WASEDA University

Research Activities

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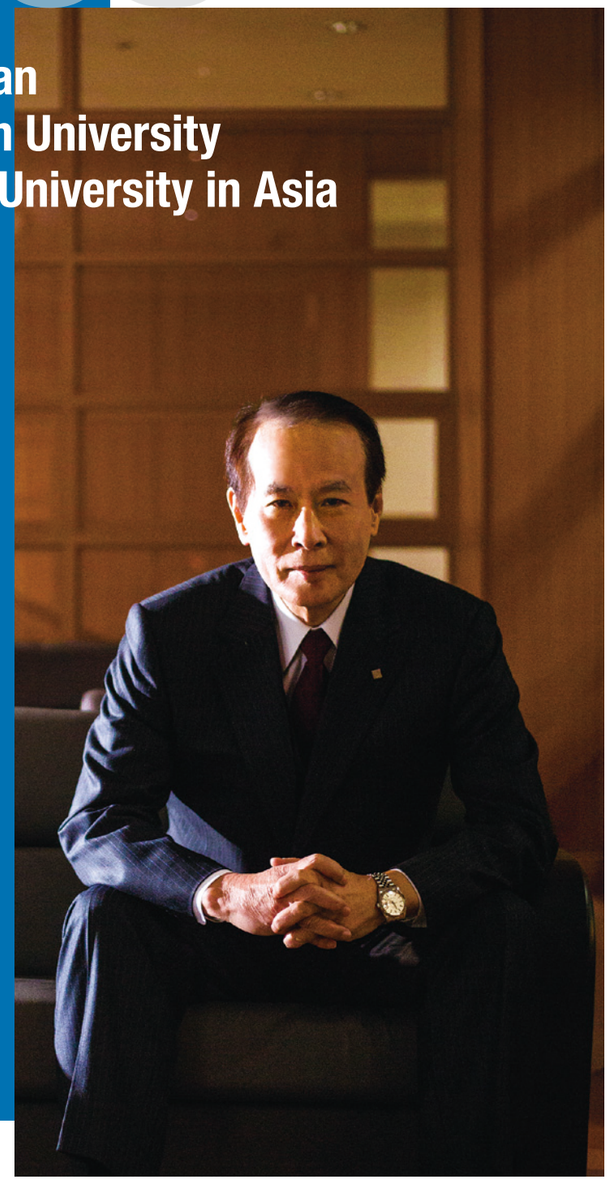
Research Activities

Striving to Become an International Research University

CONTENTS

Establishing Itself as an International Research University To Become a Leading University in Asia

As globalization of our society continues to gain momentum, critical global issues such as the environment and energy, poverty, and regional conflicts continue to cast a shadow on human society's future. In order to achieve real peace and happiness throughout the world, universities must become leading forces in rebuilding our system of values, spurring new and original advances in science and technology, and establishing new societal systems. Universities should, therefore, nurture human resources with specialized skills and leadership capability who will lead the next-generation's society. To meet these demands of society and to firmly establish Waseda as Asia's leading university, we formulated a new long-term strategic plan, the "Waseda Vision 150" in 2012. We have been continuing research and education as well as reforms in university governance to achieve these goals. Waseda Vision 150 offers a vision for the university in 2032, which marks our 150th anniversary of the foundation, and presents core strategies and specific projects for the realization of the vision. In academic research, Waseda University aims to become a world-class international research university as "Research WASEDA". One of our strengths as a comprehensive university — our integration of knowledge in diverse disciplines — will be utilized to pursue innovative and unique research that finds solutions to complex issues in society. The fruits of our research will be shared with society by a systematic strategy. We envision Waseda University that promotes "research which contributes to realization of global peace and human happiness" and that leads the world in creating a better society and brighter future in 2032. We are moving forward to turn this vision into reality.



President, Waseda University

Kaoru Kamata

Waseda University's 16th President. Graduated from Waseda University's School of Law in 1970, completed doctoral degree requirements for the School of Law in 1975, a visiting researcher at University Paris II Panthéon -Assas (France) in 1978, a professor at Waseda University's School of Law in 1983, Dean of Waseda Law School in 2005 prior to assuming his current position in November 2010. Mr. Kamata's expertise is civil law. He has served as chair of the Education Rebuilding Implementation Council since 2013.

Research that contributes to realization of global peace and human happiness

"Waseda Vision 150" is a mid-to-long term strategic plan to mark the 150th anniversary of the university's founding. The Waseda research vision for 2032 calls for "research that contributes to realization of global peace and human happiness" and aims to expand and organize human knowledge and contribute to resolution of global issues, such as the environment, poverty, disasters, and conflicts, through its unique research. Waseda has been working on renewing the structure of its research council and promoting exchanges between researchers outside the faculty framework, as well as developing key research to be strategically implemented. Furthermore, it established the Center for Research Strategy with dedicated research management staff (University Research Administrator; URA) ahead of other universities in Japan. The Center conducts surveys and studies on the academic research activities of researchers and the relevant domestic and international research trends, analyzes and evaluates the University's research capabilities, and proposes research strategies and achievable research policies. Through these initiatives, the Center for Research Strategy has been actively working to enhance the research capabilities of Waseda. To develop the University as an internationally acclaimed research center that can realize its research vision, the "Waseda Vision 150" will focus on reviewing and strengthening the research support system, encouraging promotion of young researchers, establishing research organizations and operations and promoting international joint research. At the same time, the University will continue to take on research challenges in new fields to address changes in society and contribute to create a better future.

Operations to Promote and Support Research toward Realizing

“Research WASEDA”

Waseda University established the Research Enhancement Head Office as a body for implementing initiatives that reinforce research in accordance with Waseda Vision 150. With the President acting as Director of this office, and with the Research Promotion Division and the Center for Research Strategy taking a leading role, Waseda will form research groups that can compete globally and promote practical sciences linked to society.

“Network of knowledge” extending inside and outside Japan

Waseda University is building many research sites within the university and inside and outside Japan. It is utilizing these sites as hubs to broadly engage in joint research with research entities and universities in Japan and overseas.

Overseas Bases

Asia
- Beijing office (China)
- Shanghai office (China)
- Taipei office (Taiwan)
- Bangkok office (Waseda Education Thailand) (Thailand)
- Singapore office (Singapore)
- Waseda Bioscience Research Institute in Singapore (Singapore)

North America
- San Francisco office (USA)

Europe
- Brussels office (Belgium)

Overseas Collaboration

Overseas partner schools and Overseas research institutions

Research Enhancement Head Office
(policy decision, planning)

Project Implementation Division

Research Promotion Division
(Program Management)
- System planning
- Operation development, etc.

Center for Research Strategy
(Placement of URAs*)
- Study and analysis
- Reform of research promotion systems
- Creation of large-scale projects
- Establishment of research centers

Collaboration

Companies, government bodies, research entities, and other universities

*URA (University Research Administrator)
URAs help enhance the research activities of researchers and support R&D management

Advisory, Reporting

Research Congress

Participation

Research Assistance

Diverse research organizations to promote vibrant scientific research

Research Council and Research Organizations
- Comprehensive Research Organization
- Organization for University Research Initiatives
- Organization for Islamic Area Studies
- Green Computing Systems Research Organization
- Advanced Collaborative Research Organization for Smart Society
- Research Organization for Next Generation Vehicles
- Future Robotics Organization
- Research Organization for Nano & Life Innovation
- Organization for Regional and Inter-regional Studies

Research Organizations Affiliated with Faculties
- Waseda Institute of Political Economy
- Institute of Comparative Law
- Center for Professional Legal Education and Research
- Research Institute for Letters, Arts and Sciences
- Institute for Advanced Studies in Education
- Research Institute of the Faculty of Commerce (Research Institute of Business Administration and WBS Research Center)
- Center for Finance Research
- Waseda Research Institute for Science and Engineering (Research Institute for Science and Engineering and Kagami Memorial Research Institute for Materials Science and Technology)
- Global Information and Telecommunication Institute
- Environmental Research Institute
- Information, Production and Systems Research Center
- Advanced Research Center for Human Sciences
- Institute for Sport Sciences
- Waseda University Institute of Asia-Pacific Studies (WIAPS)
- Institute for Advanced Social Sciences

Other Research Organizations
- Waseda Institute for Advanced Study (WIAS)
- Center for Japanese Language
- The Tsubouchi Memorial Theatre Museum
- Aizu Museum
- Center for Advanced Biomedical Sciences (TWins)

Research Council and Research Organizations

Waseda University has established the Research Council to stimulate interaction among researchers beyond the confines of faculties, provide support required by research activities and facilitate planning and execution of strategic research initiatives. The Research Council sets up Research Organizations that pursue promotion of cross-disciplinary research and international collaborative research aside from existing laboratories and centers.

Three policies for realizing “Research WASEDA”

Organization of research

Enhancing and strengthening team/organization-based research

We will promote the collaborative research activities of multidisciplinary researchers primarily in research fields where we have clear advantages, and raise their presence as a group. Our aim is to create a competitive environment with a concentration of highly productive and innovative researchers from broad age groups.

Research-oriented development

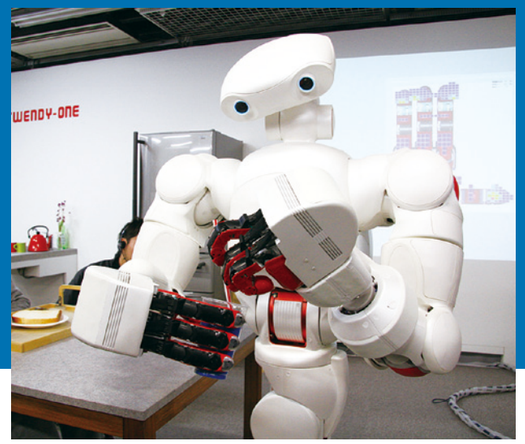
New challenges in fields linked to social issues

We will unearth fundamental problems prevalent in society and endeavor to resolve these complex issues by organizing multi-skilled research teams from within and outside the university. We will pursue research that helps the future of society.

Promotion of internationalization

Further facilitation of international collaborative research and employment of international personnel

We will prepare incentives for further facilitating international collaborative research. A support network and various mechanisms will also be developed to enable foreign researchers to easily participate in team-based research.



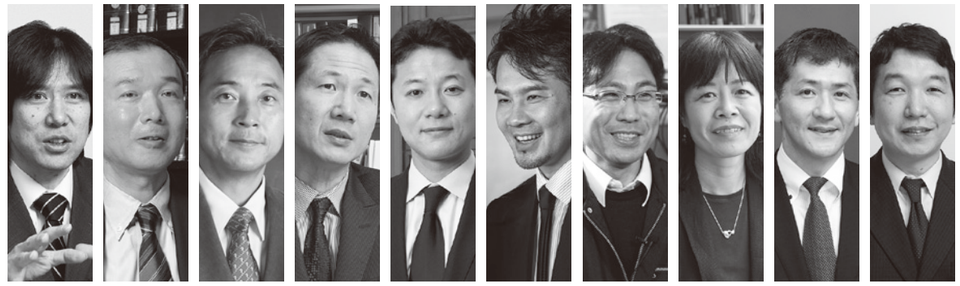
Establishment of the Research Enhancement Head Office

Waseda University has been selected by the Ministry of Education, Culture, Sports, Science and Technology’s “Program for Promoting the Enhancement of Research Universities” as a university with prospects of achieving significant global results by promoting global-class excellent research and making efforts to improve research operations and environments to international standards. It views this program as a focused and potent driver of Waseda Vision 150 initiatives. The Research Enhancement Head Office defines three policies for realization of Research WASEDA in accordance with Waseda Vision 150 and aims to form research groups that compete globally and promote practical sciences that link to society. The Office intends to solidify Waseda University as an international research university by strengthening research promotion operations, accelerating research environment enhancement and reforms, and steadily implementing initiatives. It seeks to stimulate the university’s research activities by bolstering research management operations through the URA program that enhances the sophistication of research promotion and improves efficiency.

Next-generation WASEDA Research Resources

— Next-generation Core Researchers: Key Researchers —

Who are the key researchers of the next generation?



Waseda University implements the “next-generation key researcher training program” and selects researchers with potential to lead Waseda’s research capabilities in the next generation. Waseda provides organizational support, such as concentrated research assistance and a suitable environment. This program is one of the initiatives for realizing “improvement of a group presence” under the theme of organization of research of the Ministry of Education, Culture, Sports, Science and Technology’s “Program for Promoting the Enhancement of Research Universities.” It also seeks to promote team-based research led by young and mid-level researchers in accordance with the core strategy item “promote innovative research and strengthen international dissemination capabilities” in Waseda Vision 150. Waseda has selected 10 researchers thus far who are promoting global top-level research.

From FY2015

Key Researchers

Kurumizaka Epigenetic Chromatin Structure Project

Structural basis of the chromatin dynamics

Chromatin accommodates genome DNA in the nucleus. The project clarifies the epigenetic gene control mechanism by chromatin structure and dynamics.

Graduated from Tokyo College of Phamacy in 1989, and is a licensed pharmacist, completed his Ph.D. at the Graduate School of Science and Engineering, Saitama University in 1995. He worked as a postdoctoral fellow at the National Institutes of Health (NIH, USA), a research scientist at RIKEN, and Associate Professor at the Department of Electrical Engineering and Bioscience, School of Science and Engineering (at the time) at Waseda University, and has held his current position since 2008. His specialties are structural biology, molecular biology, and biochemistry.

URL http://www.kurumizaka.sci.waseda.ac.jp/

Hitoshi Kurumizaka Professor, School of Advanced Science and Engineering

From FY2015

Key Researchers

Toeda Reimagine Japanese Literature and Culture Project

Re-imagining Japanese literature and culture in the world

Prof. Toeda promotes individual and collaborative research on Japanese literature and culture while conversing with leading researchers around the world. He also trains young researchers who are expected to play prominent roles in this field.

Prof. Toeda completed his Ph.D. (Literature) at Waseda University, Graduate School of Letters, Arts and Sciences in 1993. He then worked as a lecturer at Otsuma Women’s University and an associate professor in School of Humanities and Social Sciences at Waseda University before reaching his current positon in 2003. His specialties are Japanese modern literature and culture. His research themes are Modernist Literature, Media Censorship and Literature, Film and Literature, and Tokyo and Literature. He won the Utsubo Kubota Prize in 1994.

URL http://researchers.waseda.jp/profile/ja.4a7b24f8285ebf5678a6eddb414c949a.html

Hirokazu Toeda Professor, Faculty of Letters, Arts and Sciences

Key Researchers

Kawakami Musculotendinous Characteristics Exploitation Project

Comprehensive research on human muscle characteristics and their plasticity

This research focuses on human skeletal muscle and tendon architecture, function, and quality. Research is expected to clarify the mechanism of human movement in sports as well as daily activities, and to lead to development of the effective training modality.

Graduated from the University of Tokyo, Faculty of Education (Physical and Health Education Department) in 1988, and received a masters degree (Exercise Physiology) in 1990 and a PH.D.(Education) in 1995 from the Graduate School of Education, the University of Tokyo. Appointed as a research associate in the University of Tokyo in 1991, associate professor at the University of Tokyo in 1999, then moved to Waseda University as an associate professor in 2003 prior to starting his current job in 2005. His specialties are biomechanics, exercise physiology, and skeletal muscle mechanics.

URL http://www.f.waseda.jp/ykawa/indexj.htm

Yasuo Kawakami Professor, Faculty of Sport Sciences

Key Researchers

Todo Networks and Economic Growth Project

Role of networks in economic growth

This research examines how social and economic networks drive economic development and growth through diffusion of knowledge and information. The project utilizes a wide variety of data, including big data for global supply chains and small data for local networks among rural households in developing countries.

Received a B.A. from the University of Tokyo in 1991 and a Ph.D. in economics from Stanford University in 2000. He was a professor and the department head at the Department of International Studies, Graduate School of Frontier Sciences, the University of Tokyo and has occupied the current position since 2014.

