



Osaka Bio Headquarters



2022

**Towards the Development
of the Life Sciences Industry**

Osaka Bio Headquarters

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Accumulation of Osaka's life sciences related universities and research facilities, etc.

Osaka has been known as “a town of pharmaceuticals” for about 400 years.

Osaka is a home to a great number of pharmaceutical companies as well as world leading universities and research facilities located mainly in Northern Osaka.

There is the concentration of companies starting out in Doshomachi, in the centre of Osaka.

In Osaka, industry, academia and government are working toward further development of life sciences, one of Osaka's strengths, by accumulating drug discovery support agencies in “Umekita” in central Osaka.

Osaka has a good business environment so that you can easily develop life sciences related business.

- ① Osaka University
 - Research Institute for Microbial Diseases, Osaka University (RIMD)
 - Osaka University Immunology Frontier Research Center (IFReC)
 - Osaka University Hospital
 - Institute for Protein Research, Osaka University (IPR)
 - ② Osaka City University
 - ③ Osaka Prefecture University
 - ④ National Institutes of Biomedical Innovation, Health and Nutrition (NIBIOHN)
 - ⑤ National Cerebral and Cardiovascular Center (NCVC)
 - ⑥ RIKEN Center for Biosystems Dynamics Research (BDR)
 - ⑦ AIST Kansai, the National Institute of Advanced Industrial Science and Technology (AIST)
 - ⑧ Division of Strategic Planning and Evaluation Department of Innovative Drug Discovery and Development Japan Agency for Medical Research and Development (AMED)
 - ⑨ Pharmaceuticals and Medical Devices Agency (PMDA) Kansai Branch
 - ⑩ National Center for Industrial Property Information and Training (INPIT) Kansai Office
 - ⑪ Osaka Medical and Pharmaceutical University
 - ⑫ Kansai Medical University
 - ⑬ Center for Information and Neural Networks (CiNet)
 - ⑭ Kindai University
 - ⑮ Osaka Research Institute of Industrial Science and Technology (ORIST)
 - ⑯ Center for iPS Cell Research and Application, Kyoto University (CiRA)
 - ⑰ Advanced Telecommunications Research Institute International (ATR)
 - ⑱ RIKEN Center for Biosystems Dynamics Research (BDR)
 - ⑲ RIKEN Center for Computational Science (R-CCS)
- Supercomputer Fugaku

HYOGO

KYOTO

SHIGA

Kyoto

Saito

KENTO

Nakanoshima

Kishibe

Shin-Osaka

Umekita

Doshomachi

Shin-Kobe

Osaka International Airport

Kansai International Airport

OSAKA

NARA

WAKAYAMA



Saito



KENTO



Nakanoshima: The International Hub for Healthcare Innovation (conceptual image)

- JR Conventional line
- Bullet train
- Highways and toll roads
- Scheduled to open Shin-Meishin Expressway

*For details on the numbered institution, please refer to p.9 to p.10 of this issue

We are working on creating an international hub in Nakanoshima, Osaka to promote the commercialization and industrialization of the “Healthcare Innovation” based on regenerative medicine.

The International Hub for Healthcare Innovation

Osaka Prefecture is preparing to open The International Hub for Healthcare Innovation in spring 2024 to promote the industrialization of leading-edge “Healthcare Innovation” as a regenerative medicine-based industry that can respond immediately to progress in the healthcare technologies of the future, for example genomic medicine, artificial intelligence (AI), and utilization of the Internet of Things (IoT), and to promote global contributions by providing “Healthcare Innovation” to patients in Japan and worldwide.



*This is a tentative rendering as of January 2019.
*Image courtesy of the Project to Develop and Operate The International Hub for Healthcare Innovation at 4 Nakanoshima

We seek to establish a co-creation platform for the Healthcare Innovation, aiming toward co-creation of the Healthcare Innovation.

Organization for Advanced Healthcare Innovation

< Role >

To organize whole hub to enable medical institutions, universities, research institutes, businesses (including venture companies), and support organizations to organically collaborate with each other in research support, support for entrepreneurs, and medical practice mainly through opportunities for open innovation.

