venue: Kawauchi Research Forum 4F, Conference room, Center for Northeast Asian Studies, Kawauchi North Campus, Tohoku University
- Participants: 35

[Related Event] Workshop for young scholars for Anthropology “Domestication and the North”

- Date: Wednesday, February 20, 2019
- Venue: IEHE Lounge, 1F Room101, Center for Northeast Asian Studies, Kawauchi North Campus, Tohoku University
- Participants: 50

[Related Event] The Seminar on Religious Studies and Research

- Date: Saturday, March 16, 2019
- Venue: Room 909, 9F, Graduate School / Faculty of Arts and Letters Building, Kawauchi Campus, Tohoku University
- Participants: 25

Thematic Program 2018 | Program Code: 2018SRM

String-Math 2018

[Event] Pre-Seminar by Prof. Noriaki Ikeda

- Date: Friday, March 30, 2018
- Venue: TOKYO ELECTRON House of Creativity 3F, Lecture Theater, Katahira Campus, Tohoku University
- Participants: 10

[Event] GPPU school “String and Universe”

- Date: Tuesday, June 12, 2018 – Friday, June 15, 2018
- Venue: Room N204, Science Complex C, Aobayama North Campus, Tohoku University
- Participants: 50

[Event] International Conference “String-Math 2018”

- Date: Monday, June 18, 2018 – Friday, June 22, 2018
- Venue: Tohoku University Centennial Hall (Kawauchi Hagi Hall),
Sakura Hall, Katahira Campus, Tohoku University
TOKYO ELECTRON House of Creativity 3F, Lecture Theater, Katahira Campus, Tohoku University
- Participants: 393

[Event] Special Lecture by Prof. Shing-Tung Yau

- Date: Friday, June 22, 2018
- Venue: Tohoku University Centennial Hall (Kawauchi Hagi Hall)
- Participants: 191

[Event] Special Lecture on the 5th Anniversary of the Tohoku Forum for Creativity The Man from the 9 Dimensions

- Date: Saturday, June 23, 2018
- Venue: TOKYO ELECTRON House of Creativity 3F, Lecture Theater, Katahira Campus, Tohoku University
- Participants: 91

[Event] Discrete Approaches to the Dynamics of Fields and Space-Time

- Date: Sunday, September 9, 2018 – Wednesday, September 12, 2018
- Venue: TOKYO ELECTRON House of Creativity 3F, Lecture Theater, Katahira Campus, Tohoku University
- Participants: 40

[Follow up Workshop] String: T-duality, Integrability and Geometry

- Date: Monday, March 4, 2019 – Friday, March 8, 2019
- Venue: [March 4 - 8 (Morning Session)] TOKYO ELECTRON House of Creativity 3F, Lecture Theater, Katahira Campus, Tohoku University
[March 8 (Afternoon Session)] Room 745, Science Complex B, Aobayama North Campus, Tohoku University
- Participants: 25

Thematic Program 2018 | Program Code: 2018UAC

Tohoku Universal Acoustical Communication Month 2018

[Main Event] International Symposium on Universal Acoustical Communication 2018

- Date: Monday, October 22, 2018 – Wednesday, October 24, 2018
- Venue: Research Institute of Electrical Communication, Main Building, Katahira Campus, Tohoku University
- Participants: 137

[Satellite Seminar] Seminar on music, sound, speech and artificial intelligence

- Date: Saturday, October 20, 2018
- Venue: TOKYO ELECTRON House of Creativity 3F, Lecture Theater, Katahira Campus, Tohoku University
- Participants: 34

[Satellite Seminar] Seminar on psychology and brain sciences related to hearing and multisensory processing

- Date: Saturday, October 20, 2018 – Monday, October 22, 2018
- Venue: Sakura Hall, Katahira Campus, Tohoku University
- Participants: 121

[Satellite Seminar] Seminar on brain, hearing and speech sciences for universal speech communication

- Date: Thursday, October 25, 2018 – Friday, October 26, 2018
- Venue: Research Institute of Electrical Communication, Main Building, Katahira Campus, Tohoku University
- Participants: 72

[Satellite Seminar] Seminar on the spatial aspects of hearing and their applications

- Date: Monday, October 29, 2018 – Tuesday, October 30, 2018
- Venue: Research Institute of Electrical Communication, Main Building, Katahira Campus, Tohoku University
- Participants: 49

[Special Event] General Lectures

- Date: Thursday, October 25, 2018
- Venue: Tohoku University Centennial Hall (Kawauchi Hagi Hall)
- Participants: 38

