



Fukushima Global Medical Science Center

Fukushima Medical University

2024



公立大学法人

福島県立医科大学

Fukushima Global Medical Science Center

We aim to support Fukushima's revitalization from a medical perspective and aim to share the experiences and lessons we have learned from the disaster with the world

HAZAMA Akihiro, MD, PhD,
Executive Director



The Fukushima Global Medical Science Center (FGMSC) was established as an organization to contribute to the restoration and revitalization of the local community following the 2011 disaster from a medical perspective, and disseminate its recovery status to the world. The Center serves three main roles: (1) maintain the health of the residents of Fukushima; (2) promote cutting-edge research and the revitalization of local industries; and (3) provide highly advanced medical care. FGMSC is comprised of five sub-centers, two divisions, and medical support for the Futaba area (through the Futaba Emergency and General Medicine Support Center). The Radiation Medical Science Center for the Fukushima Health Management Survey and the Health Promotion Center aim to protect the long-term health of prefectural residents following the Great East Japan Earthquake and nuclear accident, thereby improving the health of the residents and increasing their healthy life expectancy. The Translational Research Center and Advanced Clinical Research Center develop new diagnostic and testing agents, as well as therapeutic drugs to nurture growth in the medical industries, which will lead to revitalization of the region. The Advanced Clinical Division and the Thyroid and Endocrine Center use advanced medical equipment with the goal of detecting illnesses as early as possible, and they have a variety of specialists who collaborate with each other to provide advanced, specialized medical treatment. The Education and Human Resource Development Division works to support each center and division and cooperates with international institutions to cultivate the next generation of healthcare professionals. We have an obligation to share our experiences and lessons learned from the 2011 disaster and the nuclear accident with the world, as well as to future generations. We will continue to work tirelessly to achieve the mission of the Fukushima Global Medical Science Center.

Maintain the health of the residents of Fukushima



Radiation Medical Science Center for the Fukushima Health Management Survey



Health Promotion Center



Medical Support for Futaba area

Promote cutting-edge research and the revitalization of industries



Advanced Clinical Research Center



Translational Research Center

Provide highly advanced medical care



Thyroid and Endocrine Center



Advanced Clinical Division

Cultivate the next generation medical care professionals



Education and Human Resource Development Division

Radiation Medical Science Center for the Fukushima Health Management Survey

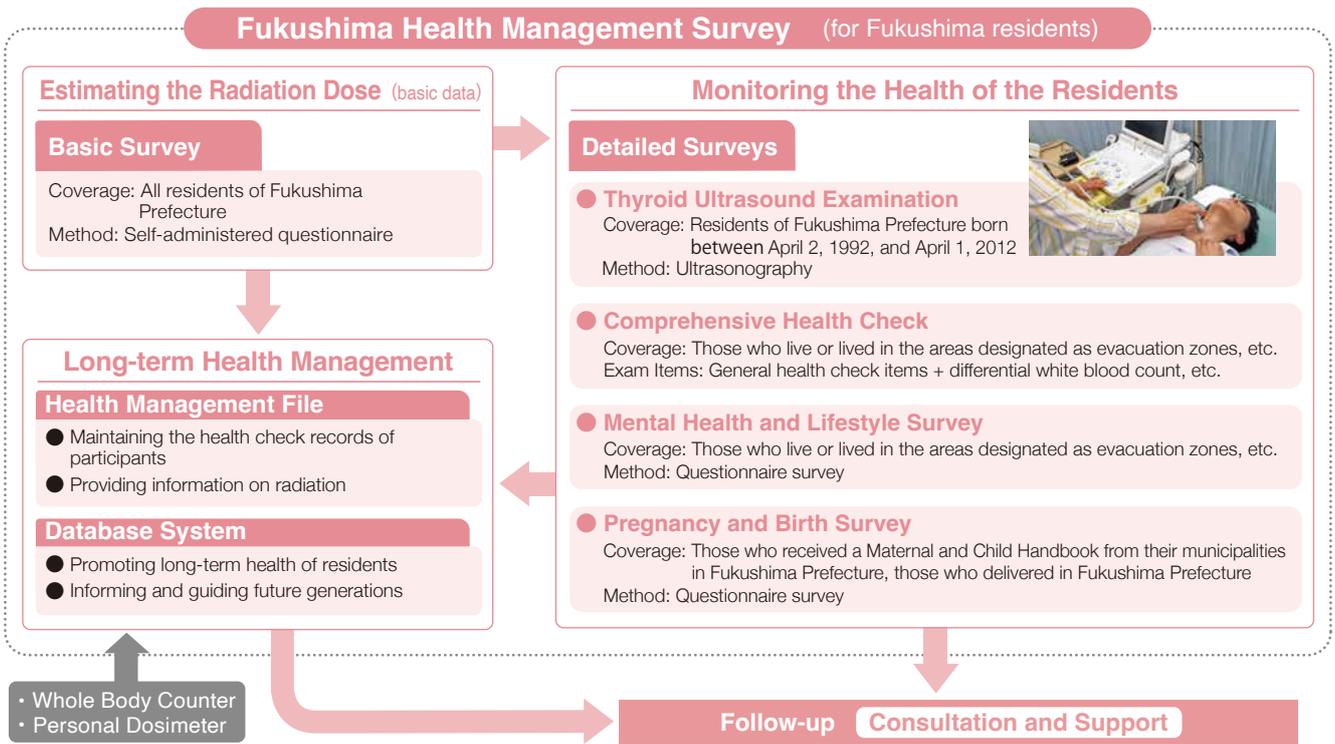
Serving to maintain and improve the health of Fukushima’s citizens through appropriate support and proactive dissemination of the survey results and our findings

