

MIC

Medtech Innovation Center



Kobe University Graduate School of Medicine
Medtech Innovation Center



Opened in October 2024

Message

Presently, the domestic medical device market is undergoing expansion, yet it remains dependent on foreign products, with imports persistently surpassing exports. One of the factors contributing to this phenomenon is believed to be the nascent stage of medical device development, characterized by initial challenges in the field. Additionally, the lack of human resources to lead these developments has been identified as a contributing factor.

In response, Kobe University has identified the establishment of a collaborative platform as a pivotal countermeasure. This initiative aims to facilitate collaboration between industry, government, academia, and medicine, with the objective of developing medical devices that align with the demands of clinical practice and industry. In addition, the platform is expected to play a crucial role in nurturing human resources dedicated to the development of medical devices. The Medtech Innovation Center was established as a new medical device development center under the Kobe Vision for the Healthcare of Tomorrow, which is being promoted in collaboration with the City of Kobe.

We will continue to promote research, development, and education so that the center will become a new center for medical device development and human resource development at our university and in Japan.

We would appreciate your understanding of the research and educational activities of this center and your cooperation in our endeavors.

Professor

MURAKAMI Takamichi,
Dean of the Graduate School of
Medicine and School of Medicine
Kobe University

Despite a century-long tradition of collaboration between the medical and engineering sectors in Japan, the nation continues to experience a persistent trade deficit in the domestic medical device industry. This phenomenon could be attributed, in part, to the prevailing misconception that the development of novel medical devices can be achieved solely through collaborative efforts between the fields of medicine and engineering.

In the realm of medical device development, the medical and manufacturing fields are intricately intertwined is extremely crucial, fostering a collaborative environment where physicians, medical professionals, engineers from academic and industry backgrounds, and experts in the medical device business can engage in continuous dialogue and collaboration. In addition, it is imperative to have access to hands-on support from experts in intellectual property (IP), marketing, pharmaceutical law, insurance reimbursement, and other areas of development at any times.

Our Medtech Innovation Center (MIC) is an ideal site for medical device development, designed to realize these environments. We will continue to promote the development of medical devices with social implementation value through the fusion of medical engineering and business.

Professor

YASUDA Takahiro,
Director of Medtech Innovation
Center

Basic concept

1

Joint research and development

Venue for collaboration and development by healthcare providers, engineers, medical devices related companies, and social implementation support team.

2

Strategic medical device development

Venue for strategic medical device development utilizing adjacent clinical sites and the Medical Device Innovation Platform (MedIP)

