

Kyoto University

Contributes to the Advance in Science and Technology
for the Global Community

Department of Energy and Hydrocarbon Chemistry
Graduate School of Engineering

Dr. Sei-ichi Nishimoto

Professor of Excited-State Hydrocarbon Chemistry

My Curriculum Vitae



Sei-ichi NISHIMOTO, Ph.D.
Professor of Excited-State Hydrocarbon Chemistry
Graduate School of Engineering, Kyoto University,
Katsura Campus, Kyoto 615-8530, Japan
Tel: 075-383-2500 FAX: 075-383-2501
E-mail: nishimot@sci.kyoto-u.ac.jp
URL: <http://www.ehcc.kyoto-u.ac.jp/eh32/home/web-content/index-e.htm>

Born in Nara on June 6, 1947.

Graduated in Engineering (Polymer Chemistry) from Kyoto University in 1970.
Studied relaxation phenomena in the photo-physicochemical systems from 1970 to 1975.
Appointed to a Research Associate at the Department of Hydrocarbon Chemistry in 1977.
Received his Ph.D. degree from Kyoto University in 1978.
Appointed to an Associate Professor in 1985.
Appointed to the Professor of Excited-State Hydrocarbon Chemistry in 1993.
Appointed to the Vice-President and the Dean of Graduate School of Engineering in 2006

Ever since 1998 I have taken a significant part in the ground design and foundation of Katsura Campus at the Techno-Science Hill, where the Graduate Schools of Engineering and Informatics are performing education and researches at the cutting edge of science and technology.

Currently, I am a leader of the Special Coordination Funds for Promoting Science and Technology: Creation of Innovation Centers for Advanced Interdisciplinary Research Areas: "Innovative Techno-Hub for Integrated Medical Bioimaging".

Kyoto University (KU)

Kyoto & Alexandria

KU: A World-Class Excellent University

Kyoto had been the capital of Japan for more than
a millennium since 8th to 19th century.



Kyoto & KU

Center of Japanese Culture

Kyoto has been the center of Japanese culture and politics for more than 1,200 years.

Many overseas scholars and artists who visit to Japan prefer Kyoto as an ideal place for their own purposes, favoring **Kyoto University** as the base for their activities.

Kyoto University is actively involved not only in researches on traditional scholarships and basic sciences, but also researches related to cutting-edge science and technology for creating economic and social values.

KU & Brief History

Foundation and Reformation

1897 Founded as **Kyoto Imperial University**

Science & Engineering (1897)
Law, Medicine (1899)
Letters (1906)
Economics (1919)
Agriculture (1923)

1947 New Start as **Kyoto University** after the World War II

College of Liberal Arts (1947)
Sciences (1954)
Pharmaceutical Sciences (1960)

Academic Traditions & Nobel Prize Laureates



Dr. Hideki YUKAWA
Physics in 1949

Dr. Shin'ichiro TOMONAGA
Physics in 1965

Dr. Reona ESAKI
Physics in 1973

Dr. Ken'ichi FUKUI
Chemistry in 1981

Dr. Susumu TONEGAWA
Physiology-Medicine in 1987

Dr. Ryoji NOYORI
Chemistry in 2001

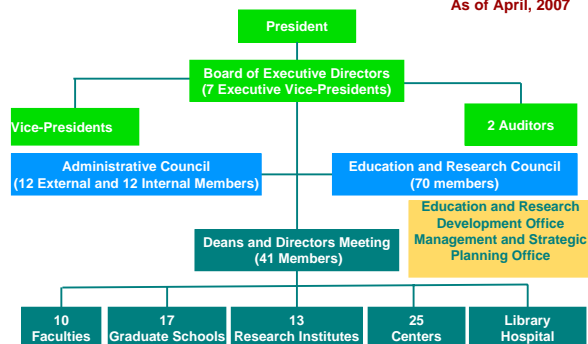
KU's Efforts of Finding Solutions to Problems in the 21st Century

