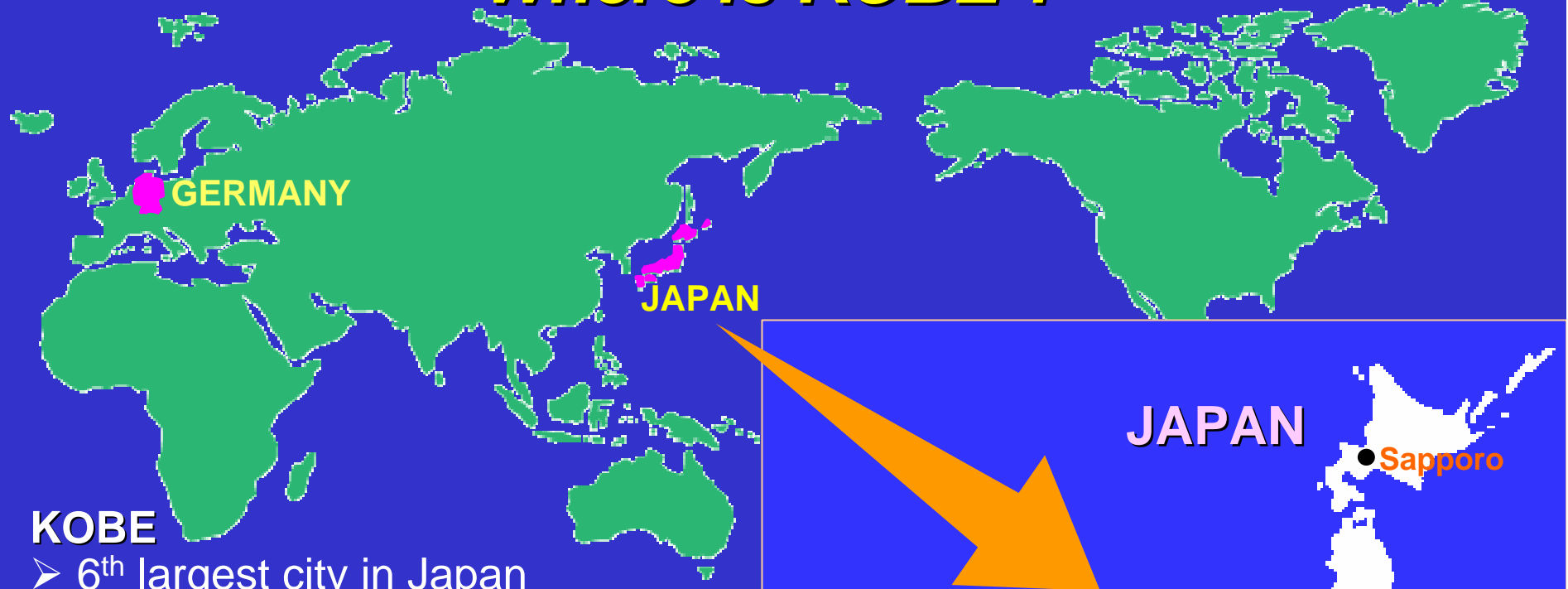


Kobe Medical Industry Development Project



Takashi MIKI
Director, Planning and Coordination Bureau
City of Kobe

Where is KOBE ?



KOBE

- 6th largest city in Japan
- Population: approx. 1.5 million
- Area: 550 km²
- GDP: approx. €43 billion (¥6 trillion)

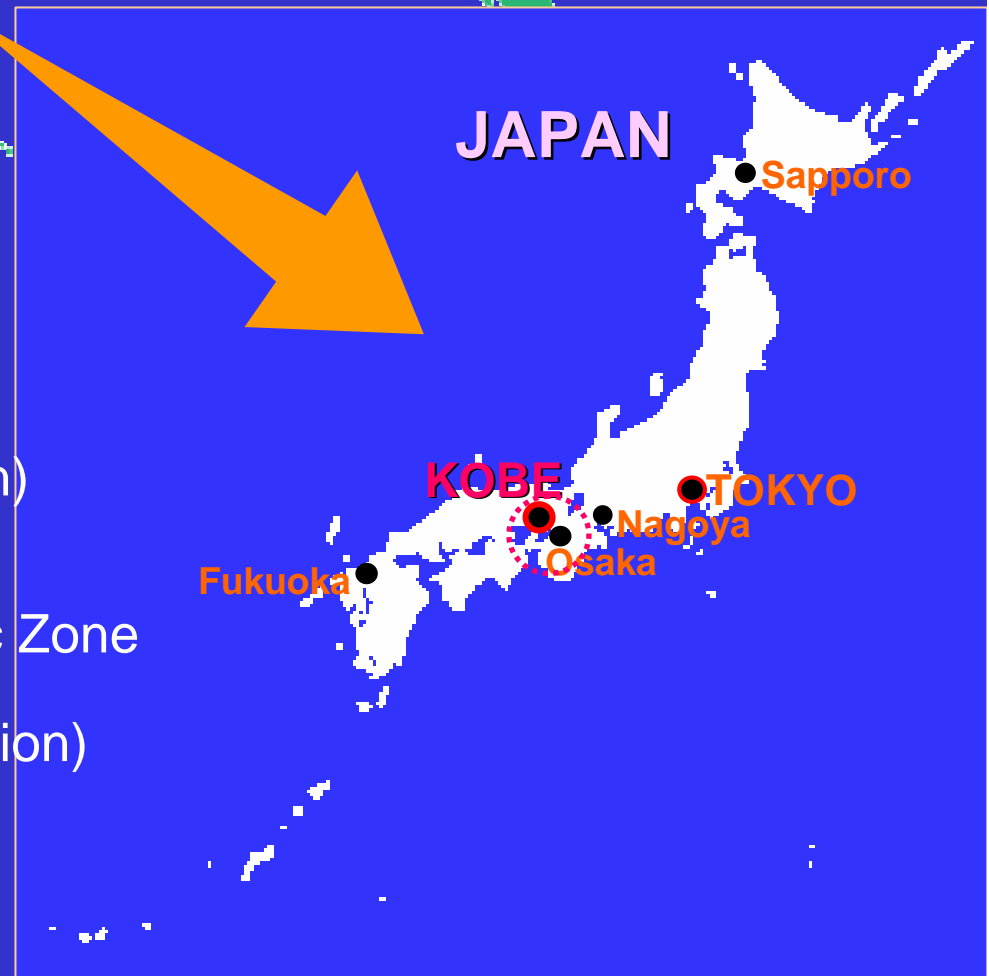
KANSAI area

- Japan's Second Largest Economic Zone
- Population: approx. 21 million
- GDP: approx. €640 billion (¥89 trillion)