Emerging Perspectives Program 2018 | Program Code: 2018EPP

[Event] Acceleration for solving optimization problem by quantum annealing – Optimization by natural phenomena for optimal society –

- Date: Monday, May 21, 2018
- Venue: Sendai International Center, Conference Building 2F, Hagi Conference Hall
- Participants: 150

[Event] Fusion with mathematical neuroscience of mutually exclusive control of a distributed and a central nervous system 2

- Date: Monday, July 9, 2018
- Venue: Research Institute of Electrical Communication, Katahira Campus, Tohoku University
- Participants: 8

[Event] Fusion with mathematical neuroscience of mutually exclusive control of a distributed and a central nervous system 3

- Date: Monday, February 25, 2019
- Venue: TOKYO ELECTRON House of Creativity 3F, Lecture Theater, Katahira Campus, Tohoku University
- Participants: 8

Special Lecture by Dr. Martin Peters

- Date: Tuesday, March 12, 2019
- Venue: TOKYO ELECTRON House of Creativity 3F, Lecture Theater, Katahira Campus, Tohoku University
- Participants: 12

[Seminar series] TFC Fusion Research Seminar

[9th Seminar]

- Date: Wednesday, May 23, 2018
- Participants: 12

[10th Seminar]

- Date: Tuesday, May 29, 2018
- Participants: 14

[11th Seminar]

- Date: Friday, October 5, 2018
- Participants: 7

[12th Seminar]

- Date: Friday, October 12, 2018
- Participants: 7

[13th Seminar]

- Date: Friday, November 2, 2018
- Participants: 11

*Venues 9th – 13th Seminars:

TOKYO ELECTRON House of Creativity 3F, Lecture Theater,
Katahira Campus, Tohoku University

Other Activities

TFC Hosted Events

FRIS-TFC Joint Symposium on “Weaving Your Network, Weaving The Academic Ecosystem”

- Date: Wednesday, July 11, 2018
- Venue: TOKYO ELECTRON House of Creativity 3F, Lecture Theater, Katahira Campus, Tohoku University
- Hosted by: • Frontier Research Institute for Interdisciplinary Sciences, Tohoku University
• Tohoku Forum for Creativity, Organization for Research Promotion, Tohoku University
- Co-hosted by: • Comprehensive Cooperative System for Fostering Researchers with Doctoral Degrees
• Division for Interdisciplinary Advanced Research and Education of Institute for Promoting Graduate Degree Programs, Tohoku University
- Participants: 35

Special Lecture on the 5th Anniversary of the Tohoku Forum for Creativity by Professor Jennifer A. Doudna

- Date: Sunday, July 29, 2018
- Venue: Tohoku University Centennial Hall (Kawauchi Hagi Hall)
- Hosted by: Tohoku Forum for Creativity, Organization for Research Promotion, Tohoku University
- Supported by: • United Centers for Advanced Research and Translational Medicine (ART), Tohoku University Graduate School of Medicine
• Tohoku Medical Society
• Tokyo Electron Limited
- Participants: 225

Falling Walls Lab SENDAI 2018

- Date: Friday, August 31, 2018
- Venue: TOKYO ELECTRON House of Creativity 3F, Lecture Theater, Katahira Campus, Tohoku University
- Hosted by: Tohoku University
- In association with: Tohoku Forum for Creativity, Organization for Research Promotion, Tohoku University
- Supported by: Tokyo Electron Limited
- Participants: 42

Special Lecture on the 5th Anniversary of the Tohoku Forum for Creativity by President Haruaki Deguchi

- Date: Friday, December 7, 2018
- Venue: Room 204, 2F Multidisciplinary Research Building (International Humanities) Kawauchi South Campus, Tohoku University
- Hosted by: • Tohoku Forum for Creativity, Organization for Research Promotion, Tohoku University
• Four School of Humanities, Tohoku University (Faculty of Arts and Letters, Faculty of Education, School of Law, and Faculty of Economics)
• Humanities and Social Sciences, URA, Tohoku University
- Participants: 82

Special Lecture on the 5th Anniversary of the Tohoku Forum for Creativity - Tohoku Forum for Creativity Premium –

- Date: Friday, January 11, 2019
- Venue: Conference Room E, 8F Nihonbashi Life Science Hub
- Hosted by: Tohoku Forum for Creativity, Organization for Research Promotion, Tohoku University
- Co-hosted by: • General Affairs and Planning Department, External Relations Division / Public Relations Office, Tohoku University
• Tohoku University Alumni “Shuyukai”
• Tokyo Electron Limited
- Participants: 108

