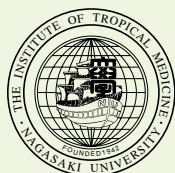


# INSTITUTE OF TROPICAL MEDICINE NAGASAKI UNIVERSITY



JULY



2003



# MISSION STATEMENT

Institute of Tropical Medicine, Nagasaki University

The tropics, the most ecologically diverse region on the Earth, presents an ongoing complexity of tropical diseases and other health problems. In view of the remarkable advances made in the field of international exchange in recent years, it is imperative that these problems be addressed from a global perspective.

Based on this understanding, the Institute of Tropical Medicine, Nagasaki University, aims to overcome tropical diseases, particularly infectious diseases, and the various health problems associated with them, in cooperation with related institutions, to strive for excellence in the following areas:

- 1 . Spear-head research in tropical medicine and international health
- 2 . Global contribution through disease control and health promotion in the tropics by applying the fruits of the research
- 3 . Cultivation of the researchers and specialists in the above fields



General view of the Institute



## Preface

The Institute of Tropical Medicine, Nagasaki University, established in 1942, is a unique government-assisted institution for the research on tropical medicine, both in the basic and applied fields. Its reorganization led to the first collaborative institute in medical science in Japan in 1989, and designation as one of the Centers of Excellence in 1995 by Ministry of Education, Science and Culture. Present organization of the institute is composed of 3 major research fields (11 departments, 1 domestic visiting department, 1 overseas visiting department), 2 centers, and 1 clinical unit.

According to the first external review in 1996, the institute worked out its Mission Statement as shown on a back cover. To fulfil our mission, we continue the research and other related activities. The highlights are as follows.

\* Activities on the Mission“ Spear-head research in tropical medicine and international health ”

- 1 . Strategic researches have been conducted to develop the novel weapon against tropical diseases; analysis of genomic structure of Japanese encephalitis and dengue viruses, structure and function of the receptors for bacterial enterotoxins, mechanisms for expression and activation of superoxide degenerating NADPH oxidase system, and immuno-genetical analysis of tropical diseases.
- 2 . Epidemiological studies and control have been carried out on malaria, dengue fever / dengue hemorrhagic fever, acute respiratory infections, Kaposi's sarcoma and schistosomiasis in Southeast Asia and Africa.
- 3 . Environmental factors, such as vector and socio-economic problem, which cause the spread of tropical diseases in the developing countries have been studied.

\* Activities on the Mission“ Global contribution through diseases control and health promotion in the tropics by applying the fruits of the research ”

- 1 . Staffs have given their technical co-operation to disease control program in developing countries as WHO short-term consultants, JICA experts and other consultants.
- 2 . Some of our professors participate in Hashimoto Initiative, the global parasite control which is organized and carried out under leadership of Japanese Government.
- 3 . In 2001, the institute will carry out the intellectual and technical leadership as Developmental Project Partner of JICA“ Malaria Control Project in Indonesia ”.

\* Activities on the Mission“ Cultivation of the researchers and specialists in the above fields ”

- 1 . Staffs of the institute conduct the doctorate degree course which belongs to Graduate School of Biomedical Sciences in Nagasaki University.
- 2 . Since 1978, the institute offers a 3-month course of Tropical Medicine and Related Studies.
- 3 . Since 1983, the institute holds one year training course for foreign participants entitled“ Research in Tropical Medicine ”sponsored by JICA.

Based on the achievement mentioned above, in1993 ,Department of Virology has been designated as WHO Collaborating Centre for Reference and Research on Tropical Viral Diseases, and since 2000 the Institute has played a role of core university in JSPS cooperative research program with Vietnam.

In 2003 ,Institute of Tropical Medicine and Graduate School of Biomedical Sciences made a joint application to the 21 st Century Center of Excellence Program supported by Ministry of Education, Culture, Sports, Science and Technology.

Our research program“ Global Control Strategy of Tropical and Emerging Infectious Diseases ”successfully obtains a Governmet Grant of 5 years.

In addition, the institute has a Home page by which we educate the public why tropical medicine is important for the future well being of humankind and information on the tropical diseases in the world.

This pamphlet is one of our advocacy efforts to the public. It offers a brief but intelligible explanation on our research activities and other related social activities. Any suggestions and supports will be gratefully appreciated.

July, 2003

Yoshiki Aoki M. D., D. M. Sc.  
Dean and Professor  
Institute of Tropical Medicine  
Nagasaki University

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## Historical Review

The Institute of Tropical Medicine, Nagasaki University was originally founded in March 1942, as the East Asian Research Institute of Endemics, in order to perform basic and applied studies on endemic diseases in East Asia. At the beginning, most of its research activities were field studies in mainland China, performed by several department such as Pathology, Bacteriology, Internal Medicine and Dermatology of Nagasaki College of Medicine. Unfortunately, all the facilities and research materials were completely destroyed instantaneously along with the Medical School by the atomic bomb which exploded on August 9th, 1945. As a result, development of the institute and its research activities were severely inhibited.

In April 1946, the institute was named as the Research Institute of Endemics attached to Nagasaki College of Medicine, and moved to Isahaya City in May in order to resume its research activities. In accordance with the Act on the Foundation of National Schools in May 1949, the institute was renamed as the Research Institute of Endemics, Nagasaki University. Because of the severe flood in Isahaya City, the construction of the new building in Sakamoto-machi, Nagasaki City was started in 1960, and the institute moved to new building in April, 1961. At that time, there were only two departments, Pathology and Clinics, however, since 1964, new departments were established every Year, such as Epidemiology, Parasitology, Virology and at the end of 1966, the first extension of the building was completed.

In June 1967, according to the partial alteration of the Act on the Foundation of National Schools, the name of the institute was changed to the present one, in order to perform basic as well as applied studies on tropical medicine. At the same time, the Depart-

ment of Internal Medicine of the institute with 20 bed facilities was opened in the University Hospital. In 1974, Department of Bacteriology and Reference Center as an attached facility were opened. In 1978, the Department of Preventive Medicine supported by visiting staff and the Training Course of Tropical Medicine were started. In 1979, Ward of Infectious animals became Animal Research Center. In March 1980, the 2nd extension of the main building was concluded. In September 1983, the Training Course in Research for Tropical Medicine by JICA was opened. In 1984, Department of Protozoology was established. In July 1985, the 3rd extension of the building was completed. In 1987, Department of Medical Entomology was established. In 1989, the institute was reorganized to a collaboration research institute. In 1991, Department of Biochemistry was added. In March 1994, the 4th extension of the building was completed, and in April, 1994, the institute was reorganized to 3 research fields, Tropical Microbiology, Pathogenesis and Clinical Sciences, and Environmental Medicine, with addition of 2 new research departments, Thermal Adaptation and Social Environment, and the institute has 12 research departments at present. In 1995, the Institute was designated as one of the "Centers of Excellence" in the forefront of scientific research. In 1996, a new research department, Molecular Epidemiology, was established under the Research Field of Microbiology to invite an overseas visiting professor. In 1997, the Reference Center was abolished and in its place the Information and Reference Center of Tropical Medicine was established, then in 2001, it was abolished and in its place the Research Center for Tropical Infectious Diseases was established. In March 2003, the 5th extension of the building was completed, symbolizing continuous consolidation and reorganization of the Institute.





## Successive Deans of the Institute

### ( East Asian Research Institute of Endemics )

Susumu Tsunoo	May .4 ,1942-Aug 22 ,1945
Kohei Koyano	Dec 22 ,1945-Jan 23 ,1948
Kiyoshi Takase	Jan 24 ,1948-Aug 31 ,1948
Noboru Tokura	Sept .1 ,1948-May 30 ,1949

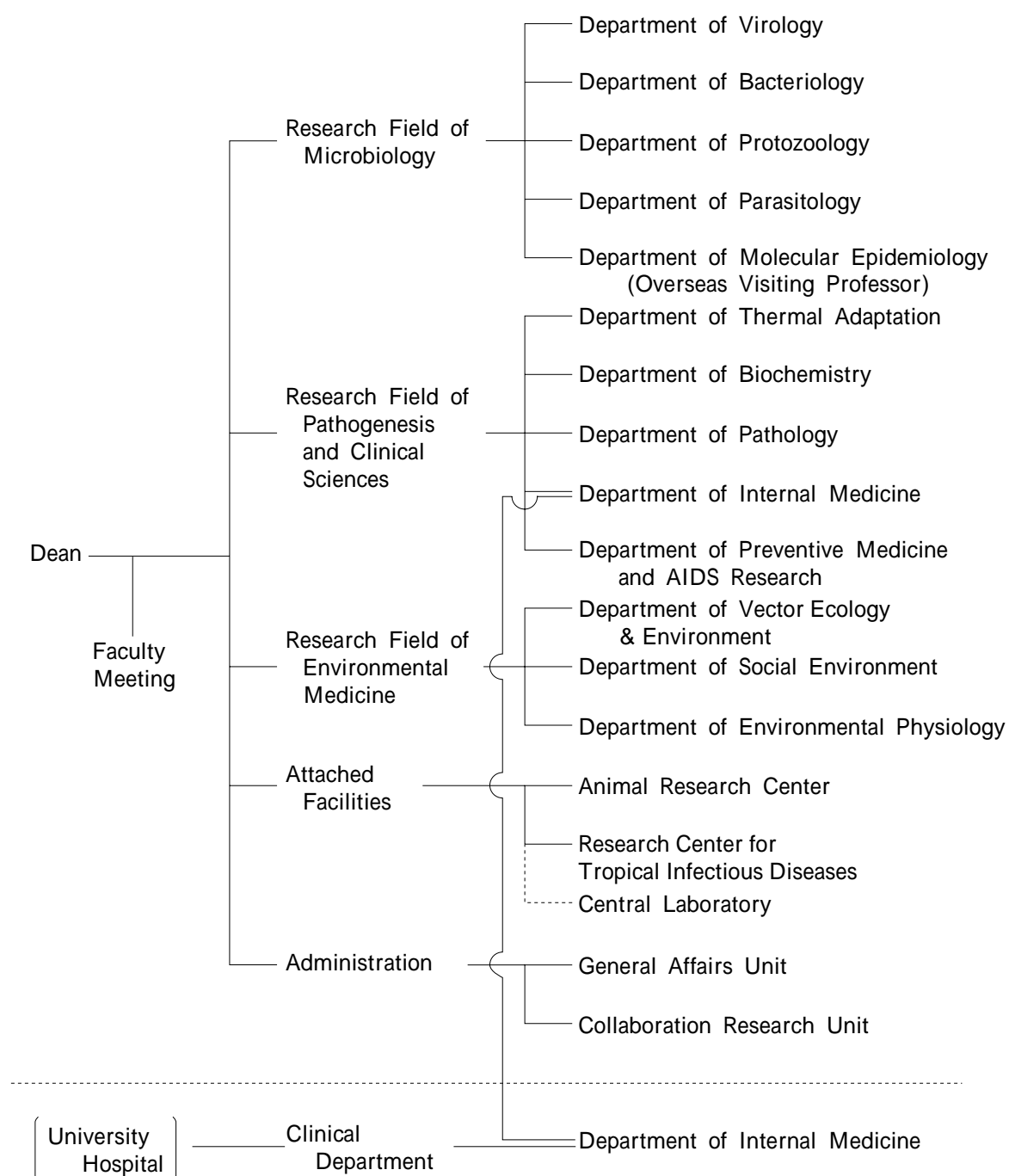
### ( Research Institute of Endemics )