Berlin

Population: approx. 3.5 million
Area: approx. 891 km²



Convenient Transportation

AIR

Kansai International Airport
(30 min. by marine transport)

Kobe Airport

(Opened on February 16th 2006)



OVERLAND

Bullet train, Highway



SEA

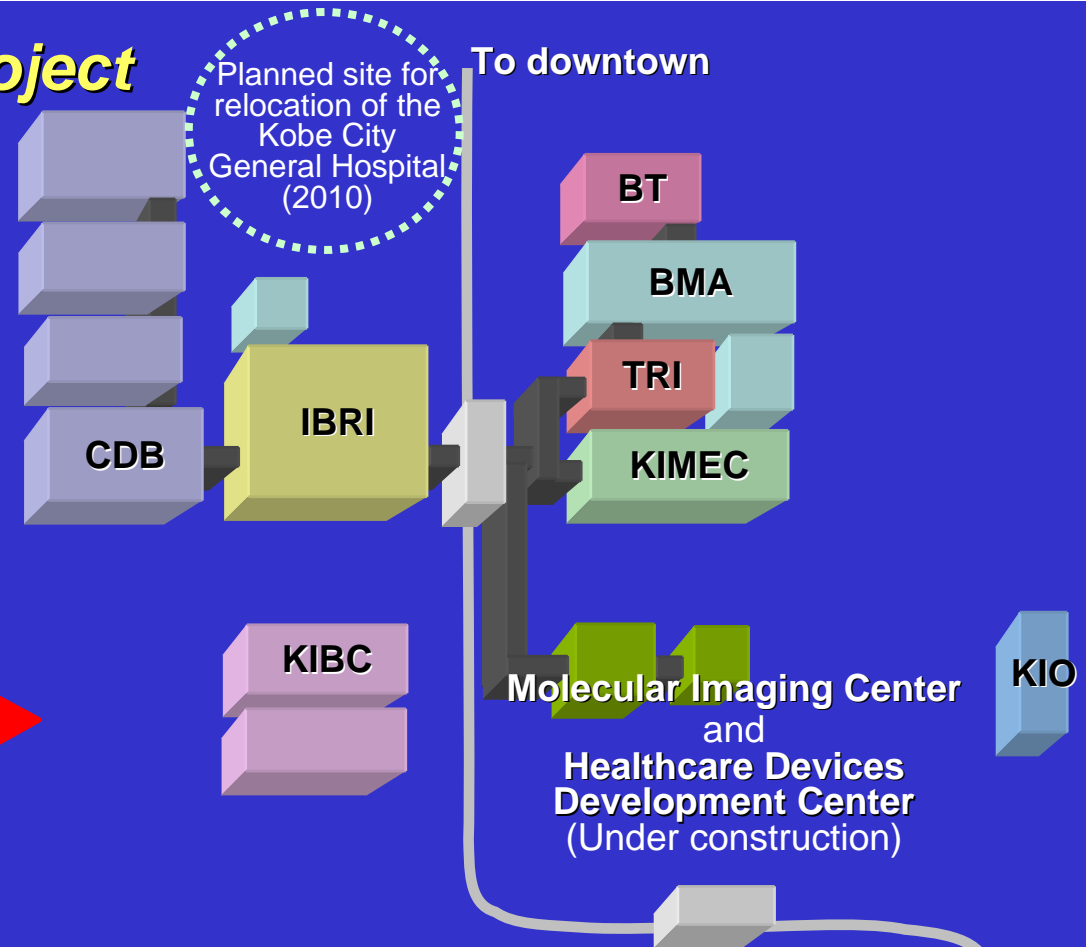
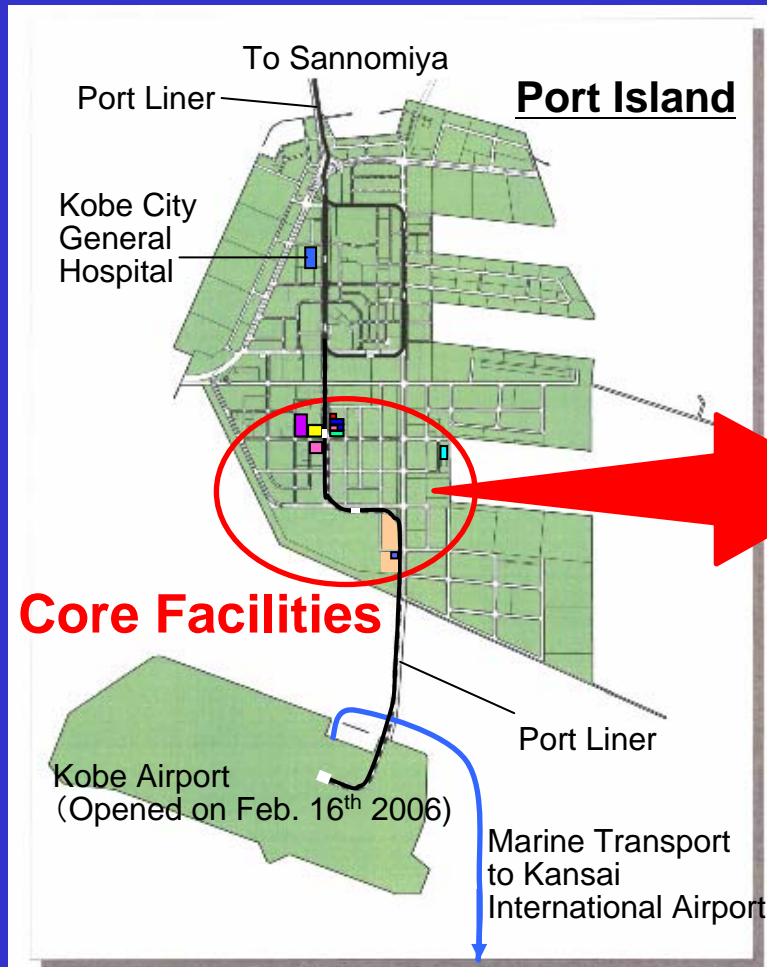
Port of Kobe