3

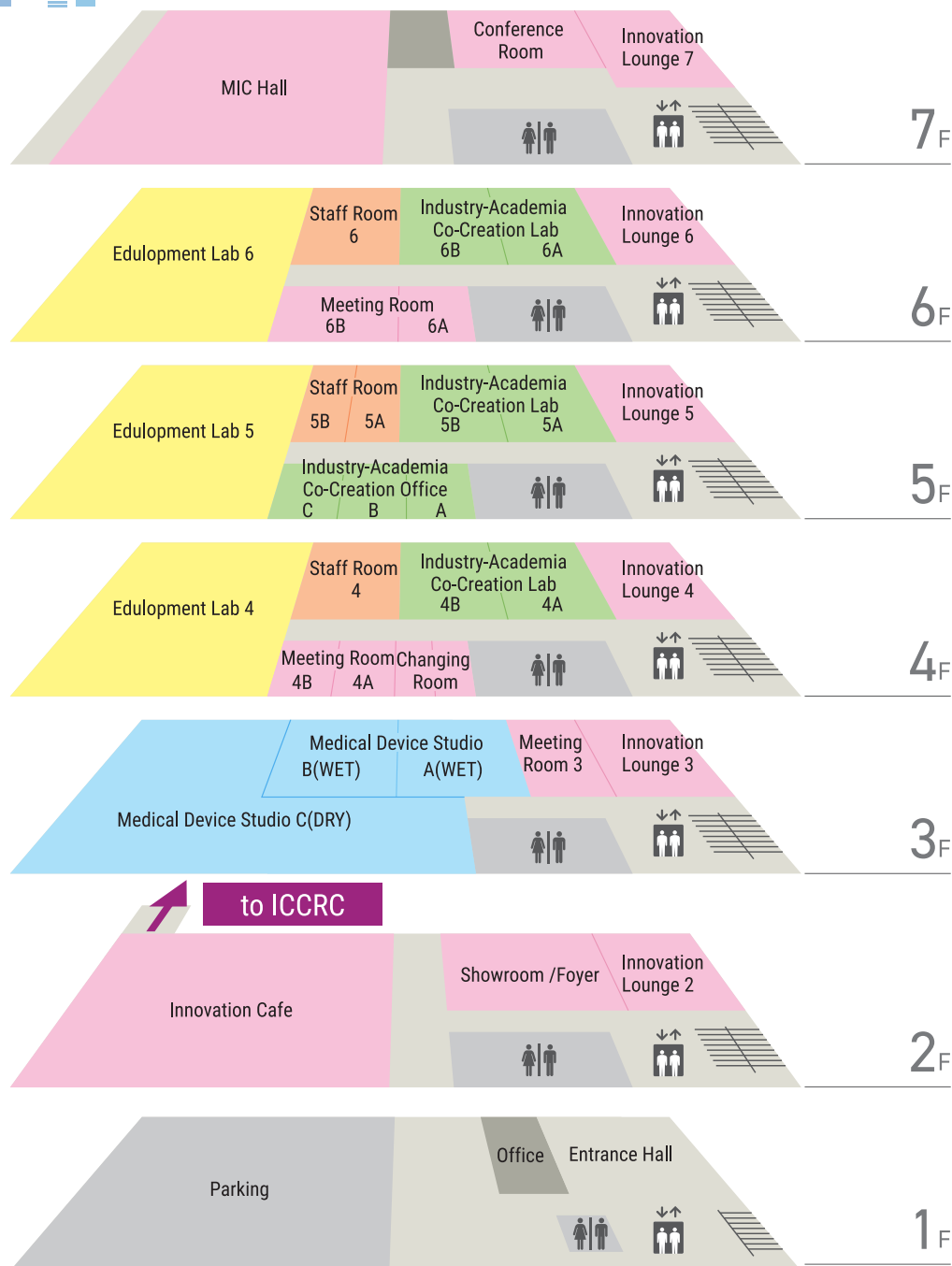
Human resource development

Venue for human resource development to lead medical device development and social implementation.

4

Creation of sustainable industry and employment

Venue to create sustainable industry and employment by building an ecosystem for medical device development.



Kobe University Hospital International Clinical Cancer Research Center (ICCRC)

Since its establishment in 2017, the International Clinical Cancer Research Center (ICCRC), in collaboration with Kobe University Hospital, has set goals to promote advanced cancer treatment, develop innovative medical devices through medical and engineering collaboration, and interact with international medical institutions. We have strengthened our collaboration within the Kobe Biomedical Innovation Cluster Project. In addition, as a research hospital of Kobe University, we are collaborating with Center for Advanced Medical Engineering Research and Development (CAMED) and the Department of Medical Device Engineering, Graduate School of Medicine. This partnership aims to establish an ecosystem for medical device development and cultivate human resources to facilitate the introduction and practical application of innovative medical devices in clinical trials from the perspective of the medical field.

