

Global Collaboration

Technology Transfer and Incubation



Osaka University

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Osaka University

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Policy for Global Collaboration

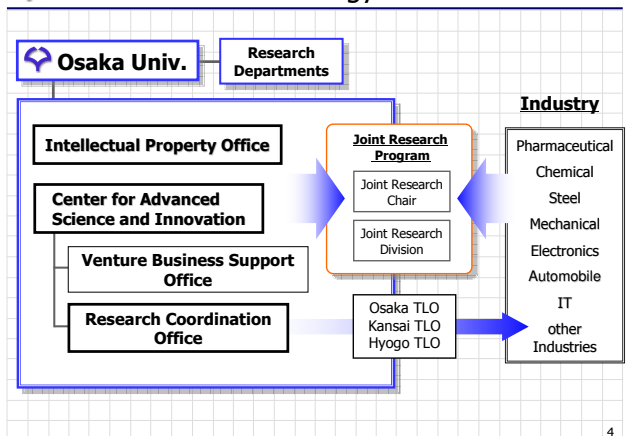
Principles of activities for Global Industry-Academia-Government Collaboration

In ever growing globalization of research and development conducted by industries, academia, and governments, the global industry-academia-government collaboration shall be operated in response to the needs of the society, and the fruits thereof shall be returned to University for the activation of its education and research.

In order to promote activities related to the global industry-academia-government collaboration, information about research activities of University shall be streamlined and sent out, so as to lead the international liaison activities.

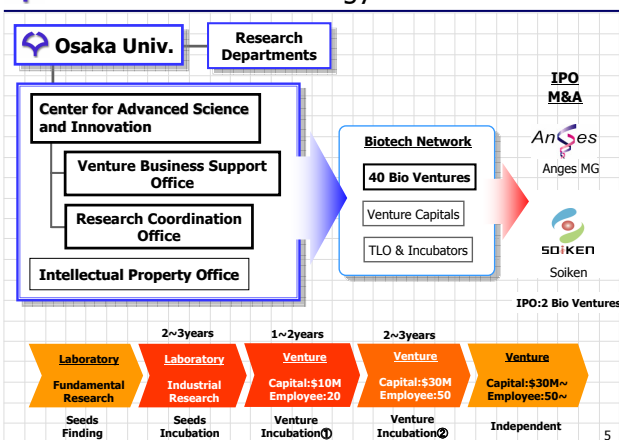
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Structure for Technology Transfer



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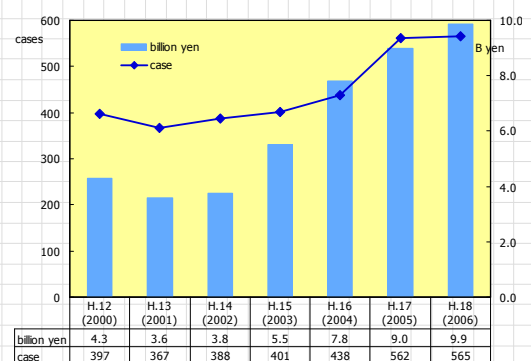
Structure for Technology Incubation



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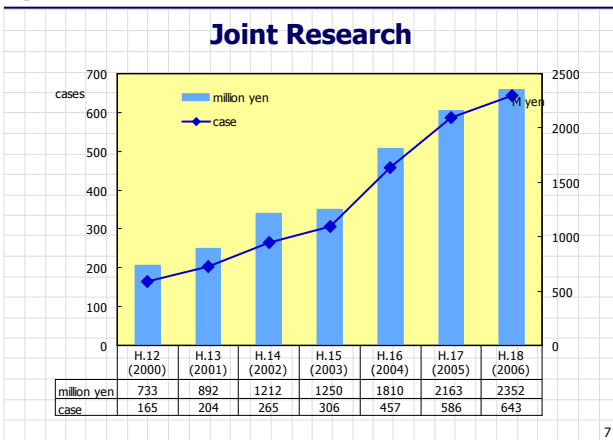
Achievements