The 2nd FRIS-TFC Joint Seminar : Unlocking the Brain - From Engineering Approaches

- Date: Monday, January 21, 2019
- Venue: TOKYO ELECTRON House of Creativity 3F, Lecture Theater, Katahira Campus, Tohoku University
- Organized by: • Frontier Research Institute for Interdisciplinary Sciences, Tohoku University
• Tohoku Forum for Creativity, Organization for Research Promotion, Tohoku University
- Co-organized by: • Comprehensive Cooperative System for Fostering Researchers with Doctoral Degrees
• Division for Interdisciplinary Advanced Research and Education of Institute for Promoting Graduate Degree Programs, Tohoku University
- Participants: 101

Outlook of the future AI and IoT

- Date: Tuesday, February 19, 2019
- Venue: N-oval Building, Sendai Foundation of Applied Information

- Hosted by:
 - Public Interest Incorporated Foundation Sendai Foundation for Applied Information Sciences
 - Tohoku Forum for Creativity, Organization for Research Promotion, Tohoku University
 - Tohoku Information Communication Conference
- Participants: 120

Discovery Event for Aspiring Female Scientists

- Date: Saturday, March 2, 2019
- Venue: TOKYO ELECTRON House of Creativity 3F, Lecture Theater, Katahira Campus, Tohoku University
- Hosted by: Tohoku Forum for Creativity, Organization for Research Promotion, Tohoku University
- Cosponsor:
 - Tohoku University Center for Gender Equality Promotion
 - Tokyo Electron Limited
- Participants: 21

Quattro Seminars

- [18th Seminar] Interdisciplinary researches and activities on disaster science as lessons from the 2011 Great East Japan Earthquake and Tsunami
- Date: Wednesday, June 13, 2018
 - Venue: Room 211, 2F Multidisciplinary Research Building (International Humanities), Kawauchi South Campus, Tohoku University
 - Participants: 7
- [19th Seminar] Science and Technology and the Well-being Society: Transcending the Border between Arts and Sciences
- Date: Wednesday, October 3, 2018
 - Venue: Room 212, 2F Multidisciplinary Research Building (International Humanities), Kawauchi South Campus, Tohoku University
 - Participants: 27
- [20th Seminar] Roles of 'Liberal Arts' in Search for Extraterrestrial Intelligence (ET) ~A Challenge for Paradigm Shifts Brought About by the Interdisciplinary Research~
- Date: Thursday, November 8, 2018
 - Venue: Room 211, 2F Multidisciplinary Research Building (International Humanities), Kawauchi South Campus, Tohoku University
 - Participants: 63
- [21st Seminar] First Step to RStudio: Error Messages are not fearful
- Date: Friday, January 18, 2019
 - Venue: Middle Conference Room, 11F New Humanities Building, Kawauchi South Campus, Tohoku University
 - Participants: 33
- [22nd Seminar] Applying Functional Brain Imaging in Social Science Research
- Date: Thursday, February 21, 2019
 - Venue: Middle Conference Room, 11F New Humanities Building, Kawauchi South Campus, Tohoku University
 - Participants: 20

TFC Co-Hosted or Nominally Supported Events

Female Chemists' Symposium

- Date: Friday, June 8, 2018
- Venue: Sakura Hall, Katahira Campus, Tohoku University

Banyu Sendai Symposium

- Date: Saturday, June 9, 2018
- Venue: Sendai International Center

Graduate-Level Research in Industrial Projects for Students (GRIPS)-Sendai 2018

- Date: Monday, June 18, 2018 – Friday, August 10, 2018
- Venue: AIMR Main Building 4F and TOKYO ELECTRON House of Creativity 3F, Lecture Theater, Katahira Campus, Tohoku University

27th Annual Conference of the Northeast Asia Economic Forum

- Date: Thursday, August 9, 2018 – Friday, August 10, 2018
- Venue: TOKYO ELECTRON House of Creativity 3F, Lecture Theater, Katahira Campus, Tohoku University

Scienceday of the year 2018 Award

- Date: Friday, August 17, 2018
- Venue: TOKYO ELECTRON House of Creativity 3F, Lecture Theater, Katahira Campus, Tohoku University

EURAXESS Japan Tour 2018: A Seminar on Research Cooperation and Researcher Mobility between Europe and Japan

- Date: Monday, September 3, 2018
- Venue: TOKYO ELECTRON House of Creativity 3F, Lecture Theater, Katahira Campus, Tohoku University

2018 International Cosmos Prize Commemorative Lecture and Discussion in Sendai

- Date: Sunday, December 2, 2018
- Venue: Sendai Kokusai Hotel

TEDxTohoku University AI Salon - Is AI, AI ?