Noboru Tokura	May 31 ,1949-Aug 31 ,1958
Nanzaburo Omori	Sept .1 ,1958-Nov 30 ,1963
Hideo Fukumi	Dec .1 ,1963-May 31 ,1967

### ( Institute of Tropical Medicine )

Hideo Fukumi	June .1 ,1967-Nov 30 ,1969
Daisuke Katamine	Dec .1 ,1969-Nov 30 ,1973
Kaoru Hayashi	Dec .1 ,1973-Nov 30 ,1977
Tatsuro Naito	Dec .1 ,1977-Nov 30 ,1979
Daisuke Katamine	Dec .1 ,1979-Apr .1 ,1981
Keizo Matsumoto	Apr .2 ,1981-Apr .1 ,1991
Hideyo Itakura	Apr .2 ,1991-Apr .1 ,1993
Mitsuo Kosaka	Apr .2 ,1993-Apr .1 ,1997
Akira Igarashi	Apr .2 ,1997-May 31 ,2001
Yoshiki Aoki	Apr .1 ,2001-Up to the present

## Organizational Chart



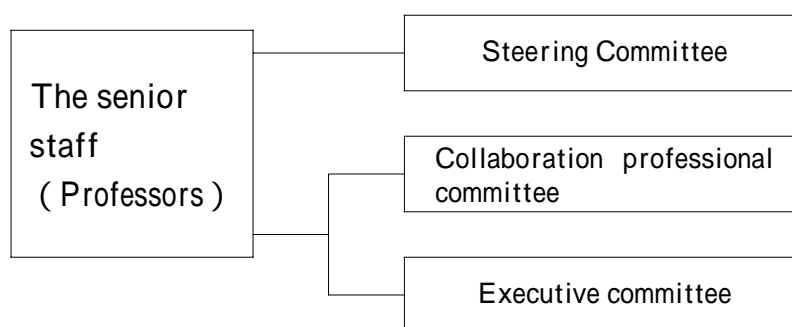
## Collaboration research

The institute has conducted research in the field of tropical medicine for the past 60 years since its establishment in 1942 . The institute was reorganized to make extensive collaboration with other universities and institute in the field of interdisciplinary tropical medicine with molecular biology, entomology, anthropology, social medicine, etc.

These activities of the institute are expected to contribute to remarkable progress of tropical medicine.

The senior staff composed of professors of the institute and the executive committee make plans for research work. The steering committee and the collaboration professional committee composed of experienced scientists coordinate the various collaboration researchs.

### Collaboration Research Sytem





## Institute of Tropical Medicine Steering Committee

Gunma University	Vice - President	Mamoru Suzuki
National Institute of Infections Diseases	Honorary Post	Akira Oya
National Institute of Infectious Diseases	Duputy Director	Takeshi Kurata
The Institute of Medical Science		
The University of Tokyo	Director	Tadashi Yamamoto
The International Medical Center	Director	Takehiko Sasazuki
Japan International Cooperation of Welfore Service		
	Senior Medical Adviser	Takashi Wagatsuma
Japan Foundation for AIDS Prevention		
	Director	Tadao Shimao
Research Institute for Microbial Diseases Osaka University		
	Director	Takeshi Honda
Nagasaki University	Professor Emetitus	Keizo Matsumoto
Research Institute for Humanity and Nature		
	Director	Toshitaka Hidaka
Nagasaki University		
Faculty of Economics	Professor	Keiji Ide
Graduate School of Biomedical Sciences	Dean	Koutaro Taniyama
Institute of Tropical Medicine	Dean	Yoshiki Aoki
"	Professor	Kouich Morita
"	Professor	Toshiya Hirayama
"	Professor	Hiroji Kanbara
"	Professor	Michio Nakamura
"	Professor	Takuya Iwasaki
"	Professor	Tsuyoshi Nagatake
"	Professor	Naoki Yamamoto
"	Professor	Masahiro Takagi
"	Professor	Tsutomu Mizota
"	Professor	Kenji Hirayama
"	Professor	Masaaki Shimada
"	Professor	Kazuhiko Moji

: Chairman

## Institute of Tropical Medicine Collaboration Professional Committee

Keio University	Professor	Tsutomu Takeuchi
Osaka International University	Professor	Yuji Yamamoto
Kobe University	Professor	Haku Hotta
University of Occupational and Environmental Health	Professor	Takekiyo Yoshimura
The University of Tokyo	Professor	Kiyoshi Kita
University of the Ryukyus	Professor	Shigeo Nonaka
Nagasaki International University	Dean	Taiichirou Takemoto
Meiji Gakuin University	Professor	Akira Oki

### Nagasaki University

Graduate School of Biomedical Sciences	Professor	Shigeru Katamine
"	Professor	Nobuyuki Kobayashi
Institute of Tropical Medicine	Professor	Tsuyoshi Nagatake
"	Professor	Kouichi Morita
"	Professor	Toshiya Hirayama
"	Professor	Hiroji Kanbara
"	Professor	Yoshiki Aoki
"	Professor	Michio Nakamura
"	Professor	Takuya Iwasaki
"	Professor	Naoki Yamamoto
"	Professor	Masahiro Takagi
"	Professor	Tsutomu Mizota
"	Professor	Kenji Hirayama
"	Professor	Masaaki Shimada
"	Professor	Kazuhiko Moji

: Chairman

## Scope of Activities

Based on the following research organization and intimate linkages with other research institutes and universities, the institute aims at accomplishing a mission “Spear-head research in tropical medicine and international health”.

To study comprehensively the tropical diseases which are raging in the developing countries, research organization of the institute consists of 3 major research fields which deal with the classical triad of “human-agent-environment” determinants of infectious diseases and Research Center for Tropical Infectious Diseases.

The research of tropical medicine faces the inevitable fact that “the bench is in the bush”. Therefore the institute has a close linkage with the overseas institutes in Asia, Africa and South Americas and continues the joint studies. Memorandums of academic exchange programs were signed between Nagasaki University and 3 overseas institutes. In 2000, the exchange program under the core university system by JSPS was newly established between our Institute and National Institute of Hygiene and Epidemiology in Vietnam.

The prevalence of tropical diseases depends on the geographic, social and economic factors. Therefore the institute has established the special research system which helps forward the multidisciplinary studies on tropical diseases.

## Postgraduate School

In April 2002 the system of Doctor Courses in Nagasaki University has been changed. In the new system the Graduate school of Medical Science, Dental Science and Pharmacology were integrated into the Graduate School of Biomedical Science consisting of four courses. All the departments in the Institute be-

long to the Course of Infection Research. Students who want to study tropical medicine in the Institute are required to apply to the office of the Graduate School of Biomedical Science through the professor of each department.

## Three-month Course on Tropical Medicine and Related Studies

The course aims to provide participating persons with a better understanding of the health problems in tropics, to increase their ability to cope with them, and to give a fuller knowledge of the cultures and the life of the people in tropics.

Physicians and professionally qualified persons working in health and related fields may apply for admission to the course. Fifteen candidates are accepted to the course in a year. The course consists of 13 weeks (June-August) of instruction and examination. Teaching is undertaken by the full-time staff and guest lecturers.

The course provides lectures and laboratory and field practices in virology, bacteriology, protozoology, parasitology, medical entomology, environmental physiology, biochemistry, pathology, genetics, epidemiology, human ecology, social medicine, internal medicine, and geography and culture in tropics. Candidates who completed successfully the course are awarded the Diploma in Tropical Medicine.



Adomission ceremony in 2003

## Training Course in Research of Tropical Medicine

Arrangements for conducting the course in this Institute are administered by Japan International Cooperation Agency, commissioned by the Government of Japan to execute Technical Cooperation Programs from 1983 .

This course is conducted by the Government of Japan as a part of its Technical Cooperation Programs for developing countries with a view of contributing to upgrading their standards in tropical medicine and to promoting friendly relations to the countries.

The purpose of this course is to help the control of endemic and epidemic diseases infesting the Torrid Zone. Through the guidance of the staff of the Institute, the participants will enrich their fundamental knowledge and practical techniques for various medical problems in the tropics.

Individual participants will study on a selected subject in the responsible department for a year. Capacity of each department is normally limited to one person.



Adomission ceremony in 2002

## Public Lectures at the Institute

Annually, the Institute of Tropical Medicine holds public lectures for the citizens. The lectures address issues pertaining to travellers to regions endemic to tropical diseases. It is intended to prepare the public to maintain good health abroad. The other aim is to open our intellect and knowledge to the public.