Grant-in-Aid for Scientific Research



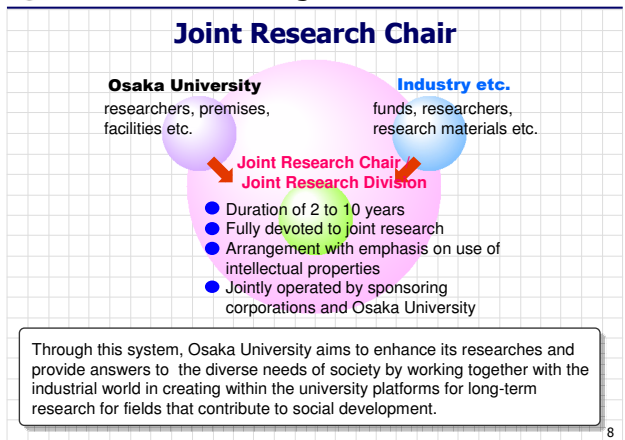
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Achievements



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Joint Research Program



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Joint Research Program

List of Current Joint Research Chair

Name of Chair / Division	established in
Komatsu Joint Research Laboratory	July, 2006
Mitsui Engineering & Shipbuilding Joint Research Chair	July, 2007
Joint Research Chair of Pipeline Engineering, Japan Petroleum Exploration Co., Ltd.	April, 2007
Joint Research Chair of Elemental Resource Circulation Engineering for Iron & Steel, Sumitomo Metals Co., Ltd	May, 2007
Joint Research Chair of Iron & Steel Surface Frontier, Nisshin Steel Co., Ltd.	June, 2007
Joint Research Chair of Iron Making Process, Nippon Steel Co., Ltd	October, 2007
Joint Research Chair of Microwave Chemistry	July, 2006
Joint Research Chair of Fluorine Chemistry	June, 2006
Electronic Device Production Technology Joint Research Chair	April, 2007
Kringle Pharma Joint Research Division for Drug Discovery	July, 2007
Fundamental Research for Electron Optics Joint Research Division	January, 2008

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Bio Research

Dynamic Bio Research Activity

9 Main Research Departments

- School of Medicine (slide:6)
- School of Frontier Bio Science
- School of Pharmaceutical Science
- School of Dentistry
- Institute for Protein Research
- Institute of Scientific and Industrial Research
- Research Institute for Microbial Diseases (slide:7)
- University Hospital
- Medical Center for Translational Research (slide:8,9)

1,200 Researchers
7,000 Graduate students
\$650Million Research Budgets

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Bio Research

Top Immunologist

Nature
Vol. 450, pp475-477, 2007
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News Feature "INNATE ABILITY"

With keen immunological insight and a knockout mouse 'factory', **Shizuo Akira** leads by quiet example.

His group is investigating host defense mechanisms, particularly the in vivo signaling pathways that participate in innate immunity.

Top Immunologist

- A pioneer in innate immunity
- THOMSON SCIENTIFIC HOTTEST RESEARCHERS2006,2007
- Robert Koch Prize (2005)
- William B Coley Award (2006)
- Imperial Prizes and Japan Academy Prizes

Professor Shizuo AKIRA

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Bio Research

Center of Immunology

Immunology Frontier Research Center (IFReC) of Osaka University
World Premier Initiative (WPI) Program

- Professor AKIRA was awarded the World Premier International Research Center grant from Japan's Science ministry. The grant will provide billions of yen to set up new institutions, Starting with 700million yen for to build the Immunology Frontier Research Center at Osaka University.
- To develop new strategies for diagnosis and treatment of infectious diseases, autoimmune diseases, allergy and cancer through immuno-imaging.
- Center consists of 10-20 world-class immunologists and imaging scientists as principal investigators. 30% of researchers are from abroad.

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Bio Research

Medical Center for Translational Research

In 2003, MTR was established in Osaka University Hospital as a translational research center for future medical technology.