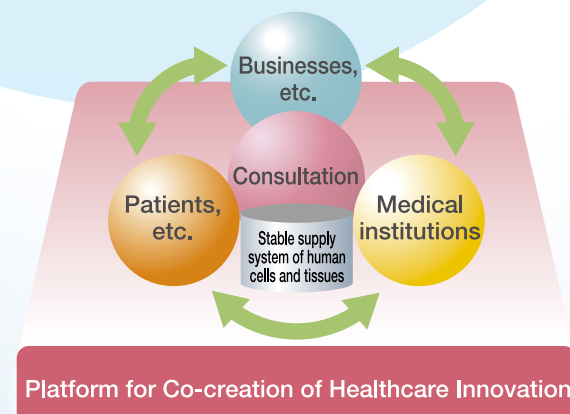
< Timeline >

November 22, 2019

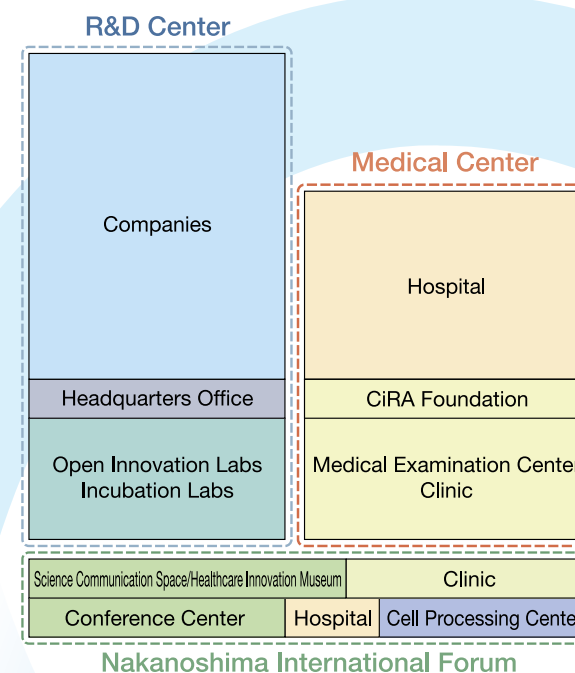
•The Organization for Advanced Healthcare Innovation is established.

December 2019

•Organization for Advanced Healthcare Innovation enters into the Basic Agreement on the Development and Operation of The International Hub for Healthcare Innovation.
•Organization for Advanced Healthcare Innovation enters into a Memorandum of Understanding (MoU) with The Japanese Society for Regenerative Medicine.



Putting in place mechanisms for collecting and connecting diverse human resources from around the world with the latest information



Driving the creation of Healthcare Innovation by connecting people with information

R&D Center

A composite research and development facility designed to meet a variety of research and development needs

- Companies
- Open Innovation Labs
- Incubation Labs

Driving the practice of the Healthcare Innovation through leading-edge medicine, clinical trials, and other initiatives

Medical Center

Practicing composite medicine founded on collaboration with the Healthcare Innovation R&D Center

- Hospital
- Clinic
- Medical Examination Center

Sharing the healthcare of the future through events, international societies, and other meetings

Nakanoshima International Forum

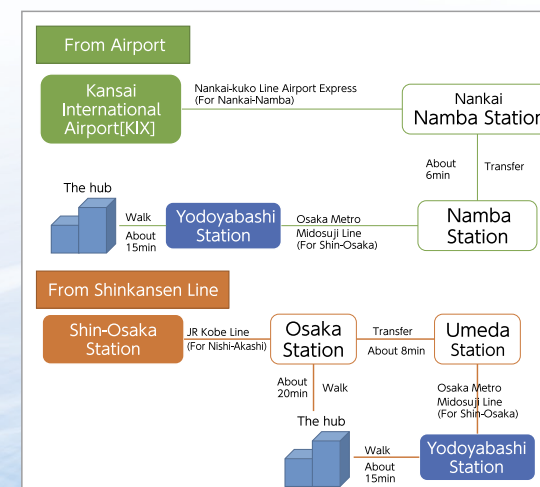
An exchange-focused facility providing open space for collaboration with other nearby facilities

- Conference Center
- Science Communication Space
- Healthcare Innovation Museum

The Nakanoshima area has become increasingly convenient.

Nakanoshima is a major business district in Osaka and a hub for dissemination of culture and information, featuring international conference halls and art museums. The planned construction there of a station on the new Naniwasuji Line (scheduled start of operation in 2031) that will connect directly to Kansai International Airport, the main gateway to Osaka/Kansai, will make this area more accessible for both domestic and international visitors.