## Publications

### Tropical Medicine

This is a quarterly journal with publications of original articles from the Institute. The journal was first published in March 1959 as “ Endemic Diseases Bulletin of Nagasaki University ”. In 1967 , the name was changed to “ Tropical Medicine ”. This year, publication was suspended.

### Institute of Tropical Medicine, Nagasaki University

The first English guide for foreign visitors was printed in 1971. A revised edition is published every year.



## The 21st Century Center of Excellence Program

Program Title : Global Control Strategy of Tropical and Emerging Infectious Diseases

The core courses to form the program : Institute of Tropical Medicine, Graduate School of Biomedical Sciences

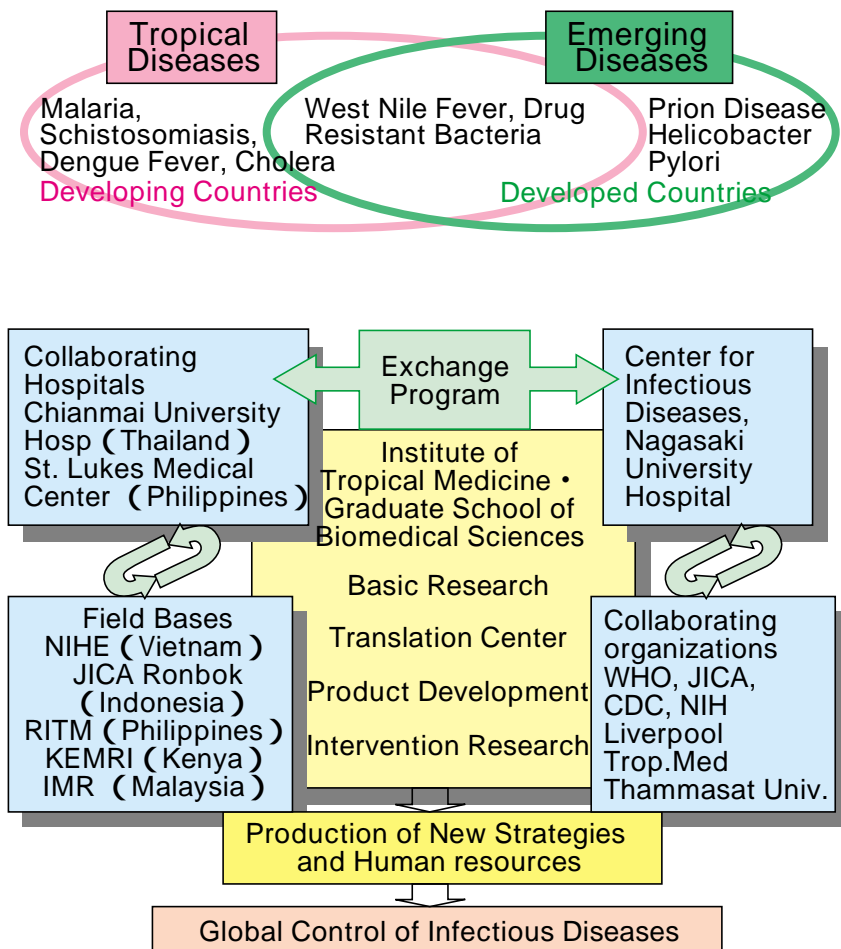
Program Leader : Yoshiaki Aoki

### 《Program Summary》

Global strategy for the control of tropical and emerging infectious diseases is urgently required by the world community. This program is designed to help our COE (Center of Excellence) to be one of the world top five centers for advanced research and education in this field within 5 years.

Our COE is coordinated by three institutions of Nagasaki University. Institute of Tropical Medicine will focus on the field based research and education. Graduate School of Biomedical Sciences will mainly perform laboratory based research. The infectious disease center will be responsible for the field or clinical practice and trial. The three institutions will be coordinated to find and establish a new strategy for the control of the disease.

We are planning to establish several field sites in Southeastern Asia and Africa. For producing the experts in this field, we will set up the master degree course of tropical medicine in addition to already existed Ph.D. course. For the medical doctors' training, we will hold a clinical training short course every year in the infectious disease center as well as in the affiliated hospitals located in the tropical countries such as Philippines and Thailand.



## Department of Virology

This Department has been conducting basic and applied research on mosquito-borne flaviviral diseases such as Japanese encephalitis (JE), dengue fever (DF) / dengue hemorrhagic fever (DHF), as well as SARS virus.

Analysis on the structure and function of JE and dengue viral genome

Nucleotide sequence analysis and molecular expression of JE and dengue viral genome have been carried out together with long PCR techniques in order to study molecular epidemiology, epitope analysis, biological activity of nonstructural proteins, and virulent viral gene responsible for viral pathogenesis.

Analysis on apoptosis induced by flavivirus infections.

Flavivirus infection induces apoptosis of the infected cells. Characterization of apoptosis and its relation to pathogenicity has been studied in cell line and animal model.

Development of rapid diagnosis of flaviviral diseases

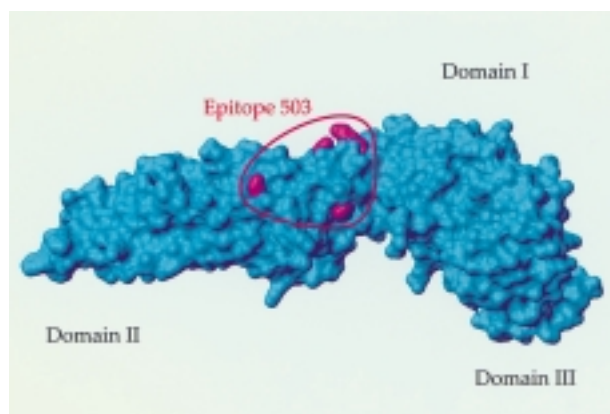
Viral genome detection and identification by PCR and LAMP methods, preparation of diagnostic antigen from infected cell culture fluid, and simplification of IgM antibody detection have been carried out.

Activities as a WHO Collaborating Center

By the letter from Dr. S. T. Han, former Director of WHO Regional Office for the Western Pacific

(WPRO) dated 23 November 1993, the Department of Virology, Institute of Tropical Medicine, Nagasaki University was designated as WHO Collaborating Center for Reference and Research on Tropical Viral Diseases. On 9 August 1994, Inauguration Ceremony was held at Pompe Hall by the presence of Dr. Han and approximately 120 guests, which was followed by the WHO Workshop "Epidemiology and Control on DF /DHF and JE ". The Department has received WHO fellows from Vietnam, Fiji, and the Philippines, and dispatched WHO short-term consultants on the subjects relevant to its terms of reference. Dr. Kouichi Morita was appointed as the Regional Advisor on Communicable Diseases, WHO-WPRO, from 16 May 1995 to 15 May 1998. According to the letter from Dr. Shigeru Omi, present Director of WHO-WPRO, the Collaborating Center was extended to 23 September 2003.

Professor	Kouichi Morita
Assistant Professor	Futoshi Hasebe
Research Associate	Shingo Inoue
Research Fellow	Afjal Hossain Khan
Guest Research Fellow	Maria del Carmen Parquet
Guest Research Fellow	Md Alimul Islam
Research Fellow	Mannmohan Parida
Senior Research Assistant	Tomomi Yamaguchi
Technician	Kazumi Jodai
Postgraduate student	Edward G. Mathenge
Postgraduate student	Thai Hong Thicam
Postgraduate student	Yu Fuxum
Ronpaku Fellow	Pareesh Sumatilal Shah
JICA Student	Guillermo Posadas Herrera
JICA Student	Sophie Bipolo



Newly identified JE neutralizing epitope 503



P 2 Level laboratory

## Department of Bacteriology

Our major research interest is to elucidate the etiologic agents isolated from pathogenic bacteria related to the worldwide emerging and re-emerging diseases.

Studies on the cellular and molecular mechanisms of diarrhea induced by bacterial enterotoxins and *Salmonella*:

*Aeromonas sobria* hemolysin is important in the pathogenesis of diarrhea caused by this enteropathogenic bacterium. Glycosylphosphatidylinositol-anchored glycoprotein was identified as a receptor for *A. sobria* hemolysin on Intestine 407 cells.

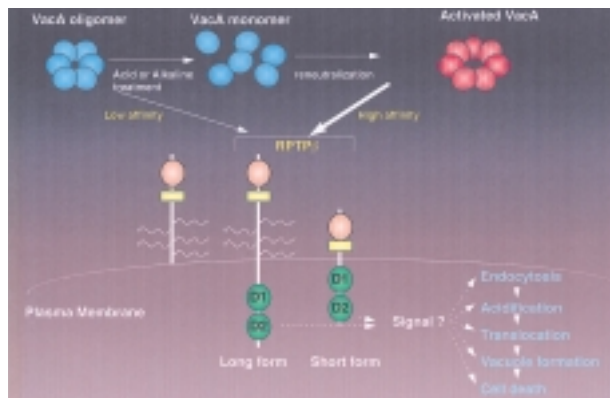
Focusing on the molecular mechanisms of the diarrhea induced by heat-stable enterotoxins (STa) of enteropathogenic bacteria, we are studying 1) interaction of *Escherichia coli* heat-stable enterotoxin with its receptor and 2) activation of guanylate cyclase (GC-C) by STa. Inflammation caused by *Salmonella* is also investigated (J. Biol. Chem. (2001) 276: 30521)

Studies on the pathogenesis of *Helicobacter pylori*:

To investigate a potential mechanism of how *H. pylori* establishes infection, we investigate the host-parasite relationships of *H. pylori*, focusing on vacuolating cytotoxin A (VacA) and Cag pathogenicity island (CagPAI).

1) In cells transiently transfected with a carboxyl-terminal transmembrane domain (dominant-negative) syntaxin 7 mutant, VacA failed to induce vacuolation, suggesting that SNARE is involved in the intracellular vacuolation induced by VacA (J. Biol. Chem. (2003) 278:25585-25590).