URL http://www.f.waseda.jp/yastodo/

Yasuyuki Todo Professor, Faculty of Political Science and Economics

From FY2016

Key Researchers

Iriyama Frontier Management Research Project

Theoretically and empirically analyzes corporate and non-market strategies

This research covers corporate and non-market strategies and team creativity themes that have been attracting interest in international management in recent years. It hopes to raise awareness in society.

Graduated with a masters in Economics from Keio University, worked for Mitsubishi Research Institute, and obtained a Ph.D. in Management at the University of Pittsburgh (US) in 2008. He served as an assistant professor at business school of State University of New York, Buffalo before assuming his current position in 2013.

URL https://www.waseda.jp/fcom/wbs/other/1047

Akie Iriyama Associate Professor, Graduate School of Business and Science

Key Researchers

Iwata Body/Mind Awakening RT Project

New initiatives in human assistive robotics technology

This research aims to establish foundation technology for robot technology that expands human capabilities and sensory and movement functionality and improve conditions facing seniors and people with disabilities and enhance QOL.

Completed a Ph.D. (Mechanical Engineering) at Department of Mechanical Engineering, Graduate School of Science and Engineering, Waseda University in 2002. Served as a lecturer for the Graduate School of Science and Engineering at Waseda University, an Associate Professor at the Consolidated Research Institute for Advanced Science and Medical Care at Waseda University, and an Associate Professor at the Faculty of Science and Engineering at Waseda University before assuming his current position in 2014. His research themes are rehabilitation assistance systems and remote medical RT.

URL http://jubi-party.jp/

Hiroyasu Iwata Professor, Faculty of Science and Engineering

Key Researchers

Kataoka High-Precision Radiation Imaging Project

Developing a high-precision radiation imaging sensor

This research is driving high-energy astrophysics via an international research project and contributing broadly to society with development of a revolutionary radiation imaging sensor.

Graduated from the Department of Physics, Faculty of Science & Graduate School of Science at the University of Tokyo in 1995 and completed a doctoral course and Ph.D. (Physics) at the Graduate School of Science at the University of Tokyo in 2000. Served as an assistant professor at the Graduate School of Science and Engineering at the Tokyo Institute of Technology and as an associate professor at the Graduate School of Advanced Science and Engineering at Waseda University before assuming his current position in 2014. His specialties are gamma ray astrophysics and radiation applied physics.

URL http://www.spxg-lab.phys.waseda.ac.jp/

Jun Kataoka Professor, Research Institute for Science and Engineering

From FY2017

Key Researchers Close up ● P.10

Liu-Farrer International Labor Migration Project

Investigating the mobilities of people in the global labor market

This project involves international collaborative research on cross-border movements of migrants with different skill levels. It aims to understand human mobilities in an age of globalization and contribute to policy making.

Liu-Farrer obtained a BA in English from Fudan University (1993), MA and Ph.D. in Sociology from the University of Chicago (2007). She joined the Graduate School of Asia-Pacific Studies, Waseda University in 2009, and became Professor in 2014. Prior to her career at Waseda, she was an assistant professor at Ochanomizu University and visiting professor at the Institute for the Study of Global Issues, Hitotsubashi University. She received the Waseda Research Award in FY2014.

URL https://www.waseda.jp/gsaps/about/faculty/liu-farrer-gracia/

Gracia Liu-Farrer Professor, Faculty of International Research & Education

Key Researchers Close up ● P.12

Sekine Ionics Catalyst Project

Building a new reaction system utilizing surface ionic conduction

This research seeks to develop an entirely new high-efficiency catalytic process, which does not rely on past catalyst reaction mechanisms, employing low-temperature surface ionic conduction and spin conduction.

Completed a doctorate of engineering course and obtained a Ph.D. (Engineering) at the University of Tokyo Graduate School, School of Engineering, Department of Applied Chemistry in 1998. Working as a research associate at the University of Tokyo Graduate School, School of Engineering, Department of Applied Chemistry, as a research associate at Waseda University, Faculty of Science and Engineering, Department of Applied Chemistry, and as an associate professor of the Department of Applied Chemistry at Waseda University prior to his current position since 2012. Also serving as a JST fellow since 2011.

URL http://www.f.waseda.jp/ysekine/

Yasushi Sekine Professor, Faculty of Science and Engineering

Key Researchers Close up ● P.14

Togawa IoT Integrated System Project

Taking on technology issues aimed at realizing an IoT World

This research addresses issues related to design, security, and application needed to build an “IoT world” that connects all things to networks.

Completed a Ph.D. (Electrical Engineering) at the Department of Electronics and Communication Engineering, Graduate School of Science and Engineering, Waseda University in 1997. Worked as a research associate at the Department of Electronics and Communication Engineering at Waseda University, an associate professor at the Department of Information and Media Sciences at the University of Kitakyushu, and an associate professor at the Department of Computer Science and Engineering at Waseda University prior to assuming his current position in 2009.
His specialties are integrated circuit design and applied technology.

URL http://www.togawa.cs.waseda.ac.jp/

Nozomu Togawa Professor, Faculty of Science and Engineering

Close up

#01

Key Researchers

Liu-Farrer International Labor Migration Project

Investigating the Mobilities of People in the Global Labor Market

The Ability to Move Is a Symbol of Freedom

International migration research investigates and theorizes the movements of people across borders. Professor Gracia Liu-Farrer from the Graduate School of Asia-Pacific Studies focuses on migration patterns of people in Japan and elsewhere in Asia. She compares the mobility phenomena and integration issues in Asia with those in Europe and the United States. As a researcher based in Asia, she aims to contribute to the theoretical development of international migration by examining migration phenomena emergent in Asian contexts and utilize the results to provide recommendations for migration policies.

Understanding current conditions and seeking solutions to migrant problems

Movement of people across national borders occurs extensively in the modern world with advances in globalization. Many patterns of movement exist, including moves by low-wage labor and moves by high-skilled professionals (highly specialized jobs). People move for work and school as well as for lifestyles. Research related to movement of people is being carried out broadly throughout the world. My research has been on new comer Chinese immigrants living in Japan in the past and the lives of migrants who come to Japan from various countries in recent years.

Problems related to migrants and migration have been occurring in Japan. For example, is international education as it is supposed to be? There was the death of a Vietnamese language student because of excessive work in 2015. While the Japanese government has a plan for “300,000 foreign students”, it comes with many challenges and a painful reality as well. Japan accepts many foreign trainees from developing countries, and some trainees are placed in harsh work environments. The Japanese government wants to attract advanced labor resources from other countries, but is not making much traction with these efforts. It is vital to have a detailed understanding of the different patterns of international migration in order to ascertain the types of measures that could serve as solutions to these various problems.

Given these concerns, I am developing international collaborative research projects to investigate patterns of international migration by workers with different skill levels. It is difficult to clearly define skills because they extend beyond just academic background and job expertise to language capabilities, flexibility in adapting to cultures and communication capabilities. Furthermore, skill levels are not fixed because they rise in the migration process. Our projects leverage qualitative and quantitative research to conceptualize patterns of labor movement and thereby achieve comprehensive understanding of issues. I hope to utilize the research results to find solutions to various migration issues confronting Japan and the world and make effective proposals on migration policies.

▲ Workers from India and Bangladesh who opt for money to bring back to their home country

Fundamental human desire to move

My personal experience of moving multiple times had a strong influence as a starting point of research into international migration. In China, where I was born and grew up, the “hukou” family-register system prevented free movements internally and strictly regulated movements from rural areas to cities. This system forced my mother, sister, and myself to live separately from our father, who lived in Shanghai, for many years. I wondered about “why people could not move freely” from a very young age. I also was very curious about other regions. Many people with similar feelings are still living in Chinese rural areas.

Our family only began to live together in Shanghai from when I was 10 years old. I graduated from Fudan University and studied abroad at the University of Chicago in the United States. I obtained master’s degree in education and then moved to Japan with my husband, also a researcher, who started an academic position in Japan. This led to my in initial research on Chinese people in Japan when I entered PhD program in sociology at the University of Chicago. I have pursued research on movements of people as my life work since then.

Professor, Faculty of International Research & Education (Graduate School of Asia-Pacific Studies)

Gracia Liu-Farrer

Liu-Farrer obtained a BA in English from Fudan University (1993), MA and Ph.D. in Sociology from the University of Chicago (2007). She joined the Graduate School of Asia-Pacific Studies, Waseda University in 2009, and became Professor in 2014. Prior to her career at Waseda, she was an assistant professor at Ochanomizu University and visiting professor at the Institute for the Study of Global Issues, Hitotsubashi University. She received the Waseda Research Award in FY2014.

URL https://www.waseda.jp/gsaps/about/faculty/liu-farrer-gracia/

I moved from a small town in China to the big city, to the United States, and finally to Japan. I learned the language, culture, and societies in each of these locations. I would be a very different person if I did not have these experiences.

These experiences led to my conclusion that the ability to move is a symbol of freedom and a fundamental desire of human beings. Migration can be the most effective way of escaping poverty, human rights violation, and other difficulties. Many people who migrate are seeking to fulfill such dreams. I personally view free movement as a basic human right that should be guaranteed for all people.

▲ Indian money transfer center in Singapore

▲ Chinese restaurant that serves sushi in Vienna

Seeking harmonization of “migrating people” and “society”

An advantage of Waseda University’s Graduate School of Asia-Pacific Studies for conducting this research is the international environment with foreign students at 70% of the student body. The diverse language and cultural background has important significance for the research itself. Students substantially broaden research scope by addressing issues of international migration related to their own backgrounds.

Another major benefit for this research, and key aspect of Waseda University as a whole, is an environment that supports interdisciplinary research. Some faculty members are involved in research on other areas related to international migration, such as language education and labor economics. I want to promote even more collaboration with other academic fields.

Japanese people have a tendency to treat “immigration” as a “phenomenon in a distant world.” This is totally not the case. In fact, many foreigners are working in Japan, including at the Tsukiji market, at building demolition sites, and as newspaper delivery people. They are already an important presence in Japanese society. It is evident that Japan must accept foreign workers in order to maintain a certain level of economic growth as it increasingly confronts the shrinking native labor force.

How can migrants and the receiving society achieve harmonization and co-existence? I am carrying out the research with the belief that methods exist to make this process work better than it does now. I hope to establish an Immigration Research Center at the university, using it to build a network linking migration researchers in Japan with those in other countries. We can join efforts in understanding the challenges of migration in an age of global mobility.

▲ Nepalese school in Tokyo

Main research papers

- Liu-Farrer, Gracia. “Migration as Class-based Consumption: the Emigration of the Rich in Contemporary China,” China Quarterly, Vol. 224, pp. 499-518, 2016.
- Liu-Farrer, Gracia. “Chinese Newcomers in Japan: Migration Trends, Profiles and the Impact of the 2011 Earthquake,” Asian and Pacific Migration Journal (APMJ), Vol. 22(2), pp. 231-257, 2013.
- Liu-Farrer, Gracia. “Making Careers in the Occupational Niche: Chinese Students in Corporate Japan’s Transnational Business,” Journal of Ethnic and Migration Studies, Vol. 37 (6). pp. 785-803, 2011.

Close up

Key Researchers

#02 Building a New Reaction System Utilizing Surface Ionic Conduction

Sekine Ionics Catalyst Project

Depicting the Future of Energy With New Technology for Catalyst Reactions

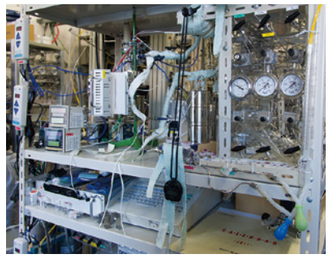
Professor Yasushi Sekine at the School of Advanced Science & Engineering is developing low-temperature hydrogen production and development of a mechanism for effective utilization of hydrocarbon resources. In 2016, he successfully validated a mechanism for generating hydrogen via the new catalytic reaction and published the results in *Scientific Reports*, a British science journal, on December 1. This technology readily creates hydrogen when it is needed. Professor Sekine is currently working on clarifying the basic theory and is striving to lay the groundwork for real-world use as a technology capable of contributing to solutions for energy, the environment, and other global issues.

Actively controls the chemical reaction

Almost all large-scale chemical plants located in the Keihin industrial zone and other areas utilize catalyst reactions in their operations. With current technology, it takes heating to temperatures of 500-700 degrees to advance catalyst reactions and this requires massive amounts of energy. Energy consumption could be significantly curtailed and catalysts could be utilized more easily if it becomes possible to carry out reactions at low temperatures. My research group is pursuing R&D for catalyst systems that can operate at low temperatures. One method is application of a weak electric field to the catalyst. We have used this technique to successfully generate hydrogen from a reaction of methane and water vapor at a sufficient rate even at a temperature of 150 degrees. We have also succeeded in validating the mechanism through observation of the catalyst state during the reaction in the electric field. This is a new catalyst reaction mechanism that utilizes surface ion conduction.

The previous stance toward catalyst reactions had been one of placing the substances in a heated environment and waiting for molecules to move (similar to saying “if the bird doesn’t sing, wait until it sings”). Technology covered by our research, meanwhile, applies an external electric field to get the molecules to move. In other words, we actively control the process of “getting the bird to sing.” This is an entirely new concept that was not in textbooks up to now.

Utilization of our technology makes it possible to readily generate hydrogen, which is attracting interest as a next-generation clean technology, when it is needed. This technology has the potential to provide solutions to energy and environmental issues. Our research project, which was selected for the “next-generation core researcher training program”, will involve complete clarification of the phenomenon, development of a new scientific framework and advances in application, based on discoveries achieved thus far. We will also seek development of more efficient catalyst processes using electron spin flow.



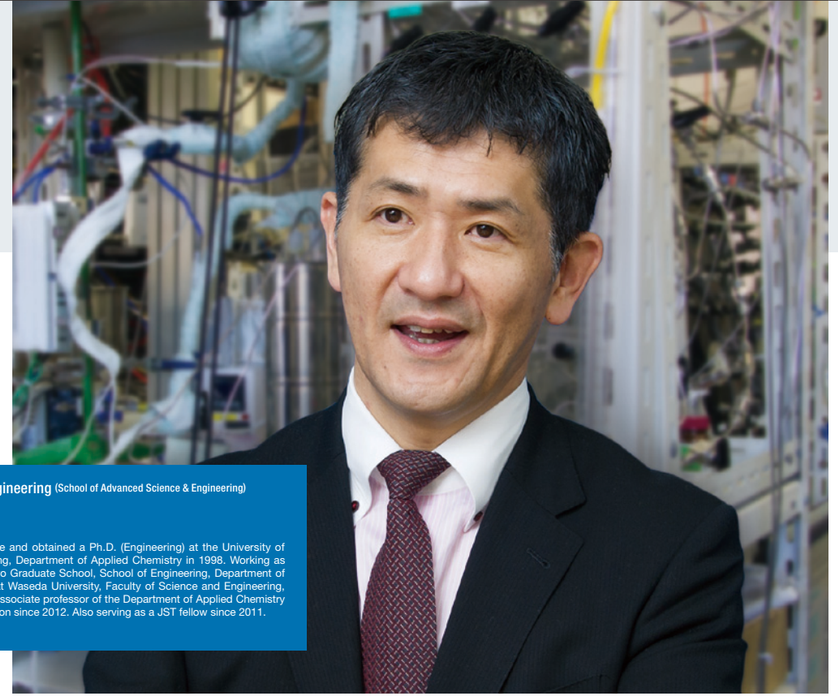
Aiming for a simple, waste-free cyclical society

Solidification and real-world utilization of a catalyst system that operates at low temperatures might enable not only hydrogen production, but also the ability to operate chemical plants using the Sun’s heat. It might be possible to bring chemical reactions to homes, cars, and other places with limited heating sources. Things deemed impossible with past common sense could become a reality and spread the presence of a new world. Real-world use might be the advent of production technology that leads to a paradigm shift.