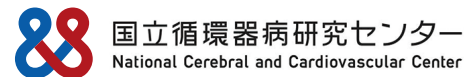
< Location and Access >



A hub for health and medical innovation, attracting many health and medical facilities and companies.

Northern Osaka Health and Biomedical Innovation Town (also known as “KENTO”)

In KENTO (approx. 30ha), a hub for health and medical innovation is being formed, embracing the National Cerebral and Cardiovascular Center (NCVC) and the National Institute of Health and Nutrition (NIHN) to be relocated from Tokyo as its core. KENTO, which is located in close proximity to city center of Osaka and Shin-Osaka, Shinkansen (bullet train) station, offers excellent transportation access.



Open Innovation Center (OIC)

Promoting open innovation through industry-academia collaboration based on intellectual property, resources, and data that have been accumulated

Open Innovation Laboratory

- Joint research laboratories for companies, research institutions, and other entities conducting joint research with the National Cerebral and Cardiovascular Center (20 units, about 2,000 m²)
- Aggressively support from Department of Industrial-Academic Collaboration for joint research using the OIL
- Collaboration with the OIC Biobank, Omics Research Center, and Department of Medical and Health Information Management; you can access to big data and biospecimens from sources such as cohort research, and shared facilities and other resources.

Science Café

Providing spaces and opportunities for a variety of people who want to realize open innovation NCVC



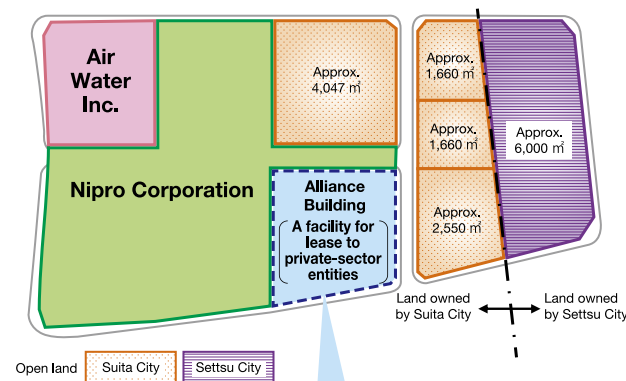
Services limited to Science Café members

Free



KENTO Innovation Park

Attracting health and healthcare businesses to form a biocluster

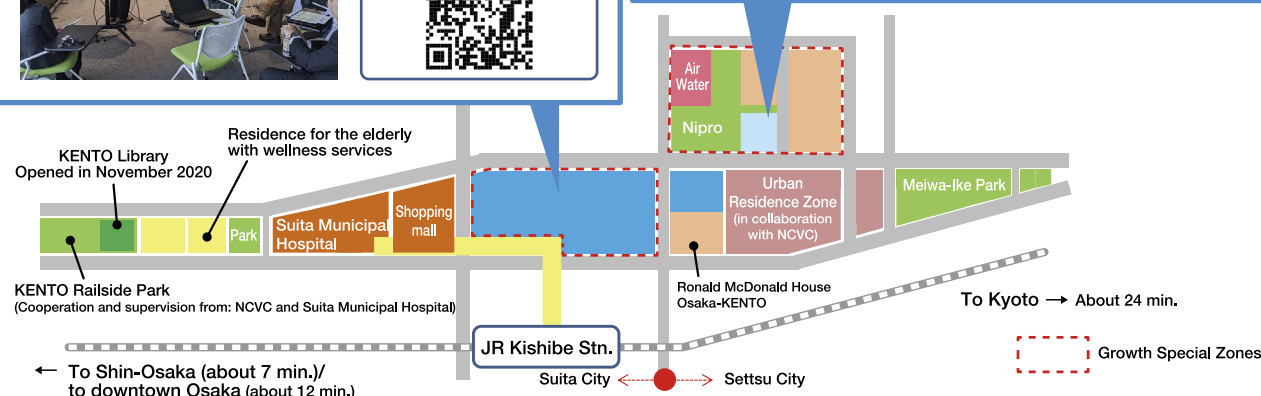


Alliance Building: open in spring 2022 (to be scheduled)

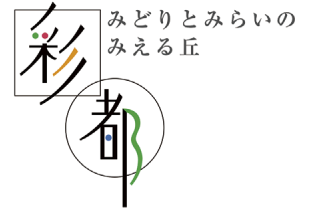
The composite facility that will be occupied by the National Institute of Health and Nutrition, which is relocating to Northern Osaka Health and Biomedical Innovation Town, as well as laboratories, offices, and shared laboratory spaces available for lease to companies and other institutions in healthcare-related companies.



