TOKYO UNIVERSITY OF SCIENCE

Tokyo University of Science

Research Institute for Science and Technology
Center for Technologies against Cancer

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Inquiry for research technology of CTC

RIDAI SCITEC

Global Collavoration Service
Tokyo University of Science Technology Licensing Organization

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Center for Technologies against Cancer
Tokyo University of Science

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CTC NEWS LETTER

Vol.01 March 2011

Tokyo University of Science
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RIDAI SCITEC

CTC

NEWS LETTER

Vol.01
March 2011

挑戦
CHALLENGE

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“A challenge to medical care against cancer”
New form of Science-Engineering Collaboration by synthetic and specialized knowledge.

03 **The interview of Ryo Abe,**
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Respecting group’s individuality, organically connect the groups.

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09 **Members of CTC research group**
Profiles of members/Research assignment.

New approach through integrating medicine and engineering
in a leap toward future cancer treatment

Meet new challenges by integrating all our knowledge

Consolidating the knowledge of the Tokyo University of Science -
We have just begun our challenge in support of oncology

CTC goal

Center for Technologies against Cancer
Tokyo University of Science

Liaison between “Research Seeds” from the Tokyo University of Science to Medicine

Advancements in cancer research. Even though a great deal of medical-engineering collaboration has already occurred, further advancements and progress areneeded. Leading-edge scientific technology plays an important and critical role in revolutionizing cancer research. Non-medical scientific technologies – science, engineering, pharmaceuticals, life science – these are the key to the future. Tokyo University of Science does not have a medical school and does not have many opportunities to become involved in clinical medicine. Yet the university is associated with the National Cancer Center (Hospital East), Japan’s foremost cancer treatment institution, in an effort to move forward. Under the banner of “Cancer Medicine”, the university has established a network for researchers to provide an extensive platform involving not only medicine, biology and pharmaceuticals but also mathematics, information science, applied biology, engineering science, mechanical engineering, material engineering and biological engineering.

While applying the basic knowledge of technology to this new collaboration, the university has a mission to develop and cultivate superior human resources – individuals who can contribute to future cancer research.
The university’s current mission is to act as the research base for projects within the interdisciplinary researcher’s network. The university is moving forward – its true value will be tested...

Energetic action, fruitful results

Collision between medicine and academia – Information bang
Competition for higher objectives brings out unexpected “chemical” reactions creating something new
“New” becomes the power to lead “Tomorrow’s Medicine”

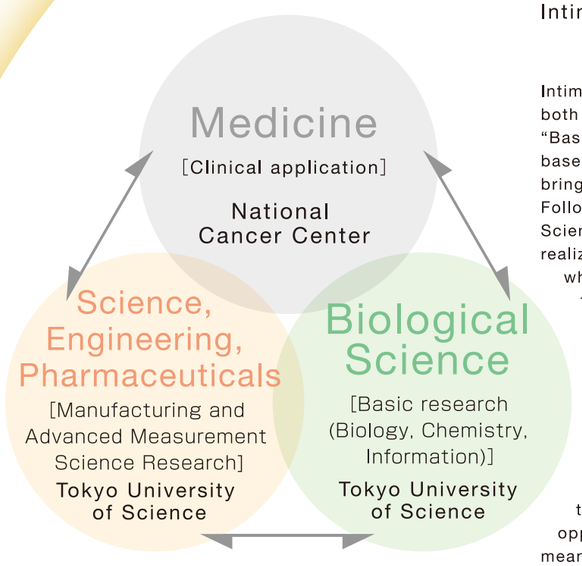
CTC activities

Realize visions and ideas and develop them.

Researchers from various fields in the university have started affiliating with the National Cancer Center (Hospital East). They have being meeting and sharing ideas on current problems and needs, and trying to determine how best to apply research results and technologies. They have also been discussing what they can do to contribute to cancer treatment and developing concrete ideas and solutions. Research results from this collaboration have been reported in seminars, lectures, workshops, etc. This supports effective public relations and enlightenment. The collaborative efforts are also aided by external evaluation and advisory committees that provide both suggestions and critiques. Additional efforts will be in such arenas as international symposiums.