If chemical reactions could be brought into the home, it might be possible to freely make new plastic products from existing unnecessary plastics as raw material in individual homes. In today’s world, the purchase of a single plastic bucket relies on an extremely complex process and massive energy consumption. Oil is mined in the Middle East and transported to Singapore for conversion to intermediate petrochemicals. The next step is to transport to China for processing to plastic raw material and manufacture buckets. Japanese retailers import the buckets by ship to Japan for distribution to stores around the country. Consumers go to a store to purchase the bucket. This circuitous flow of substance would disappear if plastics could be reused at home.

The bucket is just an example. My goal is realization of a cyclical society for energy and substances that is as simple and waste-free as possible. I think it is important for researchers to constantly employ a vision of “what the future should be” as the basis for putting together the research content. Researchers lose their way and are left behind by fast-paced developments if they just pursue a research theme that came to their attention. I am always telling students in my research group to have interest in current events and sustain a broad perspective. It is not possible to proceed deeply into a field without having a broad entry point.

▲ Sekine research group members



Professor, Faculty of Science and Engineering (School of Advanced Science & Engineering)

Yasushi Sekine

Completed a doctorate of engineering course and obtained a Ph.D. (Engineering) at the University of Tokyo Graduate School, School of Engineering, Department of Applied Chemistry in 1998. Working as a research associate at the University of Tokyo Graduate School, School of Engineering, Department of Applied Chemistry, as a research associate at Waseda University, Faculty of Science and Engineering, Department of Applied Chemistry, and as an associate professor of the Department of Applied Chemistry at Waseda University prior to his current position since 2012. Also serving as a JST fellow since 2011.

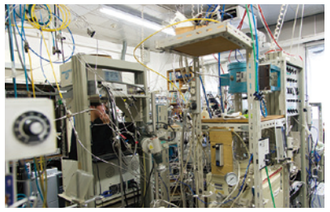
URL http://www.f.waseda.jp/ysekine/

Serving as a bridge between the ideal future and the present

I was not at all imagining a research path when I entered university. Chemistry was a major struggle, and I thus did not select it as the science subject for the common first-stage examination. While I ultimately joined the world of research through a variety of connections and choices, I might have followed a road not chosen by others because of my rough starting point. More precisely, it is not really a road, but is similar to walking through a dense forest. It is a world without signs indicating how to proceed. This is why the happiness at finding a treasure is so pronounced. It is also the source of my pleasure in conducting research. A growing number of people might start walking along the path that I forged, and the path could become a highway at some point. The enjoyment of this possibility is something that cannot be understood by traveling down an existing highway.

The future of energy is likely to migrate to a more distributed format from current heavy concentration. For example, power plants generate electricity and transmit this electricity to offices and homes through substations. In the future, meanwhile, I envision mutual sharing and efficient utilization of energy through a network, similar to the computer world. Yet it might take 50 years or even 100 years to reach this level.

I hope to further refine the new catalyst reaction mechanism technology as a bridging technology between the future vision and today’s reality.



Main research papers

- S. Ogo, Y. Sekine, “Catalytic reaction assisted by plasma or electric field” , The Chemical Record, in press. doi: 10.1002/tcr.201600127.
- R. Manabe, S. Okada, R. Inagaki, K. Oshima, S. Ogo, Y. Sekine, “Surface protonics promotes catalysis” , Scientific Reports, 6, 38007, 2016.
- K. Sugiura, S. Ogo, K. Iwasaki, T. Yabe, Y. Sekine, “Low-temperature catalytic oxidative coupling of methane in an electric field over a Ce-W-O catalyst system”, Scientific Reports, 6, 25154, 2016.

Close up

Key Researchers

#03

Togawa IoT Integrated System Project

Taking on Technology Issues Aimed at Realizing an IoT World

Leading the IoT Era With Cutting-Edge IT Technology

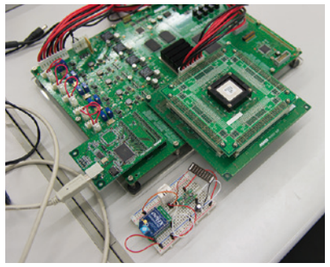
The “IoT world” in which everything in the world is connected to the network has been rapidly emerging as a new reality in recent years. While IoT has the potential to make our society more convenient and robust, Professor Nozomu Togawa of the School of Fundamental Science & Engineering notes that multiple major technology issues still need to be resolved before this happens. His research group consists mainly of younger researchers in their 20s-30s and is pursuing a wide range of research from foundation technology to applied technology with the aim of leading the IoT era.

Seeking more intuitive and easier-to-understand road directions

There is talk about arrival in the near future of a world in which everything is mutually connected to a network beyond PCs, smartphones, and other existing information and communications devices, including electronic equipment, automobiles, robots, and various facilities. This is the Internet of Things (IoT). The Ministry of Internal Affairs & Communications projects in the 2016 Information & Communications White Paper that the number of IoT devices worldwide should exceed 30 billion units in 2020 and IoT will make rapid inroads, including into social infrastructure.

The geographical information system that my research group is currently working on offers an example of an IoT applied technology. It is a navigation system for pedestrians using wearable devices, such as eyeglasses or wristwatches. The eyeglass version utilizes augmented reality to give directions. A person wearing the glasses while walking sees map information overlaid on the real scenery. This format provides more intuitive and easier-to-understand road directions.

A key factor for growing adoption of such IoT applications is development of an IoT device that continuously operates on just a tiny amount of energy. This is because of the likely broadening of IoT device usage to locations that lack stable electricity sources, including in forests, on the sea, and in outer space and the related need for energy harvesting utilizing sunlight, vibration, or other means in these environments. The IoT devices must also be capable of operating stably over a lengthy period without maintenance because of the difficulty of replacing parts. Our research group is focusing on integrated circuits as the main part for realization of an IoT device that operates continuously for a period of tens of years with a very small power supply. We are striving to develop devices that are smaller, consume less power, and use robust circuit design technology.



▲ Prototype integrated circuit and evaluation board

Urgent need for IoT security measures

Security measures are vital too in preparation for the arrival of the IoT era, in addition to circuit design technology. Connecting everything to a network itself increases the possibility of improper activity. It will also be extremely difficult to devise uniform security measures because of differences in IoT device standards, and there is significant danger of encountering a wide range of external attacks. If ill-intentioned circuitry is built into IoT devices, it could steal or disseminate information via the network. Alternatively, external attacks on electricity infrastructure that utilizes IoT could inflict heavy damages to medical facilities and public transportation systems through power outages. Our research group is conducting research on IoT security too, and we developed the world’s first technology that correctly discovers circuitry that causes improper operation illicitly built into integrated circuits (hardware trojans). We are also succeeding in finding unknown hardware trojans with a high detection rate utilizing machine learning.

My research group has handled the three above-mentioned themes thus far – 1) geographical information system (IoT application), 2) circuit design technology (IoT design), and 3) security technology (IoT security). I intend to continue working on and developing these three research fields simultaneously in the research project selected for the “next-generation core researcher training program.”

It is important to remember in dealing with IoT that IoT creates value when it is applied to something. Applications are not necessarily in the IT field. For example, there might be opportunities to collaborate with the School of Creative Science and Engineering in the case of applications to monitor the state of tunnels, bridges, and other infrastructure. Collaboration with the School of Advanced Science and Engineering is a possibility for electricity IoT. Furthermore, the IoT theme is not restricted to science and engineering because of social change and legal frameworks related to IoT. I hope to actively collaborate with research groups in other fields as needed during the process of promoting this project.

Simultaneously promoting research in multiple areas with advantage of scale

Individual students should be the main driver of their research activities in daily work. The roughly 20 members currently in the research group, including undergraduate students, graduate students, and young researchers, hence have their own themes and engage in related research. This is because our research group covers a broad range of areas extending from foundation technology to application technology and hardware technology to software technology. Our team of highly engaged and talented students supports this type of research framework. I think this is the most appealing aspect of the research environment at Waseda University. Furthermore, the campus location in central Tokyo is a major benefit for vibrant promotion of joint research with companies. An environment exists for deepening research activities through close communication, including visits to counterpart companies with students and having company staff visit the university.

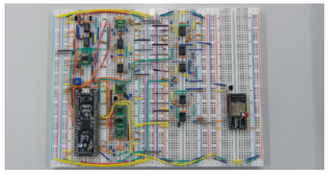
The dynamism of technology advances in a short amount of time is a truly exciting aspect of research in the IT field. Even the latest knowledge can become quickly outdated due to the rapid pace. I personally continue to learn without letting up and enjoy the ability to engage in research with students with a constantly fresh attitude.

Professor, Faculty of Science and Engineering (School of Fundamental Science and Engineering)

Nozomu Togawa

Completed a Ph.D. (Electrical Engineering) at the Department of Electronics and Communication Engineering, Graduate School of Science and Engineering, Waseda University in 1997. Worked as a research associate at the Department of Electronics and Communication Engineering at Waseda University, an associate professor at the Department of Information and Media Sciences at the University of Kitakyushu, and an associate professor at the Department of Computer Science and Engineering at Waseda University prior to assuming his current position in 2009.
His specialties are integrated circuit design and applied technology.

URL http://www.togawa.cs.waseda.ac.jp/



▲ Circuit for detection of electric capacity changes during IoT device activity and detection of improper operation

▲ Eyeglass-type wearable device that overlays various information on what is actually being seen

▲ Wristwatch-type wearable device and simplified map displayed on it; this device also displays an easy-to-understand map

Main research papers

- Masaru Oya, Noritaka Yamashita, Toshihiko Okamura, Yukiyasu Tsunoo, Masao Yanagisawa, and Nozomu Togawa, “Hardware-trojans rank: quantitative evaluation of security threats at gate-level netlists by pattern matching“, IEICE Transactions on Fundamentals of Electronics, Communications and Computer Science, vol. E99-A, no. 12, pp. 2335-2347, 2016.
- Tatsuro Kojo, Masashi Tawada, Masao Yanagisawa, and Nozomu Togawa, "A bit-write-reducing and error-correcting code generation method by clustering ECC codewords for non-volatile memories", IEICE Transactions on Fundamentals of Electronics, Communications and Computer Science, vol. E99-A, no. 12, pp. 2398-2411, 2016.
- Masaru Oya, Youhua Shi, Masao Yanagisawa, and Nozomu Togawa, "A score-based classification method for identifying hardware-trojans at gate-level netlists", IEEE/ACM Design and Test in Europe Conference 2015, pp. 465-470, 2015.

Comprehensive Research Organization

Type Research Council　Year established 2000　Faculty and institute members 2,057 (1,242 from outside of the university)　Website https://www.waseda.jp/inst/cro/

Interdisciplinary research site advancing through collaboration

Waseda University launched the Project Research Institute in April 2000 with the aim of fostering advanced research that contributes to development and welfare of human society by quickly catching up with the requirements of the society and period and using a multifaceted approach that covers a variety of academic disciplines. Project Research Institutes bring together many different people based on the five themes of “create a social structure for the future”,“support cultural heritage and development”,“make contributions to the future of regional communities”,“explore new methods for teaching and learning” and “pursue cutting-edge technology.” Without limitations on the faculty or research field (arts or sciences), a team of at least four dedicated teachers is formed and defines research topics and promotes free, flexible research activities for a fixed period utilizing research participation fees paid by participating researchers and external funds. Researchers from other schools participate too as research members, thereby enabling the formation of a global research organization led by Waseda University.

The Comprehensive Research Organization oversees the management of the diverse line-up of roughly 120 Project Research Institutes. It plays a major role as a research center that leverages the research activities of all of the school’s teachers and research and promotes research activities based on social collaboration. While the institutes operate freely based on independent themes, the Comprehensive Research Organization periodically evaluates the institutes in order to confirm activities by the various projects, identify themes, and encourage further research progress. Evaluations of the project institutes that fundamentally operate for a period of five years take place after three years and upon completion after five years. They use multifaceted and comprehensive confirmation of whether the project institutes are making sound progress, including alignment with the institute’s main theme, research plan implementation conditions and level of achievement, research results and disclosures, fiscal conditions, and extent of appeal to society, and offer advice for further research promotion.

The Comprehensive Research Organization also handles establishment and elimination of project research groups, coordination related to acceptance of researchers and other personnel, assistance in formation of consignment and joint research contracts with private-sector firms and public-sector institutes, acceptance of donations and other funds, and assistance in publishing and holding symposiums that broadly disclose research results. Additionally, it holds a joint symposium for reporting research results by multiple project groups that have achieved notable results once a year and issues the *Project Kenkyu* magazine (contains peer-review papers, peer-review research notes, and research activity reports).

▲ Research Institute of NARA BIJUTSU Deity of Children Statue, Jozan Temple in Saitama

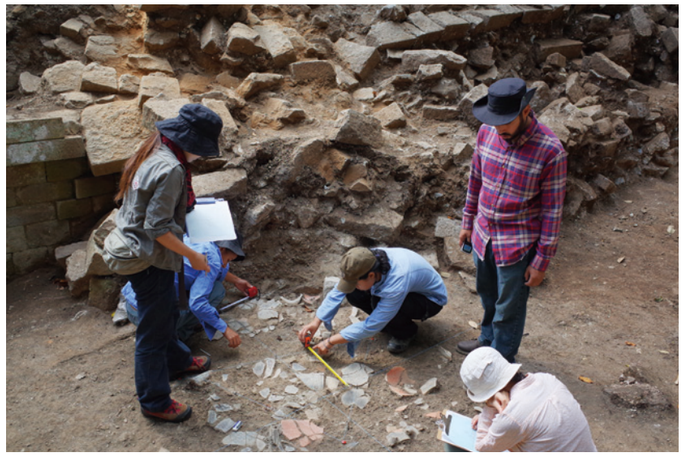
▲ Institute for Space Science Observation