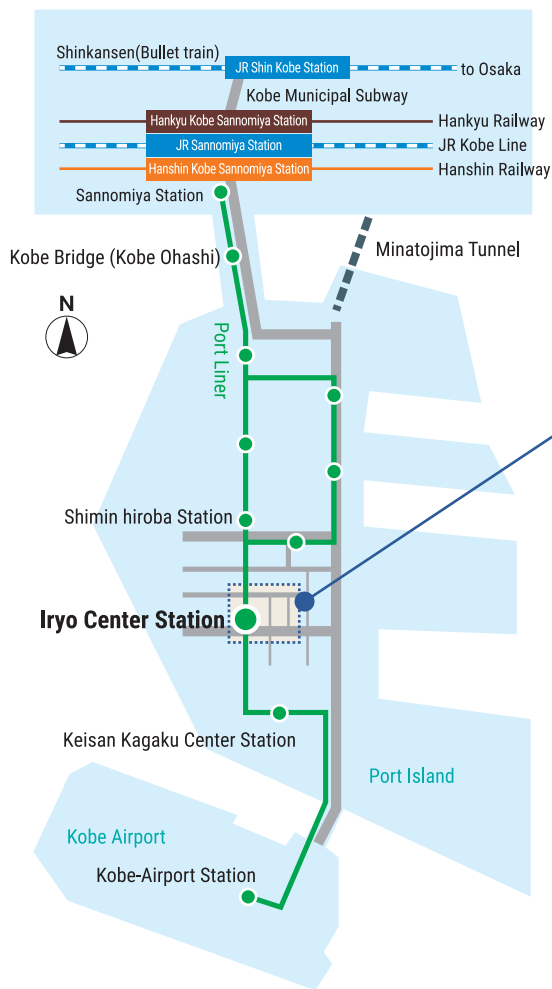
As part of the "Kobe Future Medical Plan," which is being promoted by the Cabinet Office's Regional University and Regional Industry Creation Project with the City of Kobe, we have been conducting remote operation verification tests using 5G communication technology of the surgical support robot "hinotoriTM Surgical System," and have also started to combine it with a smart treatment room system.



Kobe University Center for Advanced Medical Engineering Research and Development (CAMED)

The Center for Advanced Medical Engineering Research and Development was based on Graduate School of Medicine and the Graduate School of Engineering launched their respective research projects within the same school with the aim of accelerating the development of innovative medical devices in 2015. This led to the establishment of the Center in April 2019 with the aim of realizing a seamless integration of medicine and engineering. Based in the Medical Device Workshop at MIC, and in collaboration with our university's Digital Bio and Life Science Research Park (DBLR) Promotion Organization, physicians, engineering researchers, and medical device development supporters work together to promote the development of world-class, domestically produced medical devices. In addition, the center serves as a place for problem-solving practice and practical training for students studying medical device development, such as those in the Department of Medical Device Engineering, Graduate School of Medicine.

Access



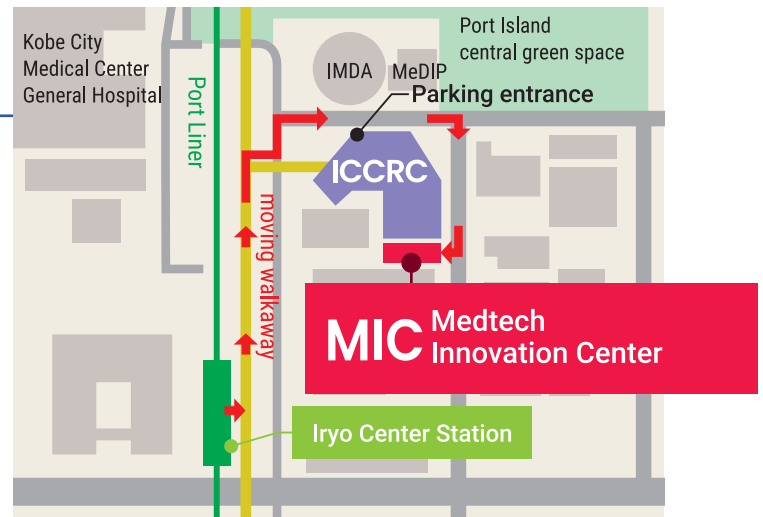
KOBE Biomedical Innovation Cluster (KBIC)



View of Kobe city from Port Island

From Iryo Center station to MIC

Exit the ticket gate and turn right(east). Go straight down the two moving walkways in a northerly direction, and you will see the ICCRC building on your right. Go down the stairs and walk straight (to east) one block to the left of the ICCRC building. Turn right at the corner, and the MIC entrance will be on your right ahead.



ACCESS



By Train

Take Port Liner to "Iryo Center Station"

- From "Sannomiya station", take the Port Liner bound for Kobe Airport (Approx. 12 min.)
- From "Kobe Airport Station", take the Port Liner bound for Sannomiya. (Approx 5 min.)
- Exit at "Iryo Center Station" and walk 100 meters to the north.



