Revitalizing disaster-stricken areas through regional innovations

In 2005, Tohoku University established its "Regional Innovation Research Center" for industrial promotion and economic development in the Tohoku region. It's two pillars are "surveying and researching regional communities" and "human resources development in regional communities."

Immediately after the Great East Japan Earthquake, the "Research Institute for Disaster Restoration and Reconstruction" was set up, headed by the university president. The organization launched five prioritized projects with the idea of contributing to the restoration/reconstruction effort and forming integrated research and development hub for disaster recovery. One of its projects is regional industrial promotion, which was started by reorienting the existing operations of the Regional Innovation Research Center towards disaster recovery.

The first pillar "Surveying and researching regional communities" was changed to "surveying and researching the reconstruction of regional industries" bringing together researchers as well as specialists gathered from industry, academia and government. They are conducting surveys and research and making policy proposals relating to the region's reconstruction while participating in theme-specific working groups. With regards to the other pillar, "human resources development in regional communities," a "regional innovator training school" is being prepared to train producers who will play a leading role in reconstructing regional industries.

"The Great East Japan Earthquake destroyed everything from infrastructure to industries and residents living in the many stricken areas. To revitalize these areas, it is necessary to bring together experts from a variety of sectors and come up with ideas. However, the goal is not just to return to the same situation as before the disaster. It is necessary to improve the regional industry and economy of the pre-disaster days. In addition, human resources capable of producing innovations are indispensable to continued regional development. Our center is willing to become a hub for transmitting the results obtained through these activities and put them into practice," says Prof. Masahiko Fujimoto.

The theme-specific working groups have 58 participants (as of August, 2011) from eight universities (Tohoku University, Tohoku Gakuin University, Miyagi University, Ishinomaki Senshu University, Miyagi Gakuin Women's University, Fukushima University, Aomori Chuo Gakuin University and the University of Tokyo) as well as public offices/economic organizations and private companies. The participants are conducting research based on their specific themes. The scale of this cross-university collaboration is very large.

In order to work toward regional reconstruction and grapple with the issues that this involves, it is necessary to collaborate with other universities and experts from private enterprises. Under the circumstances, the Regional Innovation Research Center is committed to do whatever is required.

The "Research Institute for Disaster Restoration and Reconstruction " was established as a core organization in the area affected by the Great East Japan Earthquake. It aims to strategically and systematically promote understanding, research, education, social contribution and other issues, which will lead the recovery and regional reconstruction of the disaster-stricken areas.

Professor, Graduate School of Economics and Management
Director of the Regional Innovation Research Center

Masahiko Fujimoto

Born in Hokkaido in 1959. Graduated from the Faculty of Education and the doctoral course of the Graduate School of Economics and Management, Tohoku University. Ph.D. (Economics). Worked at Recruit Co., Ltd. and then worked as Associate Professor at Graduate School of Economics and Management, Tohoku University. Has been in his current position since 2007.

http://www.econ.tohoku.ac.jp/~fujimoto/index.html

Award Winners 2010

(August 2010-July 2011)

Medal with Purple Ribbon Autumn 2010

Awarded in November 2010

Graduate School of Science Prof. Eiji Ohtani

Elucidating the structure and evolution of planets in high-pressure, high-temperature experiments

In the field of earth and planetary material sciences, Prof. Eiji Ohtani revealed the melting phenomenon of earth and planetary materials, their phase transitions and crystal and liquid properties at high pressure and temperature using high-pressure, high-temperature experiments. In addition, by applying these results, he elucidated the formation process of the Earth, its primordial terrestrial magma ocean, the generation of magma and the evolution of the Earth's core.

He took up a position as a leader of a COE program, "Global Education and Research Center for Earth and Planetary Dynamics." He contributed significantly to fostering young researchers in this field.