List of Project Research Institutes

- Research Institute of Information Technology and Management
- Asian Service Business Research Institute
- Amusement Laboratory
- Center for Decision Research
- Institute of Islamic Sciences
- Center on Finance and Innovation
- WASEDA Institute for Migration and Ethnic Cultural Studies
- Institute for Space Science Observation
- Institute of Egyptology
- Research Institute for Elderly Health
- Institute of Applied Brain Sciences
- Institute of Australian Studies
- Institute for Research in Opera and Music Theatre
- Waseda Accounting Institute
- Institute of Maritime Law
- Research Institute of Student Assessment and Development
- Institute of Value Creation Management
- Waseda Research Institute for Korean Studies
- Waseda Institute for Corporation Law and Society
- Research Institute for Career Design and Learning Services
- Waseda University Institute of Teacher Education
- Institute of Condensed-Matter Science
- Institute for Research on Credit Business
- Institute of Global Production & Logistics
- Game Sciences Laboratory
- Institute for the Study of Language and Information (ISLI)
- Institute for Contemporary Educational Research and Practice
- Research Institute of Modern Thanatology
- Waseda Institute of Contemporary Chinese Studies
- Institute for Architecture and Architectural Engineering
- Institute of Public Policy
- Institute for Medical-oriented Structural Biology
- Coaching Institute
- Global Family Business Research Institute
- Institute of Real Estate Studies
- Institute of Language and Speech Science
- Waseda Institute of Medical Anthropology on Disaster Reconstruction
- Institute of Participatory Design
- CCDL Research Center
- Gender Studies Institute
- Research Institute for Strategy of Natural Resources
- Institute for Information, Coordination and Innovation
- Research Institute of Automobile and Parts Industries
- Institute for Journalism
- Waseda Institute of the Policy of Social Safety
- Institute for Social Simulation
- Relationships between Societies Laboratory (RBSL)
- Research Center of Consumer Behavior
- Institute for Digital Enhancement of Cognitive Development
- Waseda University Wet-Rice Culture Research Institute
- Waseda Institute of Sports Nutrition
- Research Institute for Sports Industry
- Research Institute for Sport Knowledge
- RISB (Research Institute for Sport Business)
- Institute of Prehistoric Archaeology
- Waseda University Advanced Institute of Venture and Entrepreneur
- Institute for Comprehensive Study of Policy Science
- Institute of Social Media Data
- Institute for Multi-ethnic and Multi-generational Societies
- Waseda Institute for Sustainable Community and Risk Management
- Research Center for the Legal System of Intellectual Property
- Institute for Central Eurasian History and Culture
- Institute for Cultural Studies on Modern China
- WASEDA Education Institute of Chinese
- Research Institute for Chinese Old Book Culture
- Institute for Techno-Innovation in Chubu- Area Industries
- Institute for Korean Studies
- Institute of Data Science
- Institute for Digital Society
- Institute of e-Government Waseda University
- Institute for Research on Safety and Security of Greater Tokyo
- IURS (Institute of Urban and Regional Studies)
- Institute of City and Art
- Institute for Transnational Human Resource Management
- Research Institute of NARA BIJUTSU
- Research Institute of Japanese Classical Books
- Institute for Japanese Religions and Cultural History
- Waseda Institute of Human Growth and Development
- Institute of Wave Field and Communication Science
- Public Service Research Institute
- Institute of Comparative Archaeology
- Institute of East Asia Archaeology for Walled City and Silk Road
- Waseda Institute for East Asian Legal Studies
- Business Technical Communication Institute
- Humanoid Robotics Institute, Waseda University
- Waseda Human Resources Research Institute
- Advanced Institute for Complex Systems
- Institute for Cultural Heritage
- Center for Negotiation and Dispute Resolution Research
- Waseda Institute of Peace Studies
- Vietnam Research Institute
- Waseda Research Institute on Insurance by Companies and Cooperatives
- Insurance and Risk Management Institute of Waseda University
- Institute of Post Keynesian Economics
- Pure and Applied Physics Holistic Laboratories
- Laboratory of Marketing Communication Research
- Research Institute of Manifesto
- Media Research Institute
- Institute for the Studies of Media and Citizenship
- Media Design Institute
- Media Culture Research Institute of Waseda University
- Institute of UNESCO World Heritage
- Institute for European Medieval and Renaissance Studies
- Luxury Branding Institute
- Institute of Mathematical Fluid Dynamics
- Phosphorus Atlas Research Institute
- Clinical Education and Science Research Institute, CLESI
- Institute of Clinical Legal Education
- Waseda Resilience Research Institute
- Institute for Russian Studies
- Institute for Waseda Environmental Science
- Waseda Blue Ocean Strategy Institute

▲ Global Family Business Research Institute

▲ Institute of East Asia Archaeology for Walled City and Silk Road



▲ Institute of Comparative Archaeology

Organization for University Research Initiatives

Type Research Council　Year established 2009　Faculty and institute members 142 (65 from outside of the university)　Website https://www.waseda.jp/inst/ori/

Promotion of priority research initiatives through the University's strategy

Universities aiming to be international research universities have a duty to contribute to discovering and resolving global-level topics for the 21st century through advanced science and research. This requires further reinforcement in areas where Waseda University has strengths compared to other universities by bringing together researchers beyond the boundaries of faculties, research organizations, and other formats, formation of research teams that can compete with the world via accelerated globalization and international joint research, and promotion of practical learning with a link to society.

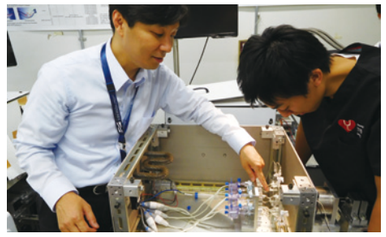
Since its establishment in 2009, the Organization for University Research Initiatives has manifested the university's strengths through specific advanced research projects and positioned research by university-wide synergistic collaboration aimed at realizing site formation as priority-area research. The Organization stimulates research at the university including people cultivation, by promoting research initiatives. It aims to solidify autonomous, sustainable research operations by acquiring new external research funds and collaborating with external organizations and to share research results broadly with society to help resolve the above-mentioned issues and contribute to realization of a better society.

The Organization conducts effective research management and promotes progress management activities by project managers during an execution period for priority-area research that lasts as long as five years through an assessment system that systemically incorporates advance evaluation, intermediate evaluation, and follow-up evaluation while supporting a wide range of research activities by Project Research Institutes implementing the research topics.

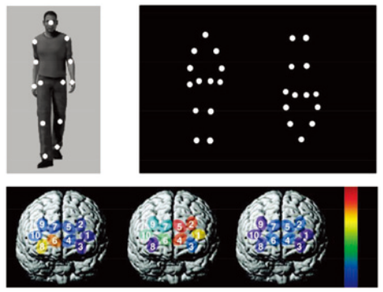
▲ Singapore WABIOS office

▲ Joint Symposium 2016 with Singapore Polytechnic

▲ A village gathering to discuss preventive measures against the destruction of forests caused by slash-and-burn agriculture



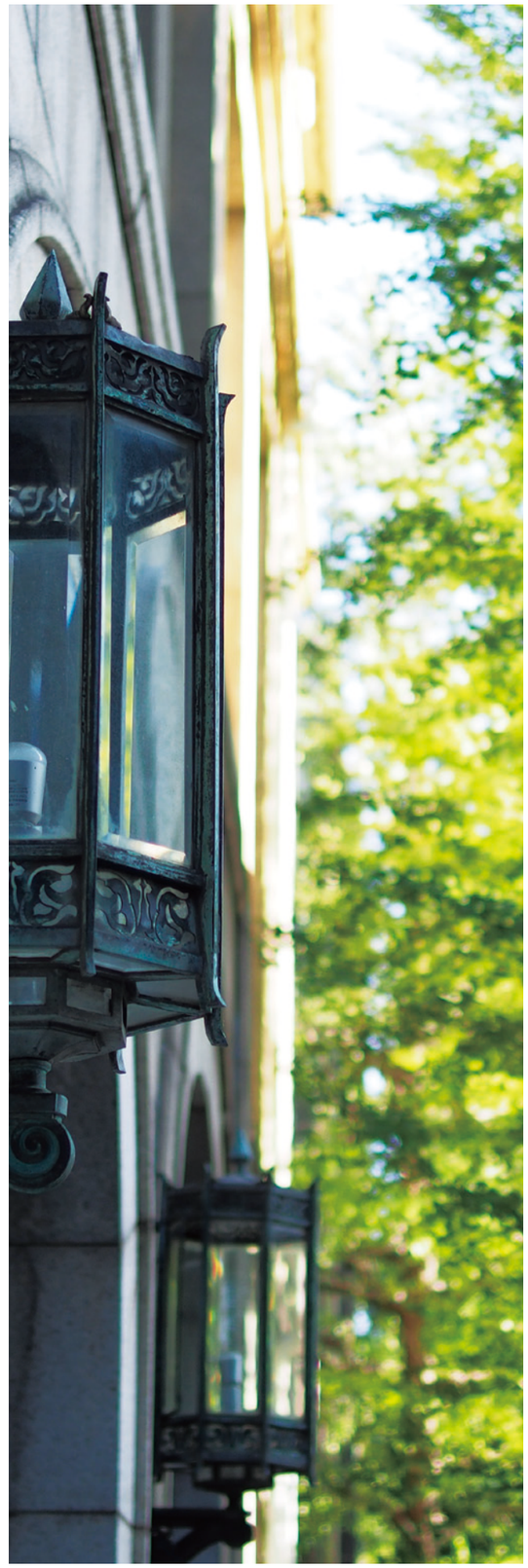
▲ Powerful tools for achieving a non-clinical approach include engineered devices such as blood circulation simulators or accelerated durability testers. This photo indicates our durability test for coronary stents to stipulate a practical guidelines for government approval.



▲ Quantitative evaluation of the mind by screen image analysis and brain activity analysis

The following list shows previous priority research initiatives and related Project Research Institutes.

- **International network for**
  - The Institute of 20th Century Media
  - International Institute for Japanese Literature and Culture
- **Systems under globalization: laws, corporations and markets**
  - Research Institute of Contemporary Japanese Systems
  - Waseda Institute for Comparative Law and Jurisprudence
  - Institute for Interdisciplinary Intellectual Property Study Forum
  - Research Center of Consumer Behavior
- **Science and technology for a green energy society**
  - Research Institute for Advanced Network Technology
- **Design for innovation health and medical care**
  - Institute of Applied Brain Sciences
- **Asian synergy in the global context**
  - Asian Service Business Research Institute
  - Center for Research on "Buddhism" as a Civilization of East Asia
  - Institute for Asian Muslim Studies
- **Industry, policy and journalism for sustainable society**
  - Research Institute for Industrial Ecology of Sustainable ResourceManagement
- **Life design through recycle-based infrastructures**
  - Institute for Eco-friendly Electrical and Electronic Materials
  - Research Institute of Green Device
  - Institute of Collaborative Systems for Sustainable Society
- **Basic science as the foundation for future development**
  - Research Institute of Nonlinear Partial Differential Equations
  - Opto-Science Laboratory
  - Waseda Institute for Space Science Observation System
- **Reconstruction from Major disasters and construction of new social systems -Towards forming robust and flexible social infrastructure-**
  - Institute for Research on Reconstruction from the Great East Japan Earthquake/Advanced Institute for Environmental Science and Medical Engineering
  - Institute for Research on Reconstruction from the Great East Japan Earthquake/Composed Crisis Research Institute
  - Institute for Research on Reconstruction from the Great East Japan Earthquake/Research Institute for Integrated Approach to Urban Safety and Security with Natural and Cultural Heritage
- **Bioscience, physical biology, nano-biotechnology, biotech imaging, and chemical biology**
  - Waseda BioScience Research Institute in Singapore
- **Paradigm shifts in a super-aged society**
  - Institute of Advanced Active Aging Research
- **The development of agriculture, forestry and fishery science based on an integrated model which covers all processes from production to services**
  - Sustainable Food Supply, Agriculture, Bioscience Institute
- **Realization of a 21st-century type of secure and safe society, and improvement of the quality of life**
  - Institute for Medical Regulatory Science
  - Planning Institute of Medicine Based Town
- **Resolution of a 21st-century type of environmental and energy problems**
  - Research Institute of Environmental Medical Sciences
  - Research Institute for Environmental Economics and Management



Organization for Islamic Area Studies

Type Research Council | Year established 2008 | Faculty and institute members 21 (8 from outside of the university) | Website https://www.waseda.jp/inst/ias/

Building a proven knowledge framework for Islamic civilization

Islamic area studies cover research that strives to build a proven knowledge framework related to Islam and its civilization. The Organization for Islamic Area Studies places emphasis on a historical approach to modern problems and comparison among regions and shares its results with the academic community and society as efforts to achieve this goal. It publishes *Journal of Islamic Area Studies* annually to disclose research results to the academic community. It also holds lecture events and symposiums to broadly supply the latest knowledge to society. Prof. Keiko Sakurai published some of the results in her book *Working in Islamic Countries, Hints for Living and Business* (Iwanami Books, 2015).

Waseda University established the Organization for Islamic Area Studies in 2008, and joint research started two years earlier with the National Institutes for the Humanities (NIHU). This joint research, which involved five domestic research sites, lasted for a total of 10 years (two phases) and the Organization was a central site in promoting this research. The Ministry of Education, Culture, Sports, Science and Technology (MEXT) designated the Organization as a "Joint Usage/Research Center" from FY2008 to the present, and the Organization implements a wide range of publicly funded research. It was also selected as one of the Core-to-Core Programs of the Japan Society for the Promotion of Science during FY2011-16. As these activities indicate, the Organization has truly occupied a central role in Islamic area studies in Japan.

The Organization is promoting the following initiatives in light of the results described above. It engages in joint research with overseas research sites, building a new-era joint research framework with international ties at the university. It promotes participation by a wide range of people in Japan by utilizing publicly funded research in order to make this a reality. The Organization intends to strengthen ties internationally, mainly with research sites in Islamic areas. Another effort is supporting wider use of the Organization's equipment and materials. The Organization has already obtained a large amount of materials as a MEXT operation and is putting in place an environment to raise awareness of the materials more widely and ensure effective utilization.

Today's image of Islam and the Islamic area in Japan is frankly not very favorable because of many terrorist actions (and particularly due to the self-proclaimed Islamic State). However, this reality does not diminish the importance of Islamic area studies. It actually makes it even more significant in some ways. Forecasts indicate that the number of Islamic believers is likely to become the highest in the world, exceeding Christianity, during the current century, unrelated to such incidents. Understanding Islam is vital to grasp where the world is headed. The Organization is working to deepen research and disseminate results to meet these needs.


▲ Night in Cairo (Egypt)


▲ Media City in Dubai (UAE)


▲ Haram Razavi in Mashhad (Iran)


▲ Store for used books in Istanbul (Turkey)


▲ Shore of Sayram Lake (Shinjang, China)


▲ Tokyo Mosque in Yoyogi-Uehara

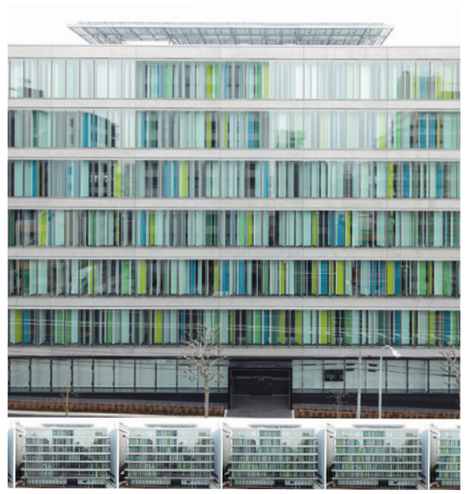

▲ Inscription for the Islamic Feast of Sacrifice (Fujian, China)


▲ One of the oldest mosques in Malaysia

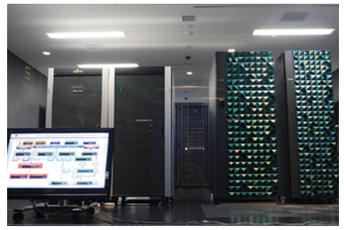
Green Computing Systems Research Organization

Type Research Council | Year established 2011 | Faculty and institute members 79 (54 from outside of the university) | Website https://www.waseda.jp/inst/gcs/

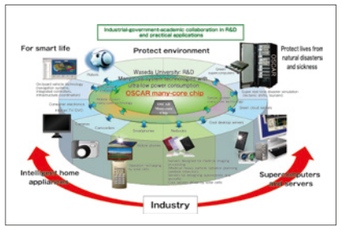
Developing ICT foundation technology for realization of a low-carbon society friendly to earth


▲ Green Computing System R&D Center (Building No.40)

▲ Collaboration and synergies among Project Research Institutes


▲ Multicore servers installed in the server room


▲ SCHEME (robots that participate in multiparty conversational situations)



▲ Collaborative R&D by industry, government, and academia and commercialization (spillover effect)

Climate change is a major global issue, and attainment of a sustainable low-carbon society friendly to the environment is a national goal too. Promotion of green innovation in this context aims to resolve climate change issues and is a priority theme as an engine in Japan's new growth strategy.

Waseda University has actively pursued research related to a variety of next-generation ITC technologies, including ultralow power consumption processors, cloud systems, and smart grids, as research that contributes to a "conversion to a low-carbon society through utilization of information and communications technologies" needed in promoting green innovation. Furthermore, it has earnestly engaged in interaction with the industrial community and promoted activities that share technologies created in R&D work with society via the NEDO Matching Fund Project as well as joint research and consignment research. It completed the Green Computing System R&D Center, a new site for collaborative research between industry and academia with support from the Ministry of Economy, Trade and Industry's (METI) "Project for Industrial Technology Research and Development Facilities" aimed at further robust promotion of green ICT technology R&D, in April 2011. Waseda University established the Green Computing Systems Research Organization as the organization for promoting research mainly at this site.