- 1st floor Shared Lounge
- 1st to 3rd floors National Institute of Health and Nutrition
- 4th floor Turnkey Lab, shared laboratories offering experimental equipment and everyday services
- 5th to 7th floors (as well as a part of 3rd floor) Leased laboratories and office spaces

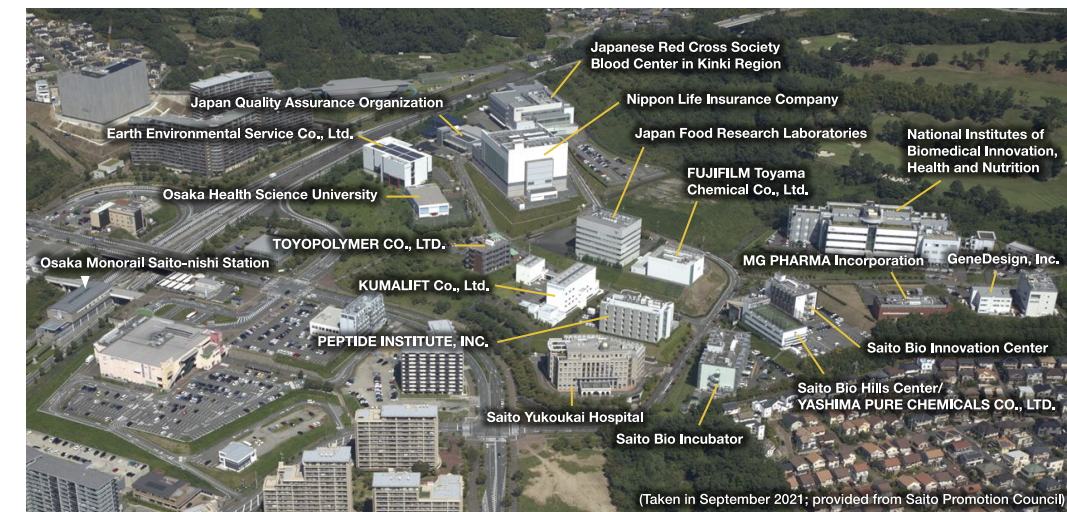


R&D hub for drug discovery in Saito, the hills of Minoh City and Ibaraki City



Saito Life Science Park

Founded in 2004, Saito Life Science Park, which is the symbol zone of Saito, is a major hub of facilities having research and technology development functions in the field of life sciences, including biotechnology and pharmaceuticals, and associated facilities.



Incubation facilities

Saito Bio Incubator	Saito Bio Hills Center	Saito Bio Innovation Center
Structure: Steel frame, 4-story Total floor area: approx. 4,900m ² Lab: 34 rooms There are two animal experiment facilities.	Structure: Steel frame and partly reinforced concrete, 3-story and one basement floor 3rd floor: approx. 880m ² Lab: 9 rooms	Structure: Steel frame, 4-story Total floor area: approx. 2,500m ² Lab: 18 rooms+1 floor There is an investigational drug manufacturing facility.
Maintenance: Organization for Small & Medium Enterprises and Regional Innovation Rental lab Opened: July 2004	Maintenance: YASHIMA PURE CHEMICALS CO., LTD. Rental lab Opened: April 2006	Maintenance: Organization for Small & Medium Enterprises and Regional Innovation Rental lab Opened: October 2008

Subsidies for rent and research equipment are available.

Announcement from a company located in Saito



We offer "Total environmental hygiene management services" for maintenance of cleanliness and prevention of microbiological contamination against the business sites such as pharmaceutical manufacturing facilities and regenerative medicine facilities. Our Saito General Research Laboratory serves as a hub for these services by fulfilling a range of functions, including offering education and training to employees and customers, and providing contract analysis and R&D services. In March 2021, we completed the construction of "Education and Training Cell Processing Center (CPC)" for replying to regenerative medicine and biomedicine. By

allowing a variety of environmental conditions, including temperature, humidity, airflow, and air exchange rate etc. at regenerative medicine facilities to be reproduced, we've made it possible to create evidence by educational programs and demonstration experiments under the field simulation conditions. Going forward cooperating with industry, government, and academia, we will continue to contribute to the life science field for establishment of regulatory science and educational training programs concerning with regenerative medicine, biomedicine, gene therapy, and other healthcare-related fields.