New Bases of Research & Education

- 1991** Graduate School of Human and Environmental Studies
- 1996** Graduate School of Energy Science
- 1998** Graduate School of Asian and African Studies
- Graduate School of Informatics
- 1999** Graduate School of Biostudies
- Graduate School of Global Environmental Studies

KU's Organization

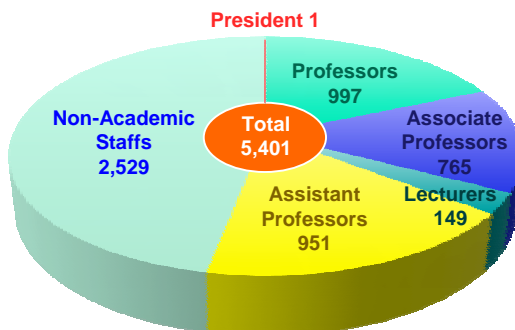
As of April, 2007



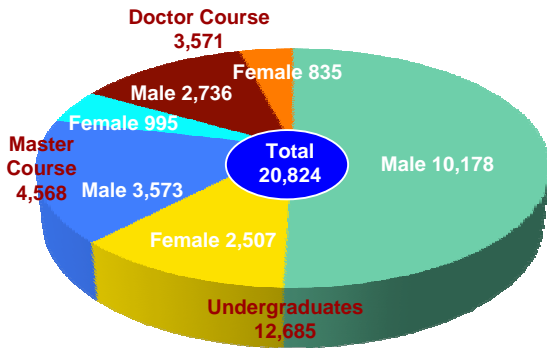
Financial Condition 2005

| Revenues (Unit : million USD) | |
|--|-----------------------|
| Grant for Administration from the National Government | 534.9 (38%) |
| Grant for Building Construction from the National Government | 20.0 (1%) |
| Grant for Repayment of Loans | 157.1 (11%) |
| Sources of Revenue from Internal Sources | 515.4 (37%) |
| Tuition Fees | 111.0 |
| Hospital Revenue | 204.2 |
| Miscellaneous Revenues | 18.0 |
| Revenue from Joint researches & Endowments | 182.3 (13%) |
| Total | 1,409.7 (100%) |
| Expenditures (Unit : million USD) | |
| Operating Costs | 778.1 (55.2%) |
| Instruction & Research Costs | 522.8 |
| Hospital Expenditures | 191.9 |
| Management Costs | 63.4 |
| Facilities Maintenance Costs | 28.8 (2.0%) |
| Joint Researches & Others | 146.2 (10.4%) |
| Repayment of Loans | 199.9 (14.2%) |
| Others | 3.4 (0.2%) |
| Reserve Fund | 253.3 (18.0%) |
| Total | 1,409.7 (100%) |

University Staffs 2007

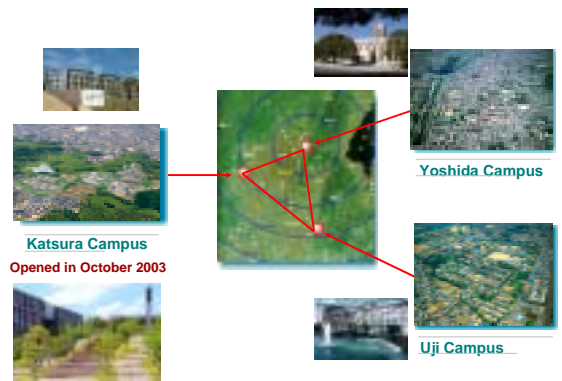


Students 2007



KU & Campuses

KU Triangular Research & Education Bases

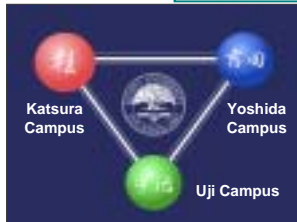


KU & Campuses

KU Triangular Research & Education Bases

Graduate School of Engineering
Graduate School of Informatics
Lot Size: ca. 37 ha
Students & Staffs: ca. 4,500

Undergraduates & Graduate Schools
of Humanities, Social Sciences &
Natural Sciences
Lot Size: ca. 73 ha
Students & Staffs: ca. 2,230



Institutes & Center of Natural Sciences
Lot Size: ca. 21 ha
Students & Staffs: ca. 1,500

KU's International Links

KU & East Asia

Association of East Asian Research Universities

AEARU was established in January 1996 by the member university presidents as a forum for leading research-oriented universities in East Asia:

Objectives

- To exchange faculty and students.
- To develop common curricula and transferable credits.
- To share facilities, information and materials.
- To cooperate on research projects.
- To sponsor workshops and international events.
- To conduct other mutual academic endeavors.

