

Promotion and Support of international Research Cooperation in Science and Technology

Solution to Global Problems

These days, we have various problems in the fields of climate, energy, food, and more associated with global warming. These problems cannot be solved by one country, and collaboration with international society is absolutely essential. JST contributes not only to

solving global problems, but also to further developing science, technology, and innovational strength in Japan including information and communication and to enhancing scientific and technological diplomacy.

Strategic International Collaborative Research Program (SICORP)

SICORP is implementing collaborative researches based on the equal and friendly partnerships among cooperative countries, regions, and research fields established under the agreement among ministries and agencies in order to further improve science, technology, and innovational strength. (11 tasks finished, 64 tasks among 32 countries and 1

region collaboratively ongoing as of December 2015)

* SICP (Strategic International Research Cooperative Program/ started in 2003) finished new adoption in 2013 and was shifted to SICORP. (SICP: 354 tasks finished, 24 tasks among 7 countries and 1 region collaboratively ongoing as of November 2015)

Science and Technology Research Partnership for Sustainable Development (SATREPS)

SATREPS is a flagship program of scientific and technological diplomacy created in collaboration between Japanese R & D capabilities and ODA (Official Development Assistance). JST in collaboration with JICA aims to address global issues in cooperation with developing countries. (99 projects adopted among 43

countries in the world after April 2008)

* Research projects in the field of Infectious Diseases Control and with the purpose of medical care were transferred to Japan Agency for Medical Research and Development (AMED) in 2015.

Japan-Asia Youth Exchange Program in Science (SAKURA Exchange Program in Science)

The Japan-Asia Youth Exchange Program in Science (SAKURA Exchange Program in Science: SSP) is a short-term invitational program to contribute to the advancement of science and technology and the development of Asian economy. The program aims to strengthen exchanges and friendly relations by inviting to Japan outstanding young people from Asian countries and regions, and giving those young people chances to experience cutting-edge science and technologies.

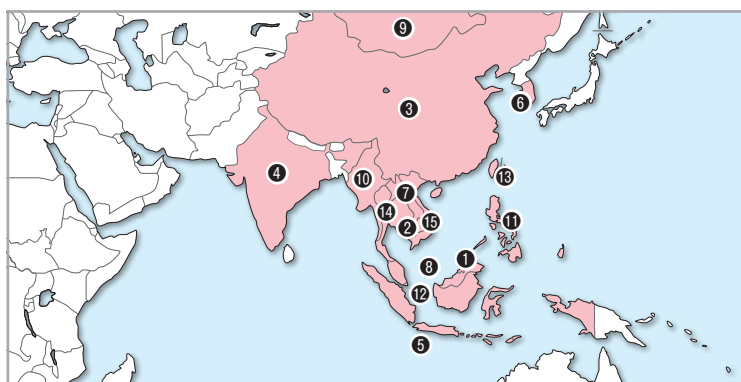
The program invited excellent young people from 488 sending organizations in all target countries and regions

and provided opportunities for them to be exposed to Japanese S&T. The program achieved almost 100 percent of satisfaction rating among the participants.

Their impressions in Japan include "cutting-edge research environment is in place", "hope to come back to Japan again to study further", "enhanced interest in working for a Japanese company". These favorable responses indicated that the invitational program has achieved its objectives. (3,800 youth to be invited on a budget basis in 2015)

Countries and regions eligible to apply for "SAKURA Exchange Program in Science"

- | | |
|------------------------------------|---------------|
| ① Brunei Darussalam | ⑩ Myanmar |
| ② Cambodia | ⑪ Philippines |
| ③ China | ⑫ Singapore |
| ④ India (2015~) | ⑬ Taiwan |
| ⑤ Indonesia | ⑭ Thailand |
| ⑥ Korea | ⑮ Viet Nam |
| ⑦ Lao People's Democratic Republic | |
| ⑧ Malaysia | |
| ⑨ Mongolia | |
- (in alphabetical order)



Research Exchanges and Collaborative Researches Promoted by JST

Panama



Bioresources: Comparative Studies of the Reproductive Biology and Early Life History of Two Tuna Species Yellowfin Tuna and Pacific Bluefin Tuna for the Sustainable Use of These Resources