Trinity collaboration

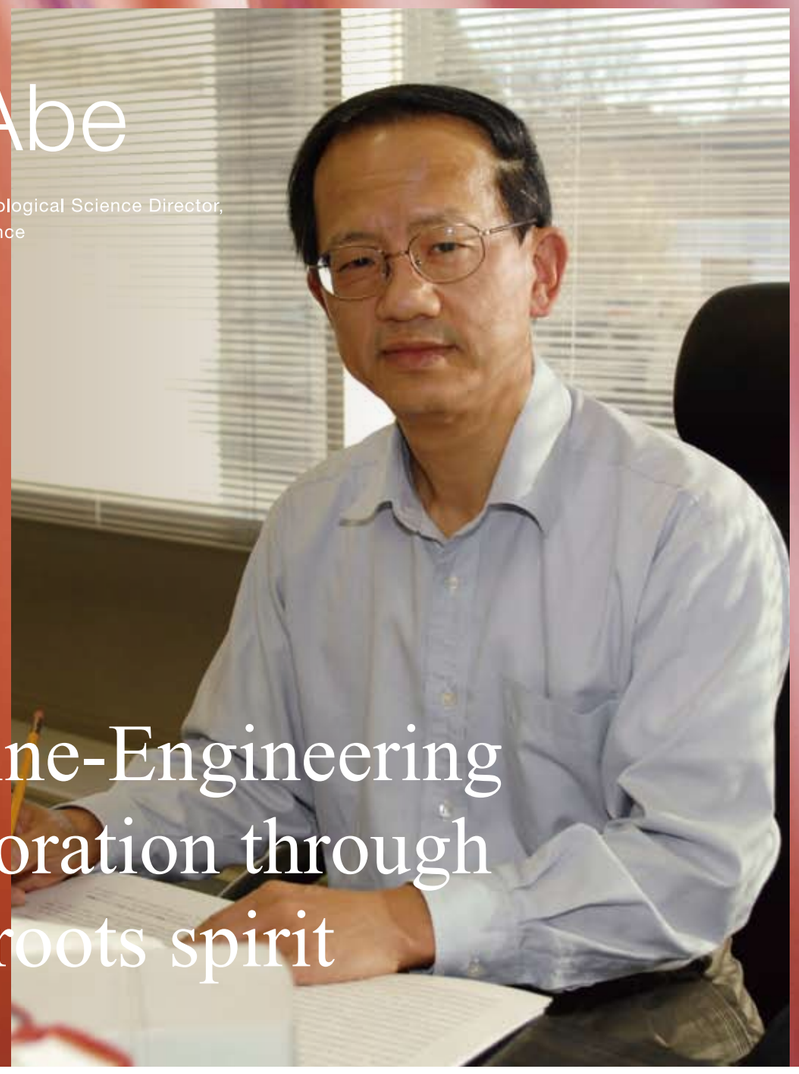
Intimate collaboration for a more challenging field



Intimate collaboration provides an innovative platform for both new and novel ideas.
“Basic Research” that supports “Cancer Life Science” is based on biology, chemistry and information – this “trinity” brings forth wisdom...intelligence.
Following the “workmanship” philosophy, “Leading-Edge Science Technology” (mechanics, electronics, materials – realizing the vision) provides the tools and systems in which knowledge is applied and acts as the hands and feet of the research and development efforts.
The National Cancer Center has been utilizing knowledge from this collaborative effort in its clinical applications – functioning as a new action for cancer research. That in itself is a challenge for CTC and is the reason for the existence of CTC
From daily activities, opinions and reactions are carefully chosen, professionally reviewed by those in every specialized field and the feedback is returned to every activity. This means higher reliability and more opportunities to find new possibilities. This process means an increase in human resources with an expanded vision.