KU & East Asia

AEARU's 17 Members by Regions



AEARU's Workshops & Activities



Kyoto University was honored to sponsor a Workshop for Web Technology in 1998, which is one of the major topics identified to be of special importance for the AEARU activities.

Association of Pacific Rim Universities

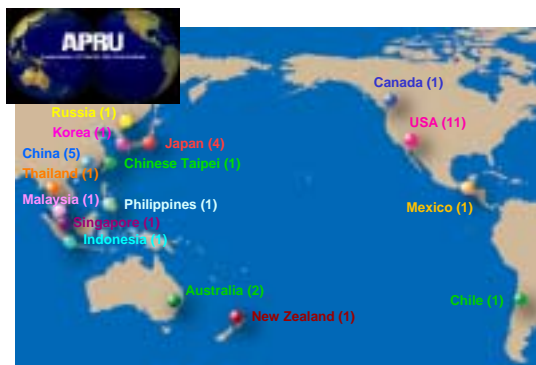
Kyoto University is a founding member of **APRU** that was established in June 1997:

Objectives

To strengthen cooperation in education and research by increasing mutual understanding among the member universities.

To help the member universities become more effective contributors to the development of an increasingly integrated Pacific Rim community.

APRU's 34 Premier Universities



APRU's Fellowship Program

Kyoto University hosted the first APRU Fellows Program in Japan in 1999, which is a fellowship program for outstanding junior faculty members.

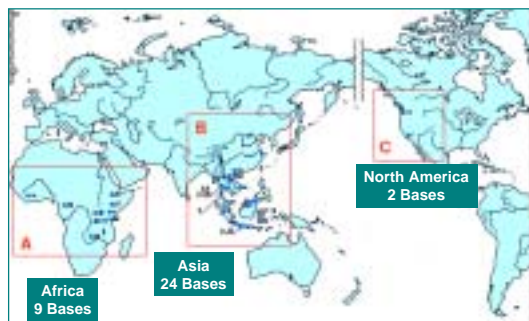
Seminar Series Theme:

The Pacific Rim in the 21st Century

1999 Seminar Sub-theme:

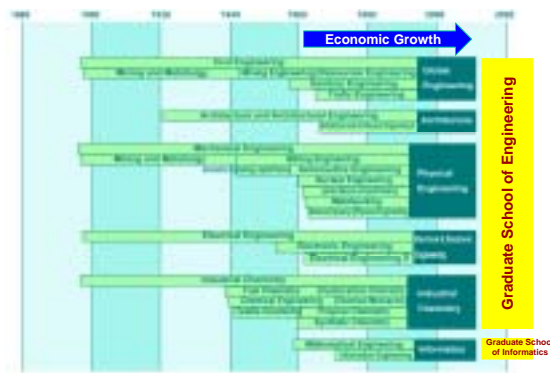
Interdisciplinary Perspectives on the Asian Economic Downturn