2) VacA induced bone marrow-derived mast cells to produce proinflammatory cytokines, TNF- $\alpha$ , macrophage-inflammatory protein-1 $\alpha$ , IL-1 $\beta$ , IL-6, IL-10, and IL-13 in a dose-dependent manner without causing degranulation (J. Immunol. (2002) 168: 2603-2607).



Cytotoxicity of VacA toxin through its binding to receptor-protein tyrosine phosphatase $\beta$

3) Mice deficient in protein tyrosine phosphatase do not show mucosal damage by VacA, although VacA is incorporated into the gastric epithelial cells to the same extent as in wide-type mice (Nat Genet. (2003) 33:375-381).

4) Human  $\beta$ -defensin-2 (hBD-2) is an antimicrobial peptide which belongs to one of the most important host defence system against bacterial infection in several epithelial tissues. We studied the effect of *H. pylori* on the expression of hBD-2 mRNA in MKN 45 gastric mucosal cells. *H. pylori*, but not culture filtrate, increased hBD-2 mRNA level in MKN 45 cells, whereas the inductive effect of *H. pylori* was not detected when Intestine 407 cells were incubated with *H. pylori*. Among the tested strains of *H. pylori*, which lacks Cag PAI, did not induce hBD-2 mRNA in MKN 45 cells. These results suggested that cag PAI of *H. pylori* is important for inductive expression of hBD-2 mRNA through NF- $\kappa$ B activation in MKN 45 cells.

Exposure of MKN 45 cells to *Salmonella* typhimurium, *S. enteritidis*, *S. typhi*, and *S. dublin*, but not *Escherichia coli* ML 35, resulted in remarkable induction of hBD-2 mRNA. (Ref. Cell. Microb. (2001) 3: 115)

Studies on the development of cholera vaccine:

The overexpression of fimbriae of *Vibrio cholerae* O 1 is under study for use in cholera vaccine trial.

Professor	Toshiya Hirayama
Research Associate	Masahiko Ehara
Research Associate	Akihiro Wada
Research Associate	Akitoyo Ichinose
Technologist	Mamoru Iwami
Technician	Kayo Honda
JSPS Fellow	Kenichi Ogushi
Postgraduate Student	Masaaki Nakayama
Postgraduate Student	Ryouhei Maeda



Laboratory

## Department of Protozoology

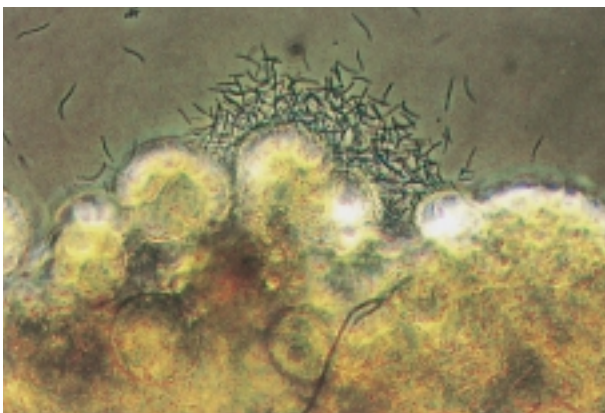
Our main purpose is to clarify infection mechanisms of intracellular protozoan parasites.

### Study of malaria parasites

- 1 ) Specific immune reaction in malaria.
- 2 ) Surviving strategies of *Plasmodium falciparum* in mammalian hosts.
- 3 ) Epidemiology of human malaria.



Laboratory for culture



Plasmodia sporozoites from ruptured oocysts in Anopheline mosquito

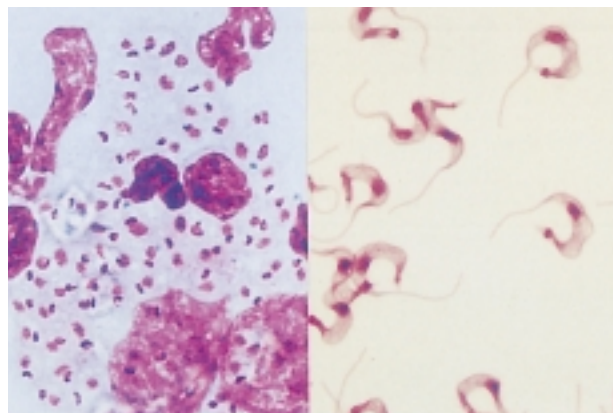
### Study of trypanosomes

- 1 ) Functions and expression mechanism of trans-sialidase.
- 2 ) Adaptation mechanisms of *Trypanosoma* species to environments.
- 3 ) Modification of infected host-cells by *Trypanosoma cruzi*.

### Other studies

- 1 ) Molecular epidemiology of pathogenic strains of *Entamoeba histolytica*.
- 2 ) Epidemiology of cryptosporidiosis

Professor	Hiroji Kanbara
Assistant Professor	Haruki Uemura
Research Associate	Shusuke Nakazawa
Technician	Kazumi Yoshinaga
Technician	Miki Kinoshita
Technician	Kurenai Tomimaru
Postgraduate Student	Mie Kato
Postgraduate Student	Katsunori Shinohara
Postgraduate Student	Mohammed Nasir Shuaibu
Postgraduate Student	Maria Cecilia Huaman
Postgraduate Student	Toshio Miyazaki
Postgraduate Student	Sandra Ines Juarez
JICA Student	Edelwisa Mendoza Segubre



Amastigotes ( left ) and trypomastigotes ( right ) of *Trypanosoma cruzi*



## Department of Parasitology

The research activities are concentrated on filariasis, schistosomiasis, and intestinal helminthiasis which constitute the major public health problems in the tropics.

### Filariasis

*Brugia malayi* (Cheju strain, periodic form), *B. pahangi* and the vector mosquito, *Aedes aegypti* (Liverpool strain) have been maintained in the laboratory for many years. Highlights of recent studies are as follows.

1 ) Development of a simple and sensitive method for determination of serum concentration of ivermectin (IVM) and diethylcarbamazine (DEC):

IVM and DEC modified partially in their chemical structure successfully produced the antibody against drugs. Therefore the serum concentration (5 ng/ml) of IVM and DEC can be determined by EIA.

2 ) Screening of antifilarial drugs from medical plants:

*Vernonia amygdalina* from Africa, *Neurolaena lobata* from Guatemala and *Cardiospermum halicababum* from Thailand, were effective in vitro on *B. pahangi* adult worms and microfilariae.

3 ) Epidemiology and control of bancroftian filariasis:

A research project was carried in Kwale, Kenya, in cooperation with Kenya Medical Research Institute (KEMRI) during the period of 1990 and 1996. Transmission potential and morbidity were studied. Mass-chemotherapy with combination of DEC and NaHCO<sub>3</sub> was evaluated.

### Schistosomiasis

*Schistosoma mansoni* (Puerto Rican strain and Kenyan strain), *S. haematobium* (Kenyan strain) and some strain of vector snails have been maintained in the laboratory. Highlights of recent studies are as

follows.

1 ) Swimming behavior of miracidia:

cAMP is involved in the control of ciliary beating and chemotaxis of miracidia.

2 ) Mechanisms of penetration of cercariae into skin:

The studies suggest the involvement of protein kinase C in proteolytic enzyme release from cercariae.

3 ) Epidemiology and control of *S. haematobium* infection:

Since 1981, the research project on Schistosomiasis haematobia was carried out in Kwale, Kenya, in cooperation with KEMRI for 20 years. The highlights of our studies are human water contact study, cercarial concentration in natural water, ecology of *Bulinus globosus*, usefulness of urinary reagent strips, new immunodiagnostic test (urine ELISA, modified COPT), effect of piped water supply, KAP study (knowledge, attitude and practices), health education, morbidity studies using ultrasound, environmental modification for snail control, prevalence of bladder cancer and liver fibrosis, and qualitative and quantitative studies on difficulty of urination in the community.

### Intestinal helminthiasis

Since 2000, epidemiological studies on intestinal helminthiasis has been taken up. The studies aim to show that mode of transmission is different in countries and main determinant is human behaviour.

Professor	Yoshiki Aoki
Assistant Professor	Yasunori Fujimaki
Research Associate	Kanji Watanabe
Technologist	Mitsumasa Miura
Technician	Satomi Tominaga
Postgraduate Student	Tomoharu Ohki
Postgraduate Student	Hiroshi Matsuyama
Postgraduate Student	Teruyo Kusaba



Examination of difficulty of urination by using Uroflow-meter in an endemic area of Kenya



Examination of contamination of soil by eggs and larvae of intestinal helminths in Vietnam

## Department of Thermal Adaptation

The department was established in 1994 to study on the influence and damage of tropical environment on human and animals. Then study result is applied in protection and care of tropical disease for improving infection and symptom.

Study on short and long term heat acclimatization of human

On the short term heat acclimatization, it experiment to expose Japanese to heat in environmental chamber for period from spring to summer. They sweat too much and high electrolyte concentration in the sweat for surplus reaction, so they have big damage as compensation of body temperature control.

Heat loss responses of Tropical inhabitants are studied in the short term heat acclimatization. Their nonevaporative heat loss by blood circulation are effective, and their sweat is a little with low electrolyte concentration as comparison with Japanese it.

Therefore, they sweat minimum volume, and have heat tolerance (Left figure).

Victims by heat stroke decrease, who are mainly children and old men. Society and economy develop by ability adaptation for heat acquired, which increases working ability without discomfort and fatigue.

A study of effective defense method from ultraviolet rays

Ultraviolet rays (UV) contained by Sun light cause various damage in the living body, and UV is a large quantity and strong power in the Tropical Zone and the mountains in particularly. Therefore, the



Experiment of thermal sweating in the environmental chamber

creatures on earth acquired various defense methods for ultraviolet rays harmful to body in a process of evolution.