- Through "Saito Hills Club," You can join a place for information, research and human exchange with companies and research institutes around Saito. / URL: <https://www.saitohills.com/>
- For inquiries regarding incubation facilities, please contact Bio-sight Capital, Inc./ TEL: +81-72-640-1060/ URL: <https://www.bs-capital.co.jp/>

High-performance, easy-to-use video conferencing system enables users to communicate smoothly.

PMDA Kansai Branch video conferencing system

The PMDA Kansai Branch provides consultation services on regulatory science (RS) strategies and clinical trials, using a video conferencing system.

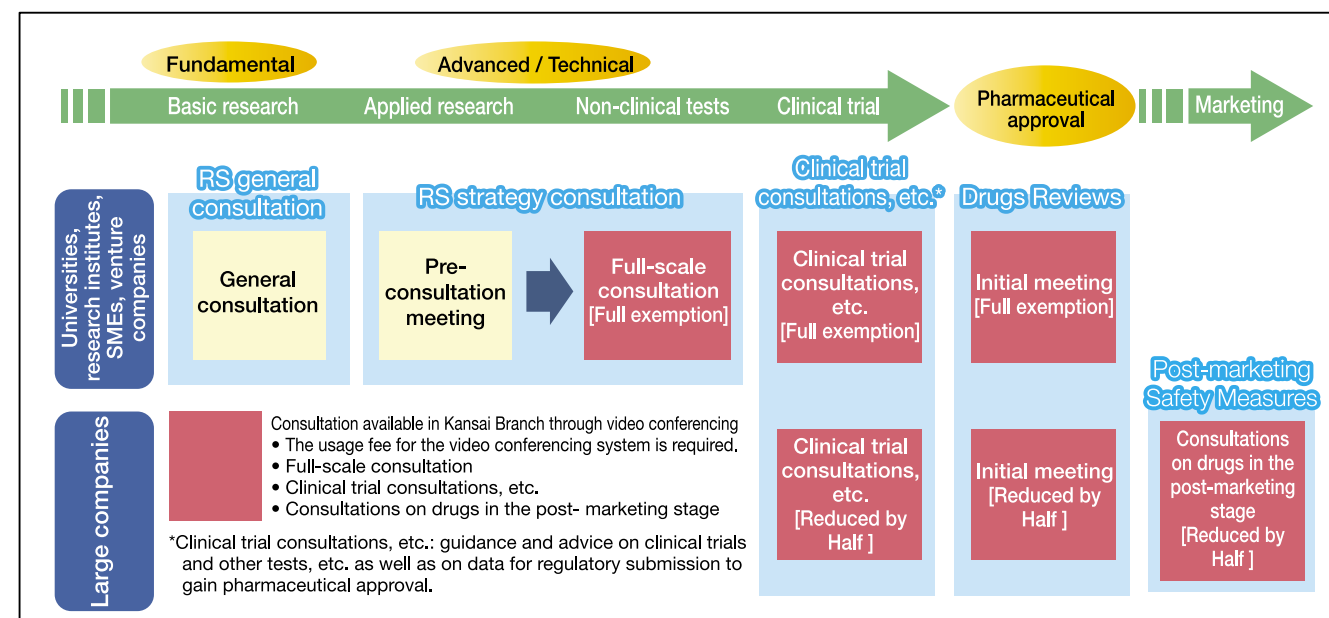
This video conferencing system offers users various benefits:

- Reduced travel expenses and travel times
- Easier adjustment of meeting schedules, such as when connecting users in Tokyo and Osaka

We have exemption and reduction system (full exemption / reduced by half) in the fee for using the video conferencing system.

PMDA Kansai Branch

Grand Front Osaka, Tower B 12F (3-1 Ofuka-cho, Kita-ku, Osaka)



Useful (easy-to-use) video conferencing system of the PMDA Kansai Branch

This video conferencing system, which uses a dedicated circuit, ensures confidentiality of information and offers smooth, stress-free communication. (The system provides high-definition images and clear sounds, so that users can clearly see the facial expressions of the remote participants.) A firsthand experience can be offered for a seminar with a certain number of persons. Feel free to contact us.

The monitors show live images of the room of the Kansai Branch office.