KU Overseas Research & Education Bases



Graduate School of Engineering

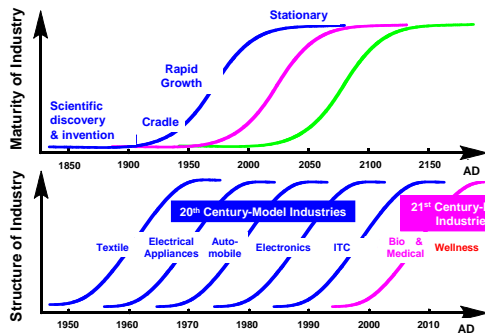
Change in Faculty of Engineering



Graduate School of Engineering

| | |
|--|--|
| Global Engineering | <ul style="list-style-type: none"> •Civil and Earth Resources Engineering •Urban Management •Urban and Environmental Engineering |
| Architecture | <ul style="list-style-type: none"> •Architecture and Architectural Engineering |
| Physical Engineering | <ul style="list-style-type: none"> •Mechanical Engineering and Science •Micro Engineering •Aeronautics and Astronautics •Nuclear Engineering •Materials Science and Engineering |
| Electrical & Electronic Engineering | <ul style="list-style-type: none"> •Electrical Engineering •Electronic Science and Engineering |
| Industrial Chemistry | <ul style="list-style-type: none"> •Material Chemistry •Energy and Hydrocarbon Chemistry •Molecular Engineering •Polymer Chemistry •Synthetic Chemistry and Biological Chemistry •Chemical Engineering |

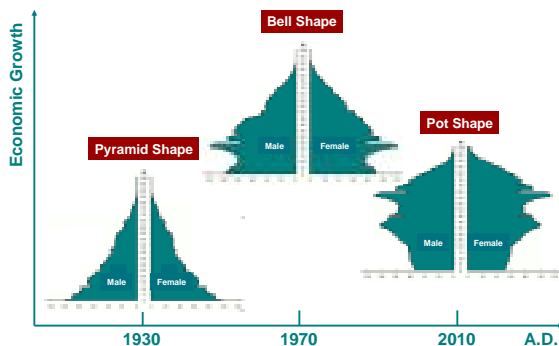
Structural Change in Industry



The National Project for the Special Coordination Funds for Promoting Science and Technology
"Creation of Innovation Centers for Advanced Interdisciplinary Research Areas"

Innovative Techno-Hub for Integrated Medical Bioimaging

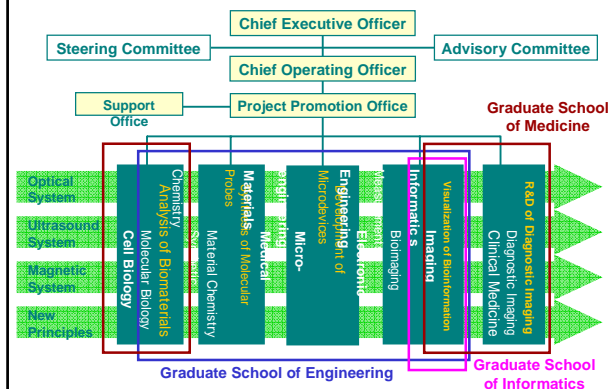
Population Composition in Japan



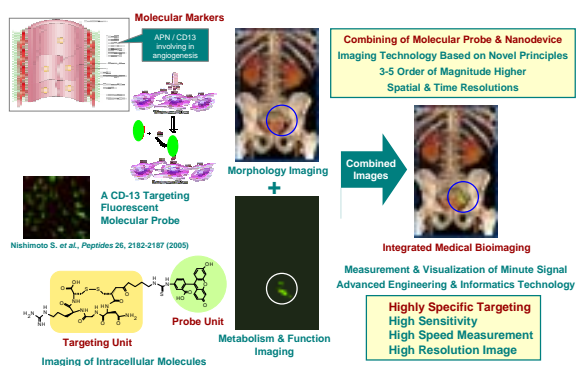
Vision & Mission



Project Management



Integrated Medical Bioimaging



Strategy of U.S. National Cancer Institute



We envision that nanotechnology will change the very foundations of cancer diagnosis, treatment and prevention.