We have been promoting the study of defense methods from ultraviolet rays in wild animals which inhabit in a low latitude area, the desert and mountains (Right figure: black layer of body hair absorbs UV) in particular.

For the purpose, we study effective defense mechanisms for ultraviolet rays in wild animals, then we design the best defense method against ultraviolet rays with nature and harmless.

The influence of change in biophylaxis functions induced by ultraviolet radiation to infection of tropical disease

Skin cancer occurs by strong ultraviolet radiation for a long term. The exposure to more little amount of ultraviolet rays may be influence biophylaxis function to infection. UV in the Tropical Zone are strong, and many persons suffer from infectious disease. There are approximately 250 million patients with schistosomiasis in Tropical Zone.

In our experiment on infection of *Schistosoma mansoni* cercariae to mouse, ultraviolet radiation group by ultraviolet lamp (UV-B) was statistical difference in the number of *Schistosoma mansoni* cercariae invaded into skin and recovery the adult worms compared with nonirradiation group. We experiment the influence of ultraviolet rays in Sun light on it now.

This study elucidates influence of ultraviolet rays for infectious disease and contributes to the infectious disease control, in particular, in the Tropical Zone with strong ultraviolet rays.

Associate professor (Additional post)

Nobu Ohwatari



Pika inhabiting the mountains of 3200 m

## Departement of Biochemistry

Our research interest is focused on the molecular events occurring in inflammatory cells for the defense against invading microbes. Reactive oxygen species are essential for killing most of bacteria, fungi, and parasites. We are therefore investigating mechanisms for the expression and activation of superoxide-degenerating NADPH oxidase system.

GATA-3 as the Eosinophil-specific Repressor for the Expression of gp91<sup>phox</sup>, an Electrontransferring Component in Phagocyte NADPH Oxidase System

In a systematic search for cis-elements regulating gp91<sup>phox</sup> expression in eosinophil lineage, we identified an inhibitory element containing a GATA consensus site at the proximal promoter and GATA-3 as the specific protein binding to that site. Two-base-pair substitution at the consensus site abolished inhibition of the promoter activity in eosinophil-committed HL60-C15 cells, indicating that the GATA-3 binding to the site is a repressor in the cells. Because eosinophil is the only cell expressing GATA-3 among human phagocytes and B lymphocytes, GATA-3 is an eosinophil lineage-specific repressor of gp91<sup>phox</sup> gene.

PU.1 but not HAF-1 is a Common Activator for the Expression of gp91<sup>phox</sup> in Neutrophils, Monocytes and B Lymphocytes

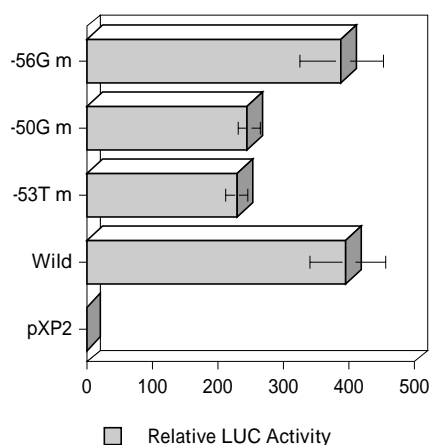


Fig. 1. Reporter gene expression driven by various mutant gp91<sup>phox</sup> promoters

For the expression of gp91<sup>phox</sup> in these cells, we previously suggested a common transcriptional activator which requires the position-53 based on an analysis of a novel patient with chronic granulomatous disease. HAF-1 and PU.1 were identified as candidates for this activator. We, therefore, examined 60 fragments with onebase substitutions neighboring to-53, and found two sequences; one has a mutation at-56 and impairs the binding of HAF-1, and the other mutation at-50 and impairs the binding of PU.1. The-50 mutant promoter but not-56 mutant one exhibited decreased reporter activity, indicating PU.1, but not HAF-1, to be an essential activator for the expression of the gene in those cells (Fig. 1). A discovery of a similar patient with a point mutation at-52 which abolished the binding of PU.1 confirmed our conclusion.

Our future aim is to apply these findings to innovation of techniques to control tropical diseases and allergy.

Professor	Michio Nakamura
Assistant Professor	Atsushi Kumatori
Research Associate	Shoichi Suzuki
Technologist	Toshiyuki Moriuchi
Postgraduate Student	Yoshito Fujii
Postgraduate Student	Maki Yahiro
Postgraduate Student	K. A. Deepa



## Department of Pathology / Division of Clinical Investigation

In 1970, the Late Professor Toyosuke WATANABE classified tropical diseases into 4 groups:

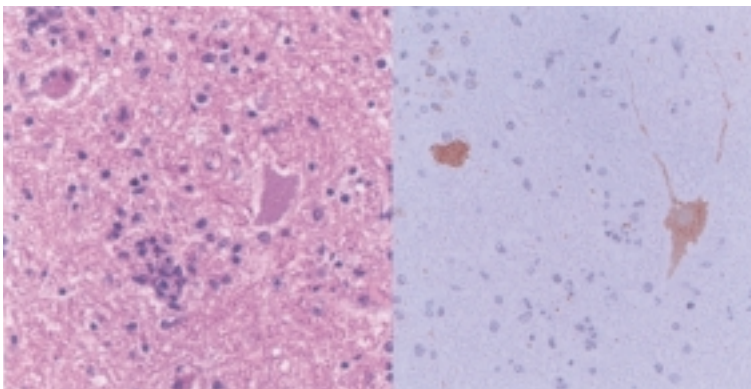
- 1 . Diseases caused by pathogens, uniquely present in the tropical areas.
- 2 . Diseases induced by environmental factors such as tropic climate.
- 3 . Diseases specific for some habitants in the tropical areas due to their high susceptibility.
- 4 . Diseases difficult to prevent in developing countries.

Now, we are investigating the pathogenesis of tropical diseases based on this concept, especially for infectious diseases caused by viruses, and aim to establish the fundamental basis of their prevention and treatment.

### Activities

Pathological diagnosis of infectious diseases.

We are developing various antibodies and molecular probes available for diagnosis of infectious diseases on the clinical specimens obtained at cytology, biopsy, necropsy and autopsy. We are also performing various animal experiments to obtain positive controls for this analysis and to analyze their pathogenesises.



Legend: The central nervous tissue of cynomolgus monkeys inoculated with enterovirus 71 (EV71) . Left: Hematoxylin - eosin stain. Right: Immunostaining for EV71 capsid antigens.

Virus infections of the central nervous system.

Flavivirus encephalitis, such as Japanese encephalitis and tick-borne encephalitis, and rabies are still big problems in the southeast and east Asia . Recently, enterovirus 71 infection among children is frequently associated with serious neurological manifestations in these areas. We are investigating the clinicopathological aspect of these infections and also performing animal experiments to establish their pathogenesis and prevention.

Carcinogenesis in papillomavirus infection.

Neoplasms, dysplasia and condylomas of the mucosa and skin are investigating for the presence of papillomaviruses using the molecular and pathological methods. In addition, we are developing an animal model of mucosal carcinogenesis using hamster.

Virus infections of the respiratory tract.

Human cases with airborne-infections such as influenza and measles are studied for pathological diagnosis and their pathogenesises.

Pathology of viral hepatitis.

Epidemiological and histopathological studies are being done in the southeast Asia for viral hepatitis and its sequelae.

Professor	IWASAKI, Takuya
Associate Professor	TORIYAMA, Kan
Research Associate	SENBA, Masachika
Research Associate	HAYASAKA, Daisuke
Research Associate	AGO, Masanobu
Research Assistant	ABE, Yuko
Technician	FUKUDA, Akemi
Postgraduate Student	KAMEI, Rika
JICA Student	Mohamed Cheick CAMARA
JICA Student	Cuong Zuy Do



## Department of Internal Medicine

The Department of Internal Medicine is developing the studies on the etiology, diagnosis, molecular epidemiology and pathophysiology of respiratory infections and performing collaborative studies on the diagnosis, treatment and prevention of infectious diseases in developing countries.

Individual research activities

### 1 .Researches on the pathophysiology of severe and intractable pulmonary infections

We are investigating the mechanisms of biofilm formation of respiratory pathogens and apoptotic neutrophil clearance by pulmonary macrophages after bacterial infections.

### 2 .Molecular epidemiology of respiratory pathogens

To determine the mechanisms of transmission of respiratory pathogens, we are analyzing the DNA pattern of isolated pathogens using pulse field gel electrophoresis.

### 3 .Researches on the pathophysiology of dengue illness in the Philippines

We are currently investigating the mechanism of thrombocytopenia, which is a characteristic feature of dengue virus infection, in Metro - Manila. This is a collaborative study with St. Lukes Medical Center and San Lazaro Hospital in the Philippines, and other departments in our institute.

### 4 .Treatment and vaccine prevention of bacterial meningitis among children in Bangladesh.

We are developing the treatment and vaccine prevention of bacterial meningitis among children in Bangladesh in cooperation with Shishu Hospital.

### 5 .A study on the effect of pneumococcal vaccine for HIV-infected adults in Uganda

We are evaluating the effects of 23 valent pneumococcal vaccine on the specific antibody production and induction of opsonic activity in sera of HIV - infected adults in Uganda.

### 6 .Bacterial etiology and antimicrobial susceptibility of isolated pathogens from pediatric patients

With acute respiratory infections in Hanoi, Vietnam. This is a collaborative study with NIHE, National Institute of Pediatrics and Bach Mai Hospital.

### 7 .Research on the pulmonary infections in HIV-infected persons in Thailand.

A collaborative study is under development between our departments and the Faculty of Medicine, Chiang Mai University, Thailand.

