KOBE BIOMEDICAL INNOVATION CLUSTER
In the aftermath of 6.9 magnitude Great Hanshin - Awaji Earthquake in 1995, Kobe city took on the unprecedented task of forging a foundation for the future of the healthcare industry.

**Missions**

- Revitalization of Kobe economy
- Improvement of healthcare services
- International contribution

**Kobe Biomedical Innovation Cluster**

- Collaboration with 8 highly specialized medical institutions
- Business support
- Interaction among companies and organizations

As of September 2023, there are 365 companies/organizations.
02 About Kobe

KANSAI REGION

Population: 19 million

GDP: $848 billion

Ranked 17th in the world

KOBE

Population: 1.5 million

GDP: ¥6.9 trillion

Area: 557 km²

*1 Vital statistics survey based on the Basic Resident Register of the Ministry of Internal Affairs and Communications (FY2021)
*2 “World Statistics” by the Ministry of Internal Affairs, “Prefectural Account” by Cabinet Office (FY2019)
*3 Kobe city (monthly estimated population) (March 1, 2023)
*4 Hyogo prefecture Municipal Accounts (FY2019)
*5 Geospatial Information Authority of Japan (January 1, 2022)
### Cluster Members

365 Companies / Organizations (as of September 2023)

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical Devices</td>
<td>86</td>
<td>23.6%</td>
</tr>
<tr>
<td>Pharmaceuticals</td>
<td>74</td>
<td>20.3%</td>
</tr>
<tr>
<td>Regenerative Medicine</td>
<td>25</td>
<td>6.8%</td>
</tr>
<tr>
<td>Universities</td>
<td>13</td>
<td>3.6%</td>
</tr>
<tr>
<td>Nursing Care / Rehabilitation</td>
<td>13</td>
<td>3.6%</td>
</tr>
<tr>
<td>R&amp;D Support</td>
<td>52</td>
<td>14.2%</td>
</tr>
<tr>
<td>Information / Software etc.</td>
<td>18</td>
<td>4.9%</td>
</tr>
<tr>
<td>Logistics</td>
<td>7</td>
<td>1.9%</td>
</tr>
<tr>
<td>Medical Institutes</td>
<td>13</td>
<td>3.6%</td>
</tr>
<tr>
<td>Others</td>
<td>26</td>
<td>7.1%</td>
</tr>
</tbody>
</table>

- **Healthcare**: 38 companies / organizations (10.4%)
- **Nursing care / Rehabilitation**: 13 companies / organizations (3.6%)
- **R&D support**: 52 companies / organizations (14.2%)
- **Information / Software etc.**: 18 companies / organizations (4.9%)
- **Logistics**: 7 companies / organizations (1.9%)
- **Medical institutes**: 13 organizations (3.6%)
- **Others**: 26 companies / organizations (7.1%)

All percentages do not always sum to 100% due to rounding to the first decimal place.

### Economic Impact (2020)

- **Estimated revenues to Kobe city**: ¥156.2 billion
- **Municipal tax revenue**: ¥6.9 billion

R&D of medical devices, pharmaceuticals, regenerative medicine, healthcare and digital health industries

Check here for details
Foundation for Biomedical Research and Innovation at Kobe

Medical Innovation

- Basic research
- Clinical application
- Industrialization

Dr. Tasuku Honjo
President
2018 Nobel Prize Laureate in Physiology or Medicine

IBRI
Institute of Biomedical Research and Innovation

CCD
Center for Cluster Development and Coordination

TRI
Translational Research Center for Medical Innovation

Check here for details
Unique Sub Clusters

Medical Cluster
Highly specialized medical institutions

Bio Cluster
R&D centers including RIKEN

Simulation Cluster
Supercomputer “FUGAKU” and related institutions

Innovation

Companies in KBIC
Unveiling what it means to be alive

- Precisely understanding the biological events unfolding inside the body from before birth to death
- Unveiling the mechanisms involved in the maintenance and disruption of normal body functions
- Contributing to the development of regenerative medicine