A video conference room of the Tokyo headquarters

The monitors show live images of the room of the Tokyo headquarters.



A video conference room of the Kansai Branch office

User feedback

- It's as if we were meeting and talking in person.
- We were able to save the time and expense required to travel to Tokyo.
- We want to use the video conferencing system again.

International Strategic Alliance

European Biotech and Pharma Partnering Conference

We have been successfully organizing annual one-one-one matching events since 2016 to support the global business development of pharmaceutical companies in Osaka/Kansai. We provide excellent business opportunities to both European and Japanese pharmaceutical companies.

«Latest Event Highlights»

*Exclusively conducted online due to COVID-19 in 2020 and 2021

2021

- Partnering meetings: 291
- Partnering companies: 156 (Japan 50 / Europe 106)
- Countries represented: 20 European countries
- Target fields: digital medicine, digital therapeutics, drug discovery, regenerative medicine, healthcare



Business matching with the USA

We initiated the collaboration with BIOCOM, California's largest and most influential organization in 2019. We promote business matching between Osaka/Kansai and the US in cooperation with BIOCOM.

«Latest Event Highlights»

○Japan-US business matching 2020

Held as part of Biotech and Pharma Partnering Virtual Partnering Conference in September 2020.

■ Partnering meetings: 17

■ Partnering companies : 18 (Japan 11 / US 7)

○BIOCOM Global Life Science Business Partnering Conference

Osaka Bio Headquarters participated virtually in the BIOCOM Global Life Science Partnering Conference in February 2021, with 5 pharmaceutical companies in Osaka/Kansai area.

At the partnering conference, we introduced some companies doing ground-breaking research in Osaka/Kansai and we aimed for cross-border business, especially in the US, as well as promoted our services.

Cooperative partnerships with international bioclusters

In order to maximize Osaka's potential, Osaka Bio Headquarters signed a memorandum of understanding with a number of international bioclusters to support the global business expansion of SMEs in Osaka/Kansai.

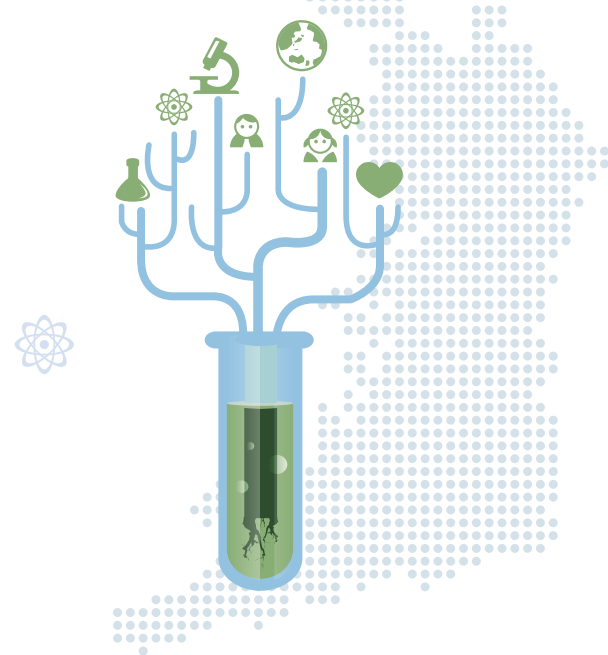
- October 2011: BioM, Bavarian biocluster in Germany
- November 2016: bioXclusters, multi-national bioclusters consisting of 4 European countries; Biocat (Spain), BioM (Germany), bioPmed/Bioindustry park (Italy), and Lyonbiopôle (France)
- October 2018: EU-Japan Centre for Industrial Cooperation



ORGANIZATIONS

Consolidated presence of major universities and research institutions, etc.
For the location of institutions, please refer to p.1 to p.2 of this issue.

Osaka Bio Headquarters is aiming at creating a worldwide biocluster for the health-related life sciences industry by making use of limitless potential of Osaka.



① Research Institute for Microbial Diseases (RIMD)

Research Institute for Microbial Diseases (RIMD), Osaka University is the world's foremost institute in the fields of medicine and biology including microbiology, immunology, and oncology. Currently, in addition to these research fields, we are developing research in various fields such as genetic engineering and genome analysis.

As a "Collaborative Research Center" under the Ministry of Education, Culture, Sports, Science, and Technology (MEXT), RIMD has specialized facilities to study infectious diseases equipped with BSL2 and 3 laboratories. These research resources, technologies, and facilities are open to the research community, and various collaborative researches are conducted.



