

INSTITUTE OF TROPICAL MEDICINE NAGASAKI UNIVERSITY



AUGUST



2008

MISSION STATEMENT

Institute of Tropical Medicine (NEKKEN), 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

Coverpage: Bednet insecticide treatment activity in a minority's community in malaria endemic area, Vietnam.



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 (12 departments, 1 domestic visiting department, 1 overseas visiting department), 4 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 immunogenetical analysis of tropical diseases.
2. Epidemiological studies and control have been carried out on malaria, dengue fever / dengue hemorrhagic fever, SARS 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. When the world was suffering from a severe outbreak of SARS in 2003, the institute dispatched 3 researchers to P.R. China and other countries in respond to a request of WHO.
2. And in 2005, the institute dispatched the investigation team to make a survey of possible outbreak of infectious diseases in Indonesia and Sri Lanka, the countries that met disaster of tsunami.
Thus the staffs have given their technical co-operation to disease control program in developing countries as WHO short-term consultants, JICA experts and other consultants.

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

1. Staffs of the institute conduct the doctorate and master degree course which belongs to Graduate School of Bio-medical Sciences in Nagasaki University. In 2006 , a one-year course of the Master of Tropical Medicine opened for medical doctors.
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.
4. Since 2006, by the cooperation of WHO/TDR, the institute started “ Diploma Course on Research & Development of Products to meet Public Health Needs ” (5 weeks) which 6 universities in 4 countries (Japan, Thailand, China, and Colombia) cooperated to held the course.

Based on the achievement mentioned above, in 1993 , 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 21st 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 Government Grant of 5 years.

In 2005, the overseas research laboratories of the Institute of Tropical Medicine has been established in Kenya Medical Research Institute, Nairobi, Kenya and National Institute of Hygiene and Epidemiology, Hanoi, Vietnam. The overseas research laboratories promise an extensive and longitudinal studies on tropical diseases.

In addition, the institute has a home page by which we appeal the public how tropical medicine is important for the well being of humankind and offer the information on the tropical diseases.

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.

August, 2008
Kenji Hirayama M. D., Ph. D.
Dean
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 Asia Research Institute of Endemics, Nagasaki Medical College 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 conducted in mainland China by the Departments of Pathology, Bacteriology, Internal Medicine, and Dermatology of Nagasaki Medical College. August 9th, 1945, the atomic bomb was dropped in Nagasaki, and the Institute's all the facilities and research materials were completely destroyed together with Medical School. Consequently, the development of the Institute and its research activities had lagged significantly behind.

In April, 1946, the Institute changed its name to the Research Institute of Endemics, Nagasaki Medical College, and moved to Isahaya City in May to resume research activities. Yet in accordance with the National School Establishment Law issued in May, 1949, the Institute once again changed its name to the Research Institute of Endemics, Nagasaki University. In 1957, the Institute was affected by another disaster of massive flooding, and its facilities, equipment, and research materials were severely damaged. Thus, construction of a new building started in Sakamoto, Nagasaki City in 1960, and the Institute moved to the building in April of the following year. The Institute's Departments, which were only two at the time, Pathology and Clinics, increased its number every year after 1963, including Epidemiology, Parasitology, and Virology. The Sakamoto building finished its first expansion at the end of 1966.

In June, 1967, with the partial alteration of the National School Establishment Law, the name of the Institute was changed for the third time to the present one to carry out basic and applied studies on tropical medicine. Around the same time, the Department of Internal Medicine, Institute of Tropical Medicine, equipped with 20 beds, was opened in the University Hospital. In 1974, the

Department of Bacteriology and the Reference Center were attached, and in 1978, the Department of Preventive Medicine, consisting mainly of visiting professors, associate professors, and researchers, and the Tropical Medicine Training Course were launched. In the ensuing year, the Infectious Animals Deprivation Experiment Laboratory was promoted to become the Animal research Center for Tropical Infections, and the second building expansion was concluded in March, 1980. In September, 1983, a JICA-sponsored group training program "Tropical Medicine Research Course" was opened, the Department of Protozoology was established a year after, and the third building extension was finished in July the year after that. Two years later, the Department of Medical Entomology was created and the Institute was reorganized into the collaborative institute in another two years. In 1991, the Department of Biochemistry was added, and the fourth building expansion was ended in March, 1994. In April, 1994, the Institute was divided into three big Divisions, Tropical Microbiology, Pathogenesis and Clinical Sciences, and Environmental Medicine, with the establishment of two new research Departments, Thermal Adaptation and Social Environment, which have expanded to 12 Departments at present. The Institute was designated as "Center of Excellence" in the forefront of scientific research in 1995, and a new research Department, Molecular Epidemiology, was established under the Research Field of Microbiology in 1996 to invite overseas visiting professors. In 1997, the Reference Room for the Tropical Medicine was replaced by the Tropical Disease Information and Reference Center, and it was again succeeded by the Research Center for Tropical Infectious Disease in 2001. In March, 2003, when the Sakamoto building finalized its fifth expansion, its extension work of almost 40 years came to an end. In March, 2006, the main building's repair work was completed. In April 2008, the Research Center for Tropical Infectious Disease for the Tropical Medicine was replaced by the Center for Infectious Disease Research in Asia and Africa and Tropical Medicine Museum.