Port Island

Kobe Airport Marine Air

Kobe Medical Industry Project Core Facilities



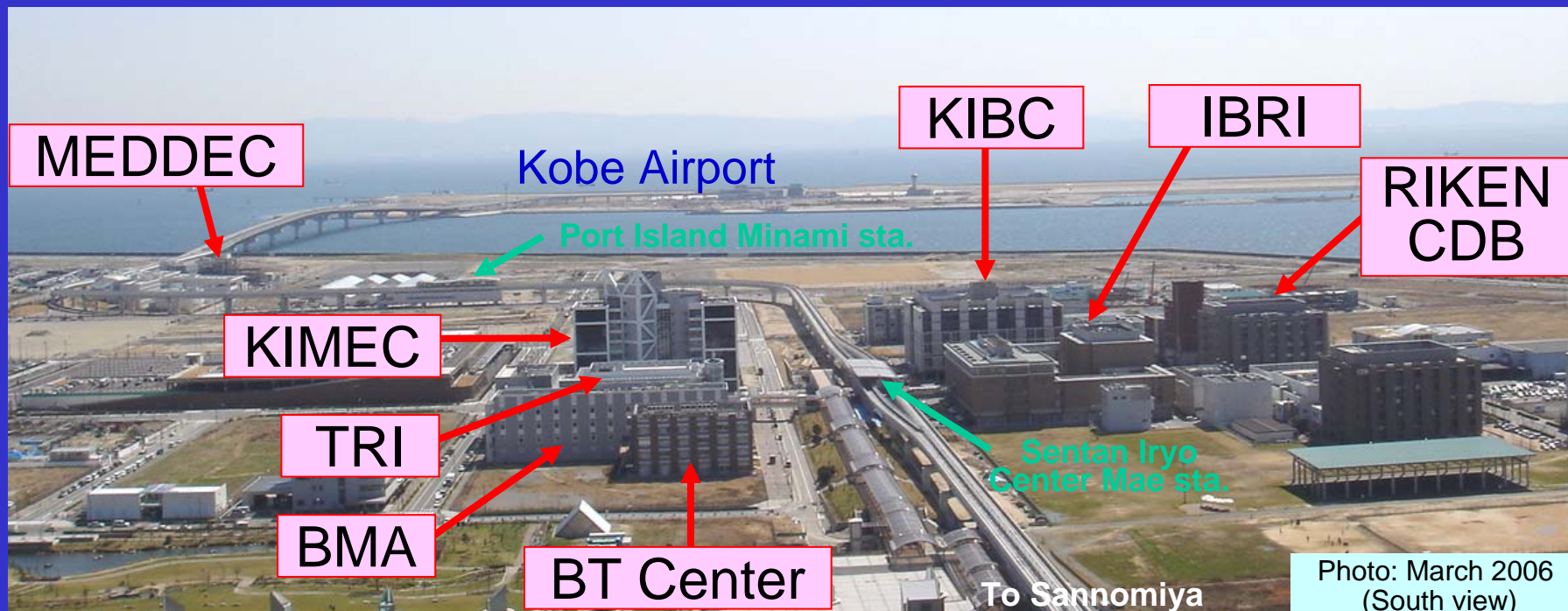
CDB: RIKEN Center for Developmental Biology
 IBRI: Institute of Biomedical Research and Innovation
 BT: Kobe Biotechnology Research and Human Resource Development Center
 BMA: Business Support Center for Biomedical Research Activities
 TRI: Translational Research Informatics Center
 KIBC: Kobe International Business Center
 KIO: Kobe Incubation Office
 MEDDEC: Kobe Medical Device Development Center



To Kobe Airport

History

- 1998.10 : Established the Kobe Medical Industry Development Project Discussion Group
Chairman – Dr. Hirô Imura (President of Kobe City General Hospital at that time)
- 1999.12 : Budgeted for IBRI and RIKEN CDB (Millennium Project)
- 2000. 2 : Approved as the Special Earthquake Restoration Project
- 2001. 8 : Approved as the 2nd selection of the Urban Renaissance Project
- 2002. 4 : Approved as the Knowledge Cluster Initiative
- 2003. 4 : Approved as the Deregulation Zone for Advanced Medical Industry
- 2005. 4 : Established the Council for Life Science Promotion



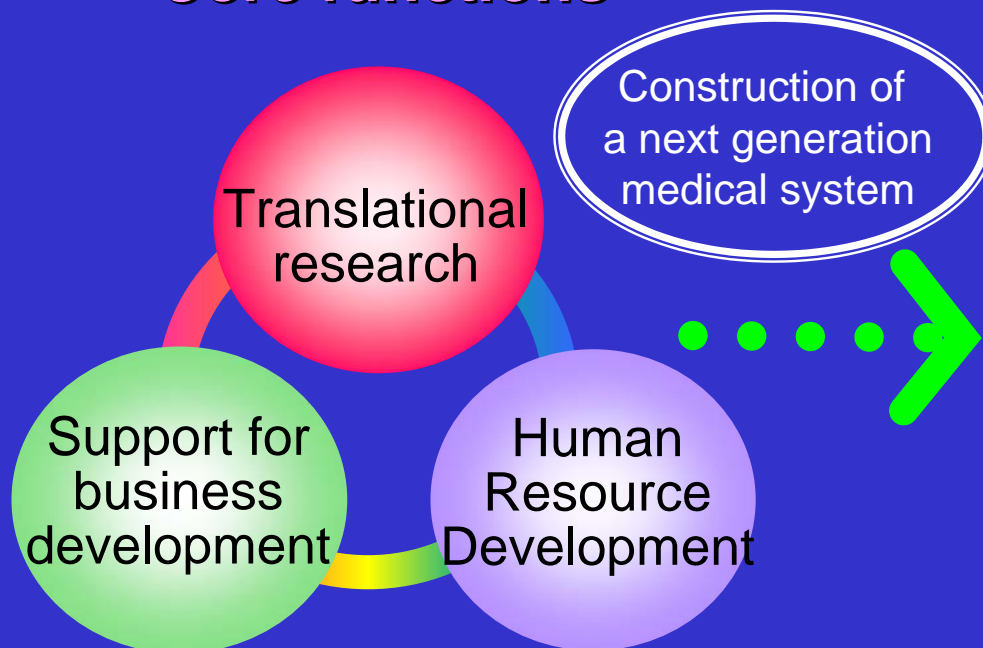
Core Functions

- Develop as a focal point for R&D of highly advanced medical technology
- Establish a streamlined process from basic research to clinical application and industrialization

Target fields

☆Medical device ☆Clinical research and trials ☆Regenerative medicine

Core functions



Goals

- ✧ Create new employments and revitalize local economy
- ✧ Provide high level medical services and welfares for Kobe citizens
- ✧ Contribution on an improvement of medical technologies in Asian countries