By Car

It takes about 15 minutes from each direction across the Kobe Grand Bridge. It is also accessible from the Port Tunnel east of Sannomiya.



Kobe University Hospital
Center for Medical Device Engineering
Innovation and Translation



Graduate School of Medicine Department
of Medical Device Engineering School
of Medicine,
Faculty of Medical Device Engineering



Kobe University Hospital
International Clinical Cancer
Research Center



Center for Advanced Medical
Engineering Research and
Development (CAMED), Kobe University



Kobe University Graduate School of Medicine
Medtech Innovation Center

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Medical Device Studio 3F

-Both the DRY and WET labs are equipped as experimental environments for manufacturing medical devices, such as prototypes, and for processing and practical education.

-Various molding machines are available, such as 3D printers and 5-axis milling machines, including precision equipment for quality inspections.

-Our studios are open to internal personnel, involved with industry and academia, as well as other companies and academic institutions.



Medical Device Studio C
(DRY)



Medical Device Studio B
(WET, Cell and Bioassessment Laboratory)

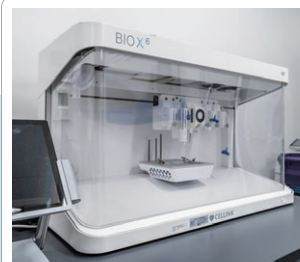


Medical Device Studio A
(WET, Organic Solvent Laboratory)

Medical Device Studio Equipment Lineup



Metal 3D Printer
COHERENT (ORLAS CREATOR RA)



Bio 3D Printer
CELLINK (BIO X6)



3D Modeling Machine
Roland (MODEL A MDX-50)



CO2 Laser Processing Machine
smart DIYs (LC950)



Rubber-like Resin 3D Printer
MITS (M3DS-4K UHD)



Raman Microscope
HORIBA(XploRA PLUS)



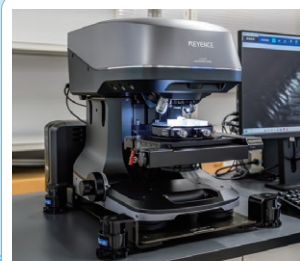
FFF 3D Printer
UltiMaker (S5,S7)



Compact 5-axis processing machine
MODIA SYSTEMS (MiniMiller MM100VF)



Collaborative Robot
UNIVERSAL ROBOTS(UR10e)



Laser microscope with white interferometer
KEYENCE(VK-X3000)

Edulopment Lab (Education+Development=Edulopment)

4 ▶ 6F

-Ideal venue for medical device research and development, as well as human resource development. Each floor is designed for a different purpose and allows users to move freely from one floor to another according to their needs.

- Faculty, staff, and students can use the space on a project basis, and simple partitions could be provided if the project requires confidentiality.

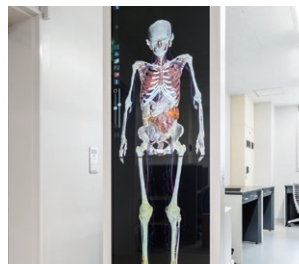
- The 4th floor is a medical measurement instrumentation development space equipped with optical measurement and analysis devices.

- The 5th floor is a medical materials and robot development space equipped with devices for evaluating the functions and properties of medical materials and devices for developing robot-related devices.

- The 6th floor is a needs verification and prototype evaluation space equipped with actual treatment and diagnostic medical devices, 3D-anatome tables, and medical phantoms.