- Date: Saturday, January 19, 2019
- Venue: TOKYO ELECTRON House of Creativity 3F, Lecture Theater, Katahira Campus, Tohoku University

Neuro Global Skill-up Seminar: Academic English for Researchers

- Date: Monday, February 18, 2019 – Friday, March 1, 2019
- Venue: Life Sciences Project Research Laboratory, Katahira Campus, Tohoku University

ELyT Workshop 2019 On-Campus Workshop

- Date: Saturday, March 9, 2019
- Venue: TOKYO ELECTRON House of Creativity 3F, Lecture Theater and 1F Lobby, AIMR Main Building, Katahira Campus, Tohoku University

RIKEN-Tohoku Joint Workshop: Frontier of Mathematics-Medicine Collaboration

- Date: Friday, March 29, 2019
- Venue: TOKYO ELECTRON House of Creativity 3F, Lecture Theater, Katahira Campus, Tohoku University

Leading Young Researcher Overseas Visit Program

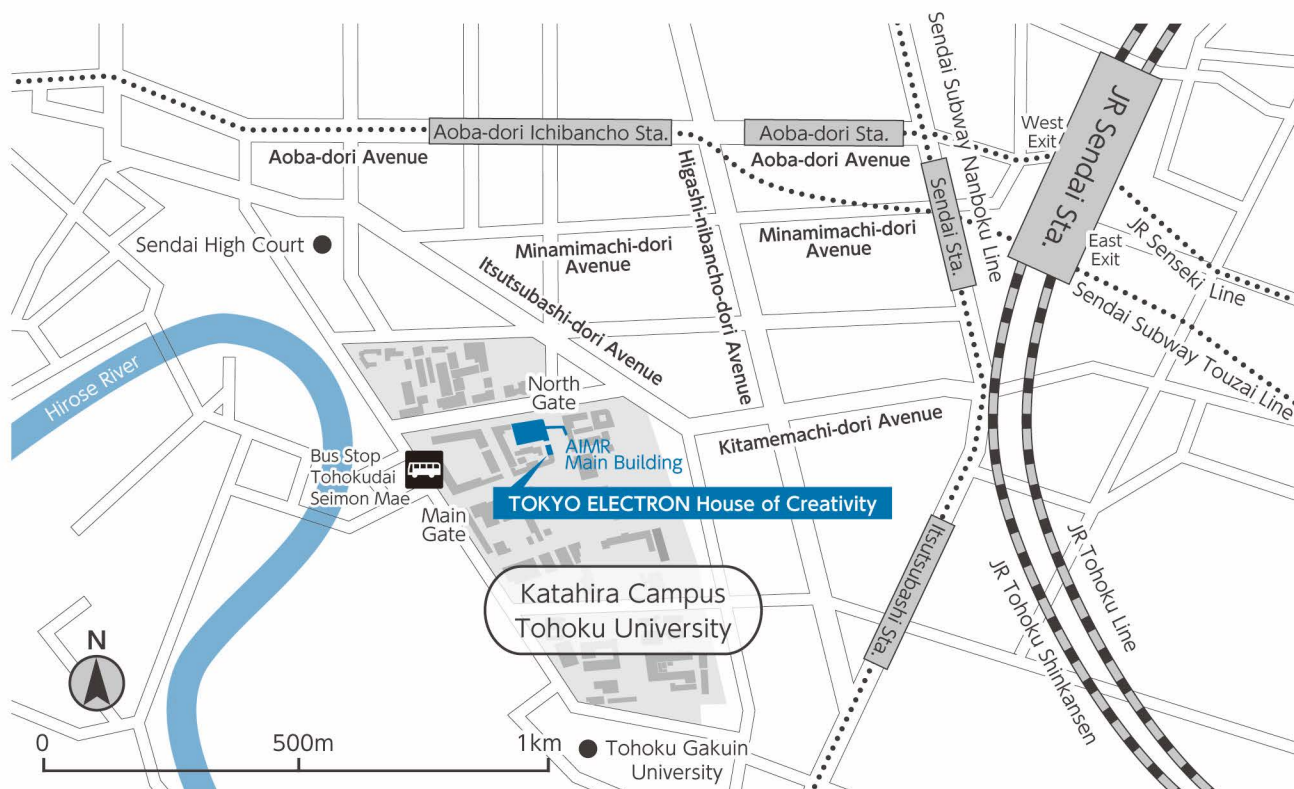
Visitors List

Period	Name	Affiliation	Position	Visiting institute	Research theme
Mar. 17, 2017 Mar. 09, 2018	Shun Kanai	RIEC	Assistant Prof.	University of Chicago (USA)	For exploring new spin defect materials and systems for quantum information technologies
Jun. 14, 2017 Mar. 25, 2018	Kazuaki Tokodai	Tohoku Univ. Hospital	Assistant Prof.	Karolinska Institutet (Sweden)	Significance of donor-specific anti-HLA antibody in transplantation
Jul. 01, 2017 Jul. 12, 2018	Hafumi Nishi	GSIS	Assistant Prof.	Case Western Reserve University (USA)	Structural Bioinformatics on amino acid mutations and modifications
Sep. 04, 2017 Feb. 28, 2018	Hisashi Kino	FRIS	Assistant Prof.	Stanford University (USA)	Study of Deposition and Etching Technologies for Novel Semiconductor Devices
Sep. 25, 2017 Sep. 13, 2018	Eisaku Miyauchi	Tohoku Univ. Hospital	Assistant Prof.	University of Chicago (USA)	Precision medicine with omics analysis for lung cancer
Feb. 01, 2018 Feb. 01, 2019	Ai Orimoto	Tohoku Univ. Hospital	Assistant Prof.	Harvard University (USA)	Molecular pathogenesis of marfan syndrome based on mechanobiology mechanism
Feb. 21, 2018 Feb. 20, 2019	Takashi Sasaki	Engineering	Assistant Prof.	Stanford University (USA)	Study of optical MEMS and its application systems
Feb. 26, 2018 Aug. 20, 2018	Fuminobu Takahashi	Science	Associate Prof.	Massachusetts Institute of Technology (USA)	The early universe and theory beyond the standard model
Feb. 28, 2018 Feb. 28, 2019	Hiroko Okawa	Tohoku Univ. Hospital	Clinical Fellow	University of California, Los Angeles (USA)	Investigation of vascular calcification mechanisms using iPS cell-derived vascular tissue
Mar. 02, 2018 Aug. 31, 2018	Shuhei Miyashita	Agriculture	Assistant Prof.	Wageningen University (the Netherlands)	Developing anti-viral plant protection technologies by perturbing the social aspects in viral way of life