Developing Japan's First Life Science Cluster

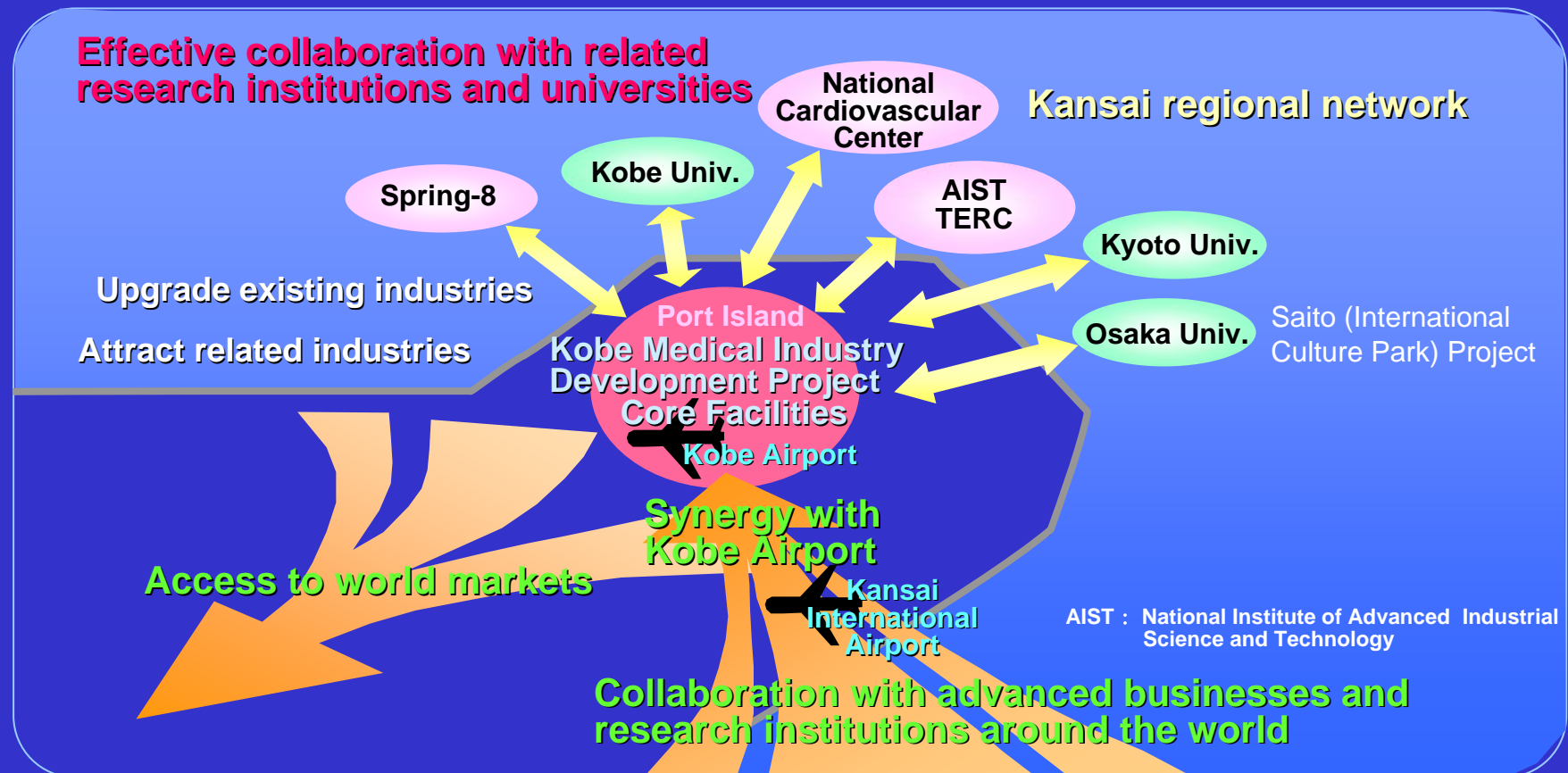
Data compiled by Bechtel/ SRI (2000)

◆ Primary factors behind the development of industrial clusters

- ① Preparation of core research facilities
- ② Structured cooperation with universities and research institutions
- ③ Effective use of airport facilities

◆ Project aims (economic effect)

- New employment created:
23,000(Kansai region)
18,000(Kobe)
- Production generated:
530 billion yen(Kansai region)
330 billion yen(Kobe)



Institute of Biomedical Research and Innovation

Administration: Foundation for Biomedical Research and Innovation

Medical treatments and clinical researches being carried out:

- ① Hematopoietic stem cell transplants
(Bone-marrow transplants, cord blood stem cell transplants)
- ② Peripheral blood vessels regeneration of the lower extremities and cardiovascular regeneration
- ③ Dental implants and regeneration of alveolar bone
- ④ Diagnosis and medical treatment using PET and CT-Linac
- ⑤ Cerebrovascular therapy
- ⑥ Chemotherapy for cancer
- ⑦ Clinical trials on pharmaceuticals and medical devices



Cell Processing Center

IBRI

Olympus Corporation :

Regenerate bone by differentiate stem cell of bone marrow into osteocyte on the β -TCP which has bio-affinity

Terumo Corporation:

Regenerate myocardium by cultivate skeletal myoblast of skeletal muscle

ArBlast Co., Ltd. :

Regenerate alveolar bone in dental surgery area by cultivate stem cell of bone marrow

Stem Cell Science KK:

Produce therapeutic use cell

BMA

Teijin Limited:

Establish new therapy which is to cultivate chondrocyte in vitro, and return to damaged articular cartilage

Hitachi Medical Corporation:

Manufacture regenerative medicine materials, and establish safety

Genemedicine Japan Inc.:

Develop every kind of GMP graded virus vector for gene therapy

Research and Development of Medical Devices



PET camera



CT-Linac



Ultra high magnetic field MRI

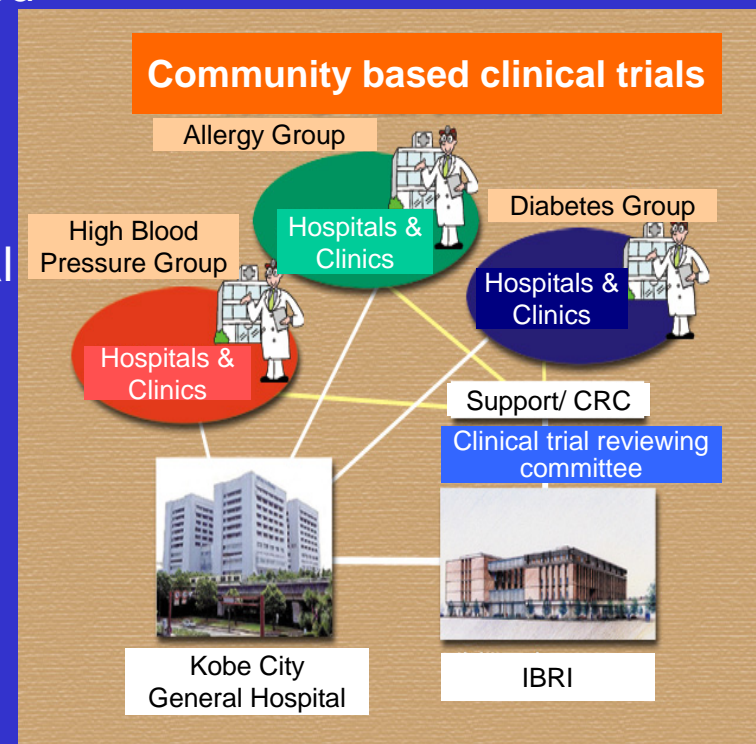
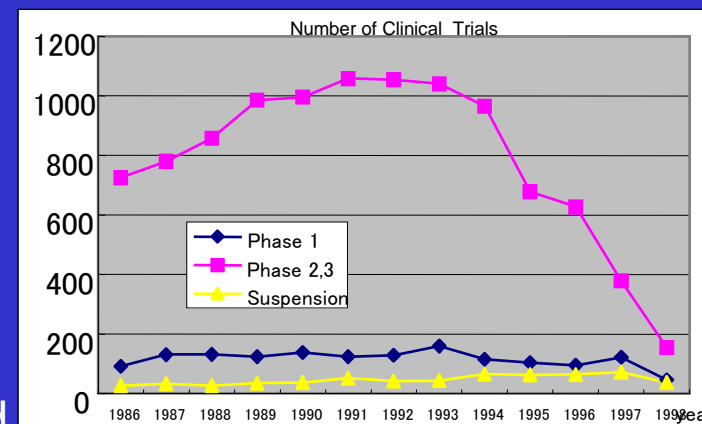