YASUMURA Seiji, MD, PhD, Executive Director

Fukushima Prefecture has been conducting its "Fukushima Health Management Survey" in response to 2011's Great East Japan Earthquake, its subsequent tsunami, and the following Fukushima Daiichi Nuclear Power Plant accident, the latter of which prompted evacuation from areas affected by environmental release of radioactive materials. The Center has been tasked by Fukushima Prefecture to conduct this survey, through which we tend to the long-term health of prefectural citizens by ascertaining their health status and providing appropriate prevention, treatment, and support.

Through its implementation, we work to continuously improve the Survey with the cooperation and support of administrative authorities and academic organizations, including universities and other research entities, both here in Japan and abroad.

Thirteen years since the Survey began, we need to reaffirm the Survey’s original purpose — a survey to provide appropriate support — with a focus on disseminating trustworthy information through our research project under the "Collection and Dissemination of Data and Knowledge on Nuclear Disasters" commissioned in fiscal 2023 by the Fukushima Institute for Research, Education and Innovation (F-REI), which was established in 2023. Going forward, we will continue to improve this Survey in order to maintain and enhance the health of our citizens.



The Center promotes understanding of the current status and results of the Fukushima Health Management Survey by issuing reports and holding international symposiums. We also attend prefectural health-related events, where we present the latest results of the survey.



Report



International symposium



Attending an event

Advanced Clinical Research Center



Developing new nuclear medicine diagnostics and therapy using cyclotron and PET scanning systems

Hazama Akihiro, MD, PhD, Executive Director

The Advanced Clinical Research Center was established as a core facility within Fukushima Prefecture to provide early diagnosis of various diseases, mainly using PET-MRI and PET/CT diagnostic imaging. The Center is also a research facility that can conduct everything from the manufacture and synthesis of radiopharmaceuticals to non-clinical studies and clinical research and trials. PET-MRI, first introduced to Japan by this Center in 2013, contributes to ultra-early detection and diagnosis by providing high-precision, high-quality images of cancer and diseases of the heart, brain, and nervous system. In addition, equipped with Japan's only medium-sized cyclotron that is specialized for the manufacture of medical radioisotopes (nuclides), the Center has succeeded in the stable production of Astatine-211 (^{211}At), which is attracting attention as an alpha-emitting nuclide that has the effect of killing cancer cells, in quantities and quality levels that can be used in nuclear medical treatment, and we are moving ahead with the research and development and clinical trials of therapeutic drugs. In order to further expand our existing research and development, we are collaborating with the Fukushima Institute for Research, Education and Innovation (F-REI), established by the government in Namie-machi in the Hama-dori region of Fukushima Prefecture, in April 2023, and are actively engaged in research and in the nurturing of high-level human talent involved in the research. Going forward, we will continue to contribute to the maintenance and promotion of the health of the citizens of Fukushima prefecture as one of Japan's finest research and development centers for radiopharmaceuticals and nuclear medicine.