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

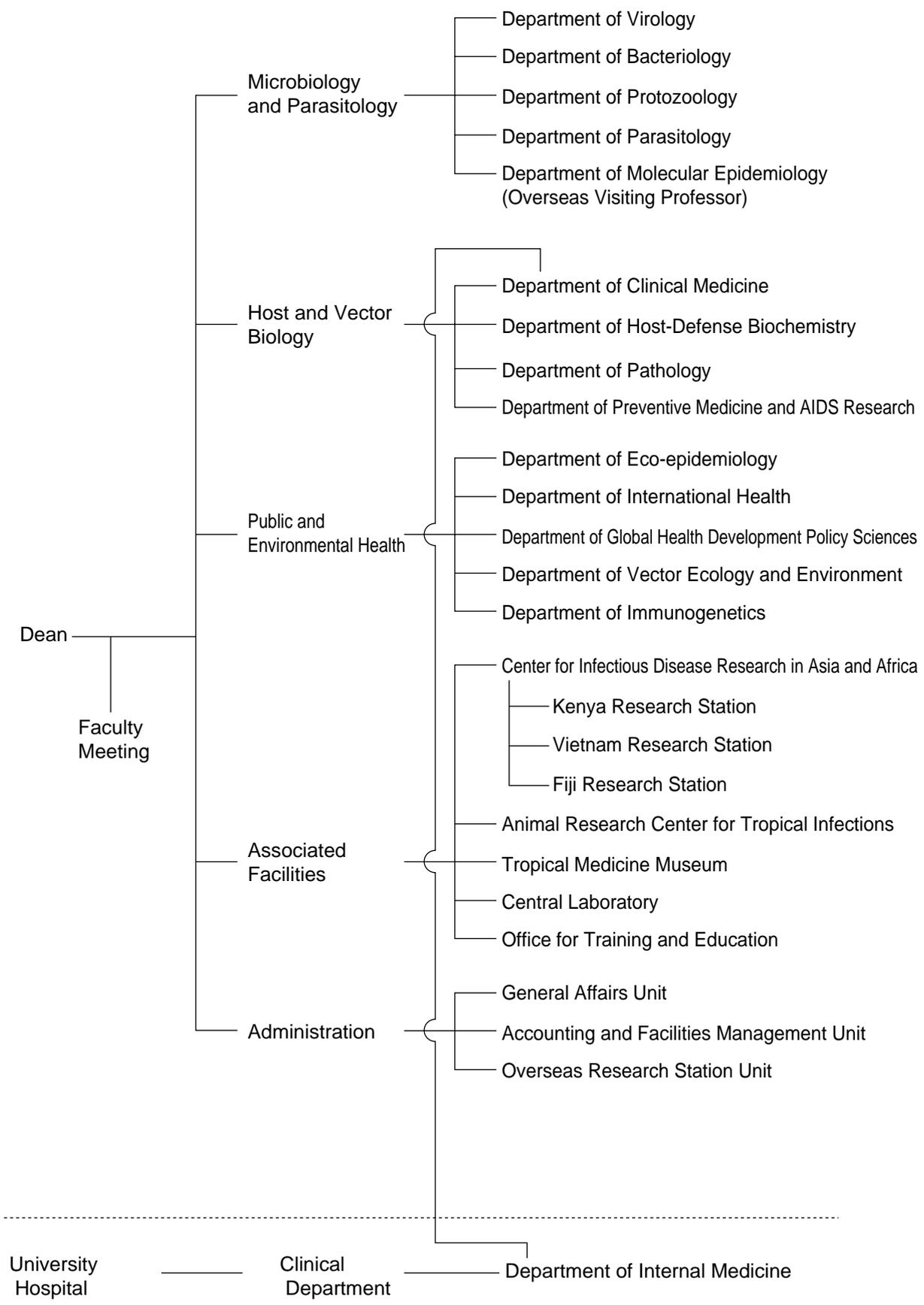
(Research Institute of Endemics)

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 - May.31,2007
Kenji Hirayama	Apr.1,2007 - Up to the present

Organizational Chart



Collaboration research

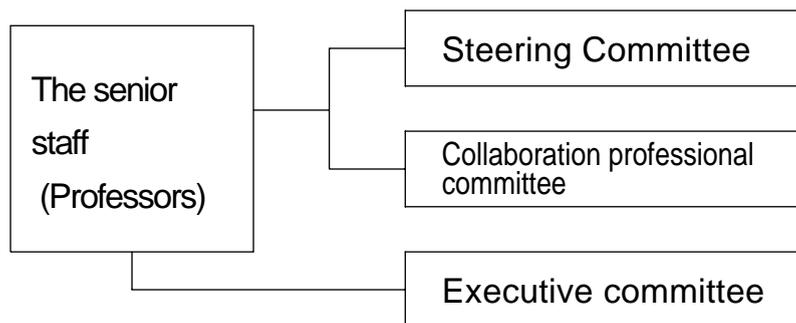
The institute has conducted research in the field of tropical medicine for the past 65 years since its establishment in 1942. The institute was reorganized to make extensive collaboration with other universities and institute in the field of interdisciplinary tropical medicine with molecular biology, 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.

In the FY2007 a total of 12 selected projects and 5 scientific meetings were carried out.

Collaboration Research Sytem



Institute of Tropical Medicine Steering Committee

Nagasaki University	Professor Emeritus	Akira Igarashi
Tayama Institute of Health	Director	Takeshi Kurata
International Medical Center	President	Takehiko Sasazuki
Keio University School of Medicine	Professor	Tsutomu Takeuchi
Research Institute for Humanity and Nature	Director	Narifumi Tachimoto
Research Institute for Microbial Diseases Osaka University	Professor	Takeshi Honda
National Museum of Ethnology	Director - General	Makio Matsuzono
The Institute of Medical Science	Director	Motoharu Seiki
The University of Tokyo	Professor	Shigeru Katamine
Graduate School of Biomedical Sciences	Dean	Masao Tomonaga
Graduate School of Biomedical Sciences	Dean	Kenji Hirayama
Institute of Tropical Medicine	Professor	Kouich Morita
''	Professor	Toshiya Hirayama
''	Professor	Osamu Kaneko
''	Professor	Yoshiki Aoki
''	Professor	Koya Ariyoshi
''	Professor	Naoki Yamamoto
''	Professor	Masahiro Takagi
''	Professor	Tsutomu Mizota
''	Professor	Masaaki Shimada
''	Professor	Taro Yamamoto

: Chairman

Institute of Tropical Medicine Collaboration Professional Committee

The Institute of Medical Science The University of Tokyo	Professor	Aikichi Iwamoto
Meiji Gakuin University The Faculty of International Studies	Professor	Akira Oki
Graduate School of Medicine The University of Tokyo	Professor	Kiyoshi Kita
Graduate School of Veterinary Medicine, Hokkaido University	Professor	Ikuo Takashima
Tsuda College Undergraduate Courses	Professor	Chizuru Misago
Kobe University Graduate School of Medicine	Professor	Haku Hotta
Research Institute for Humanity and Nature	Professor	Kenichi Abe
Nagasaki University	Regent	Kazumi Matsuoka
Graduate School of Biomedical Sciences	Professor	Isao Kouno
Institute of Tropical Medicine	Professor	Kouichi Morita
"	Professor	Toshiya Hirayama
"	Professor	Osamu Kaneko
"	Professor	Yoshiki Aoki
"	Professor	Koya Ariyoshi
"	Professor	Naoki Yamamoto
"	Professor	Masahiro Takagi
"	Professor	Tsutomu Mizota
"	Dean	Kenji Hirayama
"	Professor	Masaaki Shimada
"	Professor	Taro Yamamoto

: Chairman

Character of research organization and 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 Overseas Research Station, Animal Research Center for Tropical Medicine, and Tropical Medicine Museum.

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 8 overseas institutes. Since the overseas research laboratories of the institute has been established in Kenya Medical Research Institute, Kenya and National Institute of Hygiene and Epidemiology Vietnam in 2005, by the grants from Ministry of Education, Sports, Culture, Science and technology (MEXT), the extensive and longitudinal studies on tropical diseases are on the progress. The exchange program under the core university system of JSPS established between our Institute and National Institute of Hygiene and Epidemiology in Vietnam in 2000 has been renewed in 2005 and lasts for 5 years more.

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 consist-

ing of four courses. All the departments in the Institute belong 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.