Ryo Abe

Research Institute for Biological Science Director,
Tokyo University of Science
CTC Center Director
Ryo Abe



Medicine-Engineering Collaboration through Grass-roots spirit

Integrate leading-edge knowledge For unexpected synergy

Of cancer patients, half are cured and half of the remainder, that is, one-fourth of cancer patients, could have been cured if they had been diagnosed earlier. Current medicine, however, does not have the knowledge to cure cancer for the remainder.

Profile

Research Institute for Biological Science Director. Doctor of Medical Science.
After working at the US National Institutes of Health (NIH), National Cancer Institute (NCI) (researcher) and Uniformed Services University of the Health Science (assistant professor), Dr. Abe took a position at the Tokyo University of Science in 1995.
Council of Japanese Society for Immunology.
Kyoto T-cell Convention Steering Committee.
Research fields: Immunology, Tumor immunology, Allergy/autoimmune disease

Why was collaboration created? What kind of progress has been made so far?

Q. For which concept was the activity initiated?

Abe. The Tokyo University of Science has a variety of human resources in addition to its students. If we could link these resources to medicine and the renowned National Cancer Center in particular, which would be a rare and unique collaboration, this mutual joint effort could be established because each would complement the other.
When the National Cancer Center visited the university to see all those researches, there was surprise at the high level of the research. When the university visited the National Cancer Center , we understood that our research could be of help to advance leading-edge medicine. This of course has led to strong motivation from both parties.
Through collaboration between the National Cancer Center and industry, we are able to validate the effectiveness of the results coming from these efforts. If we can advance the collaboration further, the results may be a more effective form of organization.

Difference between viewpoints in clinical and scientific research Benefit of merging different research results.

Q. How do clinical research and scientific research differ?

Abe. The way of looking at a problem and the way of thinking about it are quite different. For example, in a hospital, there are patients who are there to get better. This is result-oriented. In a laboratory, we first establish a theory and then gone on to try and prove every aspect. We make gains in research with some expectations of results. The results are, of course, important but we also evaluate the process very carefully.
In a hospital setting, there are always more unexpected incidents. However, those incidents that are puzzling in a hospital setting can be explained in a research situation. Some technologies that are used rather off-handedly can be quite effective in solving difficult problems.
Those different ways of looking at things means there are a large variety of approaches to cancer treatment. There will be more opportunities to develop more technologies.
This collaboration also brings another benefit. For example, in education and human resource development, if you are a student of engineering or chemistry, when you realize that your field can be applied to medicine your motivation may become increase. You might even be able to think of a career in medicine.
An engineering student can apply skills in a leading-edge medical specialty such as endoscope technology or radiology instead of industrial machinery or robotics. If the skill cannot be applied to medicine it can still be expanded. In this process, the student can recognize wider possibilities or opportunities that can lead to involvement in “Life”. It is wonderful to expand the view to the world.

“Find small, treat gently” What is the latest research status?

Q. Tell us the current situation.

Abe. Abe: We are now looking for technology that will “find it small, treat it gently”.
“Find it small” means to find cancer at the very early stages. Currently, many cancers cannot be found unless they are 1cm. We are searching for a technology that will allow us to find very small cancers in very early stages and also allow us to find cancer during a surgery.
“Treat gently” refers to lowering the cost. Instead of a biopsy, which is the most widely used method – sticking a needle in the body – we may be able to find cancer from a blood test, just like other diseases. We might be able to detect a very small cancer cell in the blood and, in a safe and secure manner, determine the characteristics of the cancer and treatment effect. This type of research has already started.
The researchers from related fields joined to work in three groups according to the approach on a particular type of cancer. One of these groups is termed “Visualization/Recognition Engineering” (VRG). This group is studying technology that will allow us to find a cancer or the spread of cancer without the use of a microscope during surgery.
“Pharmaceutical / DDS Science” group (PDG) allow us to find cancer cells in the blood and develop a system to check the nature of the cancer and the effectiveness of a particular drug.
“Mathematical Information” group (MIG) is doing research on how to categorize cancer from the biological point of view, and also taking a look at the predisposition and malignancy. Doctors from the Cancer Center are participating and vigorous research is ongoing.