Medium-size cyclotron



PET-PET/SPECT/CT for small animals



PET-MRI for clinical use

Manufacture and synthesis of radiopharmaceuticals

The Center has two cyclotrons, one small and one medium-sized, where we manufacture positron-emitting nuclides used in PET diagnosis, as well as Astatine-211 (^{211}At), which is recently attracting attention as an alpha-emitting nuclide for nuclear medicine treatment. We also have five laboratories (hot labs) where various radioactive drugs are manufactured and synthesized.

Non-clinical studies

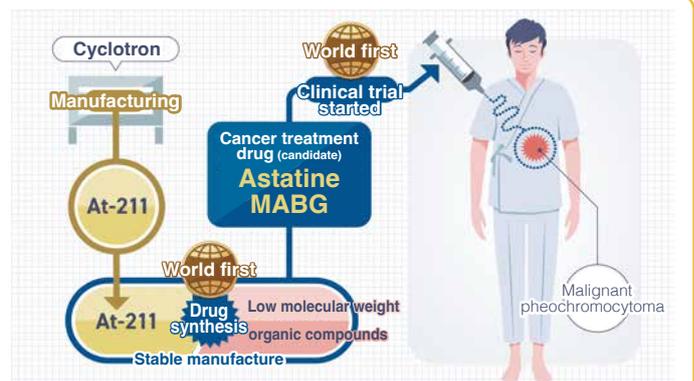
We have established environments in which advanced cell and animal experiments can be conducted, such as a specific pathogen-free environment (SPF), and we conduct pharmacokinetic and pharmacology and efficacy studies using radionuclides. In addition, the Center is equipped with advanced imaging equipment and high-precision measurement equipment, and we use a variety of methods to evaluate radioactive drugs that are candidates for development.

Clinical research and trials

Because we can manufacture radiopharmaceuticals in-house, we are able to conduct clinical trials and clinical research on therapeutic drugs that makes use of nuclides with short half-lives, on therapeutic diagnostic drugs using PET, and on synthesizing devices. Furthermore, we are carrying out clinical trials of therapeutic drugs using the RI ward of Fukushima Medical University Hospital, which is the largest in Japan (with 9 beds).

A world-first! Stable manufacturing of Astatine MABG and the start of clinical trials

The Advanced Clinical Research Center has succeeded in being the world's first stable production, at a quality that can be administered to human patients, of Astatine MABG (^{211}At -MABG), a candidate cancer drug that combines the alpha-emitting nuclide Astatine-211 (^{211}At), which kills cancer cells, with a low-molecular weight organic compound. Astatine MABG (^{211}At -MABG) is expected to be able to target cancers that occur mainly in the adrenal glands, and increase therapeutic efficacy. We began the first ever trials in June 2022 to verify its safety and efficacy.



Translational Research Center (TR Center)



Creating new bioindustry and jobs in disaster-stricken Fukushima!

WATANABE Shinya, MD, PhD, Executive Director

The TR Center was established on November 20, 2012 to promote the “Fukushima Translational Research Project” (hereinafter referred to as the “Fukushima Project”), which is one of the projects geared toward revitalization from the unprecedented damage caused by the Great East Japan Earthquake. The purposes of the Fukushima Project are twofold. The first is to revitalize the pharmaceutical-related industries by: providing processed specimens of biological origin that are the products of research and development, as well as their analysis information; and utilizing the Center’s unique technology to respond to research consignments from companies. The second purpose is to use the results of the Fukushima Project to create a new bioindustry in Fukushima and increasing the number of jobs.

In the first phase of the Fukushima Project, which ended in FY2020, we placed our focus on the needs of the industry, by creating processed specimens of biological origin with real usage value. We also accumulated various data (data from gene expression analysis, genome analysis, protein analysis, and drug response analysis of cells and organisms). These specimens have been registered as a trademark under the brand name Fukushima Collections®. We are now making