In addition to the PhD course, in 2006 Master of Tropical Medicine (MTM) course opened in the Nagasaki University graduate school of Biomedical Science and 12 students from various countries were admitted to the school in April. The curriculum is constructed by three parts namely (1) 4 months lecture and practice on Clinical Trop Med and Tropical Public Health, (2) 1 month oversea training on tropical clinical medicine and public health in Thailand, Vietnam and or Philippines, and (3) 6 months dissertation preparation for each student's subject.

For the clinical training in the tropics, we set up 2 weeks training course at three affiliated hospitals, Chianmai University Hospital, Thailand, Choray Hospital, Ho Chi Minh City, Vietnam, and San Lazaro Hospital, Manila, Philippines. The application form is available through our homepage. Briefly, the applicant should have more than two years clinical training as a medical doctor, and should have enough communication skill in English.

The Graduate School of International Health Development was founded at Nagasaki University in 2008. Our main aim is to cultivate specialists who contribute to the promotion of good health in developing countries. A Master of Public Health (M.P.H) degree is awarded to the students who successfully complete our two-year course of study. Since tropical medicine plays a pivotal role in promoting good health internationally, three professors from Nagasaki University's Institute of Tropical Medicine serve as full-time faculty in the M.P.H program.

Three-month Course on Tropical Medicine and Related Studies

This is the only one short-course of tropical medicine in Japan. This course aims to support medical and paramedical personnel who are working or will work in the tropics by providing opportunities to learn a broad range of skills and knowledge relevant to practicing medicine, conducting disease control programs and conducting medical research in tropical and developing countries.

The course began in 1978. Up to the 30th course held in 2007, 351 personnel (including 142 medical doctors, and 209 paramedical such as nurses, community-health nurse, midwives, pharmacist) from all over Japan have completed the course. Fifteen participants are accepted to attend the course in each year. The course is run by the steering committee, which consists of members from both inside and outside the Institute of Tropical Medicine (ITM).

The full-time staff member of the ITM and several guest lecturers provide the 14 weeks (June to August) of lectures, laboratory practicals and field work in the field of virology, bacteriology, protozoology, parasitology, medical entomology, environmental physiology, biochemistry, pathology, host-genetics, epidemiology, human ecology, social medicine, clinical medicine and also geography and culture in tropics. Participants who completed the course successfully are awarded the Diploma in Tropical Medicine.



Admission ceremony in 2007

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.

Public Communication

Lectures and film shows for citizens are held occasionally. Every year, several groups of high school students with teachers visit our museum, attending lectures and film shows. To accumulate know-how of risk communication on tropical infectious diseases in our institute, we are planning to introduce "science cafe" sessions where we have frank communication with citizens on the present state and future prospects of research on tropical medicine.

Publications

Our official publications are as follows;

- 1) Bulletin of Nagasaki University Institute of Tropical Medicine (in Japanese, yearly since 1964, PDF files are available at our Web page.)
- 2) English Brochure: INSTITUTE OF TROPICAL MEDICINE NAGASAKI UNIVERSITY (this copy, yearly since 1977, PDF files are available at our Web page.)
- 3) Japanese Brochure (in Japanese yearly since 1977, PDF files are available at our Web page.)
- 4) Report of Nation-wide Cooperative Research Projects (Information of research activities and achievements as a nation-wide cooperative research center for tropical medicine is compiled.)
- 5) Tropical Medicine (An academic Journal issued since 1967 are now suspended since 2002 . PDF files are available at <http://naosite.lb.nagasaki-u.ac.jp/dspace/handle/10069/6>. Electric files of Annals of Endemic Diseases (in Japanese, 1959-1966, the predecessor of Tropical Medicine) are also available at the same Web page.)
- 6) Special memorial volumes of the 20th, 30th and 50th anniversary (in Japanese)

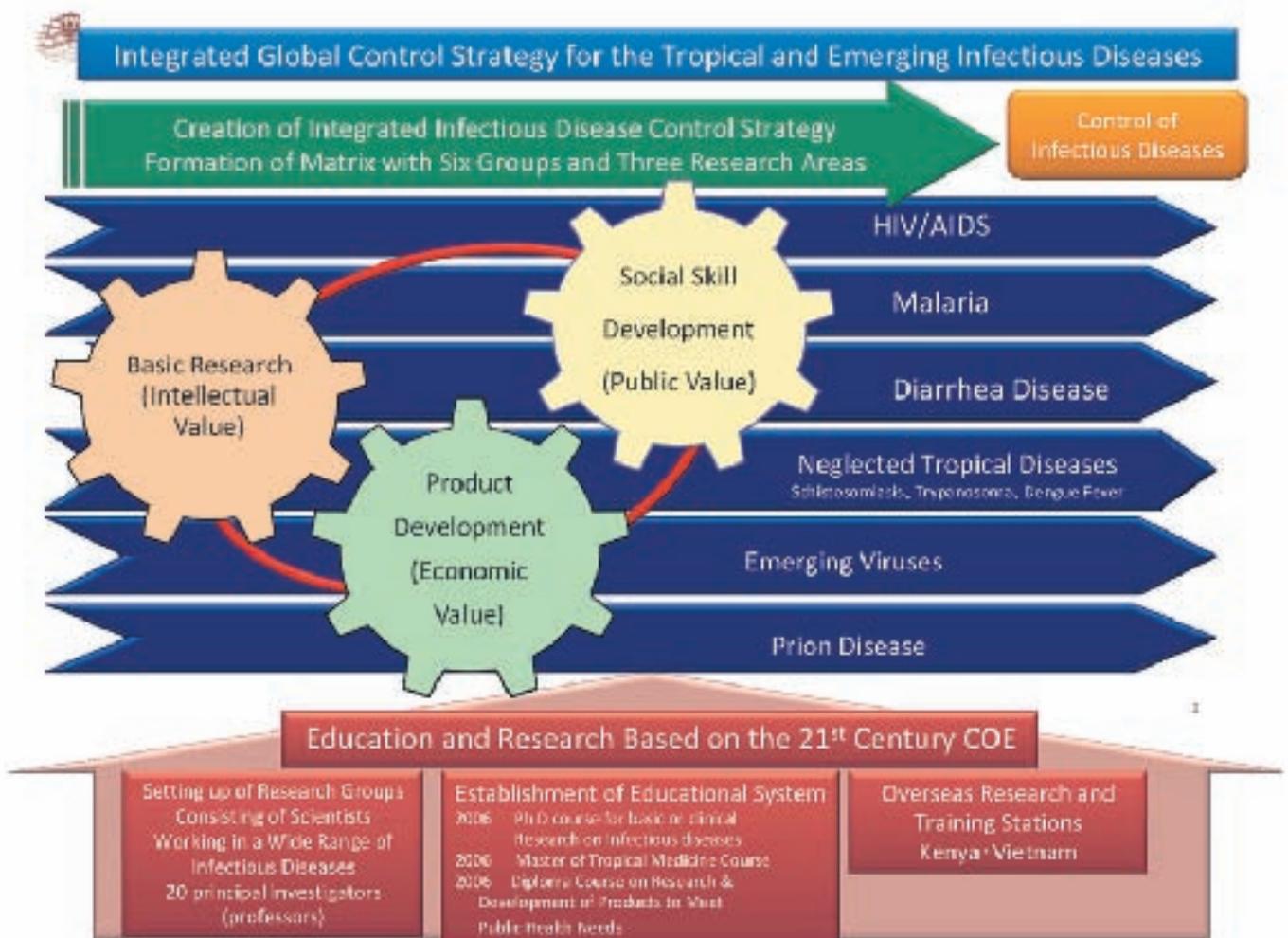
Global COE Program Integrated Global Control Strategy for the Tropical and Emerging Infectious Diseases