Mar. 07, 2018 Mar. 01, 2019	Taku Yutani	Science	1st Year Ph.D.	University of Bayreuth (Germany)	An estimation of per-alkaline petit-spot lavas' genesis using multiple saturation experiment
Apr. 26, 2018 Apr. 01, 2019	Yutaka Oya	Engineering	Assistant Prof.	University of Washington (USA)	Multidisciplinary optimization of thermosetting resin using molecular dynamics simulation
May. 17, 2018 Mar. 17, 2019	Hideaki Yamamoto	FRIS	Assistant Prof.	Technical University of Munich (Germany)	<i>In vitro</i> reconstruction of functional neuronal networks on microfabricated substrates
Jun. 03, 2018 Mar. 31, 2019	Hiroki Kato	Tohoku Univ. Hospital	Clinical Fellow	Harvard University (USA)	Erythropoiesis alterations adapting to the environmental changes
Jul. 03, 2018 Dec. 07, 2018	Daixiu Wei	IMR	Specially Appointed Assist. Prof.	Massachusetts Institute of Technology (USA)	Phase decomposition controlled by nano-macro plastic deformation and their functionalization based on chemical process in fcc/hcp alloys
Sep. 10, 2018 Jun. 03, 2019	Wakako Ohtsubo	Agriculture	Assistant Prof.	Wageningen University (the Netherlands)	Characterization of commensal gut bacteria in human and animals
Sep. 18, 2018 Sep. 17, 2019	Yusuke Shibuya	Medicine	4th Year Ph.D.	National Institutes of Health (NIH) (USA)	Functional analysis of the poor prognosis factor <i>ZFX4</i> mutation for the personalized medicine of the gynecological malignancies
Oct. 01, 2018 Feb. 28, 2019	Megumi Murakami	Medicine	Part-Time Lecturer	National Institutes of Health (NIH) (USA)	Biochemical and pharmacogenomics studies of multi-drug resistance-linked ABCB1
Jan. 31, 2019 Sep. 01, 2019	Suguru Miyauchi	IFS	Assistant Prof.	University College London (UK)	Elucidation of interactions between erythrocytes and vascular endothelia by all-atom molecular dynamics
Feb. 01, 2019 Jan. 31, 2020	Noriyoshi Takahashi	Tohoku Univ. Hospital	Assistant Prof.	Utrecht University (the Netherlands)	Magnetic resonance imaging (MRI) guided radiotherapy
Feb. 02, 2019 Jan. 31, 2020	Yasutake Tomata	Medicine	Lecturer	Karolinska Institutet (Sweden)	The impact of lifestyles on healthy ageing
Mar. 20, 2019 Mar. 20, 2020	Shunsuke Yamamoto	IMRAM	Assistant Prof.	University of Cambridge (UK)	Studies on Artificial Synapse Circuits Based on Polymer Ultra-Thin Films
Mar. 29, 2019 Oct. 01, 2019	Asato Mizuki	Agriculture	Assistant Prof.	Wageningen University (the Netherlands)	A Comparative Study on the Influence of Food Labeling Regulations on Consumer Behavior in Japan and Europe