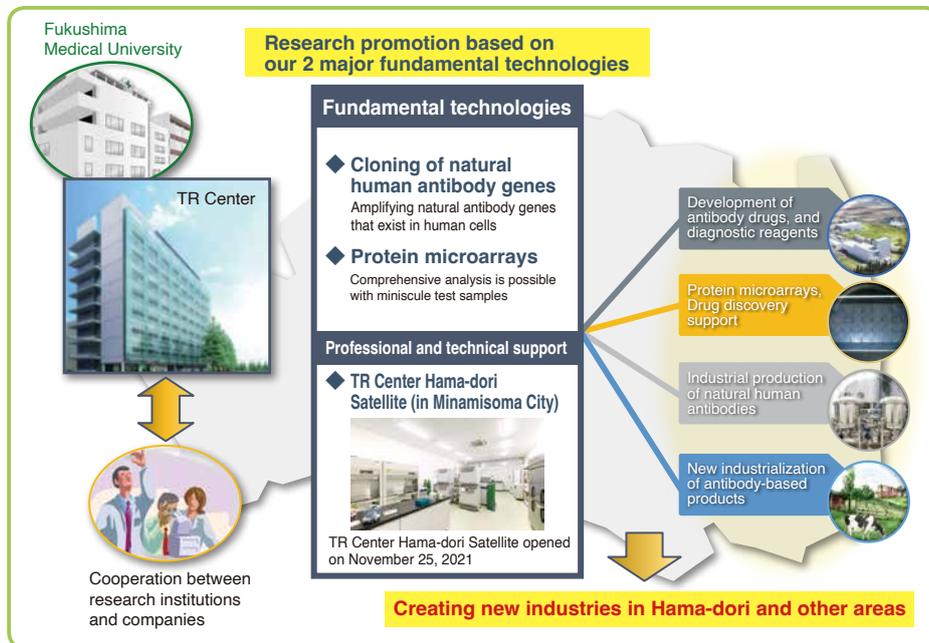
great progress providing collaborative and contract research, and analysis data and evaluation models using the Fukushima Collections® alongside pharmaceutical companies as well as testing and diagnostic agent companies.

The second phase of the Fukushima Project started in FY2021. In order to continue supporting pharmaceutical-related industries as we have until now, we plan to expand Fukushima Collections®. We will also promote the practical application of the natural human antibodies we obtain using the unique technology developed by the Fukushima Project.

Furthermore, with the aim of achieving more sustainable revitalization, we will actively apply and develop our products and unique technologies, not only in the fields of pharmaceuticals and diagnostic agents, but also in the fields of medical supplies, food and livestock.

Overview of the TR Center’s Fukushima Project Phase II

In the 2nd phase of the TR Center’s Fukushima Project, we will promote research geared toward practical applications of natural human antibodies based on the two major fundamental technologies of the TR Center as an initiative in the medical-related field, which is positioned as one of the priority fields of the Fukushima Reconstruction and Revitalization Plan. In addition, the TR Center Hama-dori Satellite in Minamisoma City will play a central role in providing professional and technical support for pharmaceutical-related companies seeking to be located to the Hama-dori area. Through this initiative, we are creating new industries and expanding employment in new industries related to the production of antibodies and products that use antibodies in the Hama-dori and other areas while contributing to the revitalization of Fukushima Prefecture.



TR Center aims to create new industries and employment in Fukushima in Hama-dori and other area by establishing the Fukushima brand in the process of supporting pharmaceutical-related industries. ⇒ For the revitalization of Fukushima