Promoting cutting edge R&D of advanced medicine

- Applying technologies such as immunosuppression to the treatment of inflammatory diseases like rheumatoid arthritis
- Applying the mechanisms of nerve cell death to the treatments of Alzheimer’s disease and other conditions
- Development of treatments for strokes and dementia
- R&D to treat malignant diseases with poor prognosis, such as leukemia
- Promoting research on the pathogenesis of infectious diseases to apply for the development of diagnostic and therapeutic methods
Coordinated by
FBRI
Center for Cluster Development and Coordination

Companies

Research Institutions

Universities

Kobe Eye Center
Kobe City Medical Center General Hospital
Kobe Proton Center at Hyogo Ion Beam Medical Center
Nishi Memorial Port Island Rehabilitation Hospital
Kobe University Hospital International Clinical Cancer Research Center
Kobe Minimally Invasive Cancer Center
Hyogo Prefectural Kobe Children's Hospital
Anshin Hospital

Check here for details
Building an innovative drug discovery platform
Personalized and preventive medicine
Neo-futuristic manufacturing
Advanced forecasting of climate and global environment

The World’s Best High-performance Computer

- Low power consumption
- Ability to produce ground-breaking results
- High computational performance
- Big data and AI simulation calculation
- User convenience

2021 ACM Gordon Bell Special prize “HPC-Based COVID-19 Research for novel droplet simulation”
2022 ACM Gordon Bell Award “International joint research for Particle-In-Cell Simulations using FUGAKU”

Implemented on
- social and scientific issues on various fields such as:
  - Healthy longevity, drug discovery
  - Disaster prevention and mitigation
  - Energy solutions
  - Manufacturing
  - Fundamental laws and Evolution of the universe

Research on COVID-19
- Elucidation of the structure of virus proteins
- Prediction of droplet infection and countermeasures
- Analysis of pandemic phenomenon
- Search for therapeutic candidates

Photo courtesy: RIKEN / Toyohashi Univ. of Technology
Supported by Kyoto Institute of Technology / Osaka University

Picture by RIKEN

Check here for details
Fostering Collaboration for Groundbreaking Discoveries

Healthcare Innovations in a wide spectrum of industries

- Pharmaceuticals
- Medical Devices
- Regenerative Medicine
- Health promotion

Promoting translational research
Promoting and supporting industrialization

Business Support

- Dedicated coordinator for each field
  - Collaboration with academic institutions
  - Network building
  - Matchmaking

- Startup support
- Rental labs & offices
Advisory platform for Commercialization

Materializing your idea for the market
Supporting and consulting Commercialization of products or services to clinical fields

Bringing Innovation to Medical field
Promoting collaboration between medical needs and technical seeds Professional advice for Evidence Based Medicine

Consulting regulatory affairs
Outstanding expertized advice based on longtime reliable experience

Building a global network
Collaboration with overseas medical clusters to support global approach Jointly participate in overseas MedTech Exhibition with KBIC companies

Support by dedicated coordinators

In 2020, the made-in-Japan robotic assisted surgery system born in Kobe 2020 “hinotori™” is introduced

Fully integrated infusion set Antileek®
Measure - Non-invasive optical sensing measurement AGES SENSOR
Infusion controller SEEVOL®

Products Successfully Commercialized

Number of commercialized products (total) 58 (as of September 2023)

Checking your ideas for the market
Consulting regulatory affairs
Building a global network
Support by dedicated coordinators

In 2020, the made-in-Japan robotic assisted surgery system born in Kobe 2020 “hinotori™” is introduced

Kobe Vision for the Healthcare of Tomorrow Creating an ecosystem that will continuously generate innovation in the field of medical device development in KBIC
Promotion of Translational Research

Total Coordination by FBRI Coordinators

- Effective management of translational research
- Collaboration with 8 hospitals
- Support & consultation on regulatory affairs
- Land for production site
- Manufacturing

Adequate leading-edge techniques and partners

Promotion of Medical Innovation in Kobe
The first-ever transplant of retinal cells derived from iPS cells to a patient with “age-related macular degeneration,” performed in Kobe in 2014

Dr. Masayo Takahashi
President of Vision Care Inc.