Professor	Tsuyoshi Nagatake
Associate Professor	Kazunori Oishi
Research Associate	Norichika Aso
Research Associate	Kiwao Watanabe
Postgraduate student	Mariko Saito
Postgraduate student	Jun Koyama
Postgraduate student	Takayuki Oike
Postgraduate student	Toshitaka Sukisaki
Postgraduate student	Yosiyasu Yoza
Postgraduate student	Qin Liang
Postgraduate student	Chen Meng
Postgraduate student	Chiharu Kaji
Postgraduate student	Aiko Fukuma
Postgraduate student	Yuki Hisatomi
Postgraduate student	Hiroaki Yoshii
JICA trainee	Heinner-Guio



Research on bacteriology in BSL 2 laboratory



Laboratory of biochemical research

## Department of Preventive Medicine and AIDS Research

This department was newly added to the institute in 1978 as a research division open to visiting professors from other universities and institutes. It is run by concurrent research staff for the present. We have planned and started from August of 2002 a series of fundamental research to answer the question how and what mechanisms human immunodeficiency virus and murine leukemia virus enter into host cells. In addition, we are studying the application of these retrovirus to human gene therapy.

### Study on the mechanism of viral entry into host cells by retroviruses

Human immunodeficiency virus (HIV) is known to be a causative agent for acquired immunodeficiency syndrome. After the HIV recognizes CD 4 and chemokine receptor, for example CXCR4, it enters into target cells mediated fusion between virus envelope and cell membrane. Murine leukemia virus (MLV) recognizes CAT 1 as the infection receptor, and enters into host cells by same manner. It is most likely that the environment around the receptors influences the infection efficiency. In this context, we are studying the effect of receptor glycosylation and lipid factors proximal to the receptor on the HIV and MLV infection.

On the other hand, there are some evidences showing that actin-dependent clustering of the recep-

tors is involved in the retrovirus infection. The receptors, however, do not directly associate with actin. We try to identify the cellular molecule that functions as a linker between the receptor and actin.

### Application of HIV envelope gene to gene therapy

HIV enters into target cells by fusion between virus envelope and cell membrane. This reaction is catalyzed by envelope glycoprotein encoded by the viral genome. When the envelope gene is introduced to susceptible cells expressing CD 4 and CXCR4, syncytium formation is induced by its membrane fusion activity, and die. Recently, CD 4-independent HIV has been isolated. When the envelope gene of the CD 4-independent HIV is introduced to cells expressing CXCR 4 but not CD4, syncytium and cell death was induced. It has been reported that CXCR 4 is up-regulated in mammary tumor. This suggests that the CD 4-independent HIV envelope protein specifically induces cell death of mammary tumor cells. We are studying the application of the CD 4-independent HIV envelope as a novel therapeutic gene for mammary tumor.

Visiting Professor	Naoki Yamamoto
Visiting Associate Professor	Hironori Sato
Assistant Professor	Yoshinao Kubo
Technician	Chika Tominaga



Laboratory for biochemical research



Laboratory for biochemical research

## Department of Vector Ecology & Environment

Main interest of the department is analysis of environmental factors that affect the transmission of insect-borne diseases, and pursuing environmental friendly vector control strategy.

### 1 . Physiology and ecology of malaria vectors

A long-term monitoring on main vectors of malaria has been conducted at several fields in South-east Asian countries. Spatial and temporal changes in larval habitats, vegetation, and the impact of human activity on the environment are evaluated in relation to abundance of vectors, host preference, and other population parameters. The GIS/RS is introduced as a new tool to analyze the environment. Geographical strains of several *Anopheles* are comparatively studied by morphological, physiological, and genetic approach.

### 2 . Ecology and control of dengue vectors

Epidemiological studies have been conducted at several fields in Southeast Asian countries. Monitoring by oviposition traps and mark-release-recapture

experiment are performed to establish more realistic larval indices. In the laboratory *Aedes aegypti* and *Ae. albopictus* are studied on their ecological characters among geographical strains. Feeding behavior and population dynamics of these mosquitoes also are studied in the laboratory and fields.

### 3 . Vector control technique related studies

Basic study of copepods as a hopeful biological control agent against vector mosquito larvae. Biochemical approach to insecticide resistance in vector mosquitoes.

Professor	Masahiro Takagi
Assistant Professor	Hitoshi Kawada
Research Associate	Nobuko Tuno
Research Assistant	Toshiko Ueno
Technician	Emiko Kawashima
Technician	Yoshihide Maekawa
Postgraduate Student	Maiko Hasegawa
Postgraduate Student	Susumu Saita
JICA Student	Wang Shan-qing
JICA Student	Tamara Belzabel Obispo Argueta



Stereomicroscopic observation of mosquitoes



Ramp traps for collecting mosquitoes

## Department of Social Environment

### Specific Features of the Department

This Department covers under the 7<sup>th</sup> tenure interdisciplinary field of Environmental and Social Medicine related to health services and social welfare problems in developing countries.

Interdisciplinary approach includes studies in Social Sciences and Humanities. Further, methods and actual means of international cooperation toward developing countries has been sought to utilize in order to promote inter-departmental linkage for information accumulated with specific analysis and professional response to the public particularly in the field of infectious diseases diagnosis and control.

Under this context, basic and applied research have been carried out in the following prospective themes from the view point of environmental and social aspects for the purpose of promoting assistance to minimize health problems in tropical areas:

#### Area of Research Activities:

- 1 . Study and analysis on social (incl. life style, political and economical) background which regulates frequency / areas / combination of diseases of the presence of epidemics.
- 2 . Study on the effect of individual and social environment toward endemic and epidemics.
- 3 . Standardization of human security measures in the field of health services from the view points of nutrition and 3 Es ie.economy, environment and education.
- 4 . Study on control of communicable diseases among the regional and international health care programs.
- 5 . Study on quantitative and qualitative values of medical and health services under the ODA ie. Official Development Assistance programs by Japanese government.

nese government.

- 6 . Feasibility study on comprehensive information filing and network system for the sake of promoting health and social welfare services in developing countries, by epidemics, by regions, by administrative measures.
- 7 . Reformation and coordination of health manpower training program / system to meet the need of tropical area in connection with Risk Management.
- 8 . Comparative studies on the control of emerging infectious diseases in tropical Asia Such as West Nile and SARS.

Specific themes of joint cooperative research designated to the Department in FY 2002 under the scheme of Research Institute for Nationally Joint-Use are listed below. The Technical and Management Committee recommended that interdisciplinary research collaboration should be realized from the viewpoint of middle and long-term range and managed not only by single department but by the whole Institute as one of the important mandates.

#### Joint Research projects themes:

- a) Social and Environmental Diagnosis of Tropical Diseases for its Control and Prevention.
- b) Study on Application of Geographical Information system in Tropical Diseases Control
- c) Research on HIV / AIDS epidemic and its Control in Developing Countries.

Professor	Tsutomu Mizota
Research Associate	Takaaki Furukawa
Research Associate	Susumu Tanimura
Research Associate	Eiko Kaneda
Research Assistant	Eiko Tara
Postgraduate Student	Chizuko Suzuki
Postgraduate Student	Qin Liang
JICA Student	Hafsa Lukwata



" Dept. of Social and Environmental Medicine often serves as a secretariat for Int'l Symposia. "



Joint Cooperative Research Members Join in the meeting for preparing textbook.



## Department of Molecular Immunogenetics

This department is focusing on the pathogenic genetic factors of the host and the parasite in the most important tropical infectious diseases using molecular biology and human genetics.

### 1. Schistosoma japonicum

#### 1) Pathogenesis of hepatosplenic disease

Immunopathology controlled by HLA-Class II genes is analysed by T cell epitope, T cell cloning, tetramer analysis, Cytokine network analysis, ELISPOT analysis, 4 color FACS, animal model of HLA Tg mini-pig system

Identification of pathogenic genes by Multiple families (MF) genetic analysis

Association analysis between disease and immune related polymorphic genes

#### 2) Molecular analysis of protective immunity in humans

Protective antigens effective for humans are searched by checking reactivity of super-resistant individuals in China.

Experimental animal model (pig)

Analysis of protective immunity in pig, and Vaccine development targeted to somula stage antigens.

Estimation of mRNA expression in somula by SAGE method

#### 3) Surveillance system

Development of novel methodology for the long term surveillance

Environmental research by GIS/RS is introduced to Hilly type schistosomiasis project

### 2. Malaria

#### 1) Pathogenesis of Severe malaria

Functional analysis of the susceptible TNFP (TNF-alpha promoter) alleles to cerebral ma-

laria

2) Protective Immunity in falciparum malaria  
HLA-Class I restricted CD 8 T cell analysis in the immunity

### 3. Trypanosoma cruzi

#### 1) Pathogenesis of the complications

Human genetic factors to develop Chagas heart, or the Mega disease by using HLA-class I, MICA, B, TNFP, and other relevant genes.

Pathogenicity of the parasite

By Comparisons between three different pathogenic parasite lines derived from human patients with different clinical types, cardiac, digestive, and no complication.

Biological variety of the parasite lines molecular basis of the difference between intracellular proliferative (Peru 1,2) and non-proliferative, (H 1, H 23) are analysed by 2 D

#### 2) Protective immunity

Identification of a resistant gene

Analysis of the human T cell immunity

Protection from transplacental fetal infection.

### 4. Dengu virus

#### 1) Pathogenesis of the DHF (Dengue Hemorrhagic Fever)

Host factors will be detected by the Population genetic analysis of the patients with DHF and non DHF.

### Staffs

Professor	Kenji Hirayama
Associate Professor	Nobu Ohwatari
Assistant Professor	Mihoko Kikuchi
Guest Research Fellow	MOHAMED Raafat Taha
Guest Research Fellow	Chuanxin Yu
Technician	Junko Hayashima
Senior Research Assistant	Ai Murakami
Postgraduate Student	Ratawan Ubalee
Postgraduate Student	Dujdow Songthamwat
JICA Student	Feng xue Zhang
JICA Student	Kazuo Kajiware



Laboratory of Molecular Genetics



Clean Room for Cell Culture

## Department of Internal Medicine ( University Hospital )

The Department of Internal Medicine, located on the floor of University Hospital, specializes in the Respiratory Diseases on the 12th floor of University Hospital. A staff of the department is examining patients with various pulmonary diseases such as: lung cancer, bronchial asthma, pulmonary fibrosis, sleep disorder and tuberculosis, systemic infections including tropical infections. Our clinic has twenty beds and isolated wards for patients with tuberculosis, and an outpatient clinic which open every two days per week. The staff carry out medical rounds, clinical conference and Journal club once a week. The staff also teaches medical students and postgraduate students of the pharmaceutical science. In the course of postgraduate training, the staff are responsible for clinical training for the intern to bring up to the general physician and the infectious diseases specialist.