COE

The United Nations issued eight development goals in its Millennium Declaration in 2000 as international targets, with the core message being measures against infectious diseases expressed as follow: “ Stop the occurrence of major diseases including HIV/AIDS by 2015 and decrease the subsequent incidence rate. ” The ultimate goal of this program is to control and conquer these major infectious diseases. We will further advance and internationalize our outstanding achievements in the 21st century COE program to create a new center of excellence (COE) toward the accomplishment of these objectives.

For controlling and overcoming infectious diseases, tactical strategies and personnel with appropriate

skills to carry them out are absolutely necessary. This new COE will focus on “ neglected infectious diseases (dengue fever, schistosomiasis, etc.) ”; which have rarely been considered because most of the cases have been happened in poor developing countries, plus diseases involving diarrhea, which tend to be treated as curable in developed countries. Of these tropical and emerging infectious diseases, we will lay concepts of a new strategy in a comprehensive manner to control and overcome those diseases which have currently become global issues or major impediments to development, and work on research and development of innovative technology essential for the implementation of our strategy. Moreover, through this process, we will foster promising experts who can play a leading role in the future of this research area.



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.

Research on emerging viral infectious diseases

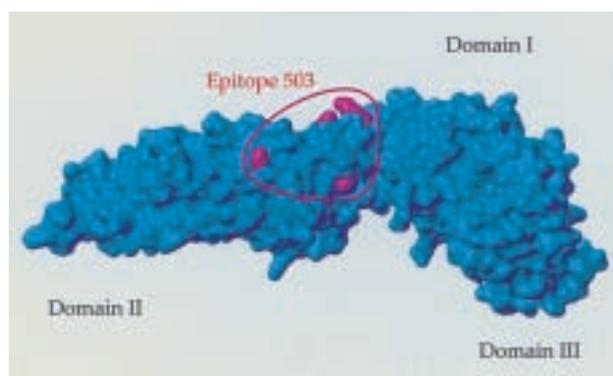
Studies on the development of diagnostic methods and epidemiology on SARS virus, Nipah virus and H5N1avian influenza virus have been conducted in Viet Nam and other countries in the South East Asia.

Activities as a WHO Collaborating Center

Dr. S. T. Han, former Regional Director of WHO Western Pacific Region (WPR) designated the Department of Virology, Institute of Tropical Medicine, Nagasaki University as a WHO Collaborating Center for Reference and Research on Tropical Viral Diseases

on 23 Nov. 1993. In 2003, epidemiological and virological studies on SARS were added to its research activities. The Department was redesignated as a WHO Collaborating Center for Reference and Research on Tropical and Emerging Virus Diseases on 3 Feb. 2008 by Dr. Shigeru Omi, currently the Regional Director of WHO/WPR. The Department has received WHO fellows from Vietnam, Fiji, and the Philippines, and dispatched WHO short-term consultants on the activities relevant to its terms of reference. Dr. Kouichi Morita was dispatched to WHO/WPRO and was appointed as Regional Adviser on Communicable Diseases for the Western Pacific Region from 16 May 1995 to 15 May 1998. Dr. Futoshi Hasebe was dispatched to the WHO Western Pacific Regional Office to collaborate in the global emerging infectious disease control program from March 2004 to March 2006.

Professor and Head	Kouichi Morita
Professor	Tetsu Yamashiro
Professor	Futoshi Hasebe
Visiting Associate Professor	Maria del Carmen Parquet
Assistant Professor	Shingo Inoue
Assistant Professor	Toru Kubo
Assistant Professor	Yu Fuxum
Assistant Professor	Takashi Nabeshima
Assistant Professor	Genichiro Uechi
Assistant Professor	Kozue Hotta
Technician	Kazumi Jodai
Technician	Tomomi Yamaguchi
Administrative Staff	Melba Gidaya
Assistant	Miki Masuda
Postgraduate student	Hitomi Kinoshita
Postgraduate student	Guillermo Posadas Herrera
Postgraduate student	Dinh Tuan Duc
Postgraduate student	Lyre Anni Espada Murao
Postgraduate student	Nguyen Dong Tu
Postgraduate student	Kenta Okamoto
Postgraduate student	Ryo Yoshikawa
Research Student	Mya Myat Ngwe Tun



Newly identified JE neutralizing epitope 503



P3 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 reemerging diseases and to know the virulence mechanisms of bacterial pathogens.

1. *Helicobacter pylori* is a bacterial pathogen found in the stomach mucosa of more than 50% of the world population and more common (over 80%) in developing and tropical countries. Infection with *H. pylori* plays a major role in the development of chronic gastritis and peptic ulcer, and is a risk factor for gastric cancer. Pathogenic strains of *H. pylori* secrete a potent protein toxin, a vacuolating cytotoxin, termed VacA, which causes progressive vacuolation of epithelial cells and gastric injury. We found that VacA induces multiple effects on epithelial cells, including mitochondrial damage [1] and apoptosis [2]. These actions of VacA appear to result from activation of cellular pathways, independent of those leading to vacuolation. Similarly, VacA-induced phosphorylation of G protein-coupled receptor kinase-interactor 1 (Gir1), which may be responsible for epithelial cell detachment caused by VacA, leading to peptic ulceration [3], and VacA-induced activation of p38/ATF-2-mediated signal pathway [4] are independent of VacA effects on cellular vacuolation.