4D Linac

Medical Devices Development Study Group (consists of 70 companies, most of them are members of Kobe Machinery and Metal Firms Association Inc. and 11 medical device companies) participate in.

Support for Clinical Trials

- ◆ Operation of Clinical Trial Model Project:
Installation of the clinic (October 2000)
- ◆ Cooperative clinical trials with local hospitals and clinics:
 - Establish network between IBRI and local medical institutions to handle life-style-related diseases
 - Community Based Clinical Trial Study Meetings (2000. 12 ~ 2001. 7)
 - Basic Agreement (2002. 3)
 - Co-sponsoring community-based clinical trial seminars with Kobe Doctors Association (2002. 11~)
- ◆ Training for Clinical Trial Coordinator:
Operation of training sessions for non-experienced and experienced people



RIKEN Center for Developmental Biology(CDB)

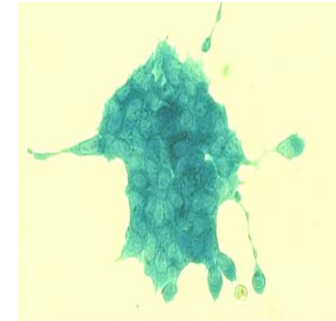
~ A world-class center in the field of embryology and stem cell research ~

Research Groups

- Director: Dr. Masatoshi TAKEICHI Ph.D.
- 7 core program directors including Director Takeichi
- 23 creative research promotion programs
- Number of researchers: 243 (30 research groups)

Major research fields

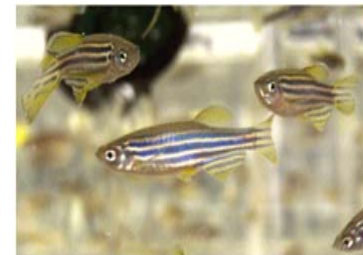
- Mechanism of Development
- Mechanism of Regeneration
- Application to Medicine



ES Cell (mouse)



Planarian
(length 1cm)



Zebra fish
(length 3 cm)

Other Core Facilities I

Translational Research Informatics Center (TRI)

- Providing information and supporting for translational research
- Management of clinical trial and supporting data management
- Establishment of management system of disease data and outcome research data
- Providing cancer-related information via internet



Business Support Center for Biomedical Research Activities (BMA)

Support bio-ventures and companies related to regenerative medicine

- Cell Processing Center
- Animal laboratory
- RI facility

Other Core Facilities II

Kobe Biotechnology Research and Human Resource Development Center (BT Center) / Kobe University Business Incubation Center

State-of-the-art and cross field research and human resource development



Kobe Medical Device Development Center (MEDDEC)

- R&D and training of catheter and endoscope
- Operating room
- MRI laboratory
- Device development corner for small-medium companies
- Rental laboratory
- Breeding and observation space

Other Core Facilities *III*

Kobe Healthcare Devices Development Center (tentative name)

Building completion in September 2006

Development of

- Bio-experiment devices
- Diagnostic and preventive devices
- Healthcare devices



Molecular Imaging Research and Development Center

Building completion in September 2006

- RIKEN, venture company
- Speeding up the process of identifying candidate materials for the design of new drugs and medications

Incentives for businesses

Kobe Biomedical Venture Fund

- Total 6.3 billion yen ⇒ invested in total 69 companies
- Sumitomo Mitsui Banking Corporation Group
- Venture capital fund specific for biomedical industries
- Technical assessments carried out by Technology Assessment Committee handled by FBRI

Kobe Life Science IP Fund

- 0.5 billion yen ⇒ invested in 3 companies
- Nomura Research & Advisories
- Starting up venture companies based on intellectual properties

Incentives based on the Kobe Enterprise Zone Ordinance

- Tax reductions, Subsidies
- Establishment of the Pilot Enterprise Zone
Land rents for 10 years without charge (Port Island 2nd stage)