Professor and Chief	Tsuyoshi Nagatake
Associate Professor	Kazunori Oishi
Assistant Professor	Hiroshi Watanabe
Research Associate	Takeshi Yamaro
Research Associate	Yoshiko Tsuchihashi
Research Associate	Konosuke Morimoto
Research Fellow	Kazuhiko Hoshino
Research Fellow	Hideki Ikeda
Research Fellow	Akitsugu Furumoto
Research Fellow	Shoko Honda
Research Fellow	Kazushi Motomura
Research Fellow	Masayuki Ishida
Intern	Reiko Mizutani



Clinical conference

## Animal Research Center

The center makes it the principal aim to ensure the safety of animal experiments which deal with the pathogenic microorganisms and to build up the successful generation of experimental animals, microorganisms and parasites. The building consists of 7 breeding rooms of experimental animals, 2 laboratories, one breeding room for snails and insects, and two P 3-level biohazard laboratories. The air pressure is kept to be always negative to avoid outflow from inside even at entrance to building. Since the building has the most thorough ventilation through HEPA filter, any microbe cannot leak out to outside of the building. The water used is given chlorination and drained off. The breeding animals and experiments are done according to the Guideline for Animal Experiment edited by Nagasaki University. The laboratory animals bred in the center are mice, rats, hamsters, gerbils, rabbits, snails and mosquitoes.

Professor and Director	Michio Nakamura
Research Associate	Tetsuo Yanagi
Technician	Junko Kawashima



Mongolian gerbil ( *Meriones unguiculatus* )

## Research Center for Tropical Infectious Diseases

The Research Center for Tropical Infectious Diseases, Which Inherited its history from the information and Reference Center of Tropical Medicine, was established in April 2001. According to the history the center has three missions.

The center functions as a museum of tropical diseases, which is unique in Japan. Next, the center also provides necessary information and references related to tropical diseases to all the staff, graduate students, researchers and trainees, as well as members of the public who visit the Institute. The third mission of the center is to contribute to the global control of the tropical infectious diseases. We analyze the factors that regulate the epidemics of the diseases to find appropriate control measure of the infection.

References currently available at the center are books, maps, periodicals, pamphlets, films, videocassette tapes, photo slides, photographs, charts, exhibition panels, animal specimens as well as pathological tissue specimens. These materials are now being digitized and are provided to the public through cyberspace. The center also gathers scientific, social economic, and cultural information related to tropical diseases. Our current exhibitions consist of panels of major tropical diseases, diarrhea diseases, acute infectious diseases, AIDS related diseases, and specimen of parasites, vector arthropods and

poisonous marine animals.

The center carries out eco-epidemiological studies on tropical diseases by means of fieldwork at the actual site of the problem. We also use computer science technology, such as the geographical information system, remote sensing and information exchanging system, which project the future of tropical infectious diseases from both local and global perspective. One of our main interest is the role of human behavior in the transmission of tropical infectious diseases. Taxonomy and ecology of vector insects and mites of infectious diseases are also the research subjects of the center.

Professor	Masaaki Shimada
Professor	Kazuhiko Moji
Associate Professor	Hiroshi Suzuki
Assistant Professor	Yuji Ataka
Research Assistant	Kyoko Sakitani
Research Assistant	Kazuo Araki
Technician	Kiyomi Suda
Postgraduate Student	Tomoko Kisu
Postgraduate Student	Yoshiki Hamada
Postgraduate Student	Yuko Nakao
Postgraduate Student	Akio Ohno
Postgraduate Student	Sadako Nakamura
Postgraduate Student	Cai Groxi



Exhibition room



Schistosomiasis transmission site  
(Collection of vector snails)

## Central Laboratory

There are several equipments at this laboratory. It is open for collaboration research with all part of Japan followings are the equipments now available. Electron microscopies (TEM and SEM of jeol), a Ultramicrotome (Reichert), con-focal laser microscope system (LEICA DMIREZ), a flow cytometer (FACScan), a cell sorter (FACSSatar plus), Laser scanning microscopies (Bio rad MRC 600 and Zeiss LSM), micromanipulation system (Nikon-Narishige and Zeiss-shimazu), Bioimage analyzers (Hamamatsu Photonics, Bio rad GS-250 and Pharmacia Image master), a peptide synthesizer (Millipore 600 E), a peptide sequencer (Shimazu PPSQ-10), DNA sequencers (Perkin-Elmer 373-70 and Pharmacia AFL), a DNA/RNA extraction system (Perkin-Elmer 341-30), a real-time surface plasmon detector (Fisons IAsys), two P 3 rooms, Super sentrifugal machine (optima L-90 K). with other equipments, experiments on cell biology and histochemistry can be carried out.

Professor and Chief	Toshiya Hirayama
Research Associate	Akitoyo Ichinose
Research Assistant	Kumi Tamura



The TEM of electron microscope Laboratory

## Administration

Yoji Shimizu, Head Official

### General Affairs Unit

Rikio Yoshidomi, Chief  
Tsukasa Harada, Sub-Chief  
Hidemitsu Baba, Sub-Chief  
Ami Ishizaka, Staff  
Hiromi Moriyama, Assistant Staff  
Junko Suenaga, Assistant Staff  
Asuka Matsuo, Assistant Staff

### Collaboration Research Unit

Keiko Matsuda, Chief  
Fumiko Hashiguchi, Staff  
Yumiko Matsumoto, Assistant Staff



## Number of Staff

(as of July, 2003)

Divisions	Professor	Assistant Professor	Lecturer	Assistant	Sub total	Others	Total
Quota	①(1) 12	(1) 10		18	①(2) 40	9	①(2) 49
Enrollment	①(1) 12	(1) 4	5	19	①(2) 40	10	①(2) 50

( ) : Visiting Staff , : Overseas visiting professor

## Accounting

Revenue (in 2002)

Divisions	Amount (in thousands)
Tuition and Matriculation Fee	2 ,330
Industry-Academic Cooperation	96 ,286
Miscellaneous	15 ,393
Total	114 ,009

Expenditure (in 2002)

Divisions	Amount (in thousands)
Special Account of National School	308 ,272
Total	308 ,272

## Grant-in-Aid for Scientific Research from the Ministry of Education, Culture, Sports, Science and Technology

(in 2003)

Classification	Scientific Research on Priority Areas	Scientific Research (A)	Scientific Research (B)	Scientific Research (C)	Exploratory Research	Young Scientists (B)	Total
Number of Grants	2	1	12	5	4	4	28
Amount (in thousands)	7 ,900	9 ,900	38 ,900	8 ,700	6 ,900	6 ,800	79 ,100



## External Funding

(in2002)

Divisions	Cooperative Research	Commissioned Research	Grants and Endowments
Number of Sources	0	11	24
Amount (in thousands)	0	62 ,367	15 ,393

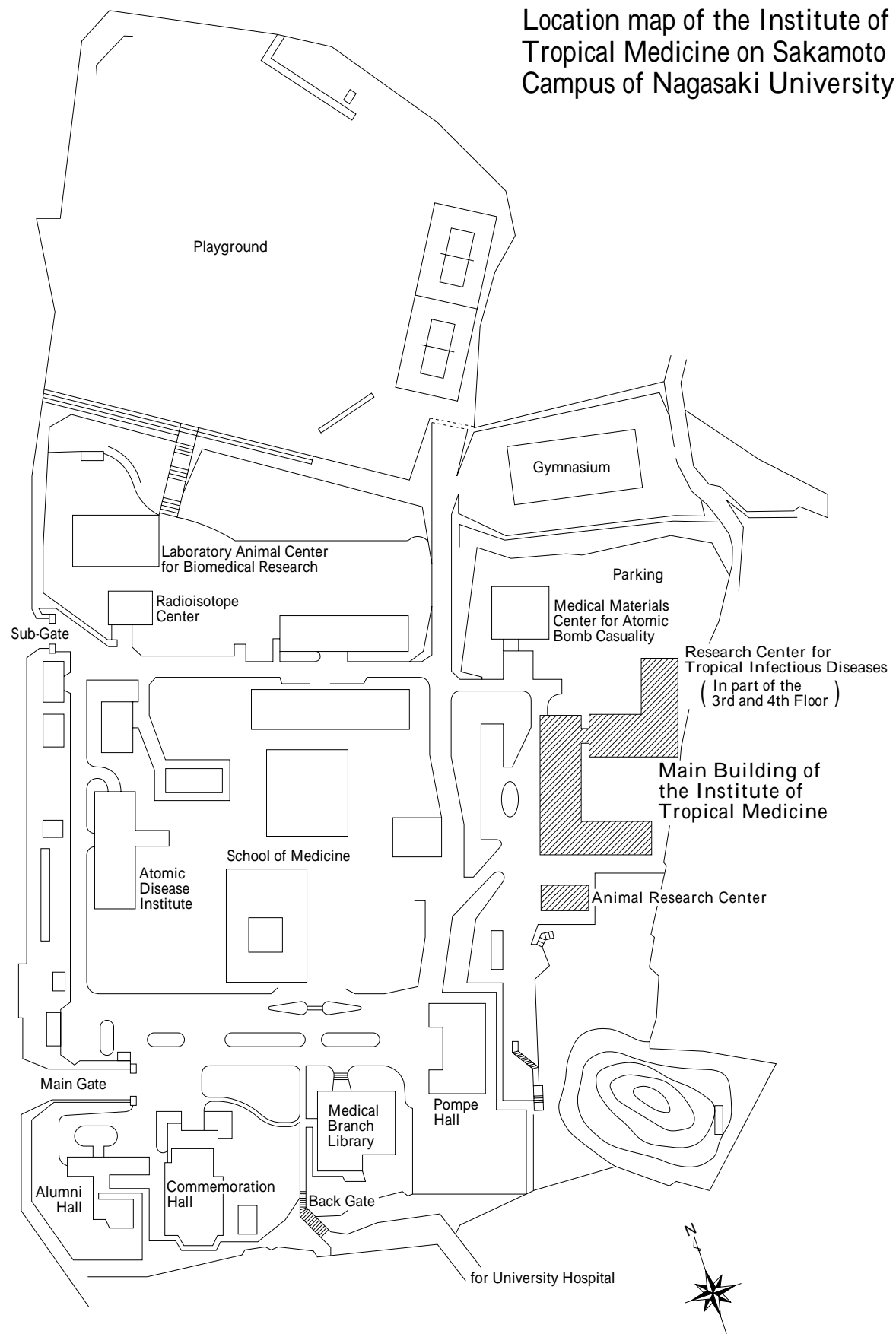
## Site and Buildings

Location	12 - 4 Sakamoto 1 chome Nagasaki - city		
Buildings( m <sup>2</sup> )	Institute of tropical medicine ( 7 ,463m <sup>2</sup> )	Animal Research Center ( 490m <sup>2</sup> )	