- Translational Research
 - Regenerative Medicine, Cell therapy, Robotics Surgery, Surgical Assistance System, Surgery Training System, New Diagnostic Imaging
- CPC Operation
- Future Medical Technology
 - Basic Research on stem cells and biomaterials
 - Introduction of IT to Surgical Suites
- Physician-oriented Clinical Trial
- Education / Human Resource Development



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Bio Research

Ongoing TR projects

- Myocardial regeneration therapy by autologous stem cell transplantation
- Bone tissue engineering
 - Integrating novel ceramic scaffold and mesenchymal stem cells
- Transplantation of cultured epithelial sheet to intractable corneal and conjunctival diseases
- Immunotherapy against gastrointestinal cancers using newly developed dendritic cell vaccine
- Therapy for intractable differentiation pain with navigation-guided repetitive transcranial magnetic stimulation
- Neuroprotective therapy for ischemic optic neuropathy using trans-corneal electrical stimulation
- Regeneration therapy using myoblast sheet against dilated type cardiomyopathy

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Bio Research

Joint Research for Drug Discovery Roche

by Dr. T. Kishimoto, Emeritus Professor

- Discovery of *IL-6* and its multi functions
- Development of anti-*IL-6* receptor antibody and its application
 - Avail treatment of Rheumatoid Arthritis and Castleman's Disease et.
- Joint Research with Roche
 - Market prospect \$10 Billion worldwide



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Bio Research

Joint Research for Drug Discovery Kringle Pharma, Inc.

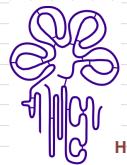


Mission of the Joint Research Division

- To make a contribution to global healthcare by joint research for drug discovery aiming at treatment of cancer and incurable diseases
- To make contribution to society through education of medical and pharmaceutical researchers

Research projects

- Studies on therapeutic effects of HGF on incurable diseases and its mechanisms
- Researches to create novel drugs superior to HGF based on structural based drug design
- Researches on HGF inducer and its application
- Researches to discover novel functions of HGF and its intramolecular fragments

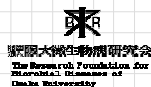


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Biotech Company

The First Biotech Company The Research Foundation for Microbial Diseases of Osaka University

The Research Foundation for Microbial Diseases of Osaka University was founded on June 6, 1934 as an applied research-oriented counterpart of the Research Institute for Microbial Diseases, Osaka University.



BIKEN's Main Products

Vaccine for Human Use

Viral vaccine
Inactivated Vaccines
Influenza HA Vaccine
Japanese Encephalitis Vaccine

Live Vaccine

Freeze-dried Live Attenuated Measles Vaccine
Freeze-dried Live Attenuated Rubella Vaccine
Freeze-dried Live Attenuated Varicella Vaccine
Freeze-dried Live Attenuated Measles, Rubella Combined Vaccine

Bacterial Vaccine

Adsorbed Diphtheria-purified Pertussis-Tetanus Combined Vaccine
Adsorbed Diphtheria-Tetanus Combined Toxoid
Adsorbed Diphtheria Toxoid for Adult Use
Adsorbed Tetanus Toxoid

Vaccines for Veterinary Use

For Fish
Inactivated Iridovirus Vaccine
Inactivated Iridovirus-Streptococcus Combined

Products for Laboratory Diagnosis

Varicella Skin Test Antigen



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Biotech Company



New Biotech Kringle Pharma, Inc.

- Established in November 2001
- Originating from Osaka University
- Capital: 1 billion 3957.8 million yen (as of November 2007)
- Employee: 17 (as of November 2007)



Head office: Osaka

Main projects

Research and development of:

- HGF (hepatocyte growth factor)
Target diseases: acute and chronic failure
- NK4 (HGF antagonist/angiogenesis inhibitor)
Target diseases: solid tumors

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Biotech Company



Kringle Pharma, Inc.