Inquiries Office for Research Promotion
1-1 Yamada-oka, Suita City, Osaka
Tel: +81-6-6877-5111



① Osaka University Hospital

Osaka University Hospital is a hospital for advanced medical development, and its philosophy is to provide high-quality medical care services and contribute to fostering medical professionals and medical development.

Osaka University Hospital, as a clinical research, core hospital, aims to contribute to the further development of the medical and pharmaceutical industry in Japan by taking advantage of various measures designed for national strategic special zones, including those for "pharmaceutical affairs strategic consultation" and "accelerated development of innovative pharmaceuticals."

Inquiries 2-15 Yamada-oka, Suita City, Osaka
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① Osaka University

Osaka University is one of Japan's leading universities, comprising 11 undergraduate schools and 16 graduate schools, six affiliated research institutes, and two affiliated hospitals. Renowned as an academic institution strong in biomedical sciences, especially immunological research, Osaka University has produced many researchers. In addition, the university actively undertakes initiatives for commercializing research outcomes.

Osaka University seeks to create new social value by promoting cooperation and collaboration between industry, government, and academia (= industry-university co-creation) from the fundamental research phase.

- Establishing Joint Research Chairs, Joint Research Division and Research Alliance Laboratories, and concluding comprehensive partnership agreements
- Promoting technology transfer of intellectual properties
- Providing support to university-originated venture businesses



Inquiries 1-1 Yamada-oka, Suita City, Osaka
Tel: +81-6-6877-5111



① Osaka University Immunology Frontier Research Center (IFReC)

The Osaka University Immunology Frontier Research Center (IFReC) is an international hub for immunology research, launched as a part of Japan's World Premier International Research Center Initiative (WPI). Now that over ten years have passed since its founding in 2007, IFReC is accelerating its expansion into innovative basic research and medical science.

IFReC provides researchers with a research environment up to international standards and support system. It is currently working on creating an open innovation laboratory for joint research, while pursuing cutting-edge immune system research using bioimaging and bioinformatics.



Inquiries Research Planning and Management Office
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① Institute for Protein Research, Osaka University (IPR)

With the aim of shedding light on the principles of life activities through fundamental research on proteins, IPR has been working on the promotion of joint research through shared use of facilities and equipment with researchers in Japan and abroad (including those from industry), as well as the development of human resources.

- Promoting shared use of facilities (SR-Beamline, NMR, cryoEM)
- Developing the Protein Data Bank (PDB) and disclosing data
- Holding protein research seminars
- Promoting multi-scale structural life sciences

As a hub for shared use of facilities and collaborative research, IPR is equipped with the operating system required for advanced research.



Inquiries 3-2 Yamada-oka, Suita City, Osaka
Tel: +81-6-6877-5111



② University Public Corporation Osaka, Osaka City University

Osaka City University (OCU) serves as a think tank for urban Osaka and intends to promote education, research activities and contribute to the community. OCU seeks to promote the creation of new industries with developing new research, business and health areas.

In addition to creating innovation in the domain of a more familiar "health and health science" with a focus on the medicine and science of fatigue/anti-fatigue, the Center for Health Science Innovation pursues activities to help people experience creating innovation in the domain of "more active health management" with a focus on sports science and health science.



Inquiries URA Center
3-3-138 Sugimoto, Sumiyoshi-ku, Osaka
Tel: +81-6-6605-3550



④ National Institutes of Biomedical Innovation, Health and Nutrition (NIBIOHN)

The objective of NIBIOHN is to contribute to improving the health of Japanese people, by preparing a foundation for enhancing technologies related to drugs, medical devices and other products, and by conducting surveys and studies pertaining to the maintenance and promotion of the health, nutrition, and diet of Japanese people. To this end, NIBIOHN is engaged in the six projects below and services under the Health Promotion Act.

- 1) Research and support of drug discovery related to fundamental technologies
- 2) Research and support of drug discovery related to biological resources
- 3) Promotion of development of drugs and other products
- 4) Surveys and studies pertaining to the maintenance and promotion of Japanese people
- 5) Surveys and studies regarding the nutrition and diet of Japanese people
- 6) Nutrition physiology tests of food



Inquiries 7-6-8 Saito-Asagi, Ibaraki City, Osaka
Tel: +81-72-641-9811 (Main)



⑥ RIKEN Center for Biosystems Dynamics Research (BDR)

BDR Osaka strives to develop the underlying technologies for analysis and simulation of molecular dynamics inside living cells in order to comprehensively understand the systemic properties essential for living things, such as resilience and robust homeostasis, and then integrate such understanding into better treatments and medicines.