## Agreement of Educational, Scientific and Scholaly Exchange

Name of organization of partner countries	Concluded date
Chiang Mai University (Thailand)	February ,1988
Mahidol University (Thailand)	November ,1999
Philippines University Diliman (Philippines)	April ,2000
Institute of Hygiene and Epidemiology (Vietnam)	June ,2001

Location map of the Institute of Tropical Medicine on Sakamoto Campus of Nagasaki University



## Telephone Number

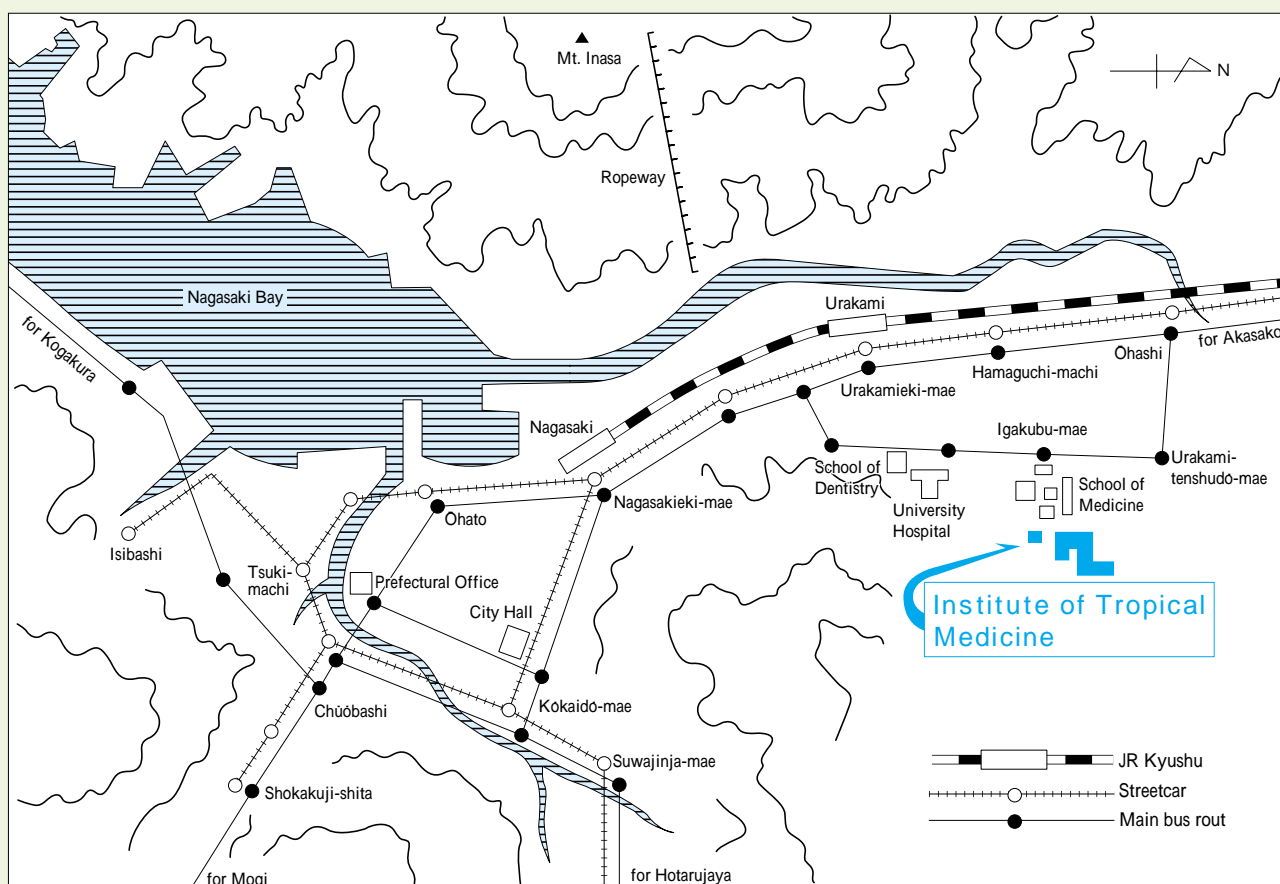
Institute of Tropical Medicine, Nagasaki University .....095 ( 849 ) 7800

	Extensions	
Dean .....	4700	849 7801
Head of Administrative Office .....	4701	849 7802
Chief of General Affairs Unit .....	4702	
General Affairs Unit .....	4703	849 7803
General Affairs Unit .....	4706	
General Affairs Unit .....	4707	849 7806
General Affairs Unit .....	4708	
Chief of Collaboration Research Unit .....	4709	
Collaboration Research Unit .....	4710	849 7807
Facsimile .....	4705	849 7805
Meeting Room .....	4711	
Department of Virology		
Professor .....	4733	849 7827
Associate Professor .....	4734	849 7828
Information .....	4735	849 7829
Facsimile .....	4736	849 7830
Department of Bacteriology		
Professor .....	4737	849 7831
Lab 9 .....	4738	849 7832
Information .....	4739	849 7833
Department of Protozoology		
Professor .....	4741	849 7835
Associate Professor .....	4742	849 7836
Lab 3 .....	4743	849 7837
Information .....	4744	849 7838
Department of Parasitology		
Professor .....	4728	849 7822
Associate Professor .....	4729	849 7823
Research Associate .....	4730	849 7824
Information .....	4731	849 7825
Department of Molecular Epidemiology		
Professor .....	4770	849 7860
Department of Thermal Adaptation		
Professor ( Concurrent ) .....	4726	849 7820
Department of Biochemistry		
Professor .....	4754	849 7848
Lab .1 .....	4755	849 7849
Lab 2 .....	4756	849 7850
Information .....	4757	849 7851

Department of Pathology	Extensions	
Professor .....	4719	849-7813
Associate Professor .....	4720	849-7814
Lab 2 .....	4721	849-7815
Information .....	4722	849-7816
Department of Internal Medicine		
Professor .....	4746	849-7840
Associate Professor .....	4747	849-7841
Information .....	4748	849-7842
Facsimile .....	4749	849-7843
Department of Preventive Medicine and AIDS Research		
Professor .....	4750	849-7844
Research Associate .....	4751	849-7845
Information .....	4752	849-7846
Department of Vector Ecology & Environment		
professor .....	4716	849-7810
Staff room .....	4717	849-7811
Information .....	4715	849-7809
Facsimile .....	4718	849-7812
Department of Social Environment		
Professor .....	4774	849-7864
Information .....	4775	849-7865
Information .....	4776	849-7866
Facsimile .....	4777	849-7867
Department of Environmental Pyhsiology		
Professor .....	4724	849-7818
Associate Professor .....	4725	849-7819
Information .....	4726	849-7820
Facsimile .....	4727	849-7821
Animal Research Center		
Information .....	4762	849-7856
Laboratory .....	4763	849-7857
Research Center for Tropical Infectious Diseases		
Professor .....	4778	849-7868
Professor .....	4779	849-7869
Associate Professor .....	4759	849-7853
Lab .1 .....	4714	849-7808
Computer Room <sup>(2)</sup> .....	4778	849-7868
Information .....	4760	849-7854
Central Laboratory		
Electron Microscope Room .....	4765	849-7859
FACS Room.....	4767	
Section for Experimental Animals .....	4769	



## Location map of the Institute of Tropical Medicine, Nagasaki University in Nagasaki City



### How to get the Institute

- 1 . From Nagasaki Station ( JR Kyushu )
  - ① Get on a bus (Nagasaki Bus, Line 8 ) at Nagasakieki-mae and get off at Igakubu-mae.  
Five minutes walk from the bus stop.
  - ② Get on a streetcar at Nagasakieki-mae ( for Akasako, Line 1 or 3 ) and get off at Hamaguchi-machi. Ten minutes walk from the streetcar stop.
  - ③ Ten minutes by taxi from the station.
- 2 . From Urakami Station ( JR Kyushu )
  - ① Twenty minutes walk.
  - ② Five minutes taxi.
- 3 . From Nagasaki Airport
  - ① Get on limousine at the airport ( for Nagasaki ), and get off at Nagasaki-ekimae, and then continue to 1 .
  - ② Get on limousine at the airport ( for Nagasaki ), and get off at Ohashi, and then twenty minutes walk from the bus stop or 5 minutes by taxi.
  - ③ About one hour by taxi from the airport.

### Location

1 12 4 Sakamoto Nagasaki 852 8523  
 URL <http://www.tm.nagasaki-u.ac.jp>

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