

# Tohoku University Disaster Reconstruction Projects

We are in the third year since the Great East Japan Earthquake, which occurred on March 11, 2011. Tohoku University established the Institute for Disaster Reconstruction and Regeneration Research on April 2011 and promoted the following eight projects.

## 1 International Research Project on Disaster Science

**International Research Institute of Disaster Science (IRIDeS)** has been established and is acting to understand the mechanisms that generate earthquakes and tsunamis, performs medical activities to protect the lives and health of disaster victims, researches and studies how to relieve cultural assets and benefit society.

## 2 Project for the Reconstruction of Community Health Care

- The goal of the **Comprehensive Training Center for Community Medicine** is to teach advanced medicine, support medical recovery, and develop human resources to cultivate regional medicine and disaster medicine in the affected areas.
- Tohoku Medical Megabank Organization** has been constructed to be a complex biobank to integrate medical and genome information, while conducting long-term health surveys of disaster victims and dispatching doctors to affected coastal areas.

## 3 Project for Environmental Energy

Develops and studies next generation energy and energy management systems tailored to the local climate and geographical features revival of energy sources in the disaster-stricken areas, and solutions for the energy problems facing Japan.

## 4 ICT Reconstruction Project

Established the **Research Organization of Electrical Communication (ROEC)** to address solutions to problems in information and communication technology exposed in the wake of the earthquake, such as the disruption of communication lines.

## 5 Tohoku Marine Science Project

Ascertains the impact the earthquake and tsunami had on the marine ecosystem and the restoration process, and to contribute to recovery of Tohoku's seas.

## 6 Radioactive Decontamination Project

- Research Center for Remediation Engineering of Living Environment Contaminated with Radioisotopes** strives for technological developments for remediation and restoration engineering of contaminated living environments, such as technology for contamination inspection and decontamination of soil.
- Project for comprehensive exposure dose assessment for disaster-affected animals** examines the distribution of radioactive substances in the bodies of livestock and constructs an archive in order to understand exactly how internal exposure affects the environment, other living animals, and human beings.

## 7 Regional Industries Restoration Support Project

- Regional Industries Restoration Research Project** tracks current restoration conditions and challenges, and suggests how the future social and economic structure in the Tohoku Region should look.
- The **Regional Innovation Producer school** trains managerial talent from local communities and support innovative businesses in local communities.

## 8 Industry-University Collaboration Development Project for Reconstruction

Aims to create stronger cooperation with industries and municipalities in Miyagi Prefecture, and to have the technological innovations of the University utilized and commercialized in local businesses.

In addition "Reconstruction Action 100+" has expanded with a diverse pool of more than 100 voluntary projects by faculty members.



ICT Reconstruction Project  
Information communication experiment with the use of an outdoor speaker system



Tohoku Marine Science Project  
Joint investigations with fisheries



Radioactive Decontamination Project  
Radiation detector that can analyze food in bulk

# Tohoku Medical Megabank Organization

## Spearheading the effort for construction of a cutting-edge medical care system set in motion with the recovery efforts from the Great East Japan Earthquake

Now, two years after the Great East Japan Earthquake that occurred on March 11, 2011, there are many earthquake victims who still have to live in temporary houses. Not a few of them are suffering from health problems caused by stress since the occurrence of the earthquake.

Tohoku University has engaged in various medical support activities for recovery from the earthquake since its occurrence. It established the Tohoku Medical Megabank Organization (ToMMo) in February 2012 with the motto of "Creative Reconstruction" to actively support the recovery of the disaster-stricken areas.

In order to use genome analysis techniques that have rapidly evolved since the Human Genome Project was started in the field of medicine, it should be accelerated to construct a whole genome reference panel for Japanese so that the development of new medical technologies can use medical information that has been integrated into genetic information. While it engages in a health study on people in the disaster-stricken areas, ToMMo will store genetic information on people, and provide long-term preventive health care and medical support activities, in an effort to construct a system of medical care for the future.

"At present, ToMMo has a staff of 200 people including Genome Medical Research Coordinators (GMRC). GMRCs are certified by ToMMo to recruit those who agree to provide their genetic information to ToMMo for the project (joining a genome cohort). GMRCs are trained and nurtured in an internal training school. A genetic counseling course was newly established at the Tohoku University School of Medicine, because communication with genetic information providers to give them information on possible risks for diseases obtained from genetic information will become increasingly important," says Professor Yamamoto, Executive Director, ToMMo. He emphatically states that it is an important mission of Tohoku University to develop human resources that are able to work in the future medical care system so that they can provide outstanding medical services.

Construction on the central facility for the project will be completed in spring of 2014, and ToMMo should be ready to start full-scale operations by summer. It will be provided with a super computer and other cutting-edge equipment necessary for human genome analysis, and a mega-databank for genetic information. The facility will modify medical information and medical histories so that they can be handled by ICT, thus preventing data from being lost in disasters. ToMMo also aims to attract related medical industries so that they are able to utilize these resources as well. In this way, this facility will become a major center for advanced medicine.

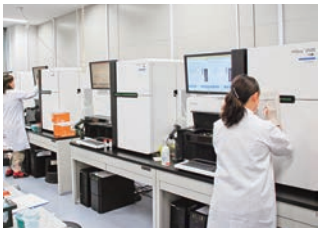


A community resident cohort. GMRCs are giving an explanation of the study to them in person.



ToMMo Clinical Fellows presenting a report on their work to medical institutions located on the coastal areas of Miyagi Prefecture. They work there in a "system of dispatching physicians on a rotation basis" and meetings are held on a regular basis.

This state-of-the-art DNA sequencer reads a DNA sequence at a high speed and analyzes DNA samples.



ToMMo building will be completed in spring of next year.

## Tohoku Medical Megabank Organization

### Executive Director

## Masayuki Yamamoto

Born in 1954 in Gunma Prefecture. He graduated from Tohoku University School of Medicine in 1979. After finishing his doctoral course at the Tohoku University Graduate School of Medicine, he began working as Postdoctoral Fellow at Northwestern University in 1983, as Lecturer at Tohoku University School of Medicine in 1991, as Professor at the University of Tsukuba Center for Tsukuba Advanced Research Alliance in 1995, as Professor at Tohoku University Graduate School of Medicine in 2007, as Vice President and Dean at Graduate School of Medicine/School of Medicine at Tohoku University in 2008, and as Distinguished Professor at Tohoku University in 2010. He has been in his current position since 2012.