BDR's technological developments include:

- Technological development for live cell imaging (microscopes, fluorescent probes, body tissue transparency technologies, microfabrication devices, etc.)
- Highly efficient genetic engineering of mice (Triple-CRISPR)
- Respiration-based sleep analysis technique for mice
- Drug-discovery simulations



Inquiries Section responsible for business partnerships
6-2-3 Furuedai, Suita City, Osaka
partner@ml.riken.jp



Support Organizations (Drug discovery, etc.)

⑧ Division of Strategic Planning and Evaluation, Department of Innovative Drug Discovery and Development, Japan Agency for Medical Research and Development (AMED)

Working through a drug discovery support network that offers support for the discovery of innovative new drugs based on exceptional research conducted by universities and public research institutions, AMED's coordinators, who have experience in research and development at pharmaceutical manufacturers and other industry entities, provide support for operations mainly ranging from exploratory research to pre-clinical development.



Inquiries West Japan Office
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3-1 Ofuka-cho, Kita-ku, Osaka
Tel: +81-6-6372-1771



③ BioMedical Forum, Osaka Prefecture University

Osaka Prefecture University has established the BioMedical Forum as a bioscience research center to provide professional advice concerning research strategies, including initiatives in the bio industry.

The BioMedical Forum, comprising three research laboratories and three centers, which are all deeply involved in key R&D processes up to the preclinical stage of drug development, plans and proposes biomedical strategies and promotes mutual collaboration between members.



Inquiries URA Center
1-1 Gakuen-cho, Naka-ku, Sakai City, Osaka
Tel: +81-72-254-9128



⑤ National Cerebral and Cardiovascular Center (NCVC)

The National Cerebral and Cardiovascular Center (NCVC) was established as a national center for advanced and specialized medical care and research, with the mission to understand and control cerebral and cardiovascular diseases. Specialists – both medical practitioners and researchers – in the fields of heart disease and cerebrovascular disease and businesses work together to improve treatment outcomes and develop new technologies.

- One of the world's leading facilities for treatment of cardiovascular disease and strokes
- One of Japan's leading facilities for heart transplants and artificial heart implants
- A facility involved in services ranging from the development of leading-edge medical devices ex. ECMO systems to their clinical application
- A track record of best-in-class basic research into the pathology of cardiovascular disease
- Advanced check-ups and state-of-the-art treatment of brain and cardiovascular diseases based on world's leading epidemiological research



Inquiries 6-1 Kishibe-Shimmachi, Suita City, Osaka
Tel: +81-6-6170-1070 (Main)



⑦ AIST Kansai, the National Institute of Advanced Industrial Science and Technology (AIST)

With a focus on its biomedical research team, AIST Kansai is trying to implement biotechnology in society by unraveling, measuring, and applying biological functions in order to realize a healthy society with high life expectancy.

- Diagnosis by the Ultra-Fast PCR system and development of testing devices
- Biological production using genome editing and other techniques
- Development and evaluation of the environmental performance of biodegradable plastics
- Strengthening of industry-academia collaboration through AIST Kansai discussions and the Kansai Biomedicine Research Group.
- Collaboration with research institutions, government agencies, and businesses in Japan and abroad



Inquiries Industry-academia-government Collaboration Promotion Office
1-8-31 Midorigaoka, Ikeda City, Osaka
Tel: +81-72-751-9681



⑨ Pharmaceuticals and Medical Devices Agency (PMDA), Kansai Branch

To help academia and venture companies create innovative drugs, etc. in Japan, the PMDA Kansai Branch conducts Regulatory Science (RS) General Consultations and RS Strategy Consultations for designing both non-clinical trial plans and clinical trial plans required in the early phase of development.

PMDA also provides face-to-face consultation regarding clinical trials and application materials, using a high-performance video conferencing system that connects the Tokyo HQ and Kansai Branch. PMDA undertakes inspections whether facilities and control procedures for manufacturing medicinal chemicals comply with GMP, etc.



Inquiries Grand Front Osaka, Tower B 12F
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