Nanotechnology & Cancer

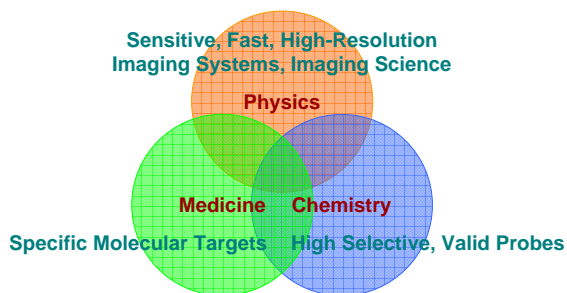
NCI Programs conducted over the past five years have supported research on novel **Nanodevices** that may

detect and **pinpoint** the location of cancer at its earliest stages,

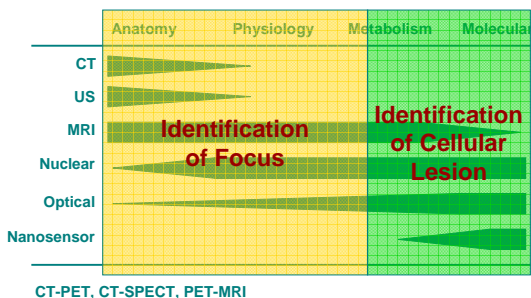
derive anticancer drugs specifically to malignant cells, and

determine in real-time if these drugs are effective in killing malignant cells.

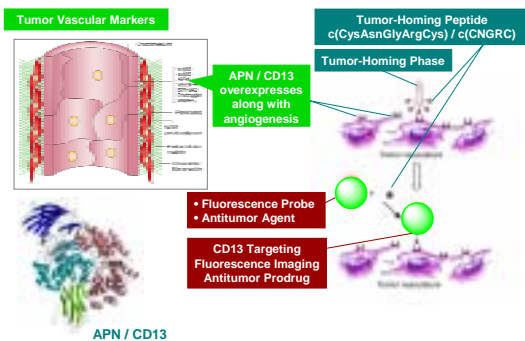
Noninvasive Medical Bioimaging



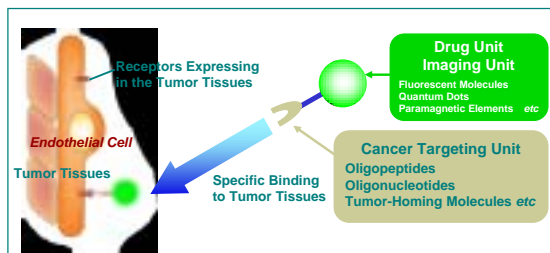
Medical Bioimaging Technology



Strategy of Targeting Cancer Treatment



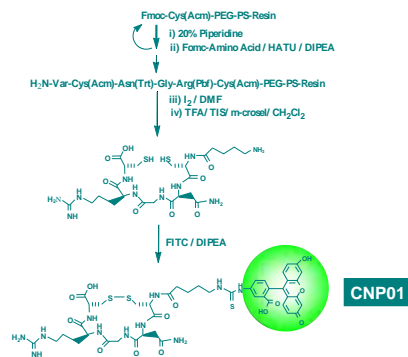
Tumor-Specific Drugs & Molecular Probes



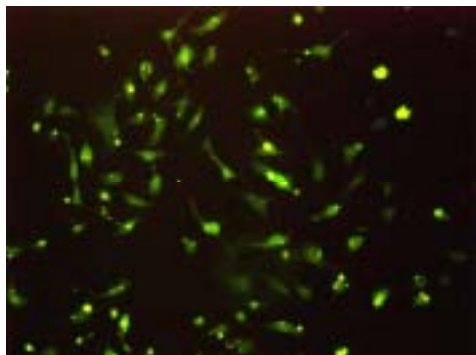
Tumor-Specific Marker & Target

| Tumor Molecular Address | Corresponding Deliverer |
|-------------------------|-----------------------------|
| Integrin avb3, avb5 | ACDCRGDCFCG, RGD-4C |
| Aminopeptidase N (CD13) | Cys-Asn-Gly-Arg-Cys (CNGRC) |
| NG2 | TAASGVRSMH |
| MMP-9 | CTTHWGFTLC |
| NPY | NPY-peptide |

Tumor-Targeting Fluorescent Probe



Molecular Imaging by Fluorescence



Thank you for your attention