Scientists at the Kinki University succeeded in raising the eggs of yellowfin tuna to young fish for the first time in the world in the Republic of Panama. They will raise young fish that have been successfully raised this time to full-grown fish in future and aim at newly producing juvenile fish two years later at the earliest. It is expected to establish the technology of completely farming yellowfin tunas that are listed as a semi-endangered species. (Adopted the project in 2010, "Comparative Studies of the Reproductive Biology and Early Life History of Two Tuna Species Yellowfin Tuna and Pacific Bluefin Tuna for the Sustainable Use of These Resources," Fisheries Laboratory, Kinki University, Professor Yoshifumi Sawada)

Mexico



Global-scale Environmental Issues: Formation Mechanism of Ozone, VOCs, and PM2.5 and Proposal of Countermeasure Scenario

The project is working to research on air pollution regarding ozone, VOCs, and PM2.5 at three major cities in Mexico, and countermeasures against air pollution that were proposed from the project on the basis of their research results start being reflected in planning countermeasures against air pollution in each state. In Monterrey where PM pollution is significant, the proposal will be applied as next countermeasures against air polluted environment. (Adopted the project in 2010, "Joint Research Project on Formation Mechanism of Ozone, VOCs, and PM2.5 and Proposal of Countermeasure Scenario," Faculty of Agriculture, Ehime University, Professor Shinji Wakamatsu)

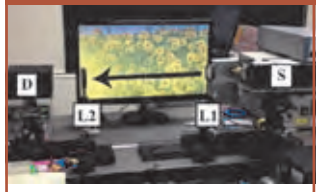
Israel



Conclusion of research cooperation memorandum with Israel

On January 18, 2015, the Japan-Israel Business Forum was held in Jerusalem, the capital of Israel, and the memorandum regarding research cooperation in the ICT field was concluded with the Israel Ministry of Science, Technology and Space (MOST) in the presence of Japanese Prime Minister, Abe, and Israel Prime Minister Netanyahu. A scheme to promote science and technology in both countries was discussed in the exchange of opinions with Vice-Minister of MOST, Charyl, and the promotion of cooperation research in the ICT field between two countries was confirmed.

France



Next-generation wireless communication

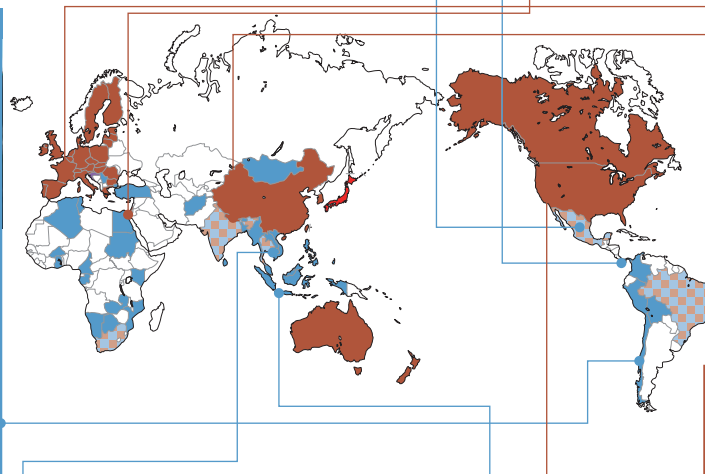
Wireless transmission at an ultrahigh data rate was verified through cooperative research by Japan and France. It surpasses 40 Gbit/s in an unexplored frequency range up to 720GHz. This is the world's fastest uncompressed wireless transmission, which may be effectively utilized for next-generation high definition television (4K). Adopted in FY 2009, "Wireless Communication using Terahertz Plasmonic - Nano ICT Devices" Taichi Otsuji, Professor, Communication, Research Institute of Electrical, Tohoku University Institute of Electrical, Tohoku University

Chile




Disaster Prevention and Mitigation: Research Project on Enhancement of Technology to Develop Tsunami-resilient Community