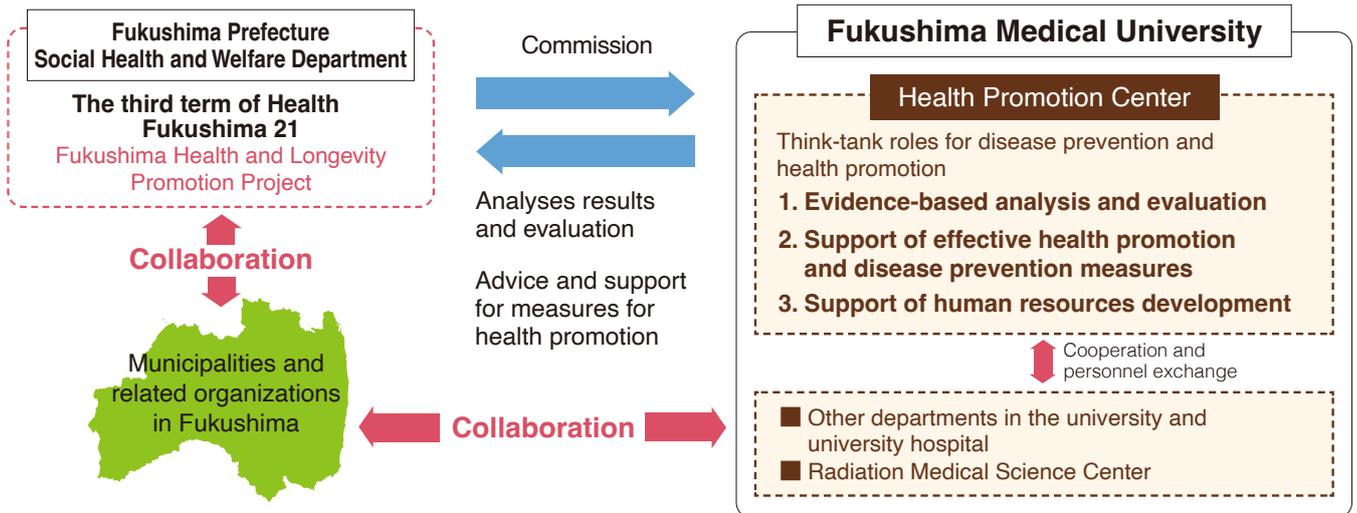
Health Promotion Center



Advancing healthy life expectancy and reducing health disparities

Shimabukuro Michio, MD, PhD, Executive Director

The Health Promotion Center is expected to serve as a think-tank, playing roles in preventive medicine and health promotion in enacting measures “to advance healthy life expectancy and reduce health disparities,” which is the basic objective of “Health Fukushima 21 (third term).” Specifically, our activities are as follows. First, we scientifically analyze and evaluate medical expenses, health-checkups, and long-term care data stored in the FDB (Fukushima Health Database) along with registered cases of strokes and myocardial infarctions. Second, we enable “visualization” of issues based on the analysis and evaluation results and offer advice and support for effective health promotion measures in the prefecture and municipalities. Third, we hold development programs to improve the skills of public health nurses and other health care workers who will take on the responsibility of health promotion activities in the prefecture as well as working closely with the prefecture to ensure the continuous retainment and training of public health physicians. We also hold events and produce health education video contents to enlighten our prefectural residents about the importance of maintaining one’s health. Through all these activities, we would like to prevent diseases that threaten the healthy life expectancy of prefectural residents and promote health.



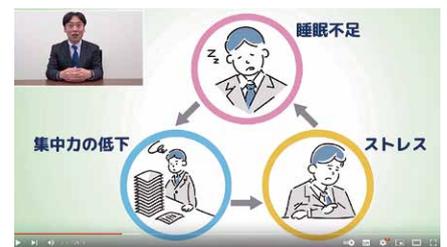
At the Health Promotion Center, we create annual reports on the state of medical care and health check results using the FDB and plan to continue creating other reports based on the data accumulated in the FDB. In terms of supporting the development and training of human resources, in addition to holding training sessions for specialists in social medicine, we also hold various training sessions several times a year for professionals in health-related fields working for the prefecture and municipalities. Through a health promotion event called the "Iki-Iki Kenko-zukuri Forum" and online video content on health issues in Fukushima Prefecture, we encourage prefectural residents to improve their lifestyle and promote their health.



Training sessions for professionals in health-related fields working for the prefecture and municipalities



"Iki-Iki Kenko-zukuri Forum"



Video content

Thyroid and Endocrine Center



Serving as the contact point for internal medicine and surgical departments, we would like to provide patients with optimal medical care

SUZUKI Satoru, MD, PhD, Executive Director

Conventionally, diagnosis and treatment of endocrine diseases have been dealt with at the internal medicine and surgical divisions separately, but the Thyroid and Endocrine Center serves as the comprehensive contact point for these clinical divisions so that patients can receive optimal medical care. Clinical practice for endocrine diseases involves a variety of clinical divisions, including the Divisions of Thyroid and Endocrine Medicine and the Division of Diabetology, Endocrinology and Metabolism in internal medicine and, among the surgical divisions, the Divisions of Thyroid and Endocrine Surgery, Neurosurgery, Urology and Adrenal Endocrine Surgery, and Otolaryngology-Head and Neck Surgery. These divisions share information by among other means, holding regular conferences. We are enhancing efforts to provide patients with optimal comprehensive medical care by sharing information among specialists gathered from various divisions. Commissioned by Fukushima Prefecture, we treat a large number of patients with conditions that have been found to require treatment following the Fukushima Health Management Survey's Thyroid Ultrasound Examination. Clinical practice is conducted primarily by the medical professionals at our Center using the cutting-edge devices available at our Advanced Clinical Research Center.