Establishment of the Pro-Cluster Kobe

- Industrialization Support, Human Resource Development, Providing Information

MedCollabo KOBE

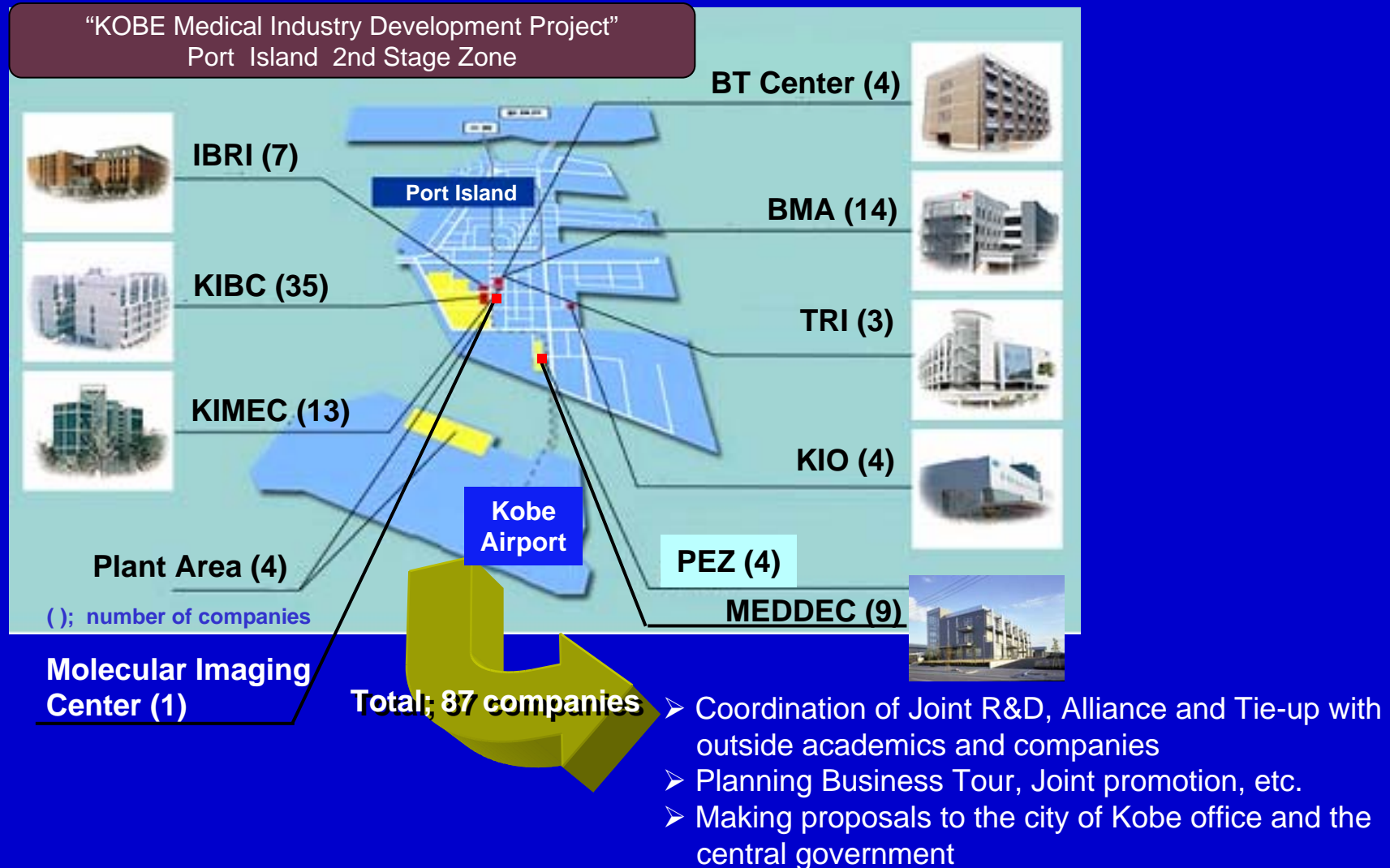
~ Business Network in the project ~

Establishment: November, 2004

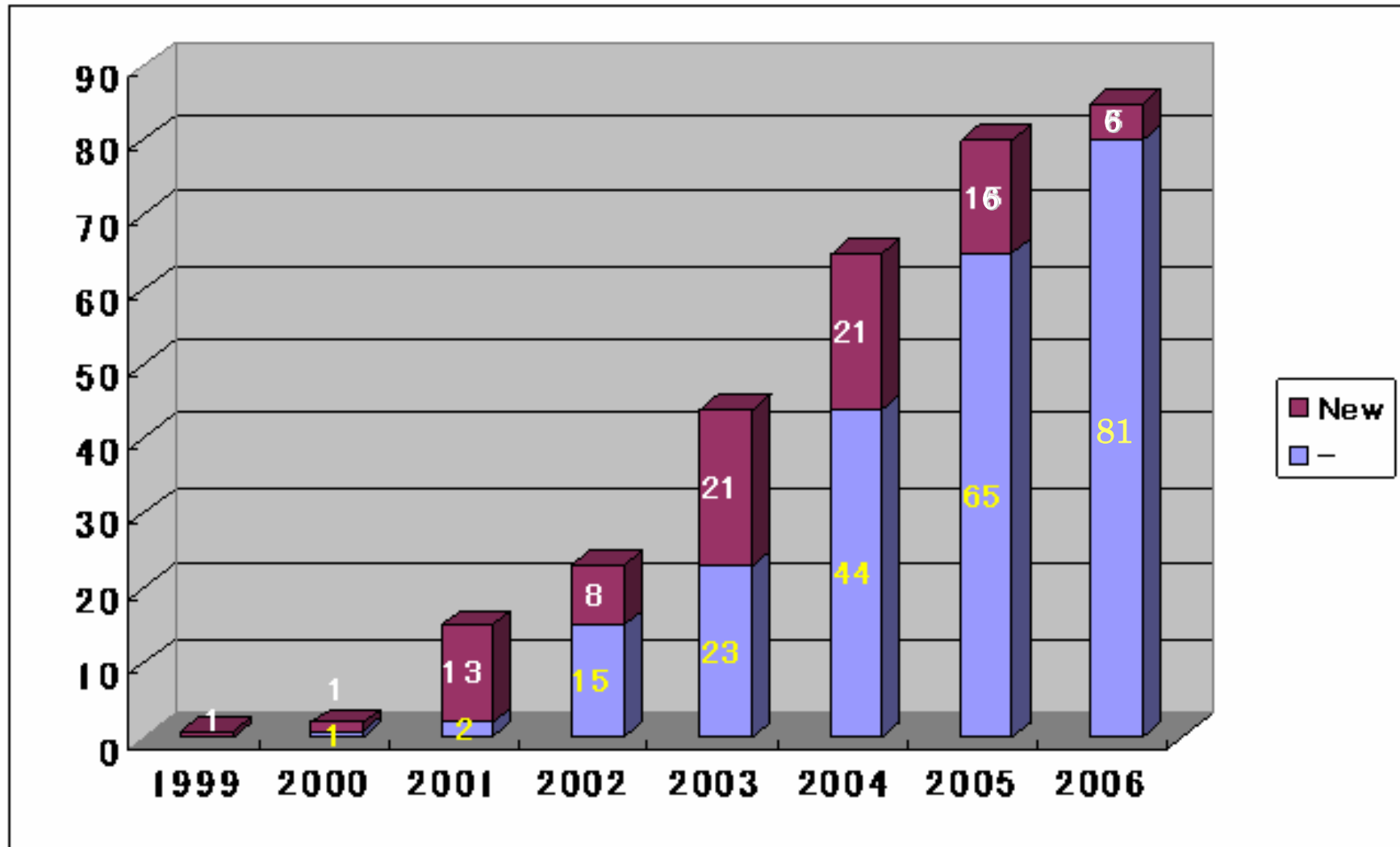
Mission/Objectives : To enhance relationship among companies in the project

To promote and accelerate the formation of “KOBE Biomedical Cluster “

Support Organizations: Foundation for Biomedical Research and Innovation,
The Kobe Chamber of Commerce and Industry