Edulopment Lab 6F Equipment Lineup



3D Virtual Anatomy Table
Anatomage



Ultrasonic Operating Machine(Cusa)
Integra (CUSA Clarity)



Ultrasound Imaging Devices(Echo)
FUJIFILM (FC-1),
GE HealthCare(Vscan Air SL)



Electric Mesta Oscilloscope
(190-502)
FLUKE (QA-ES MKIII)



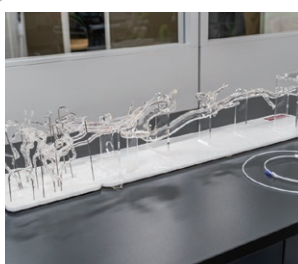
Energy Device
Medtronic(FT10),
OLYMPUS(USG-410/ESG-410),
Johnson & Johnson(GEN11)erbe(VIO3)



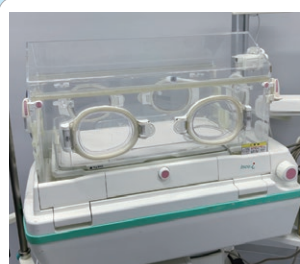
Endoscopy system
OLYMPUS (EVIS X1)



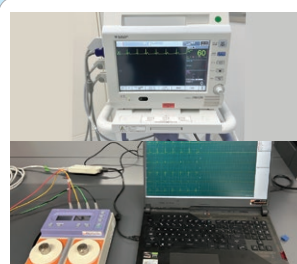
Ventilator
Dräger(EvitaXL), PHILIPS(V60)



Simulator for endovascular treatment
Just Medical Corporation(CT-101L)
Circuit Altamira



Incubator
Atom Medical(incui)



ECG(Electrocardiograph) and Bedside Monitor
SAN-EI MEDISYS(ECG Explorer 500X2)
Fukuda Denshi(DS-8100)



ECMO
TERUMO(CAPIOX SP-101)

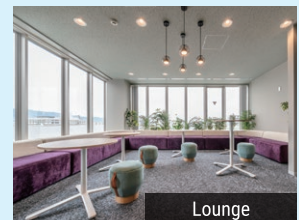
Collaborative spaces

All floors have Collaborative spaces that is open to all users, including doctors, researchers, business people, and students, as a "Venue for Emergence, Co-creation, and open communication for each other". The goal is to learn from each other by interacting with diverse human resources, generating new ideas through conversation, and building new networks.

7F

MIC Hall

MIC hall is suitable for a variety of events, including casual meetings, conferences, workshops, and other events. Depending on the combination of individual desks and chairs, it can be used in a variety of ways. The hall is an elongated, horizontal space with a raised floor at the back. (The hall can accommodate up to 130 people.)



Lounge



Conference Room

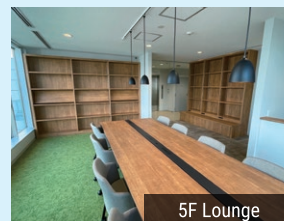
2▶7F

Innovation Lounge

Located in the east corner of the 2nd to 7th floors, this space is ideal for taking a break or enjoying a change of pace. Each floor offers a unique ambiance, allowing guests to select a location that aligns with their preferences and mood.



6F Lounge



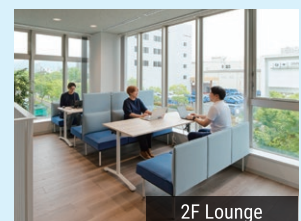
5F Lounge



4F Lounge



3F Lounge



2F Lounge

2F

Innovation Cafe

This venue is an event space with a café offering light meals and accommodating approximately 70 people.

As a liaison space with the hospital (ICCRC), it is open not only to ICCRC and MIC-related personnel, but also to the general public during lunch time. It can be used as a place for exchange and collaboration between MIC-related personnel and medical professionals, as well as between companies in the Kobe Biomedical Innovation Cluster.



3▶7F

Conference Room / Meeting Rooms

Flexibility to accommodate various types of meetings from small groups to 15 people.



Meeting Room 6B



Meeting Room 4A



Meeting Room 4B



Meeting Room 3

Rental Lab / Rental Office

4▶6F

Industry-Academia Co-Creation Lab/Office



Industry-Academia Co-Creation Lab (Large room 37m²)

- Rental labs and offices for medical device manufacturers, manufacturing companies, and venture companies.
- The main users are companies that wish to collaborate with Kobe University faculty, staff, and graduate students.
- All labs are equipped with WET specifications, and each floor's large room can be divided into two separate rooms. The facility can accommodate a wide range of room size requests.