To reach bigger goals Synergy of active activities

Q. What are the issues and visions for the future?

Abe. The highest priority is to yield results. We need to apply our basic technologies at the National Cancer Center to develop new products and applications. Important issues include insufficient research funds, technologies and equipment, etc. Our organization is not that large but we have to integrate our abilities to establish closer collaboration. We want to move forward to attack the problems with a “Grass-roots” spirit. This is because we have many “potential” human resources. We can get surprising results after stimulating each other, by competing with each other but also by complementing each other.
We, who want to understand life – and what a complex thing it is – are trying to find out what it is by using various methods and tools. We are living in a rather suffocating environment but have to bear in mind that the responsibility of a university is to send promising people out into the world.

Respecting the group's individuality and organically connect the groups.

Collaboration of three groups

CTC is a center between Japanese science, engineering, pharmaceuticals and cancer medicine elites.
Each applies its unique skill to each collaboration to develop unprecedented results.
Each actively participates to this center.
Satisfying real needs in the front line, making more improvements, bringing forth new discoveries.

Delivery of illuminant to cancer, imaging device development

Cell imaging, observation technology using an electron microscope

PDG Pharmaceutical DDS(Drug Delivery System) Group

Pharmaceutical DDS (Drug Delivery System) Group

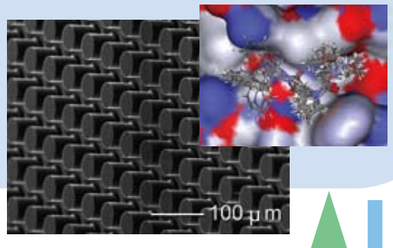
Aiming to develop the cancer drugs with target specificity, the teams are doing research on various chemical compounds.
Parts that are chemically bound before actual production must be searched; after this occurs, MIG can support the project by providing the virtual screening technology.

Drug Discovery Team

◎ Shin Aoki (Pharmaceutical Sciences, Medicinal and Life Science)
Susumu Kobayashi (Pharmaceutical Sciences, Medicinal and Life Science)
Fumio Sugawara (Science and Technology, Applied biological Scince)
Takeo Konakahara (Science and Technology, Pure and Applied Chemistry)
Makoto Yuasa (Science and Technology, Pure and Applied Chemistry)
Kengo Sakaguchi (Research Institute for Science and Technology)
Isamu Shiina (Science, Applied Chemistry)
Keiko Inami (Pharmaceutical Sciences, Pharmacy)
Masanori Kitamura (Pharmaceutical Sciences, Medicinal and Life Science)
Takahiro Suzuki (Pharmaceutical Sciences, Medicinal and Life Science)
Reiko Ikeda (Science and Technology, Pure and Applied Chemistry)
Shinya Ariyasu (Research Institute for Science and Technology)

Bio-device Team

◎ Masanori Hayase (Science and Technology, Mechanical Engineering)
Hidenori Otsuka (Science, Applied Chemistry)
Takashi Ishiguro (Industrial Science and Technology, Materials)
Hiroshi Takemura (Science and Engineering, Mechanical Engineering)
Kenichi Sakai (Science and Technology, Industrial Chemical)
Mitsutoshi Tsukimoto (Pharmaceutical Sciences, Pharmacy)



Powerful collaboration transforms itself into a force to move forward

Setting cancer as a shared goal,
Using skill in one's own field,
Solving problems,
Pushing us further

Structuring a chemical compound database, software development for drug design

Provision of data for study

Center for Technologies against Cancer
Tokyo University of Science

VRG Visualization Recognition Group

Visualization Recognition Group

Under the goal of detecting cancer early and development of a diagnostic system, the group supports the research from the technology aspect to develop a system that can visualize the illuminant particles by linking the research results to the development efforts.
The group is also researching various imaging processing technologies required by other groups.