Dr. Takahashi worked as a project leader at RIKEN in 2014 and is currently closely connected with Kobe Eye Center through her contributions to numerous clinical researches. She has also established a startup to promote new lifesaving treatments to be implemented to patients.

Medicaroid Corporation

The company was established in Kobe in 2013 through a joint investment between Kawasaki Heavy Industries, an industrial robot manufacturer, and Sysmex, a medical device manufacturer. It obtained Japan’s manufacturing and marketing approval for a surgical support robot in 2020 and has obtained some regulatory approvals.

World’s first pulp regeneration therapy

Dental nerve regeneration by using tooth cells derived from orthodontically unnecessary teeth such as wisdom teeth

Air Water Group
Aeras Bio Inc.

The company has put into practical use their technology that derives pulp from unnecessary teeth, cultures and incubates the pulp stem cells, and transplants them into teeth with damaged nerves. Pulp stem cell bank project in which dental pulp stem cells are stored frozen for a long period is also in progress.

World’s first iPS cell-based transplant surgery

The first-ever transplant of retinal cells derived from iPS cells to a patient with “age-related macular degeneration,” performed in Kobe in 2014

Japan-made Surgical robot system

Robotic assisted surgery system “hinotori™ surgical robot system”
Health promotion

Utilizing citizen supporters system to obtain scientific evidence

Health promotion citizen supporters

2,875 citizens are registered
(as of September 2023)

Joint Development of Industry-Academia-Citizen Partnership Products and Services

Commercialization of preventative medical products and services

Support by FBRI coordinators

Create healthcare ecosystem in Kobe through the Industry-Academia-Government collaboration

Core Business

Health function
Position map for total health

DATA HUB
KOBE UNIVERSITY / UNIVERSITY OF HYOGO
14-1 Life Science Startup Ecosystem

MedTech Grand Prix Kobe
Discovering promising startups from all over Japan

413 teams have joined the competition in last six years from 2018

Human resources
- Training programs for business development
- Recruitment networks

Facilities
- Office / Shared lab
- Collaboration with hospitals to demonstrate products

Capital
- Kobe Life Science Gap Fund
- R & D Grants
- VC networks

73 startups in KBIC (as of September 2023)

Support by FBRI coordinators from early stage

Early
Focused areas
Seed
Expansion
Later

Check here for details
14-2 Partnership with Global Mega Pharma

Partnership agreement for promoting KBIC's life science startup ecosystem

Bayer Yakuhin Ltd.

- 2018: Incubation lab "CoLaborator Kobe" opened following the United States and Germany.
- 2019: Held networking event in Boston.

Nippon Boehringer Ingelheim Co., Ltd.

- 2008: The Kobe Pharma Research Institute, the only research laboratory in Asia opened.
- 2022: Held "Boehringer Ingelheim Innovation Prize" in Kobe.
KBIC Global Network

- Support KBIC business opportunities for both inbound and outbound
- Promote international industry-academia collaboration through joint research and development projects with overseas companies and research institutes

Global Publicity

- English portal site
- KBIC Newsletter
- Social media (LinkedIn)

We have connections with 70+ organizations (as of September 2023)
Cooperation among Kobe City, FBRI, and Eli Lilly Japan
Promotion of clinical research, etc

Conclusion of a cooperation agreement between the three parties (March 2016)

Joint Research with WHO Kobe Center
Rental Labs and Offices

A variety of spaces to satisfy your R&D needs

Creative Lab for Innovation in Kobe (CLIK)
- Shared lab / office for startups (2F)

Kobe Center for Medical Innovation (KCMI)
- Wet labs suitable for cell processing (3 - 5F)

Kobe Medical Device Development Center (MEDDEC)
- Animal testing and operation facility (1F)

Check here for details
Support System

Kobe Biomedical Innovation Cluster

Portal site

Inquiries for lab or office

Incentive programs by Kobe city

Support programs for setting up headquarter / office
Programs for growing startups
Incentives for prices on industrial land
Programs for companies in the Kobe city
Programs for special zones

Foundation for Biomedical Research and Innovation at Kobe

Center for Cluster Development and Coordination
Business support

Grants / subsidies

Translational Research Center for Medical Innovation
Research support / consultation