Clinical Development Status of NK4/HGF

Project	Drug substance	Target disease	Development stage	Alliance
NK4	Protein	Solid tumors	Pre-clinical	To be determined
	Gene	Solid tumors	Pre-clinical	To be determined
HGF	Protein ⁱ	Acute Renal Failure ^{ii,iii}	Phase-I/US	To be determined
		Skin ulcers ⁱⁱⁱ	Phase-II/EU	Tripep AB

i. Other indications for HGF to be determined. ii. To be conducted at The Rogosin Institute, NY. iii. Expected to begin following authority's review.

- ◆ Seeking to alliance with pharmaceutical company interested in License-in noble medical seeds.

Contact info: Kringle Pharma, Inc. Business Development, AdachiNakanishi
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Phone: +81-6-6831-3330 Fax: +81-6-6831-3430
Web site: www.kringle-pharma.com/en/index.html
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Biotech Company



New Biotech SOSHO, Inc.

- ◇ Established: July 1, 2005
- ◇ Representative Director:
Hiroaki ADACHI (President), Yusuke MORI
- ◇ Capital: 55 million yen
- ◇ Employees: 8

Main projects

- Screening for crystallization by laser irradiation
- Optimization of growth condition
Improvement of crystallinity, Large crystal growth
- X-ray diffraction measurement and data collection
- Structural analysis
- Consulting for crystal growth

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Biotech Company

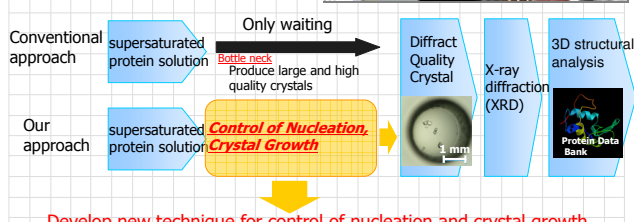


SOSHO, Inc.

Information of three dimensional structure of protein molecular

- Understand function of protein
- Structure-based-Drug design

Scheme of structure analysis

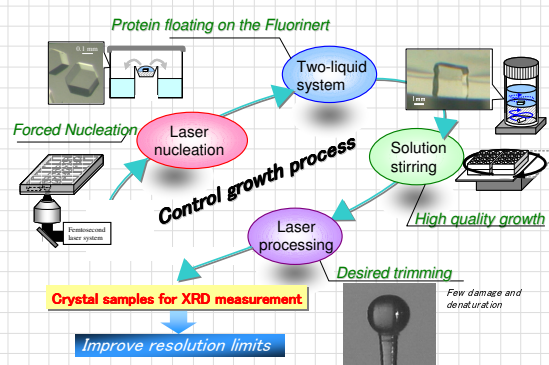


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Biotech Company



SOSHO, Inc.



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Biotech Cluster

Biotech Network

40 Bio Ventures have been launched

Kansai (Greater Osaka) Bio Cluster

- Universities: 18 (Kyoto Univ., Kobe Univ., Osaka Pref. Univ., etc)
- Bio-ventures companies successfully launched so far : 100
(Osaka University has launched 40 bio ventures)
- Pharmaceutical Companies: 20 (Takeda, Shionogi, Mitsubishi-Tanabe, etc.)
- Public Sector Sources of support and funding: 5

Osaka Prefecture government
Osaka City government
Kansai Bureau of Economy, Trade
and Industry (METI-Kansai), etc

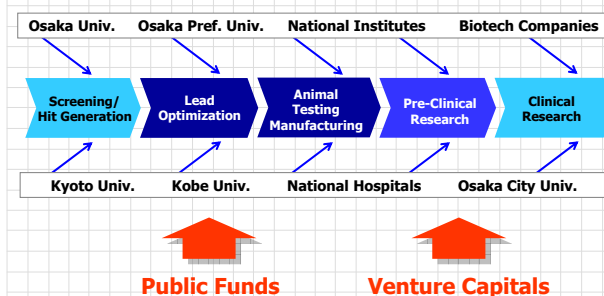


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Biotech Cluster

Dynamic Bio Value Chain

Expanding to Global Network



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