◎ Kohei Soga (Industrial Science and Technology, Materials)
Masami Ando (Research Institute for Science and Technology)
Noriaki Yanaka (Pharmaceutical Sciences)
Naoyuki Aikawa (Industrial Science and Technology, Applied Electronics)
Hidehiro Kishimoto (Research Institute for Biological Science)
Hirofumi Fujii (National Cancer Center – Higashi Hospital)
Kazuhiro Kaneko (National Cancer Center – Higashi Hospital)
Kiyotsugu Kojima (Olympus Corporation)
Hideo Yokota (Riken)
Hirotada Akiyama (ndustrial Science and Technology, Biological Science and Technology)
Hiroshi Hyodo (Industrial Science and Technology, Materials)
HEMMER EVA (Research Institute for Science and Technology)

Provision of next-generation image

Comprehensive analysis/system development (e.g., "Bad Face Filter")

MIG Mathematics Information Group

Mathematics Information Group

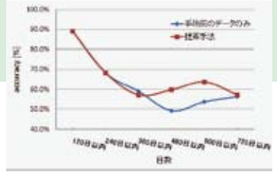
Nothing can start unless the Bio Material Team delivers the materials.
If the research data from the groups is accumulated, it can be processed – information process.
This group is the focal point for finalizing the collaboration.

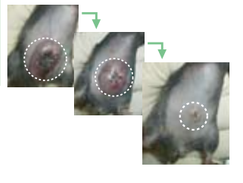
Biomaterials Team

◎ Ryo Abe (Research Institute for Biological Science)
Ryo Goitsuka (Research Institute for Biological Science)
Takachika Azuma (Research Institute for Biological Science)
Fumio Fukai (Pharmaceutical Sciences, Medicinal and Life Science)
Joe Chiba (Industrial Science and Technology, Biological Science and Technology)
Naoko Nakano (Research Institute for Biological Science)
Ryushin Mizuta (Research Institute for Biological Science)
Tetsuya Nakatsura (National Cancer Center – Higashi Hospital)
Masaaki Ito (National Cancer Center – Higashi Hospital)
Shuhei Ogawa (Research Institute for Biological Science)
Toshihiro Suzuki (Research Institute for Biological Science)
Moyuru Hayashi (Science, Chemistry)
Kazutaka Horie (Research Institute for Science and Technology)
Akihito Murakami (Research Institute for Science and Technology)

Mathematics / Bioinformatics Team

◎ Hayato Ohwada (Science and Technology, Industrial Administration)
Shunsuke Mori (Science and Technology, Industrial Administration)
Hirohito Kojima (Science and Technology, Civil Engineering)
Keiko Sato (Science and Technology, Information Sciences)
Hiroyuki Nishiyama (Science and Technology, Industrial Administration)
Nobuyuki Ota (A-Cube, Inc.)





Diverse researches are divided into three groups for cancer treatment types

Features and visions of those three research groups

PDG

Pharmaceutical DDS
(Drug Delivery System) Group

Discovery of cancer drug with high target specificity

Three pillars – “Drug Discovery / Diagnostics”, “Screening”, “Activity Assessment”

●Drug Discovery Team

The team designs and synthesizes anticancer drugs based on a new acting mechanism. It researches chemical compounds that enable both cancer cell imaging and treatment. Each member brings chemical compounds and develops a chemical compound library. Using the university’s characteristics, the team is trying to discover innovative anticancer drugs. Currently, the most promising drug is SQAG (Anticancer antibiotic) – functional analysis and clinical application.

Since the blood concentration of acetaldehyde (metabolized by alcohol intake) is high, the carcinogenic rate becomes high. The team is also trying to determine the quantity and to develop a new diagnostic method using the difference in a cancer cell’s pH.

VRG

Visualization
Recognition Group

Detecting cancer / Developing Diagnostic System

The most critical mission is to “See” and “Recognize” the cancer.