Analysis of VacA receptors provided new insights into the molecular basis of VacA function. We reported that two VacA proteins, termed m1 VacA and m2 VacA, which were defined by sequence differences in the middle of the molecules, interacted with target cells by binding to two types of receptorlike protein tyrosine phosphatases (RTPs), i. e., RTP and RPTP, resulting in toxin internalization and vacuolation of the human gastric adenocarcinoma cell lines AZ-521 and G 401 [5, 6, 7]. By analysis of the patho-

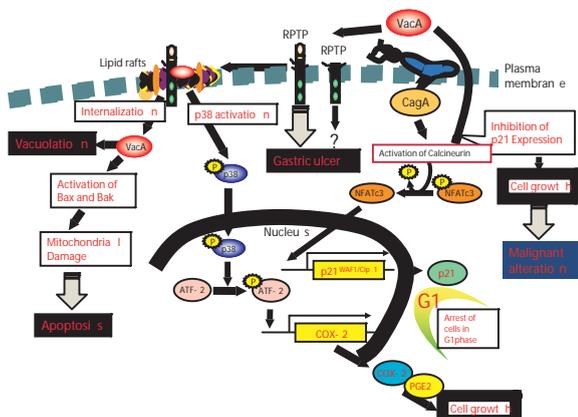
logical responses of wild type and RPTP-deficient mice to oral administration of VacA, we found that RPTP functions as a receptor for VacA and produces the disease associated with VacA toxicity including gastritis and gastric ulcer [3]. Receptor-dependent translocation of VacA to lipid rafts is critical for signaling pathways leading to its toxicity [8, 9, 10].

To know a potential mechanism of how *H. pylori* establishes infection, we also investigate the host-parasite relationships of *H. pylori*, focusing on VacA as well as CagA, which is an effector protein injected by its type IV secretion system into host cells. Consistent with suppression of nuclear translocation of nuclear factor of activated T cells, NFAT, in Jurkat T cells, VacA counteracted CagA-induced activation of NFAT in AGS cells, suggesting that the two major *H. pylori* virulence factors inversely control NFAT activity [11]. Deregulation of NFAT, either positively or negatively, may contribute to cellular dysfunctions that underlie diverged clinical manifestations caused by *H. pylori* infection.

References: [1] Microb. Pathog. 31:29-36, 2001, [2] J. Biol. Chem. 281, 11250-11259, 2006, [3] Nat. Genet. 33:375-381, 2003, [4] J. Biol. Chem. 279, 7024-7028, 2004, [5] J. Biol. Chem. 278:19183-19189, 2003, [6] J. Biol. Chem. 279:51013-51021, 2004, [7] Cell Microbiol 7, 1285-293, 2005, [8] Infect Immun. 74, 6571-6580, 2006, [9] Infect. Immun. 75:4472-4481, 2007, [10] J. Immunol. 180:5017-5027, 2008, [11] Proc. Natl. Acad. Sci. USA. 102, 9661-9666, 2005.

Professor
Senior Assistant Professor
Assistant professor
Technologist
Technician
Postdoctoral Fellow
Postgraduate Fellow

Toshiya Hirayama
Akihiro Wada
Masahiko Ehara
Mamoru Iwami
Kayo Maeda
Masaaki Nakayama
Junzo Hisatsune



Virulence mechanism of *Helicobacter pylori* vacuolating cytotoxin, VacA.



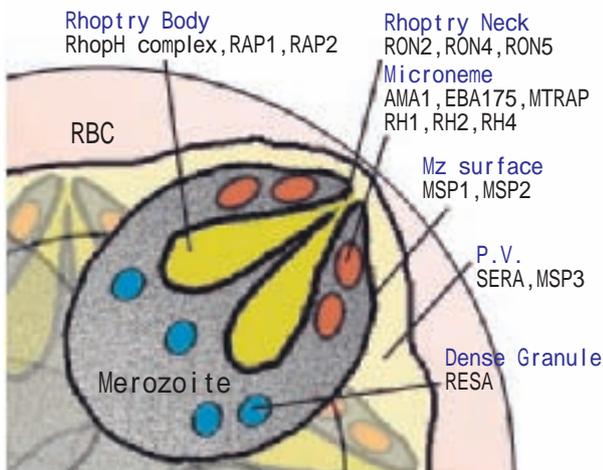
Laboratory

Department of Protozoology

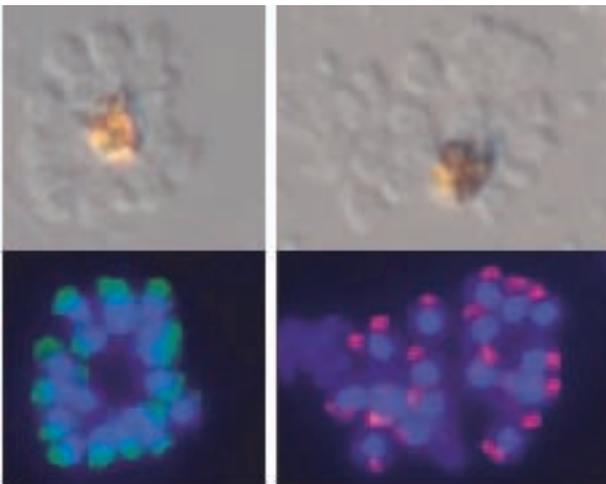
Our goal is to clarify the infection mechanisms of the intracellular protozoan pathogens, such as *Plasmodium* malaria parasites, *Trypanosoma* spp, and *Leishmania donovani*.

1 . Malaria

- 1) Molecular basis of the erythrocyte invasion of the malaria merozoites
- 2) Molecular basis of the cytoadherence of the malaria-infected erythrocytes
- 3) Searching the parasite antigens that are the host immune target
- 4) Survival strategies of the malaria parasites in the



Schematic of the malaria merozoite and its invasion-related molecules.



Newly identified malaria proteins were localized to the apical end of the merozoites. Blue is parasite nucleus, green and red are the location of the identified proteins. Upper panels are DIC images of the malaria parasite.

host

- 5) Epidemiology of the drug-resistant *P. falciparum* malaria
- 6) Investigation of interactions between malaria parasite species
- 7) Prevalence, origins and population genetics of African *Plasmodium vivax*

2 . Trypanosoma

- 1) Functions and expression of transsialidase
- 2) Adaptation mechanisms of *Trypanosoma* spp to environments
- 3) Modification of infected host-cells by *Trypanosoma cruzi*

3 . Leishmania

- 1) Characterization of *Leishmania donovani* isolates from Nepal
- 2) Establishment of animal model of visceral leishmaniasis

Professor

Osamu Kaneko

Senior Assistant Professor

Haruki Uemura

Assistant Professor

Shusuke Nakazawa

Assistant Professor

Kazuhide Yahata

Assistant Professor

Richard Culleton

Assistant

Miki Kinoshita

Graduate Student

Akikocristina Salati

Graduate Student

Yoko Tsumori

Graduate Student

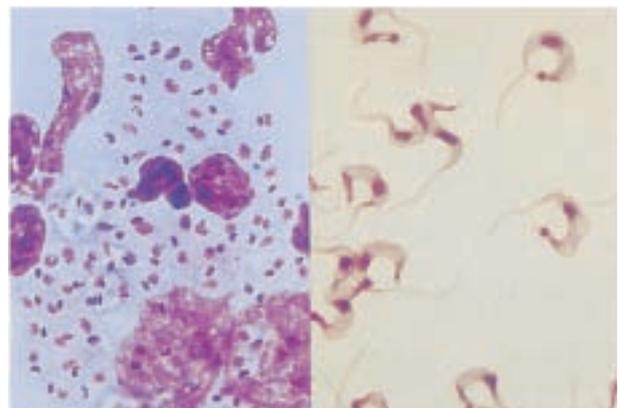
Morakot Kaewthamasorn

Research Fellow

Jianxia Tang

Assistant

Xiaotong Zhu



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

Department of Parasitology

The research activities are concentrated on filariasis and schistosomiasis 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 (5ng/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 halicacabum* 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 NaHCO₃ was evaluated.