The Center's server room on the 2nd floor has two parallel computers with global top-level performance. Solar panels installed on the roof supply electricity to the server room, and the site is conducting validation tests for commercialization of low-power computer technology that can operate on solar light. The research floors for joint industrial and academic research, the 3rd and 4th floors, host many researchers from joint research companies as researchers, visiting researchers, and invited researchers.

The Organization brings together the Advanced Multicore Processor Research Institute, Perceptual Computing Laboratory, Global Software Engineering Laboratory and Global Robot Academia Laboratory in order to promote R&D on green ICT technology, mainly using high-performance multicore processors at ultralow power consumption, through industry and academia collaboration. The Organization's core mission is contributing to formation of a sustainable global society, though it also endeavors to train Waseda's young researchers who participate in cutting-edge joint research to become resources that contribute to creative technology development as corporate researchers.

Advanced Collaborative Research Organization for Smart Society

Type Research Council **Year established** 2014 **Faculty and institute members** 75 (22 from outside of the university) **Website** http://www.waseda.jp/across/

Aiming to be a global top-level research site for smart society technology

Pursuit of "smart capabilities" seeks broad inroads by ICT in society, expanded social interest in energy and the environment, and overall optimization through elimination of waste and improved efficiency. Today's world is truly moving toward a smarter society. The targeted smart society must not only provide shelter and food, as basic needs, to individuals, but also allow for activity, offer comfortable, healthy, and safe conditions, and be friendly to the environment.

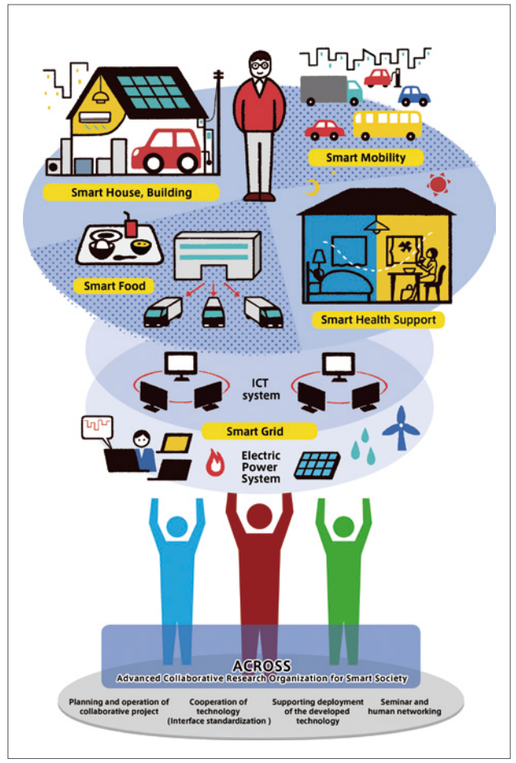
The Organization is addressing five smart domains (smart homes, condominiums and buildings, smart health support, smart mobility, smart food, and smart grid) through seven research groups in order to create an ideal vision of a smart society and drive its realization at the cutting edge of efforts. It aims for a society that is organically linked via information and energy services. Furthermore, it hopes to deliver excellent results requested by society through "provision of university knowledge","planning and proposing joint projects", and "fostering interaction among people" and formation of a venue that help technology to blossom aided by interaction of people.

Furthermore, the Organization participated in METI's "Research Project for Connectivity and Control Technologies in Standardization of Energy Management Systems (EMS), a proof-of-concept project, with research on the theme of "advanced research related to international standardization for realizing demand response (DR)."

The university established the EMS Shinjuku R&D Center with extensive cooperation from 40 leading Japanese companies in order to validate the concept.

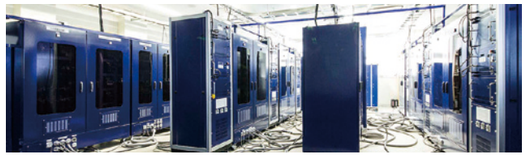
The Organization is mainly promoting four areas now: "Research on foundation technology for quantitative, dynamic DR operation" as METI's validation initiative for building virtual power plants with the aim of establishing shared foundation technology for realization of quantitative, dynamic DR; "Development of a scenario-responsive, distributed, collaborative EMS realization methodology that employs a general-purpose validation base framework" as CREST's validation effort for creating a next-generation EMS realization methodology; "Development of advanced measures that expand collaboration of renewable energy"; and "Development of advanced wind power forecasts and control" as NEDO R&D projects on power-grid output fluctuation adaptive technology that seeks to expand use of renewable energy.

The Advanced Collaborative Research Organization for Smart Society (ACROSS) functions as an advanced research operation for smart society initiatives. ACROSS embodies a variety of concepts related to connectivity ("to the other side","cutting across","intersecting","in a variety of areas","cross sectional","all areas", and "beyond boundaries") and aims to create a platform that can present many images. ACROSS intends to disseminate its activities "across the world."

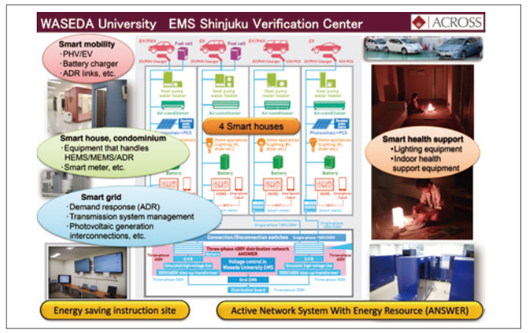


▲ Organization conceptual diagram

▲ Inside of a smart house



▲ Center: Next-generation advanced grid experimental model system - ANSWER (Active Network System with Energy Resources)

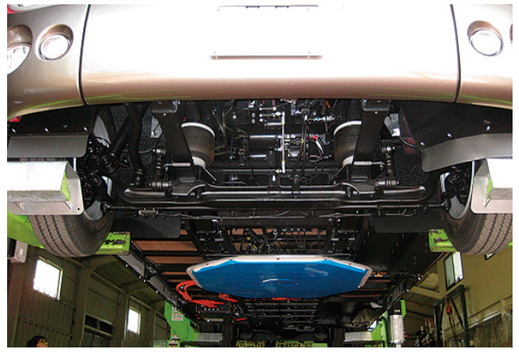


▲ Image of the validation center

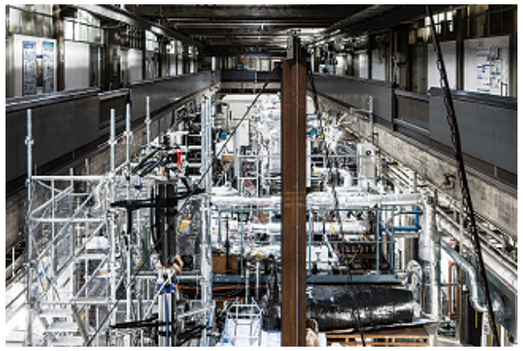
Research Organization for Next Generation Vehicles

Type Research Council **Year established** 2014 **Faculty and institute members** 42 (19 from outside of the university) **Website** http://www.waseda.jp/nextgv/top/

Automobile powertrain research site for development of innovative engine technology



▲ Wireless charging device for electric vehicles



▲ No.58 Building (Laboratory) at Waseda University

▲ Website image

▲ Core researchers at the Research Organization for Next Generation Vehicles

Research on automobile engines and catalysts has a very long history at Waseda University, beginning in the Department of Modern Mechanical Engineering (School of Creative Science and Engineering) and Department of Applied Chemistry (School of Advanced Science and Engineering). Its strong reputation for research results and operations in this field stands out among universities in Japan.

The university held a central role in R&D work on clean diesel engines attracting interest in Europe and other major markets in 2014 through consignments from the Research Association of Automotive Internal Combustion Engines (AICE) of various projects in the "Research and Development Project for the Advancement of Clean Diesel Engine Technology" of METI. Additionally, it was selected as an academic research site for "Innovative Combustion Technology" under the Cabinet Office – JST Strategic Innovation Promotion Program (SIP). Waseda University launched the Research Organization for Next Generation Vehicles in October 2014 as a research site that mainly handles these two initiatives and aids a smooth transition to next generation vehicles while maintaining and advancing international competitiveness in cutting-edge internal combustion and catalyst development areas at the heart of automobiles.

Since its formation, the Organization has been simultaneously implementing these research projects as part of industry and academic collaboration. Our talented researchers are cooperating to achieve smooth progress with the projects, and the university has proposed a new model for collaboration between engineering-related university research and industrial research (mechanical engineering R&D system) with automobile engines as an example. Additionally, the university is targeting cultivation of human resources who are capable of functioning in industry or academia and use of research results in industry, administration, and other social systems by promoting practical research. These projects that create innovation are possible thanks to Waseda University's lead in establishing close cooperative operations with the industrial community.

The Organization has four Project Research Institutes engaged in research as of April 2017 (Research Institute for Combustion and Heat Mass Transfer Engineering, WASEDA Univ., Research Institute for Automotive Catalysts, WASEDA Univ., Research Institute for Automotive Electric Power System, and Research Institute for Automotive New Materials and Production Technology). It has established a platform for mutual collaboration in these areas by combining and integrating knowledge from researchers at the university and external entities in the various areas.

Future Robotics Organization

Type Research Council　Year established 2015　Faculty and institute members 37 (8 from outside of the university)　Website https://www.waseda.jp/inst/fro/

Pursuing development of robots that co-exist with people by “spending time with people and supporting people”

Co-existence of human beings and robots is an everlasting theme of robotics researchers. The Organization implements research on themes of disaster response (Institute for Disaster Response Robotics), healthcare (Institute for Healthcare Robotics), and co-creation (Institute for Human Robot Co-Creation) with the goal of forming a research site that promotes peaceful utilization of robots in order to realize a truly prosperous human society.

Waseda’s robotics research does not restrict itself to industrial robots and aims to create original robots with the concept of “human beings”. Manufacturing activities obtain knowhow related to computer, electric circuit, and machinery materials and designs as well as knowledge about medical, psychology, and other areas. The program builds robots in teams, thereby fostering communications capabilities and teamwork, establishing educational curriculum and experimental environments, and sharing “failure experiences.” These attributes contribute to creation of good robots. The Organization promotes robot building while collaborating with various research groups.

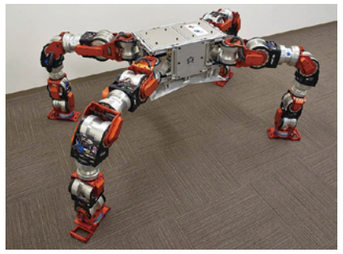
Future robotics research is likely to contribute to future society in two ways. One is convenience provided by the robots themselves, and the other is application of new advanced manufacturing technology (Robot Technology; RT) obtained from robotics research to all types of areas. The Organization is promoting real-world use that shares university research with society.

Waseda University established an education research site targeting global top-class “co-existence of people and robot technology” with catalysts from the 21st Century COE Program, Global COE Program, and other initiatives in order to enable advances in robot technology to become a “genuine intellectual social foundation” ahead of the world. It is cultivating many young people with “break-through capabilities” through a variety of unique programs and has formed a global top-class RT educational research site. Waseda established the Future Robotics Organization, a global core site for robotics research, in order to capitalize on these research promotion capabilities and further strengthen international competitiveness. With this new operation, the university aims to 1) foster high-level knowledge, 2) rapidly share RT utilizing this knowledge with society, and 3) cultivate many young people with “break-through capabilities” that involve creativity for practical ideas. It intends to work even harder as global WASEDA.

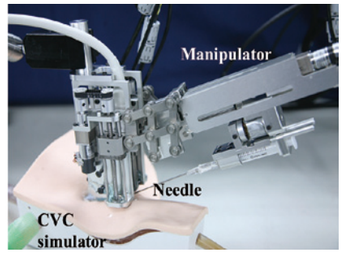
▲ TWENDY-ONE robot for co-existence with human beings

▲ WABIAN-2R robot that walks on two legs

▲ KOBIAN-RIV communication robot



▲ WAREC-1 platform robot with feet



▲ Centesis assistance robot

▲ Octopus disaster response robot

Research Organization for Nano & Life Innovation

Type Research Council　Year established 2015　Faculty and institute members 268 (148 from outside of the university)　Website https://www.waseda.jp/inst/nanolife/

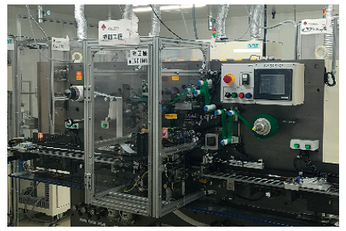
Seeking Waseda-style innovation with nanotechnology

The Organization, which brings together researchers who produced results at the Institute for Nanoscience & Nanotechnology and Consolidated Research Institute for Advanced Science and Medical Care (ASMeW) and is equipped with cutting-edge equipment, promotes backcasting-type R&D for global issues with the unfettered ideas of passionate researchers and students as triggers through seven Project Research Institutes, more than 20 large public research projects, and a wide range of joint and consignment research with domestic and overseas companies.

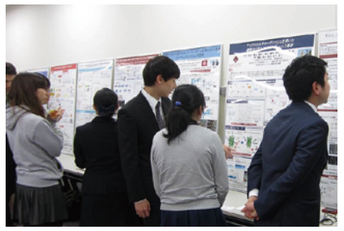
The Research Institute for Nanotechnology operates nano-order three-dimensional processing devices and equipment for a wide range of materials at top domestic levels and provides technology assistance. It develops nano-microsystems that handle measurements and synthesis in very small amounts. The Research Institute for Mesoscale Materials, which links practical materials and basic chemistry from a unique meso-order standpoint, is the site handling mesoporous materials, where Waseda is a pioneer. The Nano-process Research Center develops new technologies related to substance conversion and creation and environment conservation based on an energy-saving, high-efficiency separation process. The Research Institute of Green Device, which targets materials and devices that operate at ultralow power usage, such as power semiconductors and new photonic-electric conversion and optical materials, and the Research Institute for Low-power Consumption Optical Interconnection, which aims to realize optical interconnections for next-generation ultrahigh-speed signal processing, are also disseminating many results. The Research Institute for Life Support Innovation contributes to vital energy and health and lifespan issues by covering from collaboration between smart grids and next-generation store batteries to ultra-small biosensors. The Integrated Institute for Regulatory Science promotes enhanced awareness of risk management in bio-tech, health food, and medical areas from a practical science perspective.

Key strengths of the Organization are research equipment and facilities and staff supporting the above-mentioned institutes. The Nanotechnology Research Center (NTRC), along with the newly established Smart Energy System Innovation Center (Battery Building), gives researchers and students a high-level research environment, including three clean rooms (with a 100-class room), chemistry experiment rooms, and nano-order processing, measurement, and evaluation equipment as part of MEXT’s Nanotechnology Platform (NPF) initiative. The Organization is bolstering interaction and human resource cultivation for young researchers and engineers via agreements with major university research institutes, the Nanotechnology Forum (NFM), an industry, academia, and government collaboration body, and others, and dissemination of information to society.