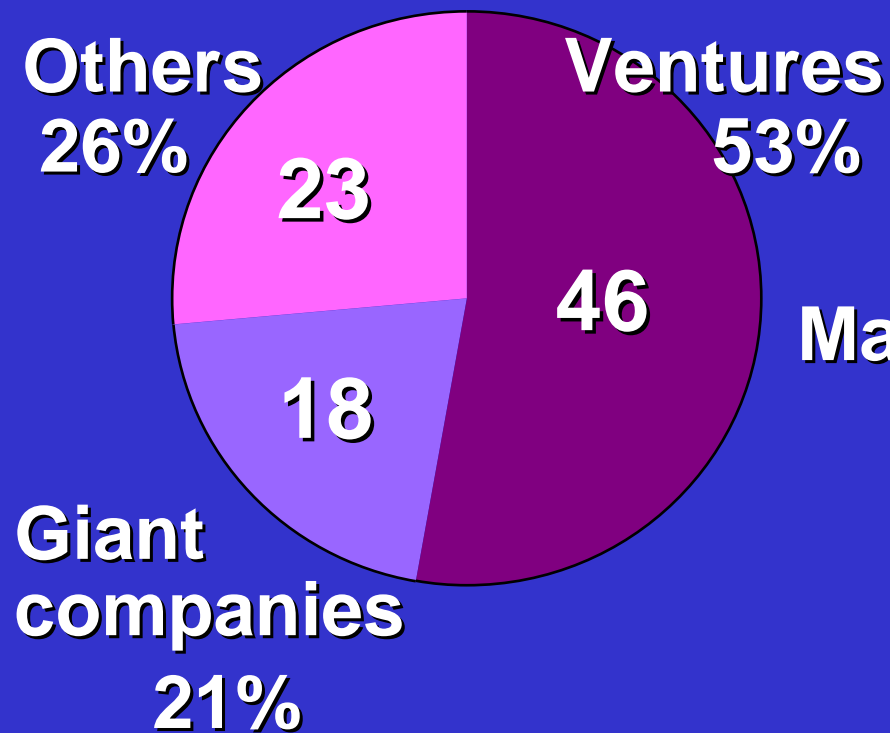


The Number of Companies

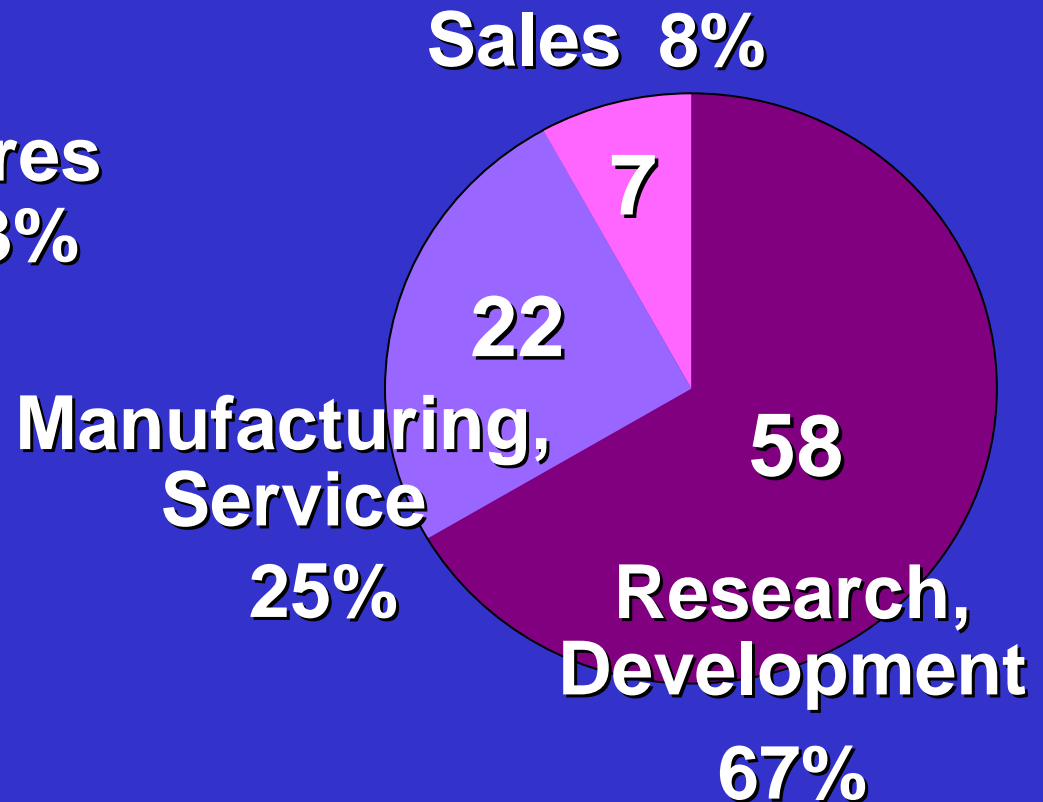


Profiles of 87 companies

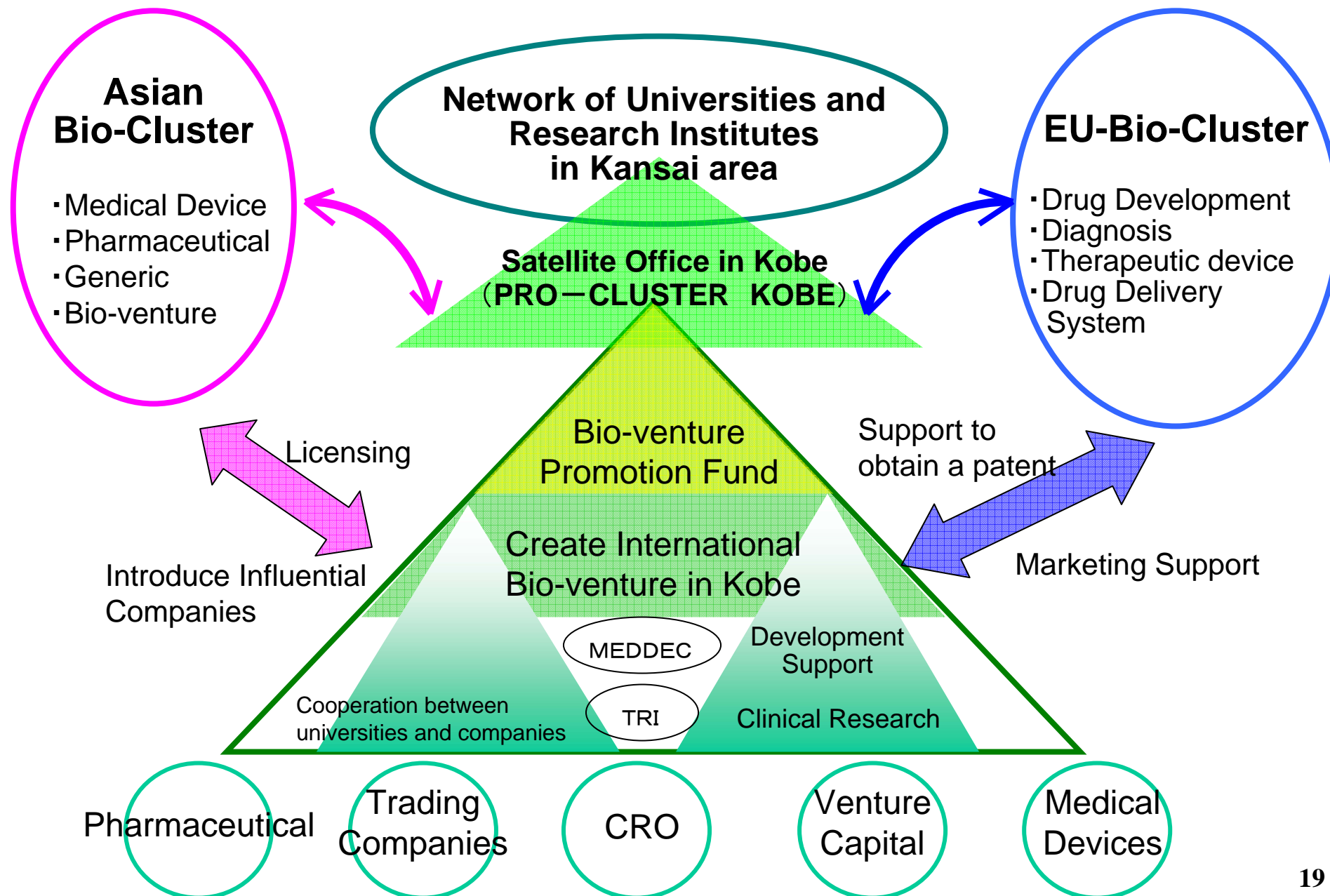
Company Size



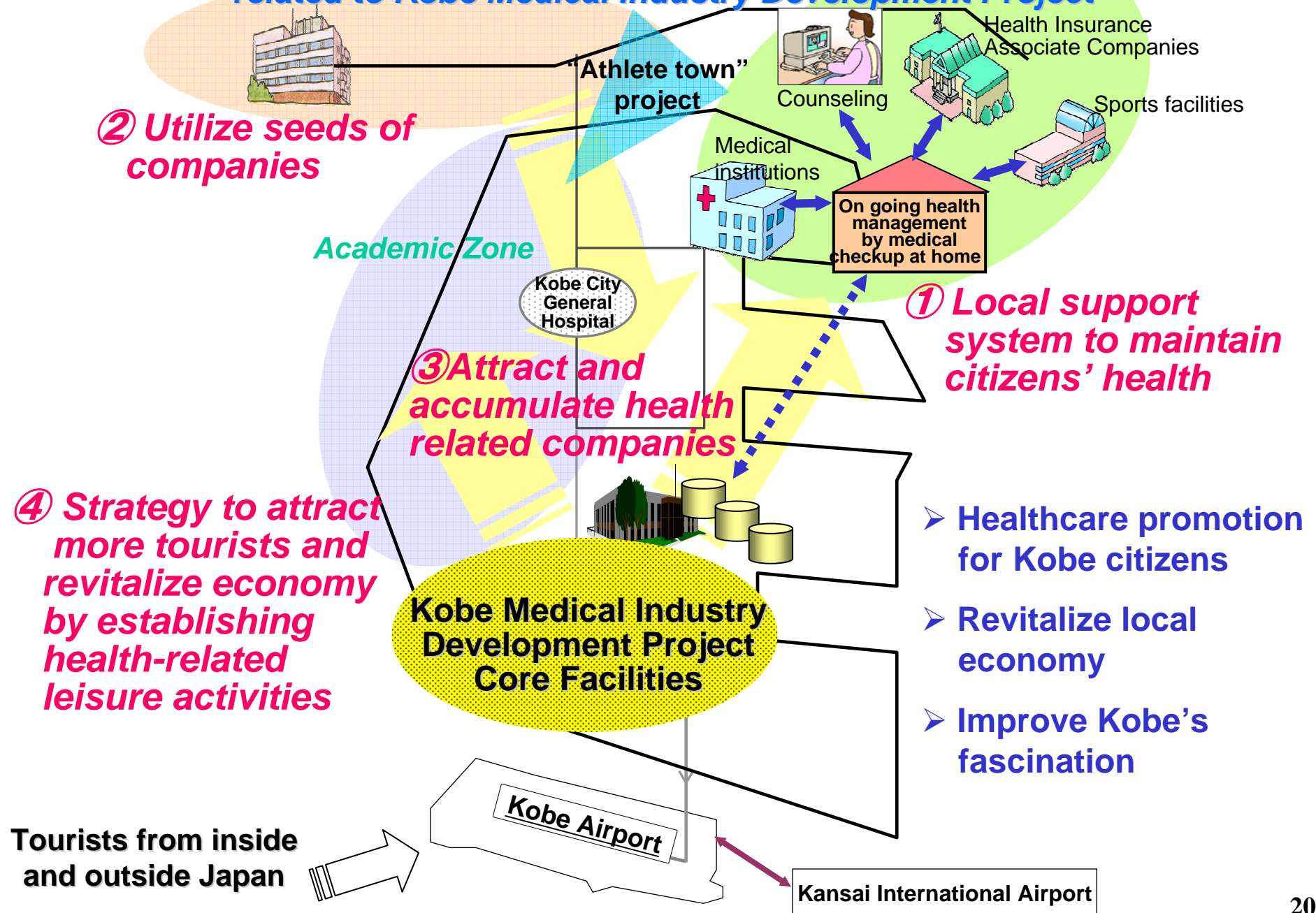
Activity in Kobe



Support System to promote International Bio-Venture



Healthcare program related to Kobe Medical Industry Development Project



Outline of Kobe Life Science Innovative Program

③ Propose a cluster promotion plan to invigorate local economy



Council Member (formed in April 2005)

Chairman: Hirô Imura (Chairman of FBRI)

Member:

- Researchers of university and research institute in Kansai area in medical, engineering and social science field
- Business community of Kobe
- Local Doctor's Association
- Local small & medium sized companies
- Companies expanded into Port Island 2nd stage

Observer: Hyogo prefecture

Ministry of Health, Labour and Welfare
Ministry of Economy, Trade and Industry
Ministry of Education, Culture, Sports, Science and Technology

① Propose grand designs of after 10 and 20 years

Molecular Imaging R&D Center and Healthcare Devices Development Center

**R&D Zone
(Companies/ Venture Zone)**

② Propose a new plan of research and technology development in life science field