4) Chemotaxis of filarial infective larvae:

We first reported *B. pahangi* infective larvae show chemotaxis to serum. The peculiar chemotactic movement and the signal transduction involved in chemotactic response were also reported. Serum factors that cause chemotactic response of larvae are investigated.

Schistosomiasis

Schistosoma mansoni (Puerto Rican strain and Kenyan strain), *S. haematobium* (Kenyan strain) and some strain of vector snails have been maintained in



Examination of difficulty of urination by using Uroflowmeter in an endemic area of Kenya

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, and the vigorous swimming of miracidia inside the egg-shell is a key factor for hatching of miracidia.

2) Mechanisms of penetration of cercariae into skin:

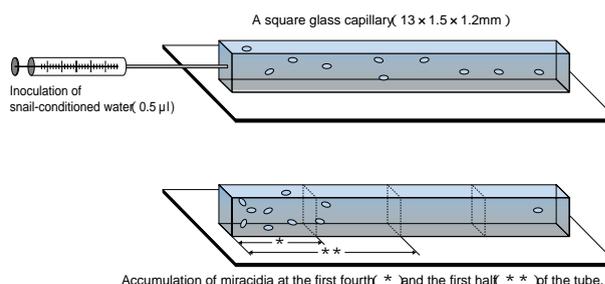
The studies suggest the involvement of protein kinase C in proteolytic enzyme release from cercariae.

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 25 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.

4) A novel tool for control of schistosomiasis, Decoy snails: Schistosome miracidia invade nonintermediate snails too. Presence of the huge number of decoy snails that attract powerfully miracidia, but do not allow miracidia to develop, is expected to block the life cycle of schistosome. The studies on decoy snails are carried on.

Professor	Yoshiki Aoki
Assistant Professor	Kanji Watanabe
Assistant Professor	Yoshinori Mitsui
Technologist	Mitsumasa Miura
Technician	Satomi Tominaga
Technician	Masako Hayashida
Postgraduate Student	Tomoharu Ohki
Postgraduate Student	Mayumi Abe



Observation of the snail-conditioned water that has attraction for schistosome miracidia

Department of Clinical Medicine

Main objectives of research activities in the Department of Internal Medicine are to understand pathogenesis of tropical diseases and respiratory infectious diseases and to improve diagnosis, prevention and therapy for infectious diseases in developing countries. Various basic scientific research and international collaborative studies are on going as follows:

1. Respiratory Infections

Our goal is to better-understand mechanisms causing severe and treatment-refractory pneumonias at molecular levels toward development of a novel treatment strategy. We hypothesize that patients with severe and treatment-refractory pneumonia has an impaired process in inducing the cessation of inflammation and re-construction of damaged tissues. We, particularly, focus on the function of macrophage which is responsible for clearing apoptotic cells from the inflammation site using a mouse pneumonia model. We have also developing a rapid and comprehensive assay to identify multiple pathogens causing respiratory infections, which is being applied for several clinical studies.

2. Pediatric Infectious Diseases in Vietnam

We have, so far, conducted studies on clinical and bacteriological diagnosis, antimicrobial susceptibility and molecular epidemiology in collaboration with National Institute of Hygiene and Epidemiology. Since 2005, we further collaborated with International Vaccine Institute and started a large-scale of census survey targeting all residents in Nha Trang city and its adjacent Nin Hoa district in the middle part of Vietnam. During the census, we also collect information regarding environment and diseases burden (particularly pneumonia, diarrhea, dengue fever), health utilization pattern. Since 2006, a research clinician has been dispatched from our department and monitoring all pneumonia cases admitted to the pediatric ward at Kan Hoa General Hospital in the above city. So far over



Khanh Hoa General Hospital (Vietnam)

1000 cases have been registered and we are currently analyzing clinical samples and data.

3. HIV cohort studies in northern Thailand

In collaboration with National Institute of Health, Thailand and National Institute of Infectious diseases, Japan, a large scale of cohort study targeting HIV-infected individuals and their spouses has been established and maintained in Lampang Hospital, northern Thailand. So far, over 1200 people have participated. The main objectives of this cohort are to understand mechanisms of resistance to HIV infection among HIV-exposed but uninfected spouses living with HIV-infected patients and mechanisms of slow-progression among HIV-infected slowprogressors. These studies are being conducted in close collaboration with Thai counter parts and international experts in various fields such as hostgene polymorphisms, molecular immunology, molecular epidemiology and virology. Furthermore, based on this field setting, we are also conducting studies on frequencies of opportunistic infection, the effect of anti-retroviral drug therapy, and social need for children born to HIV-affected parents.

Department of Clinical Medicine

Professor	Koya Ariyoshi
Professor (Project)	Hideki Yanai
Associate Professor	Konosuke Morimoto
Assistant Professor	Kei Miyagi
Assistant Professor	Laymyint Yoshida
Assistant Professor	Motoi Suzuki
Technician	Mitsuyo Kirie
Technician	Rina Shiramizu
Secretary	Rika Nogawa
Postgraduate student	Naho Tsuchiya
Postgraduate student	Vu Thi Thu Huong
Postgraduate student	Masahiko Mori
Postgraduate student	Takayuki Oike
Postgraduate student	Toshitaka Sukizaki
Postgraduate student	Yoshiyasu Yoza
Postgraduate student	Keita Oma



P2 Level Laboratory

Department of Host-Defense Biochemistry

Reserches in our laboratory are focused on the molecular regulations of the phagocyte NADPH oxidase system that generates active oxygens essential for killing invading microbes.

Selective expression mechaisms for gp 91^{phox}, a core component of the oxidase

The phagocyte NADPH oxidase is composed of membrane-integrated flavocytochrome b 558 containing gp 91^{phox} and p 22^{phox}, and cytosolic components such as p 47^{phox} and p 67^{phox}. Upon phagocytotic stimulation, cytosolic factors move to membrane to make an active complex with the flavocytochrome. Based on genetic analysis of CYBB, the gene encoding gp 91^{phox}, in a patient with chronic granulomatous disease (CGD), we found that PU.1, a transcriptional activator, bound to gp 91^{phox} promoter position centered to bp -53 was important for the expression of gp 91^{phox} in neutrophils, monocytes, and B lymphocytes, but not in eosinophils. On the other hand, GATA-1 bound to a position centered to bp -98 had an important role in the expression of the gene in eosinophils.