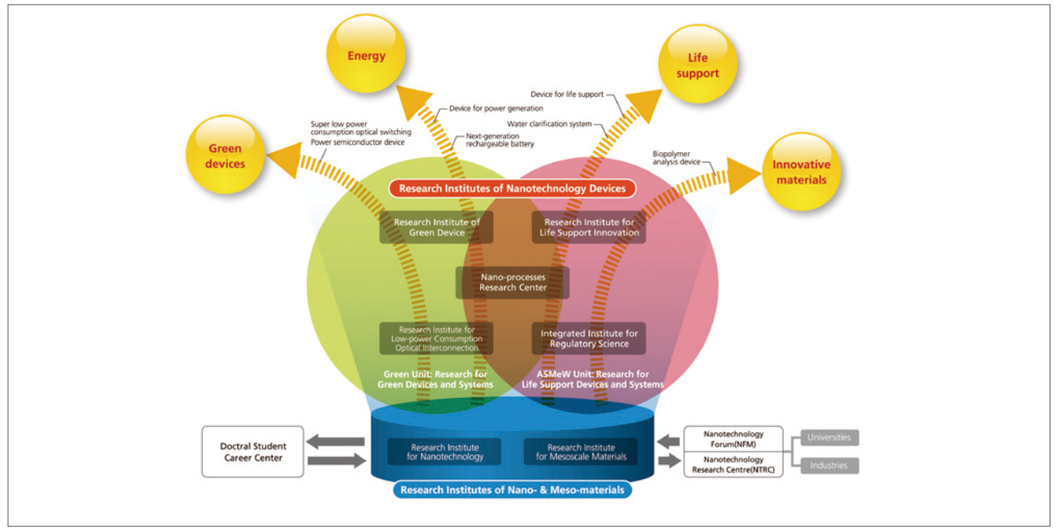
▲ Experiment taking place in NTRC’s clean room



▲ Super-dry room for production of cutting-edge lithium-ion battery electrodes and batteries



▲ Training young researchers by holding a research interaction meeting

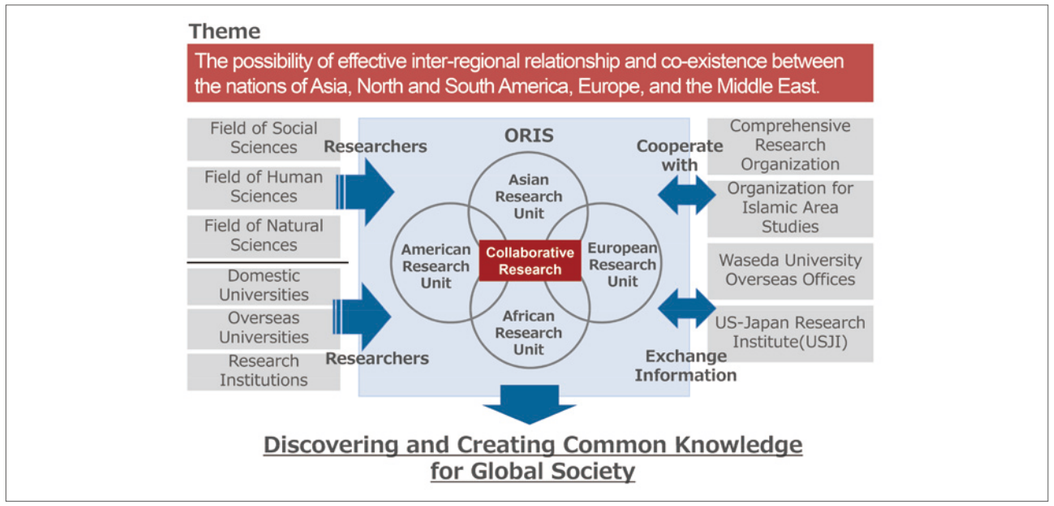


▲ Major issues handled by Project Research Institutes

Organization for Regional and Inter-regional Studies

Type Research Council　Year established 2015　Faculty and institute members 348 (184 from outside of the university)　Website https://www.waseda.jp/inst/oris/

The Construction of Mechanisms for “Reconciliation and Coexistence” beyond the Region



▲ ORIS research theme in English

▲ Japanese Journal of European Studies

▲ Journal of Next Generation Forum

▲ Asia Review

▲ International Symposium(2015)

▲ International Symposium(2016)

The Organization for Regional and Inter-regional Studies (ORIS) was established in April 2015, integrating the Waseda Organization for Asian Studies, the Waseda Organization for Japan-US Studies, and the Waseda Organization for European Studies. Restructuring these three former organizations into the Asian Research Unit, American Research Unit, and European Research Unit, and adding the newly established African Research Unit group, it aims to seek a shared order and to propose solutions to issues in different regions.
Under the theme “the inter-regional relationships and possible co-existence between nations in Asia, North and South America, Europe, Africa, and the Middle East”, ORIS runs two core research projects. One project examines how historical processes have formed separate regional [socio-political] orders. The other project aims to create a shared order for some areas, and to explore the applicability of this new innovation in other areas under the current context of accelerating globalization.

Our aims

- Formation of an active intellectual platform for transdisciplinary regional and inter-regional studies from the perspectives of Asia
- Discovery, and creation and education of the "Global Common Knowledge"; and delivery of feedback to the societies
- Formation of the forum for academic-practitioner exchange, and provision of new opportunities for young researchers
- Contribution to the Waseda academic community as an effective international research wing of the university

Research Unit Outline

- Asia Research Unit: Respecting a variety of values in the region, we actively engage in proposing academic and strategic actions and frameworks for more democratic, peaceful and stable Asia.
- American Research Unit: We undertake policy oriented research on partnership between Japan and countries in the Americas and in Asia by bringing together researchers in a broad range of fields.
- European Research Unit: We study the peculiarity and universality of “reconciliation and co-existence” in European integration based on interdisciplinary projects and global research networks.
- African Research Unit: Considering the traditional cultures in the continent, we analyze the example of national reconciliations especially by reevaluating the role of “Truth and Reconciliation Commission” in South Africa.

Waseda Institute of Political Economy

Type Faculty of Political Science and Economics **Year established** 1978 **Faculty and institute members** 135 (35 from outside of the university) **Website** https://www.waseda.jp/fpse/winpec/

Analysis of modern issues in mass communication and journalism

▲ Japan-EU Friendship Week Symposium

Waseda established the Institute in 1978 to conduct interdisciplinary research of issues confronting the modern world and provide meaningful policy advice. The Institute mainly addresses issues related to policies and the economy. It carries on Waseda University's mass communication and journalism research tradition and researches mass communication and journalism and collects materials. The Institute is deepening collaboration with other research entities and broadening research activities to interdisciplinary research of the environment and energy, creation of sustainability science, comprehensive research on the EU, collection of postwar materials, and systematic historical research on postwar history. It strives to constantly disseminate and collect the latest information by disclosing working papers on the website and holding the Institute of Political Economy seminar 3-4 times a month with teachers invited from all around Japan. In recent years, it has been focusing on assistance for young researchers who will support the next generation and covering costs for publication of very top-notch books.

Research Institute for Letters, Arts and Sciences

Type Faculty of Letters, Arts and Sciences **Year established** 2012 **Faculty and institute members** 270 (39 from outside of the university) **Website** https://www.waseda.jp/flas/rilas/

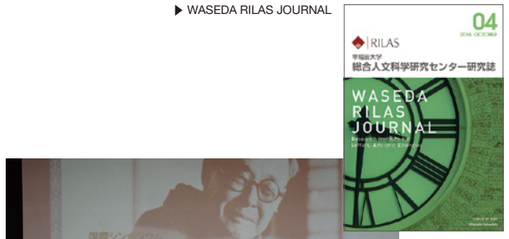
Developing the frontier of humanities research

The Research Institute for Letters, Arts and Sciences (also known as RILAS) is a center established in the Faculty of Letters, Arts and Sciences, Waseda University, which has promoted humanities research for more than 120 years, with a mission of "passing down accumulated knowledge of humanities and cultural sciences to the future generations, and addressing and seeking answers to the issues facing humanity."

The important characteristic of the research activities at RILAS is that it not just fosters individual researchers to pursue deeper knowledge in the fields of specialization, but it also promotes joint researches that advance collaboration and integration of various research themes. RILAS is currently conducting a wide range of research efforts with 12 interdisciplinary research groups as its core.

Besides the research activities of individual researchers, RILAS has four major initiatives: cultivation of young researchers through collaboration with graduate school education, acceptance of researchers from overseas, promotion of international research interaction, including lecture events and symposia, and acceptance of funded research and joint research in response to the social requests. RILAS intends to continue pursuing a variety of research project as a pioneer in humanities research while collaborating with many researchers at the university and from outside. The outcomes of these various research institute members are published in the online journal *WASEDA RILAS JOURNAL*. Please take a look at the open website of the journal.

▶ WASEDA RILAS JOURNAL



▲ FY2016 annual forum "Rebuilding humanities and text reading techniques – Sokichi Tsuda"

Institute of Comparative Law

Type Faculty of Law **Year established** 1958 **Faculty and institute members** 243 (121 from outside of the university) **Website** https://www.waseda.jp/folaw/icl/

Designing global, regional and national law in response to economic globalization

The Institute of Comparative Law (ICL) at Waseda University was established in 1958. It conducts comparative research on the legal systems of Japan and other countries, and contributes to research and education in the field of Japanese legal studies.

The Institute is conducting a long-term research project entitled 'The Role of Law and Legal Studies in the Transition to a Sustainable Society: From the Perspective of Regional Law in Asia'. The research project aims to determine a new role for law and legal studies that will be instrumental in bringing about a balance between the economy, society, and the environment to achieve a transition to a sustainable society that protects the interest of future generations.

The Institute also regularly holds symposiums and seminars, and has twenty one separate joint research projects conducted by research affiliates according to their specific research topics. Our research results are published regularly, in print and online media, including *Hikaku Hogaku (Comparative Law Review)*, *Waseda Bulletin of Comparative Law*, *Waseda ICL Online Journal* and *Waseda ICL Online Forum*.

▲ Public lecture event "Responding to the international refugee protection crisis" (May 27, 2016)

▲ Japan-China Criminal Law Symposium "Analysis of differences in Japan-China criminal law codes" (November 23, 2016)

▲ Symposium "Brexit and UK Politics and Constitution – Constitutional rules in a country without a written constitution and discord with political realities" (January 28, 2017)

▲ Symposium "Outlook for defining the laws of a sustainable society (No.2) Possibility of a green welfare nation (degrowth welfare nation)" (October 29, 2014)

Center for Professional Legal Education and Research

Type Faculty of Law **Year established** 2007 **Faculty and institute members** 3 **Website** https://www.waseda.jp/folaw/cpler/

Fostering excellent legal experts through research and continuous education

▲ Building No.27 (Azusa Ono Commemorative Building)

The Center for Professional Legal Education and Research (CPLER) fosters excellent legal experts and operates three divisions (research, education, and collaboration with external parties) with the aim of contributing to advancement of a society based on rule of law. Primary activities are 1) theoretical and applied research on legal practice, 2) practical education in Waseda Law School and career assistance for law school graduates, 3) advanced specialty education for legal experts, and 4) bolstering collaboration through provision of legal information service to university graduates in the legal profession.

Additionally, it published the No.1 issue of the *Waseda Law School Journal*, a legal magazine that focuses on being a bridge between theory and practice, in FY2016. Waseda hopes that the journal will serve as a way of sharing educational and research results accumulated under the law school program with society and disclosing research results of young jurists who complete law school.

It also launched a Law Recurrent Course (continuous education course) in FY2016. This program offers a new cutting-edge realistic curriculum primarily for jurists who completed law school for the purpose of providing sustainable, continuous support after students have become legal professionals. Please refer to the center's website for details.

Institute for Advanced Studies in Education

Type Faculty of Education and Integrated Arts and Sciences | Year established 1986 | Faculty and institute members 176 (27 from outside of the university) | Website https://www.waseda.jp/fedu/iase/

Comprehensively studies contemporary issues based on an understanding of inherent educational value

Tough questions are being asked about the true value of education in modern society with steady advances in information access and internationalization and a mix of diverse value systems. It is important to grasp contemporary educational issues broadly with an advanced and interdisciplinary perspective and engage in initiatives related to specific implementation of education for tomorrow.

The Institute started as the Laboratory for Advanced Studies in Education in the Faculty of Education in April 1986 and was reorganized as the Institute for Advanced Studies in Education on a university-wide scale in September 1998. Roughly 30 years has passed since the establishment of the research group. The Institute intends to carry on the legacy of past results and pursue effective research that addresses contemporary issues.

The Institute's main activities are holding lecture events, symposiums, and seminars, arranging and assisting public placement research, and editing and issuing periodicals (Institute Bulletin, Waseda Review of Education, Waseda Education Monographs, Waseda Education Booklets). These publications and research announcements disclose the results from publicly funded research.

The Institute President and Vice President, management committee members, operating committee members (general affairs committee and editing committee), and secretariat collaborate and cooperate in running the Institute.

The Institute hopes to attract active participation by people in the education field and with interest in education.

▲ Example of a front-line education lecture event series poster on "Learning class content and specialty fields in English"

▲ Publication from the Institute (Cover page of Institute Bulletin No.25)

▲ Publication from the Institute (Cover page of Booklet No.14)

▲ Publication from the Institute (Cover page of Booklet No.15)

Institute for Advanced Social Sciences

Type Faculty of Social Sciences | Year established 2016 | Faculty and institute members 85 (17 from outside of the university) | Website https://www.waseda.jp/fsss/iass/

Interdisciplinary, international, and application-oriented research site for social sciences

Waseda University's Faculty of Social Sciences launched the Institute for Advanced Social Sciences on March 25, 2016 to organize and drive interdisciplinary, international, and application-oriented research in the social sciences and to apply research findings to education. The principle of our research is based on the following three goals.

- "Integration" of the social sciences by recognizing the complexity and diversity of society and studying it as a whole.
- "Interdisciplinarity" of the social sciences by uniting boundaries across fields through the incorporation of the development of the humanities and sciences.
- "Application" of the social sciences by generating findings on subjects that require immediate response through emphasis on research activity that directly engages social problems.

The Institute is divided into two divisions: Global Issues and Social Design. These divisions are based on two majors (Global Society and Policy Sciences) taught in the Graduate School of Social Sciences. Faculty members belonging to these divisions form a project research group which will conduct research that spans 5 to 10 years.

Various research seminars and workshops are held in Japanese and English, as appropriate, and information on these events is disseminated through the Institute's website.

▲ International symposium commemorating the opening of the Institute for Advanced Social Sciences (April 23, 2016)

Research Institute of the Faculty of Commerce

Type Faculty of Commerce | Year established 2007 | Faculty and institute members 150 (11 from outside of the university) | Website http://www.waseda.jp/foc/rifc/

Multifaceted research utilizing two research divisions with different backgrounds

▲ Sanken Forum (Masaru Ibuka Auditorium)

▲ Executive education scene

▲ Executive education scene

The Institute consists of two research divisions: the Research Institute of Business Administration (RIBA) and the WBS Research Center ("WBS" stands for Waseda Business School). It contributes to advancement and reinforcement of the research activities of the Faculty of Commerce, and aims to give those research outcomes back to society.

● **Research Institute of Business Administration**

The Research Institute of Business Administration (RIBA) was founded in 1974 for pursuing research led by the faculty members of the School of Commerce with a mission of linking industry and academia in order to tackle a variety of cutting-edge issues broadly related to industry management from various perspectives.

● **WBS Research Center**

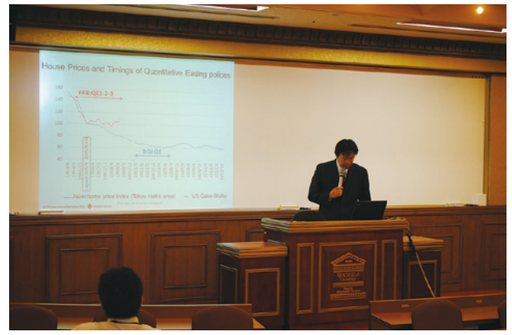
The WBS Research Center offers non-degree education in the field of business and management to executives through Asian regional research and various consignment and collaborative research projects with support from the Institute of Systems Science that has a long history. The Center pursues specific solutions to issues on the front line of business and higher-quality research results. It also promotes application of its research results to education and society.