Advanced Clinical Division

PICU
(Pediatric Intensive Care Unit)



Three Major Functions of the Mirai Building

1. Medical treatment following emergencies, disasters, and radiation exposure
2. Medical treatment that also provides women and children with peace of mind
3. Enhanced treatment environment

A: Maintenance of the Children's Medical Center

- A facility that accepts patients under the age of 15 and treats them comprehensively across all divisions.
- Enhancing the system of treatment for children with serious diseases.

B: Expansion of the Maternal and Perinatal Center

- A facility that provides advanced medical treatment for high-risk mothers, fetuses, and newborns in the prenatal and perinatal phases.
- Enhancing a medical environment that protects mothers and children, promoting the mothers' sense of security with regard to giving birth to, and raising, their children.

C: Strengthening our Reproductive Medicine Center

- A facility that functions as the base hospital in Fukushima Prefecture for fertility treatments.
- Providing advanced medical care related to fertility treatment and enhancing our consultation and support system.

5th Floor: Children's Medical Center

- June 2017, establishment of a pediatric intensive care unit (PICU) with 4 beds
- June 2018, increase in the number of beds in the PICU from 4 to 6 beds
- October 2018, decrease in the number of beds per ward to 51 beds (decrease of 8 beds)
- November 2019, increase in the number of beds per ward to 53 beds (increase of 2 beds)

3rd Floor: Maternal and Perinatal Center

- MFICU - 6 beds · East Wing - 31 beds (mainly obstetrics)
- NICU - 15 beds · GCU - 12 beds

2nd Floor: Reproductive Medicine Center

- April 2019, opened as a central clinical facility.
- At the request of the prefecture, an infertility consultation center was established.

Education and Human Resource Development Division

Fostering healthcare professionals dedicated to supporting the lifelong health of the people of Fukushima.

In order to sustain our activities long-term, this division fosters skilled healthcare professionals to the work done in our centers, and next-generation medical professionals who can contribute to disaster medicine, radiation emergency medicine, and/or regional medicine.

Clinical Medicine Departments

Radiation Health Management
Thyroid and Endocrinology
Disaster Psychiatry
Radiation Oncology
Medical Oncology
Radiation Disaster Medicine

Social Medicine Departments

Epidemiology
Health Risk Communication

Basic Medical Science Departments

Radiation Life Sciences
Radiation Physics and Chemistry

Graduate School of Medicine Master's Program Joint Master's Program of Disaster and Radiation Medical Sciences

It has become clear that there is a shortage of healthcare professionals capable of responding to the compound disaster of natural disasters and radiation contamination due to the nuclear power plant accident. This is why we have established a graduate program in collaboration with Nagasaki University to provide education on treatment following disasters, radiation exposure, and radiation.

Medical Support for the Futaba Area

Securing secondary emergency medical services in the Futaba area and providing wide-area comprehensive medical support.

Fukushima Medical University established the Futaba Emergency and General Medicine Support Center in April 2016 to provide medical care to the Futaba area. Its role then shifted to one of support after the Futaba Medical Center, a prefectural facility, was established in 2018, by dispatching doctors and providing remote diagnoses, etc., providing medical support (individual guidance for untreated patients, etc.) for the residents of the Futaba area, and operational support of a multi-purpose medical helicopter. In this way, we protect the health of residents who have returned from their evacuation to this area, nuclear plant employees, and employees engaged in recovery projects. We also support the revitalization of the Futaba area from the medical side by resolving medical concerns, thereby encouraging former residents to come back to this area.



Multi-purpose medical helicopter

Fukushima Global Medical Science Center Floor Arrangement

- Radiation Medical Science Center for the Fukushima Health Management Survey
- Translational Research Center
- Thyroid and Endocrine Center
- Education & Human Resource Development Division
- Advanced Clinical Research Center
- Health Promotion Center
- Advanced Clinical Division



Disaster Medicine/Medical Industry Bldg.
★8-story/1 basement structure

- Translational Research Center (TR Center)
- Education & Human Resource Development Division
- Advanced Clinical Research Center