Medal with Purple Ribbon Spring 2011

Awarded in April 2011

Graduate School of Science Prof. Masahiro Hirama

Contributing to the total synthesis of biologically active natural products

Prof. Masahiro Hirama focused his research on the total synthesis of biologically active natural products and made outstanding contributions to natural product chemistry. Based on natural product chemistry and organic synthesis, he developed interdisciplinary studies, and collaborated with researchers in multidisciplinary fields of science such as physical chemistry, pharmacology, physiology, and medicine. In particular, total synthesis of ciguatoxin, a causative toxin of ciguatera seafood poisoning, has been recognized worldwide as a landmark of the art of organic synthesis. His research had a great impact on academia and society.

TOPICS

Academic paper citation ranking
3rd worldwide in the field of "Material Sciences"

Thomson Reuters, which is the world's leading source of intelligent information for specialists, released the Japanese research institution rankings based on trends in citations of published papers. Continuing from last year, Tohoku University was ranked 3rd worldwide (1st in Japan) in "Materials Science," 10th worldwide (2nd in Japan) in "Physics," and was also ranked highly in other fields. From this data, it is apparent that the university is receiving attention as a research institution for achieving an outstandingly high level of accomplishments.

3rd in the world (1st in Japan)	Materials Science
10th in the world (2nd in Japan)	Physics
20th in the world (6th in Japan)	Chemistry
89th in the world (4th in Japan)	Pharmacology/Toxicology
107th in the world (9th in Japan)	Biology/Biochemistry
131th in the world (8th in Japan)	Immunology

Duration of citation analysis: January 1, 2001 - April 30, 2011 (10 years)

Plasma Prize from the American Vacuum Society (AVS)

Awarded in October 2010

Institute of Fluid Science Prof. Seiji Samukawa

Pioneering achievements in "super-low-damage etching processes"

The Plasma Prize is awarded to researchers for their outstanding contributions and achievements in the field of plasma science and technology. This is the 11th awarding of this prize, and Prof. Samukawa is the second Japanese recipient. Prof. Samukawa has been conducting research on pulse-time-modulation plasma, neutral beams, etc. He was highly praised by the American Vacuum Society for his creative research activities and great contributions to the industry over the last 20 years.

The Meritorious Manuscript Award from the American Association of Pharmaceutical Scientists (AAPS)

Awarded in November 2010

Research group led by Prof. Tetsuya Terasaki at Graduate School of Pharmaceutical Sciences

Developing a new "protein quantification method"

A research group led by Prof. Tetsuya Terasaki and Associate Prof. Sumio Ohtsuki received the Pharmaceutical Research Meritorious Manuscript Award from the American Association of Pharmaceutical Scientists (AAPS). The award was given to the best paper for high scientific impact among 285 manuscripts published in Pharmaceutical Research in 2008. High praise was given to their paper titled "Quantitative atlas of membrane transporter proteins: Development and application of a highly sensitive simultaneous LC/MS/MS method combined with novel in-silico peptide selection criteria."

The 51st Toray Science and Technology Prize

Awarded in February 2011

Graduate School of Medicine Prof. Masayuki Yamamoto

Clarification of the molecular mechanism of environmental stress response in the body

The Toray Science and Technology Prize is awarded to researchers for their outstanding achievements in science and technology. Prof. Masayuki Yamamoto received the prize. He was highly praised for his achievements on "Clarification of the Molecular Mechanism of Environmental Stress Response in the Body" and his year-long research efforts. He developed Nrf2 knockout mice that are known as a Japanese bio-resource and are used more than any other in the world. Nrf2 knockout mice are expected to significantly contribute to the development of interdisciplinary research that connects biomedicine, pharmacy and environmental science.

William J. Gies Award from the International Association for Dental Research (IADR)

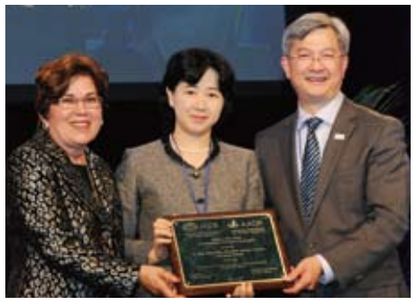
Awarded in March 2011

Graduate School of Biomedical Engineering Prof. Tetsuya Kodama

Graduate School of Dentistry Senior Assistant Prof. Mirei Chiba and their three coworkers

Successful in the delivery of luciferase and EGFP genes into rat periodontal tissue

A research group led by Prof. Tetsuya Kodama at the Graduate School of Biomedical Engineering received the 2011 William J. Gies Award for the best paper. This prize is given to the author of the most outstanding paper of the year among those published in the Journal of Dental Research, the most authoritative journal in its field. The award ceremony was held during the 89th IADR/AADR General Session & Exhibition in San Diego, California and Senior Assistant Prof. Mirei Chiba, one of his coworkers, participated in the ceremony.