Center for Finance Research

Type Faculty of Commerce | Year established 2004 | Faculty and institute members 36 (15 from outside of the university) | Website http://www.waseda.jp/wnfs/

Aiming to be a central research entity in Japan's finance field

The Research Center produces and disseminates global-class research results through basic and applied research mainly for finance. It was formed in 2004 for the purpose of being a central research entity related to Japanese finance. The Research Center actively pursues collaborative and consignment research with companies, public agencies, and external research entities and aims to create financial innovation, including the fintech field, as the foundation for collaboration among industry, academia, and government. Its researchers freely define their own research themes and ramp up research projects by themselves. This project approach facilitates dynamic and lively research activities on a variety of themes and generates high-quality research results through competition among projects. Waseda University utilizes a policy of research and education that promptly reflects these research results in educational content at the Business School and at the Business Information Academy, the educational body of the Research Center. The Research Center shares results from advanced and applied research with students and practitioners and intends to actively promote development of domestic and overseas networks with being increasingly sensitive to the needs of students and practitioners. Furthermore, the Research Center engages in vibrant information dissemination through seminars, symposiums, and other events that address socioeconomic implications from finance-related theory and practice and their impact on public policy from the standpoint of broad social contributions.



▲ WCFR Workshop

Waseda Research Institute for Science and Engineering

Type Faculty of Science and Engineering **Year established** 2006 **Faculty and institute members** 1,034 (697 from outside of the university) **Website** https://www.waseda.jp/fsci/wise/

Largest science and engineering research organization at the university

The Institute oversees the Research Institute for Science and Engineering and Kagami Memorial Research Institute for Materials Science and Technology in its efforts to promote organic and efficient research related to the foundation and application of science and engineering, including interdisciplinary research, while collaborating with society. It conducts its own research assistance activities as a comprehensive institute that include 1) development of young researchers (Early Bird Program), 2) collaboration with the industrial community (Waseda Innovation Network for Advanced Science and Technology(WINeST)), and 3) research results promotional activities.

● **Kagami Memorial Research Institute for Materials Science and Technology**

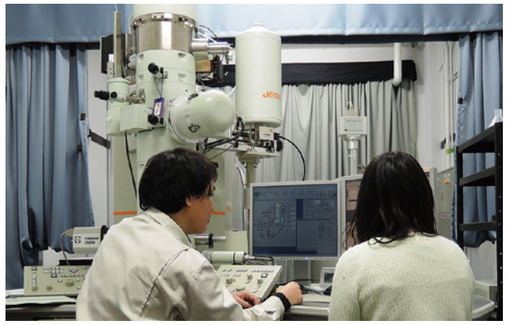
The Research Institute was established in 1938 using funds donated by Kouichirou Kagami and Yoshiyuki Kagami (father and son) as the Castings Research Laboratory and started research work with Dr. Tokiji Ishikawa as the first director. While efforts initially focused on casting and cast materials, the Research Institute broadened to plastic processing, surface processing, metallurgy, and other areas in accordance with subsequent advances in industrial technology and also strengthened activities related to ceramics, semiconductors, and other electronic materials because of their growing importance as industrial materials. The Research Institute adopted its current name (Kagami Memorial Research Institute for Materials Science and Technology) on the 50th anniversary of the founding on October 21, 1988, taking into account these trends. It implements a wide range of research now with focus on fundamental research and project research.

● **Research Institute for Science and Engineering**

The Research Institute for Science and Engineering has a mission of "contributing to advances in science and technology and human happiness by developing research related to fundamentals and applications of science and engineering, including interdisciplinary research, while collaborating with society". Funding for the Institute's activities comes from external sources (mainly consignment and collaborative research from the industrial community and public entities) and grants by the university.

External funds received by the Institute correspond to about half of the total value of external funds for the university, highlighting its central role in Waseda University's research activities. It currently has 13 research professors and about 1,000 researchers at the university and other locations, including multitask university researchers and junior researchers.

Roughly 100 research projects are taking place with coverage by various research divisions (biotech, environmental, science, and technology). The Institute helps in organizing lecture events, issues mooks regarding the Institute's activities, and conducts other activities to support research and cultivate young researches. An important aim is disclosing research results from the above-mentioned activities and actively sharing results with society.



▲ Extensive analysis and evaluation equipment at the Kagami Memorial Research Institute for Materials Science and Technology

▲ Training and assistance for young researchers (Early Bird Program)

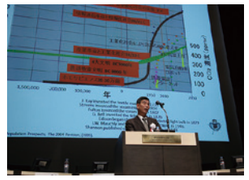
▲ Research publication journal issued by the Institute

▲ Research conference by research professor at the Research Institute for Science and Engineering

Global Information and Telecommunication Institute

Type Faculty of Science and Engineering **Year established** 1998 **Faculty and institute members** 101 (80 from outside of the university) **Website** https://www.waseda.jp/fsci/giti/

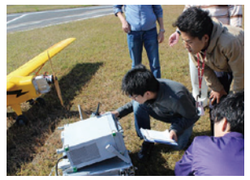
Contributing to realization of a prosperous advanced information and telecommunication society



▲ Director Takuro Sato, Global Information and Telecommunication Institute

▲ 2016 GITI Forum Lectures (Professor Kaji)

▲ Survey and experiment related to IoT utilization by a railway company



▲ Broad-area sensor network test using unmanned aircraft

Advances in information and telecommunications technologies have greatly contributed to not only the means of communication used by people, but also to development of social infrastructure networks, including logistics, traffic control, medical, plant control, machine control, energy distribution, and monitoring control. Social activities are rapidly globalizing beyond the confines of time and space, against a backdrop of fast advances by these technologies in recent years. At the same time, however, information disparities that rapidly widened at national, regional, and personal levels are adding to uncertainty in society related to various global issues, such as steep population growth, economic inequalities, resource depletion, food shortages, and worsening environmental conditions. Further enhancement of information and communication technologies and solutions to economic and social problems related to information and communications are vital to realization of more prosperous and safer and more reassuring information societies. To address these demands from society, the Global Information and Telecommunication Institute collaborates with all industries, works together with universities from around the world, research institutions, national research entities, and government ministries and agencies, and seeks to build an advanced information and telecommunication base in interdisciplinary (cutting across information science, human science, social science, and other areas) and practical areas. It also cultivates people with the potential to contribute to international society using information and communication technologies.

Information, Production and Systems Research Center

Type Faculty of Science and Engineering **Year established** 2007 **Faculty and institute members** 42 **Website** https://www.waseda.jp/fsci/ipsrc/

Disseminating information as a global-level research site with industrial, government, and academic collaboration from Kitakyushu, a city with manufacturing roots

This research center (IPSRC) engages in a broad range of activities with the Graduate School of Information, Production and Systems from education research to local and social contributions, including support for knowledge advancement in automotive and semiconductor industries concentrated in northern Kyushu, joint research and project participation with domestic and overseas research entities and companies, provision of science and engineering learning opportunities to middle and high school students, and holding open classes and technology seminars. The International collaboration Symposium on Information, Production and Systems, which is held once a year, attracts about 200 people from Japan and other countries. This is a major event for announcements of joint research results and the latest technology and research trends in presentations and posters and provision of a forum for inter-disciplinary interaction by participants.

The Kitakyushu Science and Research Park, which brings together the IPSRC, IPS, three universities, and companies, focuses on automobiles as a core area and forms a global-level research site with industrial, government, and academic collaboration that serves as a "partner graduate school" for learning about car electronics and car robotics from corporate engineers who are active on the front line of business as teachers and conducts field tests for next-generation transportation, including validation tests for unmanned driving.

▲ Kitakyushu Science and Research Park (IPSRC is on the right side of the photo)

▲ Engine disassembly and assembly practice in a local auto plant

▲ Image of the International collaboration Symposium on Information, Production and Systems

▲ Driverless vehicle demonstration at Kitakyushu Science and Research Park

Environmental Research Institute

Type Faculty of Science and Engineering **Year established** 2002 **Faculty and institute members** 179 (133 from outside of the university) **Website** https://www.waseda.jp/fsci/weri/

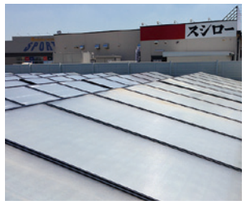
Initiatives with industry, academia, government, and citizen efforts, practical approach to the environment

This research institute was founded in 2002 to seek solutions to increasingly complex environmental problems on a global scale. It conducts R&D aimed at solving problems with a multidisciplinary approach and makes the fullest use of the overall capabilities of Waseda University. It also actively promotes a practical approach of validating R&D results with the "3G's," namely the field(genba),original(genbutsu) and reality(genjitsu). While advances in science and technology have vastly improved our lives in material ways, high-volume consumption of resources and energy through various social and economic activities is causing a variety of environment and resource problems. Many mutually contradictory challenges exist in the current world. It is very important to address these issues with diverse perspectives, including a spatial approach that extends from the areas where we live (nature, cities, farming and fishing villages, forests, and mountainous areas) to the entire country, Asia and the world, a temporal approach of past, present, and future related to environmental issues, and an approach related to diverse industries, social and economic systems, and legal systems and policies as well as traditions, cultures, and lifestyles. Cumulative negative legacy might become irreparable unless problems are resolved collaboratively by fully studying issues, sharing future goals and plans, and leveraging the stances and attributes of industry, academia, and government plus related citizen groups. The Institute collaborates with researchers and various entities at Waseda University and outside the university and implements practical research aimed at making contributions to society.


▲ Electric bus WEB-3 developed by Waseda University


▲ Indonesia forest restoration project


▲ ULV driven by a compressed air engine

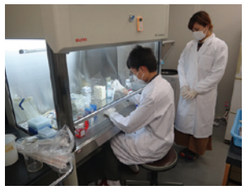

▲ Hybrid heat-source system using solar heat and ground-source heat at Honjo Smart Energy Town

Advanced Research Center for Human Sciences

Type Faculty of Human Sciences **Year established** 1987 **Faculty and institute members** 214 (97 from outside of the university) **Website** https://www.waseda.jp/fhum/archs/

Comprehensive scientific research on various human problems from the standpoint of human development


▲ Interview in the psychological services office


▲ Subculture process for tissue cells in a bacteria-free state


▲ Automated consecutive monitoring of atmospheric minute components utilizing measurement equipment


▲ Experiment related to measuring the reactions of Twitter users with LEGO

This research center was established with the purpose of contributing to the establishment of healthy, happy human lives and active social lives through harmonization of people, society, and nature and orderly advances and scientific and comprehensive research into various issues related to human existence and behavior.

The research center conducts three types of research projects that have been carefully selected once every three years as an initiative to realize this aim. It promotes research on a variety of themes with the three project types – planning and preparation projects that assist preparations for acquiring large competitive research funds, large research assistance projects that support more efficient handling of acquired large-scale competitive research funds, and general research projects that freely define issues.

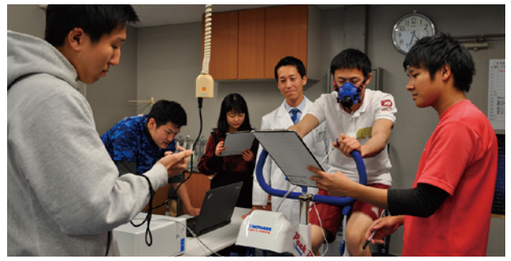
Additionally, it collaborates with research institutions at the university and outside the university, extensively accepts invited researchers, collaborative research, and consignment research, and builds operations to pursue multifaceted research. These activities lead to formation of a community of researchers.

Results from research conducted by this research center should continue to contribute to resolving many difficult issues facing modern society educating and supporting young researchers who are the future and sharing results broadly with society.

Institute for Sport Sciences

Type Faculty of Sport Sciences **Year established** 2006 **Faculty and institute members** 149 (64 from outside of the university) **Website** https://www.waseda.jp/fsps/rcsports/research/

Strengthening society and enhancing people's lives through sports


▲ Image of a cardio pulmonary exercise test


▲ Basketball player's line of sight and brain wave measurement


▲ Image of electroencephalography in a test room

The Waseda Institute for Sport Sciences was established in September 2006 to promote research into sport in such disciplines as the humanities, pedagogy, business, medicine, kinesiology, and coaching, and to make the results of this research widely available.

The Institute aspires to a high level of research while collaborating closely with the educational and research activities of the Graduate School of Sport Sciences and the undergraduate School of Sport Sciences. The Institute conducts research and disseminates the results, holds research meetings and lecture events, and serves as a liaison for research between faculty members and external bodies. The results of these activities are openly available both inside and outside the university.

The importance of living an active life is steadily increasing as the population ages. There are also growing expectations for the sport sciences to provide scientific support for athletes ahead of the 2020 Tokyo Olympic and Paralympic Games. In these times of change and opportunity, this Institute strives for an even stronger vibrancy to achieve its mission of enhancing people's lives and the general welfare.

Waseda University Institute of Asia-Pacific Studies (WIAPS)

Type Faculty of International Research and Education **Year established** 1997 **Faculty and institute members** 167 (111 from outside of the university) **Website** https://www.waseda.jp/gsaps/wiaps/

Promotion of interdisciplinary research for various issues in the fast-growing Asia-Pacific region

The Asia-Pacific region currently accounts for at least 50% of the global economy. While people have become physically more prosperous thanks to economic advances, many issues severely affect living, such as poverty, the environment, and security. These problems no longer stay within individual nations and are international issues in a globalized society with active movement of people, goods, money, and information across borders.

The Waseda University Institute of Asia-Pacific Studies engages in interdisciplinary research from global and regional perspectives to address these issues with dedicated faculty who focus on research on three areas (Area Studies, International Relations, and International Development/Policy Studies). The dedicated faculty create research groups within the center and actively disclose research results to the outside world via the *Journal of Asia-Pacific Studies*. The Institute also handles research projects with consignment research funds, donations, and supplemental funds from outside the university. It puts emphasis on formation of research networks through collaboration with universities, research entities, and companies located in Japan and other countries. The Institute strives to disseminate research results to other countries by arranging international collaborative research and holding international symposiums. It plays an important role in the promotion of international research activities in the Asia-Pacific region.


▲ Forum on Global Ethics in East Asia attended by Harvard University Professor Michael Ignatieff


▲ East Asia Community Forum


▲ Students making announcements at the ASEAN Community Building, an international symposium

Waseda Institute for Advanced Study (WIAS)

Year established 2006 Faculty and institute members 54 Website https://www.waseda.jp/inst/wias/

Research platform for promising researchers' great leap forward into the world


▲ Conference with UBIAS researchers


▲ Conference with UBIAS researchers


▲ WIAS monthly workshop


▲ WIAS lunchtime seminar

WIAS was established with the aim of enhancing quality and international profile of the research activities of Waseda University by nurturing promising young researchers. WIAS accepts researchers from across the world, irrespective of nationality or research area. They are provided with good research environment in which they can concentrate on their research activities.
WIAS researchers are working on respective research themes in humanities, social sciences, natural sciences or interdisciplinary areas. WIAS researchers are expected to acquire various competitive research funds, disseminate their research results through papers and presentations at academic conferences, host WIAS monthly workshops and run seminars. WIAS offers systematic exchange opportunities for researchers such as periodical progress report meeting in WIAS or joint seminars in collaboration with other organizations. Through these activities, researchers can go beyond their specific research area and work with other researchers in more dynamic ways.
They also have chances to engage in educational activities in Waseda University. After working for some years at WIAS, they generally obtain full-time positions at Universities or research institutes.
WIAS also invites distinguished researchers from abroad so that they can interact with faculty and young researches of Waseda University. WIAS will reinforce the alliance with institutes for advanced studies based on universities around the world to further enhance the research standards of WIAS as well as that of Waseda University.