●Bio-device Team activities

The team is heavily involved in developing a device to detect CTC (Circulating Tumor Cell) in the blood. (Collaboration Project). The device traps cells in a section where the antibodies has been modified after being separated from normal tissue by a “micro-flow path” based on the Deterministic Lateral Replacement Method (existing technology) and thus concentrating cancer cells. This is a trial to release the cells using the “Optical Cutting Linker” developed by Prof. Aoki, group leader of the Drug Discovery Team. There are many tasks – adjusting/modifying the CTC capture chip, observing the antibody modification, culturing spheroids, etc.
The team is also developing a tactile sensor as an approach to cancer treatment. Using a small sensor attached to an endoscope, data is collected, for example, on the hardness of the gastric wall. New types of data can be collected such as the level of cancer cell invasion.
When a cancer cell multiplies or proliferates, the enzyme level in the blood changes, so the team is focusing on a method to measure the enzyme concentration in the blood.

The team’s primary research is “Imaging and Recognition Technology - Targeting Cancer”.
Prof.Soga, the group leader, is researching the “Illuminator” used in optic fiber communication, using the 1-2 micron wavelength band. (The wavelength band allows permeation of “biological object” that is termed the “window of biological body”. This can be a universal solution for such current problems as discoloration in fluorescent observation in a biological body, self-fluorescence, biotoxicity, light scattering.
The “near-infrared fluorescent bioimaging” is developed using ceramics nanoparticles containing rare-earth compounds. The optic fiber wavelength region, used by Prof. Soga in the past, is 1.5 microns wavelength band and the optical component used in the optical fiber communication can be used as is. As a result, the “Cancer detection method = Visualization” project – the innovative method – has started. As an application concept, the doctor’s “user demand” is emphasized to develop further “effective” and “usable” technology. A near-infrared in-vivo fluorescent bio-imaging device has been developed. That is one of the first such devices in the world. They have already developed three units. For treating colorectal cancer, current endoscopes can mark the affected area with near-infrared fluorescence to define the exact location; it can be removed precisely with the abdominoscope. The team is researching system development.
In the area of recognition technology, a more effective interface must be developed that will enable physicians to find cancer using more sophisticated methods from diverse/many diagnostic images (CT, MRI, SECT, etc.).
“Finding small = Early detection” – This is a universal issue for physicians. In this case, “Marker” is critical. The team is actively developing markers that react only to cancer cells. The team is also researching on new cancer detection methods.

<Prevention><Diagnostics><Treatment> : Critical elements in Cancer Medicine

The research area can be further categorized into the following:
- Prevention: [MIG] Genome analysis
- Diagnostics: [VRG]
- Treatment: [PGD:

Actual research effort transcends those walls – Each group contributes to research in Prevention, Diagnostics and Treatment.

MIG

Mathematics Information Group
Mathematical Information Science Team, Biological Materials Team

Cancer differentiation, Malignancy, Metastasis – Mechanism Study

Simulation programs and information strategy Platform for whole center

●Mathematics / Bioinformatics Team - Activities

The involvement with the medicine started when Prof. Owada, the group leader, developed a “glaucoma diagnostic system” when researching artificial intelligence. The system (i.e., computer), not the physician, asks the patient such critical questions as age, sex, eye pressure and automatically diagnoses for glaucoma. Currently, the team is involved in “predictions of liver cancer recidivation”. Liver cancer has high recidivation rate. The test data can be input in the computer, and the computer can calculate the conditions for recidivation – probability and time. The data mining method is used in this project. This is now a universal way to search for regularity in massive amounts of data. In the future, the team will be involved in many projects such as matching data with genetic data, the relationship between protein and disease, system biology – combining the networks among cells called “pathways”. These projects require sophisticated analysis that investigates the relationship between the data and clinical data from many directions.