From left: Dr. Maria Fidela de Lima Navarro (IADR President), Mirei Chiba (Senior Assistant Prof., Graduate School of Dentistry) and Dr. David T. Wong.

Striving to return excellent research results to society
Environment, organization and management for an intelligent

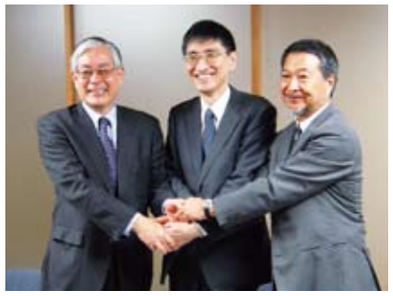
Graduate School of Environmental Studies The Ministry of the Environment's Eco House Project

The Ministry of the Environment's Eco House Project is an industry-academia-government project that targets a 10% CO_2 reduction by recovering unused subtle energy and storing it in low voltage lithium-ion rechargeable batteries to be re-used as household. At the Eco-Lab (a wooden school building used for on-site application of natural energy research results,) technological developments and demonstrations are being conducted on battery technology, energy recovery/power generating technology, AC/DC power control technology, DC home appliances, etc.

The Graduate Course in Strategic Environmental Management and Sustainable Technology Solutions (SEMSaT) has been training "immediate and practical leaders with environmental management skills."

The Eco House Project for Technological Development on Energy Conservation relating to Subtle Energy Storage was based on concepts created by the teachers and students at SEMSaT. It was adopted as a Ministry of the Environment program for its Anti-Global Warming Energy Conservation Technology Development project." This led to the regular launching of Eco House Projects by the Ministry of the Environment.

Rio Tinto and Komatsu to offer scholarships to disaster-stricken students



Rio Tinto Japan Ltd., a Japanese subsidiary of world leading mining and resources company Rio Tinto, and Komatsu Ltd., a global manufacturer of construction equipment and industrial machinery, have agreed to jointly offer a scholarship (the Rio Tinto-Komatsu Scholarship) to Tohoku University. Rio Tinto previously expressed its intention to assist students who suffered financially from the Great East Japan Earthquake. A total amount of JPY 400 million (continuous assistance for 10 years) will be provided, targeting undergraduate and graduate students enrolled in Tohoku University (including future students who are currently enrolled in high school).

Global Centers of Excellence Program (Global COE Program)

The Global COE Program is an initiative by the Ministry of Education, Culture, Sports, Science and Technology that supports excellence centers to promote internationally competitive universities with the intention of developing creative world leaders. During the selection process, COE candidates are reviewed in terms of their potential for growth as education and research centers. They must function to develop human resources, and an original, epoch-making research base is a prerequisite.
At Tohoku University 12 programs in eight research fields were designated as COEs in FY 2007 and 2008.

- Basic & Translational Research Center for Global Brain Science
- Weaving Science Web beyond Particle-Matter Hierarchy
- International Center of Research & Education for Molecular Complex Chemistry
- Global Education and Research Center for Earth and Planetary Dynamics
- Materials Integration International Center of Education and Research
- World Center of Education and Research for Trans-disciplinary Flow Dynamics
- Center of Education and Research for Information Electronics Systems
- Center for the Study of Social Stratification and Inequality
- Global Nano-Biomedical Engineering Education and Research Network Center
- Gender Equality and Multicultural Conviviality in the Age of Globalization
- Global COE for Conquest of Signal Transduction Diseases with "Network Medicine"
- Center for Ecosystem Management Adapting to Global Change