Center for Japanese Language

Year established 1988 Faculty and institute members 201 (168 from outside of the university) Website https://www.waseda.jp/inst/cjl/

One of Japan's largest providers of Japanese education, and a place for practicing advanced theories of Japanese language education

The Center for Japanese Language (CJL) at Waseda University offers Japanese language education that is tailored to match the Japanese abilities and study objectives of individual students. The CJL offers Japanese courses to the approximately 5,000 international students enrolled in Waseda University from around the world, and also provides one-year and half-year "Japanese Language Programs" and three-week and six-week "Short-term Japanese Programs." Another feature of the CJL is that it is open to overseas researchers and overseas faculty, not only Waseda's own international students. The CJL also works with the Graduate School of Japanese Applied Linguistics and functions as a place for practicing advanced theories of Japanese language education.
The Center also implements theoretical and practical research projects related to Japanese language education, offers research groups, and conducts various research activities with the aim of enhancing the Japanese language and Japanese language education. Additionally, the Center publishes the Bulletin "Waseda Practical Studies in Japanese Language Education" annually to share its Japanese language education activities inside and outside the university and to contribute the improvement of the language education.


▲ Class scene


▲ Class scene


▲ Class scene


▲ Waseda Practical Studies in Japanese Language Education

The Tsubouchi Memorial Theatre Museum

Year established 1928 Faculty and institute members 5 Website https://www.waseda.jp/enpaku/

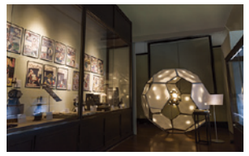
The symbolic presence of "Waseda Theatre" – Asia's only comprehensive theatre museum

As a specialist in theatre and film, the museum collects and stores materials related to theatre and film not only from within Japan but from all over the world. After classification, preservation, research and investigative activities, this vast ranging collection is extensively released via exhibitions and events, printed materials and via databases. In addition, the Museum also actively engages in regional exchange initiatives and contributes to a wider understanding of theatre and film.

In recent years, the Museum has been energetically giving attention to digitalising the collection, and gradually releasing its comprehensive database of theatre information: Digital Archive Collection. From Ukiyoe, to rare books, playbills and performance documents, the database has a diverse range – it particularly focuses on a collection of actors in Ukiyoe and all of the collected materials can be browsed. Moreover, in making a three dimensional collection of 3D materials for example, the Museum is aiming to create an archive for the future. In addition, the Museum has also established a library where each genre of materials can be browsed and which are utilised not only in research but in many other ways.


▲ Front of the Museum is modeled on the historic Elizabethan "Fortune Playhouse" built in the 16th century; the building itself is a theater material


▲ Digital archives


▲ Special exhibition

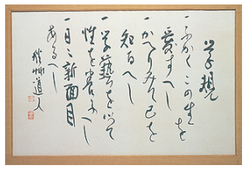
Aizu Museum

Year established 1998 Faculty and institute members 5 Website https://www.waseda.jp/culture/aizu-museum/

Open university museum with valuable cultural materials


▲ Permanent exhibit room


▲ Meian (Taikan Yokoyama and Kanzan Shimomura); painting for the No.2 building (former library)


▲ Yaichi Aizu's Gakki


▲ Exterior of the No.2 Building Yaichi Aizu Memorial Museum

Yaichi Aizu (1881-1956), who was not only an Eastern art history researcher but also a poet and writer, stressed the importance of direct contact with works in art history research and education and referred to this as "practical learning." He collected just over 4,000 items, including Chinese ceramics, mirrors, and gasen, purchased with his own funds for use in student education and research. These items form the Yaichi Aizu collection and are an important component of the Museum's collection. The Museum also has archeological materials from excavations conducted prior to the war, donated modern art works, and materials on the Aizu people from the Yoshio Tosabayashi collection. Its materials are unique and valuable cultural assets of Waseda University. Since opening the Museum in 1998, it has received various donations from friends of the university, including the Shigenori Tomioka collection, the Uchiyama collection, the Kantaro Nobuhara collection, the Hattori collection, the Ono collection, and the Kosei Ando collection. The Museum's collection has expanded to about 20,000 items. The Museum items are permanently exhibited. The Museum aims to be a site for use in research and education at the university and from outside the university and to offer opportunities to have contact with the university's knowledge-filled historical items.

Center for Advanced Biomedical Sciences : TWIns, Waseda

Type Faculty of Science and Engineering | Year established 2008 | Faculty and institute members 279 (80 from outside of the university) | Website https://www.waseda.jp/inst/twins/

Promotes next-generation biomedical science and engineering collaboration aimed at realizing advanced medical care

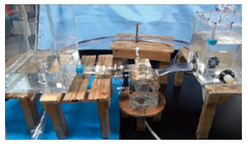
Waseda University and Tokyo Women's Medical University have been cooperating in artificial heart and biometrics for over 50 years and have accumulated extensive joint research knowhow combining medicine and science and engineering. The two universities opened the Tokyo Women's Medical University - Waseda University Joint Institution for Advanced Biomedical Sciences (TWIns) in 2008 to organizationally pursue research in life science and medical science fields, and Waseda University's portion is the Center for Advanced Biomedical Sciences. The facility is equipped with advanced devices and facilities, including laboratories with high safety and hygiene levels.

TWIns brings together many Waseda University research groups related to life science and medical science beyond faculty and department boundaries, and supports practical education and activities. Research covers a wide range of areas, including life science, biology, medicine, and science and engineering. The site also pursues new treatments with cutting-edge technologies and disease prevention technologies based on practical collaboration with knowledge possessed by Tokyo Women's Medical University and Waseda University. It actively reviews ways of quickly bringing advanced medical technology to the front line of medical care and fosters human resources for next-generation medicine.

▲ Exterior of TWIns

▲ A life science experiment in the shared laboratory on the third floor

▲ "Summer Triangle" in Your Hand: Three LEDs are lighting on an ultra-conformable conductive polymer nanosheet (300 nm thick) attaching to the skin, expressing the "Summer Triangle" that shines in the night sky



▲ Assessment of hydrodynamic features of a newly developed stentless mitral valve using a pulsation-type circulation system

San Francisco Office / Brussels Office

Type International Affairs Division | Year established 2012 (San Francisco Office) 2016 (Brussels Office) | Faculty and institute members — | Website http://www.waseda.jp/inst/us-office/ (San Francisco Office) https://www.waseda.jp/inst/brussels-office/en/ (Brussels Office)

Overseas Sites Supporting Education and Research

▲ Exterior of the building where the San Francisco office is located

▲ EU-Japan Forum Roundtable for researchers

▲ San Francisco office

▲ Brussels office sign

Waseda University has concluded academic agreements with leading overseas scientific institutions and is promoting student and researcher exchanges based on these agreements. Those academic exchanges are supported by Waseda's overseas branch offices located over seven regions worldwide. Branch offices in the North America and Europe are aimed at internationally expanding Waseda's research network and collaboration.

The San Francisco office (opened in 2012) supports the university's educational and research activities in North America and covers a wide range of activities. The office assists researchers in North America-related studies and works closely with our Center for Research Strategy to build and strengthen networks between Waseda and academic institutions in the US. Through its networks built in the Bay Area, including Silicon Valley, the office assists researchers and Waseda students studying in the region. The Brussels office (opened in 2016) was launched for the purpose of facilitating international joint research and boosting the university's knowledge dissemination capability in Europe. With a great deal of information on education and research flowing into Brussels, the capital of the European Union, the city is playing a greater role as a central site for various science advancement programs. The broaden networks with European scientific institutions through the office have led to the EU-Japan Forum in October 2016. The office earnestly seeks to promote WASEDA to attract international partners for academic collaboration.

Waseda University Research Ethics Measures

Waseda University has put in place relevant rules and implemented relevant measures to ensure that all researchers and other personnel who are involved in academic research recognize the great influence that research activities have on society, and carry out research activities faithfully in accordance with their own good conscience.

Establishment of Rules and Other Provisions Related to Academic Research Ethics

Waseda University has established the Waseda University Academic Research Ethics Charter to articulate the desired ethical behavior and to set out a code of conduct for all concerned with research activities at the University.

Waseda University has created its "Guidelines Regarding Academic Research Ethics" to serve as a guideline for compliance with the Academic Research Ethics Charter, and to articulate in detail the responsibilities of the university and its researchers.

Waseda University, in its "Rules for Preventive Measures against Research Misconduct and the Investigation Procedures", stipulates the university's stance on the prevention of misconduct regarding research activities and misconduct regarding the handling of research funds, and on the treatment of cases of misconduct.

Charter/Code of Conduct

Waseda University Academic Research Ethics Charter
Ethical behavior and code of conduct for those who are concerned with academic research activities

Guidelines Regarding Academic Research Ethics
Concrete guidelines for researchers' duties and appropriate conduct regarding research activities

Rules for Preventive Measures against Research Misconduct and the Investigation Procedures
Rules for the prevention of misconduct of research and research funds and measures against improper activities

The Academic Research Ethical Review Committee

Waseda University has established the Academic Research Ethical Review Committee, based on Waseda's Rules for Preventive Measures against Research Misconduct and the Investigation Procedures. The Committee works to prevent misconduct and takes action in response to cases of misconduct.

Review System for Research and Experiments

Waseda University has established a system for the review of ethics related to research plans, and of experiment plans, so as to protect research subjects, and to set rules to ensure fairness and reliability in research.

Conflict of Interest Management

Waseda University has established its "Regulations for Conflict of Interest Management Regarding Public Research Funds" as well as the Conflict of Interest Management Committee pursuant to those regulations. Conflict of Interest management is carried out by the Committee.

Waseda University Office of Research Ethics ▶ https://www.waseda.jp/inst/ore/

Waseda University's world-class research capabilities

Waseda University promotes original research that innovates the future, while at the same time applying its wealth of knowledge to the diverse fields that are its strength as a university. In the latest world university ranking (Quacquarelli Symonds ranking), Waseda University ranked among the top 100 in the world in 9 research fields, demonstrating that Waseda University's research capabilities are highly regarded around the world.

TO THE WORLD

QS Graduate Employability Rankings 2017
Ranked No.1 in Japan for the second year running in the ranking that indicates how successful university's graduates are. Ranked No.26 worldwide.

THE (Times Higher Education) World University Rankings Japan University Rankings 2017

#1
Top in Japan in 8 research fields
Cumulative number of newly selected projects for Grants-in-Aid for Scientific Research (2012 – 2016)
Japanese literature, Japanese language education, foreign language education, civil law, new fields of law, politics, sociology, money/finance

#1
Top among private universities in Japan
Ranking in Japan for highly cited papers
Clarivate Analytics
(2006 – 2016)

#1
Top among private universities in Japan
Collaborative research with foreign enterprises
Ministry of Education, Culture, Sports, Science and Technology (MEXT)
FY2015 Survey on the Implementation Status of Industry-Academia cooperation in Universities

#1
Top among private universities in Japan
Ranking in Japan for paper citation index
Clarivate Analytics
(2011 – 2015)

Ranked among top 100 in the world in 9 research fields!

QS World University Rankings by Subject 2017

In the QS World University Rankings by Subject 2017 released in March 2017, Waseda University ranked among the top 100 in 9 out of 46 research fields, three times the result it achieved last year.

Close up ▼

Ranked 19th globally and 1st in Japan for newly established Sports-related Subjects

Data on research activities

Changes in amount of research funds received

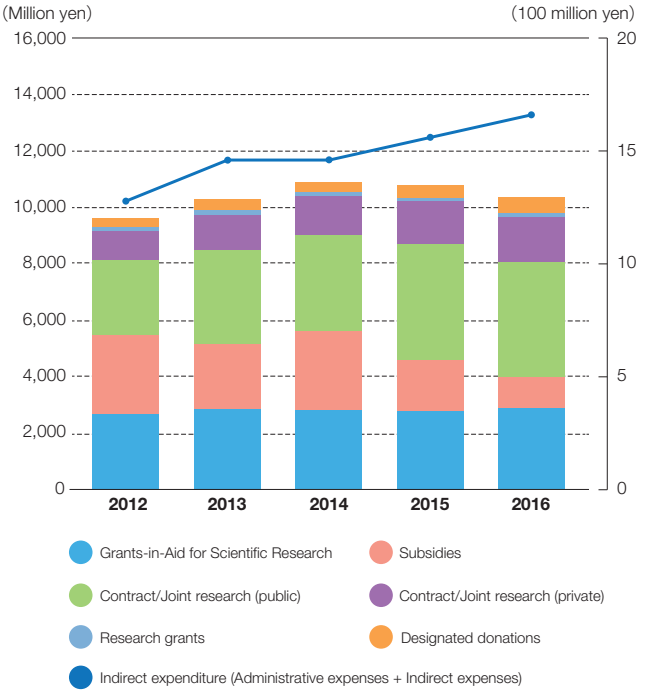
(Million yen)

	2012	2013	2014	2015	2016
Grants-in-Aid for Scientific Research	2,671	2,844	2,794	2,774	2,867
Subsidies	2,779	2,290	2,838	1,809	1,118
Contract/Joint research (public)*1	2,665	3,366	3,375	4,128	4,070
Contract/Joint research (private)*1	1,030	1,241	1,408	1,511	1,619
Research grants*2	152	150	133	134	118
Designated donations*3	336	406	345	451	585
Total	**9,633**	**10,297**	**10,893**	**10,806**	**10,378**

(100 million yen)

Indirect expenditure (Administrative expenses + Indirect expenses)	**12.8**	**14.6**	**14.6**	**15.6**	**16.6**

*1. Contract/Joint research costs after FY2014 are calculated based on the actual results of deposits received.
*2. Research grants: Research costs received from private-sector foundations and others for the purpose of developing academic research.
*3. Designated donations: Donations granted to support research activities at Waseda University.



Projects selected for Grants-in-Aid for Scientific Research

Number of projects selected, and national ranking

	2012	2013	2014	2015	2016
Number of projects selected	816	883	929	946	982
National ranking for number of projects selected	14	12	12	12	12

Fields of research ranked first for number of projects selected (cumulative total for past five years)

Japanese literature
Japanese language education
Foreign language education
Civil law
New fields of law
Politics
Money/finance
Sociology

* Based on data from FY2016 Distribution of Grants-in-Aid for Scientific Research by MEXT Research Promotion Bureau
http://www.mext.go.jp/a_menu/shinkou/hojyo/1377914.htm

QS rankings by Subject

Figures in ( ) show ranking among the top 50

Year	Number of research fields ranked among top 50	Number of research fields ranked among top 100	Number of research fields ranked among top 200	Breakdown of research fields ranked among top 100
2017	3 fields	9 fields	24 fields	· Linguistics · Modern Languages (41) · Eng. - Mech., Aeronautical & Manufact. · Eng. - Mineral & Mining (50) · Geography & Area Studies · Business & Management Studies · Politics & International Studies · Sociology · Sports-Related Subjects (19)
2016	1 field	3 fields	21 fields	· Modern Languages (46) · Politics & International Studies · Sociology
2015	1 field	5 fields	21 fields	· History · Linguistics · Modern Languages (49) · Law · Politics & International Studies
2014	1 field	5 fields	13 fields	· Linguistics · Modern Languages (36) · Eng. – Mech., Aeronautical & Manufact. · Economics & Econometrics · Law

Number of venture businesses established – Waseda ranks 1st among private universities for the third year running!

In the FY2016 Survey on University-Oriented Venture Businesses conducted by the Ministry of Economy, Trade and Industry (METI), Waseda University ranked No.1 among private universities in Japan for the number of university-oriented venture businesses. This marked the third consecutive year that it has placed first, after FY2014 and FY2015. Waseda University has established an Incubation Promotion Office that nurtures venture businesses utilizing the research and academic output of students and faculties, and provides support for the creation of innovation.

Source: METI's FY2016 Industrial Technology Research Project (Survey on the Establishment of University-Oriented Venture Businesses)

FY2016 Number of venture businesses: 62
Ranked 1st among private universities and 6th in Japan

FY2015 Number of venture businesses: 65
Ranked 1st among private universities and 5th in Japan

FY2014 Number of venture businesses: 67
Ranked 1st among private universities and 5th in Japan