●Biological Materials Team - Activities

Staff mainly from the Life Science Research Center is trying to develop new cancer drug technology with high target specificity. The team analyzes the CTC (Circulating Tumor Cells), designs and selects the antibody particles that specifically identify the cancer cells. This field is different from that of the Mathematical/Information group, but the combination of the beginning point (providing various materials) and the ending point (final analysis of the data) can enhance cancer treatment research from a more strategic point of view.

New vision focusing on specialized fields

The research results of each group, based on results from individual researchers, will be applied to cancer treatment, and under CTC’s framework needs and benefits are combined into an innovative approach to cancer research.

Members of CTC research group

PDG

Drug discovery Team

PDG
Drug Discovery Team
Chief

Shin Aoki
Professor
Faculty of Pharmaceutical Sciences
Department of Medicinal and Life Science

[Research project] Cancer diagnosis with high target specificity, Development of treatment method, Implementation of compound library that is proprietary of Tokyo University of Science

Listen for "voices" from the medical front and apply the original research in the iatrochemistry.

Susumu Kobayashi
Professor
Faculty of Pharmaceutical Sciences
Department of Medicinal and Life Science

[Research project]
Drug-discovery technology

Fumio Sugawara
Professor
Faculty of Science and Technology
Applied Biological Science

[Research project]
Search technology for in vivo target of medicinally-active small molecule

Takeo Konakahara
Professor
Faculty of Science and Technology
Pure and Applied Chemistry

[Research project]
Drug-discovery technology

Makoto Yuasa
Professor
Faculty of Science and Technology
Pure and Applied Chemistry

[Research project]
Drug-discovery technology

Kengo Sakaguchi
Professor
Research Institute for Science and Technology

[Research project]
Cancer diagnosis and treatment

Isamu Shiina
Professor
Faculty of Science, Division 1
Applied Chemistry

[Research project]
Short-step synthesis of new anticancer drug and search for pharmacologically-active compound

Keiko Inami
Junior Associate Professor
Faculty of Pharmaceutical Sciences
Department of Pharmacy

[Research project]
Development of DNA modification anticancer drug

Masanori Kitamura
Assistant Lecturer
Faculty of Pharmaceutical Sciences
Department of Medicinal and Life Science

Takahiro Suzuki
Assistant Lecturer
Faculty of Pharmaceutical Sciences
Department of Medicinal and Life Science

Reiko Ikeda
Assistant Lecturer
Faculty of Science and Technology
Pure and Applied Chemistry

Shinya Ariyasu
PD
Research Institute for Science and Technology

Bio-device Team

PDG
Bio-device Team
Chief

Masanori Hayase
Associate Professor
Faculty of Science and Technology
Mechanical Engineering

[Research project]
Development of the device for cancer diagnosis using microfabrication

Starting from the far-end of cancer. Unconventional idea must be helpful.

Takashi Ishiguro
Professor
Faculty of Industrial Science and Technology Material Science and Technology

[Research project]
Analysis of biological structure by electron microscope

Hidenori Otsuka
Associate Professor
Faculty of Science, Division 1
Applied Chemistry

[Research project]
Surface design of the cell target material, development of mini-tissue array

Hiroshi Takemura
Junior Associate Professor
Faculty of Science and Technology
Mechanical Engineering

[Research project]
Development of organ simple model device

Kenichi Sakai
Assistant Lecturer
Faculty of Science and Technology
Pure and Applied Chemistry

Mitsutoshi Tsukimoto
Assistant Lecturer
Faculty of Pharmaceutical Sciences
Department of Pharmacy

VRG

VRG
Chief

Kohei Soga
Associate Professor
Faculty of Industrial Science and Technology Material Science and Technology

[Research project]
Medical application of the next generation imaging using near infrared fluorescence

Don't think. Do it.