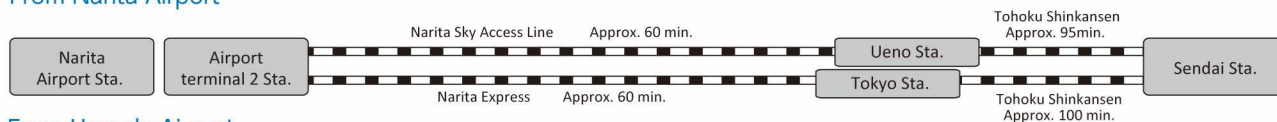
Major Achievements

- E. Miyauchi, T. Matsuda, K. Kiyotani, S. K. Low, Y. W. Hsu, Y. Tsukita, M. Ichinose, A. Sakurada, Y. Okada, R. Saito, Y. Nakamura. "Significant differences in T cell receptor repertoires in lung adenocarcinomas with and without epidermal growth factor receptor mutations." *Cancer Sci.* 2019 Mar;110(3):867-874.
- F. Takahashi, W. Yin and A. H. Guth, "QCD axion window and low-scale inflation," *Phys. Rev. D* 98, no. 1, 015042 (2018) doi:10.1103/PhysRevD.98.015042 [arXiv:1805.08763 [hep-ph]].
- H. Yamamoto, L. Grob, T. Sumi, K. Oiwa, A. Hirano-Iwata, B. Wolfrum: Ultrasoft silicone gel as a biomimetic passivation layer in inkjet-printed 3D MEA devices. *Advanced Biosystems* (accepted for publication).
- S. E. Hanbal, S. Miyashita, S. Ando, S. A. Sidaros and H. Takahashi (2018) "First identification and characterization of cucumber mosaic virus from *Corchorus olitorius* in Japan." *Journal of Plant Pathology* doi: 10.1007/s42161-018-0099-6.

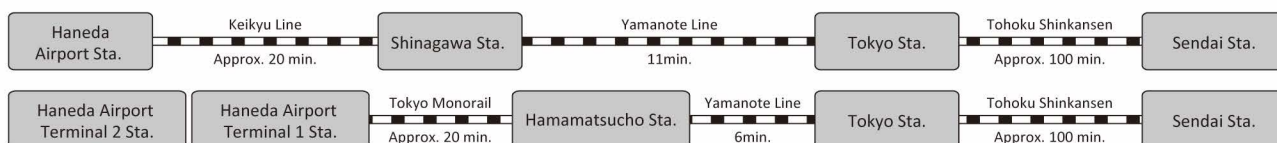
Access and Contact



From Narita Airport



From Haneda Airport



From Sendai Airport



From Sendai Station

By taxi : Approx. 10 min. by taxi from the West Exit on the first floor of Sendai Station

By foot : Approx. 15 min. walk from the West Exit of Sendai Station

From Aoba-dori Ichibancho Station

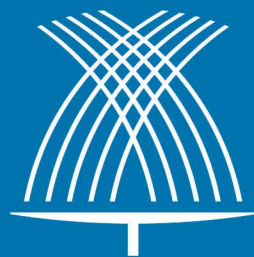
By foot : Approx. 5 min. walk from the South-1 Exit of Aoba-dori Ichibancho Station

Contact

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2-1-1 Katahira, Aoba-ku, Sendai 980-8577 JAPAN

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