Analysis of NADPH oxidase

We are receiving blood samples to check whether the patients are CGD or not by testing genomic DNA and protein. And also we check mRNA to detect the length because there are skipping mechanisms to avoid pre-mature stop.

A novel GT-mismatch binidng protein

In the analysis of a *cis* -element of gp 91^{phox} promoter, we found a novel GT-mismatched DNA binding protein. An addition of unlabelled competitor homoduplex with G/C at bp -177, generated, but not erased, a strong 'supershifted' band in EMSA using the labelled probe with A/T at bp -177. Newly paired heteroduplex with the unlabelled upper stand with G at bp -177 and the labelled lower stand with T at the same position recruited nGTBP. This protein strictly required TRTGNB (R=purine, N=any base, B=not adenine, G paired with T) and 14-mer or longer for binding. G can be replaced by deaminated A, namely, hypoxanthine, suggesting deaminated C-6 is essential for nGTBP binding. Deamination of nucleotide bases are increased by high temperature and the repair of deami-

nated portions of DNA would be more important in tropical area than other areas. Transitions appreciably occured more at TRTRNB sites than at other sites in tumor supressor protein p 53 exons, suggesting this particular sites were fragile in tumor-prone cells. Relative frequency of esophageal cancer due to transitions at p 53 non-GpG sites in Brazilian mate-drinkers was relatively higher than that in world-wide patients. Cloning and purification of this nGTBP are now urgent issues in our laboraatory.

Visiting Professor	Tomoyuki Maekawa
Associate Professor	Futoshi Kuribayashi
Assistant Professor	Yoshito Fujii
Technical Assistant	Chikako Araki



Department of Pathology

Main purpose of our research is fundamentally pathological investigation of tropical diseases, mainly infectious diseases, focused on oncogenic microbes, and establishes the basis of their treatment and prevention. Although many investigators have proposed oncogenesis due to inflammation associated cancer development, the mechanisms underlying the relationship between chronic inflammation and cancer still remain unresolved. Therefore, our research focuses on the potential role of oncogenic microbes in the development of cancers, highlighting the recent advances in the understanding of the molecular mechanisms.

Inflammation and cancer

The proportion of total cancer deaths attributable to infectious agents is estimated to be 20% to 25% in developing countries and 7% to 10% in industrialized countries. A causal relationship between chronic inflammation and cancer is widely accepted. Specifically, there is a strong association between tumor viruses and the development of human cancers. Both DNA and RNA viruses have been reported to be capable of causing cancer. Epstein-Barr virus (EBV), human papillomavirus (HPV), hepatitis B virus (HBV), and Kaposi's sarcoma associated herpesvirus (KSHV) are DNA viruses known to lead to the development of cancers. Cancer inducing RNA viruses include Hepatitis C virus (HCV) and human T lymphotropic virus type-1 (HTLV-1). EBV is associated with Burkitt's lymphoma, nasopharyngeal carcinoma, Hodgkin's lymphoma and non-Hodgkin's lymphoma; HBV and HCV viruses with hepatocellular carcinoma; HTLV-1 with adult T-cell leukemia/lymphoma; and HPV with cervical cancer, penile cancer, anal cancer, oropharyngeal cancer, and skin cancer. In developing countries, 15% to 20% of the global cancer burden can be linked to these infections. An additional 5% can be attributed to bacterial infection (*Helicobacter pylori*) and parasitic infections (*Schistosoma*, *Opisthorchis*, *Clonorchis*).

Histopathological characteristics of chronic inflam-

mation include the predominance of lymphocytes and macrophages. In 1863, Virchow hypothesized that malignant tumors occurred in the chronic inflammation lesions associated with lymphocyte infiltration. Activated lymphocytes and macrophages are interactive in releasing inflammatory mediators such as cytokines, chemokines, growth factors, and survival factors interact with specific cell surface receptors resulting in amplified immune reactivity.

The mechanisms of oncogenesis associated with infection and inflammation have not been elucidated. However, many oncogenic mechanisms have been proposed for infection and inflammation; for example, 1) Signal transduction: Toll-like receptors (TLR) for pro-inflammatory cytokines, such as tumor necrosis factor- α (TNF- α) and interleukin-1 (IL-1), IL-6, IL-8, and IL-18 leads to activation of many important signaling pathways. The other pro-inflammatory gene products are matrix metalloproteinase-9 (MMP-9), vascular endothelial growth factor (VEGF), cyclooxygenase-2 (COX-2), and 5-lipoxygenase (5-LOX). It is well accepted that the NF- κ B group of transcription factors play a still more important role in inflammation. 2) Direct action of viral proteins and host cells: Products of binding viral proteins and human genes lead to alteration of host cells. Tumor-suppressor gene products of retinoblastoma protein (pRb) and p53 are inactivated by interaction with products of viral proteins. For example, human papillomavirus (HPV) E6 and E7 proteins are oncogenic factors in HPV related cancers. 3) Immunosuppression: Human immunodeficiency virus (HIV) causes immunosuppression, which leads to Kaposi's sarcoma and/or malignant lymphomas. 4) Production of reactive oxygen species (ROS) and reactive nitrogen species (RNS). Prolonged activation of inflammatory cells generates ROS and RNS that can damage host DNA, which can contribute to carcinogenesis. Activation of NF- κ B is also involved cancer development and progression. Therefore, our research focuses on the molecular players during the development from chronic inflammation to cancer.

Assistant Professor Senba Masachika
Postgraduate Student Sumiko Irie



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 CD4 and chemokine receptor, for example CXCR4, it enters into target cells mediated fusion between virus envelope and cell membrane. Murine leukemia virus (MLV) recognizes CAT1 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 receptors 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 CD4 and CXCR4, syncytium formation is induced by its membrane fusion activity, and die. Recently, CD4-independent HIV has been isolated. When the envelope gene of the CD4-independent HIV is introduced to cells expressing CXCR4 but not CD4, syncytium and cell death was induced. It has been reported that CXCR4 is up-regulated in mammary tumor. This suggests that the CD4-independent HIV envelope protein specifically induces cell death of mammary tumor cells. We are studying the application of the CD4-independent HIV envelope as a novel therapeutic gene for mammary tumor.

Visiting Professor	Naoki Yamamoto
Visiting Associate Professor	Hironori Sato
Assistant Professor	Yoshinao Kubo



Laboratory for biochemical research



Laboratory for biochemical research

Department of Eco-epidemiology

April 2008, the Research Center for Tropical Infectious Diseases was reorganized and transformed into four groups i.e. two departments in the Research Field of Environmental Medicine, Tropical Medicine Museum and the Kenya station of Overseas Research Stations.