Rooftop machinery storage space	
8F	Education & Human Resource Development Division
7F	Education & Human Resource Development Division
6F	Education & Human Resource Development Division
5F	Translational Research Center
4F	Translational Research Center
3F	Translational Research Center
2F	Translational Research Center
1F	Translational Research Center
B1	Advanced Clinical Research Center



Environmental Dynamic Analysis Center Bldg.
★2-story structure

- Advanced Clinical Research Center

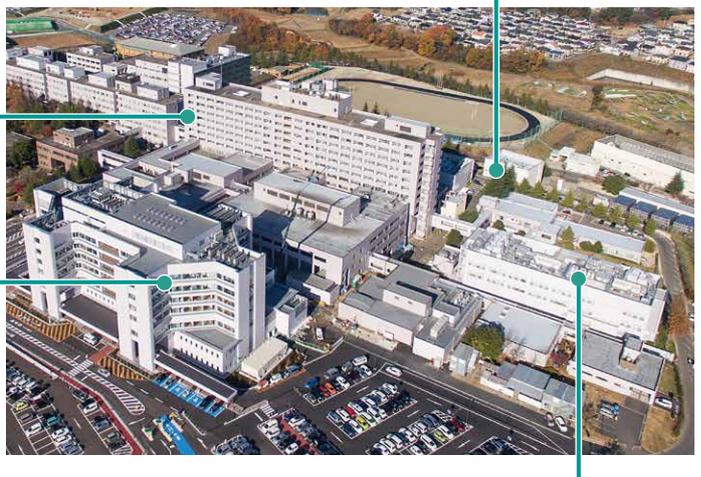
2F	Department of Environmental Dynamics Investigation
1F	Machine room Department of Environmental Dynamics Investigation



Medical Center for Fukushima "Life & Future" Bldg.
★7-story/1 basement structure

- Advanced Clinical Division
- Radiation Medical Science Center for the Fukushima Health Management Survey
- Health Promotion Center
- Thyroid and Endocrine Center

7F	Radiation Medical Science Center for the Fukushima Health Management Survey	Health Promotion Center
6F	Radiation Medical Science Center for the Fukushima Health Management Survey	
5F	Children's Medical Center	
4F	Female Disease Ward, RI Ward	
3F	Maternal and Perinatal Center	
2F	Chemotherapy Center, etc.	Thyroid and Endocrine Center
1F	Disaster Medicine / Advanced Emergency and Critical Care Center	
B1	Machine room	



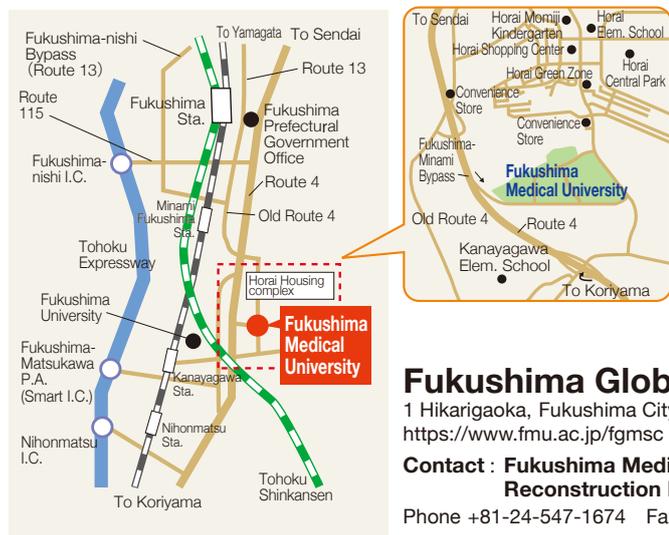


Advanced Clinical Research Center Bldg.
★3-story/1 basement structure

- Advanced Clinical Research Center

3F	Office	Machine room
2F	Laboratories/Meeting rooms, etc.	
1F	Diagnostic imaging (PET-MRI and PET/CT)	
B1	Machine room	Cyclotron

ACCESS



By Car: Approx. 13 min. after exiting the Tohoku Expressway at Fukushima-nishi I.C., or approx. 8 min. from the Fukushima-Matsukawa Smart I.C. (ETC-equipped vehicle only)

By Bus: Get on a bus at No. 5 or No. 6 stands in front of the JR Fukushima Sta. (East Exit), and get off at the "Idai-byoin" or "Ikadaigaku-mae" stop. Approx. 36 min. required.

Fukushima Global Medical Science Center

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