Masami Ando
Professor
Research Institute for Science and Technology

[Research project]
Imaging of various cancers by radiant X-ray

Noriaki Ynaka
Professor
Faculty of Pharmaceutical Sciences
Department of Pharmacy

[Research project]
Medical diagnosis of cancer image

Naoyuki Aikawa
Associate Professor
Faculty of Industrial Science and Technology Applied Electronics

[Research project]
Medical diagnosis of cancer image

Hidehiro Kishimoto
Associate Professor
Research Institute for Biological Sciences Division of Immunobiology

[Research project]
Study on malignant cancer and metastasis mechanism

Hirofumi Fujii
National Cancer Center – Higashi Hospital

[Research project]
Development cancer drug and clinical research on cancer

Kazuhiro Kaneko
National Cancer Center – Higashi Hospital

[Research project]
Cancer diagnosis by endoscope and treatment

Kiyotsugu Kojima
Kiyotsugu Kojima
Olympus Corporation

[Research project]
Medical diagnosis of cancer image

Hideo Yokota
Riken

[Research project]
Observation of cancer tissue by 6 dimensions internal structure microscope

Hirotada Akiyama
Assistant Lecturer
Faculty of Industrial Science and Technology Biological Science and Technology

Hiroshi Hyodo
Assistant Lecturer
Faculty of Industrial Science and Technology Material Science and Technology

HEMMER EVA
PD
Research Institute for Science and Technology

MIG

Bio-material Team

MIG
Biomaterials Team
Chief

Ryo Abe
Professor
Research Institute for Biological Science Director
Center for Technologies against Cancer Director

[Research project]
T-cell antigen recognition and activation mechanism, development of antigen-specific immunotherapy

We can consolidate our effort to create an epoch-making opportunity for revolutionary "Medicine".

Ryo Goitsuka
Professor
Research Institute for Biological Sciences

[Research project]
Study on cell generation and differentiation

Takachika Azuma
Professor
Research Institute for Biological Sciences

[Research project]
Antibody molecule design and selection

Fumio Fukai
Professor
Faculty of Pharmaceutical Sciences
Department of Medicinal and Life Science

[Research project]
Search for new anticancer molecule targeted drug

Joe Chiba
Professor
Faculty of Industrial Science and Technology Biological Science and Technology

[Research project]
Search for new anticancer molecule targeted drug

Naoko Nakano
Associate Professor
Research Institute for Biological Sciences Division of Biotechnology

[Research project]
Measure anticancer effect using mouse model

Ryushin Mizuta
Associate Professor
Research Institute for Biological Sciences Division of Molecular Biology

[Research project]
Canceration and inflammation evaluation

Tetsuya Nakatsura
National Cancer Center – Higashi Hospital

[Research project]
Cancer immunotherapy

Masaaki Ito
National Cancer Center – Higashi Hospital

[Research project]
Cancer diagnosis and treatment

Shuhei Ogawa
Assistant Lecturer
Research Institute for Biological Sciences Division of Immunobiology

Toshihiro Suzuki
Assistant Lecturer
Research Institute for Biological Sciences Division of Immunobiology

Moyuru Hayashi
Assistant Lecturer
Faculty of Science, Division 1 Chemistry

Kazutaka Horie
PD
Research Institute for Science and Technology

Akihito Murakami
Research Institute for Science and Technology

Mathematical Science/ Information Analysis Team

MIG Mathematics / Bioinformatics Team
Chief

Hayato Ohwada
Professor
Faculty of Science and Technology
Industrial Administration

[Research project]
Developing the prediction system for recurrence of hepatocarcinoma

Developing IT technology for cancer medicine for the world.

Shunsuke Mori
Professor
Faculty of Science and Technology
Industrial Administration

[Research project]
Study on numerical analytical algorithm

Hirohito Kojima
Professor
Faculty of Science and Technology
Civil Engineering

[Research project]
Development of image processing technology

Keiko Sato
Junior Associate Professor
Faculty of Science and Technology
Information Science

[Research project]
Research on cancer mutation

Hiroyuki Nishiyama
Junior Associate Professor
Faculty of Science and Technology
Industrial Administration

[Research project]
Study on development of computation algorithm

Nobuyuki Ota
A-Cube,Inc.
CEO

[Research project]
Study on development of computation algorithm