Between Chile and Japan, the aim is to develop the technology of estimating tsunami damage and the technique of tsunami warning with high accuracy and propose programs to develop tsunami-resistant communities for improving tsunami prevention capability. Through these research activities, the citizens were able to evacuate quickly in the Mw 8.2 earthquake of April 1, 2014, off the coast of Iquique, Chile. (Adopted the project in 2011, "Research Project on Enhancement of Technology to Develop Tsunami-resilient Community" Port and Airport Research Institute, Asia-Pacific Center for Coastal Disaster Research, Deputy Director-General, Managing Director, Takashi Tomita)



- ① SICIP and SICORP partner countries (■) [J1]
- ② SATREPS partner countries (■) [J2]
- ③ ①and②partner countries (■) [J3]

Nepal



J-RAPID

In light of the Nepal earthquake occurred on April 25, 2015, an international emergency cooperative research/investigation support program (J-RAPID) was activated. Thirteen (13) issues including damage state investigation and study for reconstruction were adopted. Pictures
Right: Constructions in Durbar Square, World Heritage, damaged by earthquake
Left: Workshop held in Katmandu, the capital of Nepal on October 28, 2015

Vietnam



Bioresources: Development of Crop Genotypes for the Midlands and Mountain Areas of North Vietnam

The project developed the latest rice breeding method with use of a DNA marker, and succeeded in the development of two species having useful characters of higher yield and low-temperature resistance and additionally faster growth as compared with the existing species in Vietnam. Expectations toward new species that are suitable for local weather conditions are high, and the registration of the species is now in preparation. (Adopted the project in 2010, "Development of Crop Genotypes for the Midlands and Mountain Areas of North Vietnam," Plant Breeding, Faculty of Agriculture, Kyushu University, Professor Atsushi Yoshimura)


Vietnam



Global-scale Environmental Issues: Establishment of Carbon-Cycle-System with Natural Rubber

"Lead in the natural rubber industry with new technology to suppress the global warming" The project established the refining technology for removing proteins from natural rubber, and achieved the development of application and the proposal of standardizing the evaluation technique. In addition, the development of a next-generation enzyme for converting waste rubber into fuel and a next-generation technique of treating wastewater established a system that can substantially reduce greenhouse gases. (Adopted the project in 2010, "Establishment of Carbon-Cycle-System with Natural Rubber," School of Engineering, Nagaoka University of Technology, Professor Masao Fukuda)

Indonesia



Low Carbon Society/Energy: Pilot Study for Carbon Sequestration and Monitoring

This is a CCS verification test with use of CO2 emitted from gas processing plant in Gundih, Central Java province for the first time in Southeast Asia on the basis of the partnership between both countries. They determined the press fit target stratum by a geophysical technique and performed research by an electromagnetic survey method and the like. They finished the concept design of ground facilities with support of ADB and proceed to the construction of the facilities. (Adopted the project in 2011, "Pilot Study for Carbon Sequestration and Monitoring in Gundih Area, Central Java Province, Indonesia," Graduate School of Engineering, Kyoto University, Professor Toshifumi Matsuoka)


United States



Metabolomics for a low-carbon society

In this research, open-access metabolomics databases of unicellular algae were constructed, and metabolomics data, which includes the measurement of microalgal metabolites available for industrial use, was publicized. The KNApSAcK sub database, which includes information collected from biosynthesis-related genes for metabolites from microalgals and bioactive metabolites, was also publicized. Adopted in FY 2011, "Metabolomics: Integrating Cheminformatic Resources for Investigating Photoautotrophic and Mixotrophic Metabolism in Algae" Masanori Arita, Professor, National Institute of Genetics

Cameroon



Disaster Prevention and Mitigation: Comprehensive Measures and Human Resource Development for Prevention of Gas Disaster at Crater Lakes in Cameroon

The project put automatic observation buoys on Lake Nyos in North-West province to allow water temperature and electric conductivity to be observed in real time. They also put an apparatus that draws up deep water, which is driven by solar cells in Lake Monoun. They organized a team to evaluate the risk of limnetic eruption and achieved possibility evaluation by computer simulation. (Adopted the project in 2010, "Comprehensive Measures and Human Resource Development for Prevention of Gas Disaster at Crater Lakes in Cameroon," School of Science, Tokai University, Professor Takeshi Ohta)