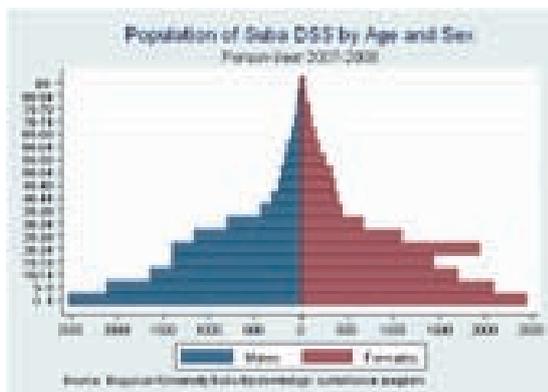
“Eco-epidemiology” department is one of the new two departments in the Research Field of Environmental Medicine.

However, the staffs do not work in the department at present and mainly work for the Kenya Research station of Overseas Research Stations and for the Tropical Medicine Museum.

Professor Masaaki Shimada (Kenya Station)
 Professor Masahiro Horio (Museum)
 Professor Satoshi Kaneko (Kenya Station)
 Professor Yoshio Ichinose (Kenya Station)

The concept of eco-epidemiology is based on the view of recognizing tropical diseases as a system of infection. The aim of our research is to understand the process of interaction between microorganisms, vectors and human beings in the system.

Human beings and vectors, so-called hosts as a niche of pathogens, exist not statically but dynamically in time and space. In addition, there is an infinite di-



The population pyramid of Suba area.

versity in the characteristics of hosts. We study how microorganism survive, maintain, proliferate, diminish, disappear and emerge through the niches.

The ultimate purpose of the department is to form a theory for a better understanding of the interrelationship between hosts and pathogen and its consequences, diseases.



Prof. Ichinose, collecting stool samples from cholera patients in an isolation ward.



Prof. Horio,commentating on tropical diseases at the museum.



Staff (Left to right:Shimada, Minakawa, Horio, Kaneko, and Ichinose)

Department of International Health

Department of International Health has started its activities since 2008, following the internal reform of Institute of Tropical Medicine. Department of International Health has its basis on Research Center for Tropical Infectious Diseases (RECTID) of Institute of Tropical Medicine established in 2001, Information and Reference Center in 1997, and Reference Center in 1994.

It says that RECTID, a precursor of our department, had following three activities; 1) developing the museum of tropical medicine, 2) collecting and disseminating information on tropical infectious diseases and 3) promoting joint research projects and doing epidemiological studies. Out of which, Department of International Health takes over research activities and adds to its mandate an international collaboration as a social responsibility anew.

Thus, Department of International Health, as a newly established department, has two pillars, e.g. research and social responsibility.

Research was composed of three units; 1) research on infectious diseases in ecosystem, 2) research on the environment including climate change and Asian dust related to health, 3) research on biological evolution of microorganisms from the adaptation or fitness view point. The umbrella concept or key word linking above three research units is to reconstruct infectious diseases “temporally” and “spatially” alike. Infection is the biological interaction between hosts and microorganisms. In other words, host behavior, social structure as well as culture per se affect microorganisms in fitness and adaptation whereas microorganism has impact on its hosts. Based on that perception, our department aims to get more detailed understanding and insight on infectious diseases.



Another pillar is a social responsibility. Now that even profit oriented organizations are required to have its corporate social responsibility, no need to say for academia or university. Out of the name of our department, it must be nothing but contribution to international health or people's health in resource limited settings.

Our department raises following three activities as international contribution; advocacy on international health at national and international level, health promotion activities and empowerment at the community/grassroots' level and emergency relief.

What our department thinks of important in those activities is to make solidarity in order to improve people's health and contribute to people's sustainable development. It is our department's goal.

Professor	Taro Yamamoto
Associate Professor	Sumihisa Honda
Assistant Professor	Toshihiko Sunahara
Assistant Professor	Masahiro Hashizume
Visiting Fellow	Guoxi Cai
Visiting Fellow	Liang Qin
Research Assistant	Kyoko Sakitani
Technician	Katsuyuki Eguchi
Technician	Hidefumi Fujii
Assistant Staff	Satsuki Shiraishi
Postgraduate Student	Osuke Komazawa
Postgraduate Student	Keiko Akahane
Postgraduate Student	Kounnavong Sengchanh
Research Student	Tomoko Abe



Department of Global Health Development Policy Sciences

Specific Features of the Department

This Department covers under the 12th 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 / accumulation 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.
- 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 administra-

tive 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 or Avian Flu.
- 9 . Study and analysis of the AIDS orphans care system in Thailand.
- 10 . Comparative Studies on the Entamoeba histolytica infections in institutions for mental deficiency between Japan and Mexico.

Specific themes of joint cooperative research designated to the Department 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 also by the whole Institute as one of the important mandates.

Joint Research projects themes:

- a) Control and preventive measures for infectious diseases from the view point of the crisis management.
- b) Analysis on socio-environmental factors of the control and prevention of infections using the remote sensing and GIS.

Noted results of research projects have often been integrated and fully utilized in the forms of seminar or symposium for covering valuable themes.

We participated in various kinds of national or international meetings regardless of specific field barrier.

Professor	Tsutomu Mizota
Assistant Professor	Kensuke Goto
Assistant Professor	Takeshi Yoda
Research Assistant	Rie Ushitani
Technician	Emi Nakayama
Visiting Researcher	Chizuko Suzuki
Visiting Researcher	Susumu Tanimura
Postgraduate Student	Kazuo Minematsu



The Dept. often organizes Int'l Symposia.



Lecture on Development and Aid in the Master course of Tropical Medicine.

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 . Ecology and control strategy of dengue/DHF vectors

Ecological mapping of dengue/DHF vectors is conducted in Vietnam focusing to abandoned tires which are one of main breeding sources of the vectors. An epidemiological study also is conducted at several town blocks in NyaTrang city, southeast Vietnam, to clarify key breeding containers reflecting the life style of local people.

2 . Ecological, physiological and genetic studies on malaria vectors

Geographical distribution, ecological/physiological differences, and evolution of malaria vectors composed of the species complex are studied from molecular biological and genetic approaches focusing on *Anopheles gambiae* group in Africa and *An. minimus* and *An. dirus* groups in Asia.

3 . Basic studies on newly developed vector control measures

Efficacy of newly developed pyrethroid as a space repellent is evaluated in a laboratory and tropical fields. Improvement of mass rearing and planting techniques of *Mesocyclops*, which is a hopeful biological agent against dengue vector mosquito larvae, is challenged by laboratory and field trials in Vietnam. Status of insecticide resistance is continuously monitored.

4 . Detection of virus in mosquitoes

Under collaboration with Department of Virology, ITM and Department of Medical Entomology, NIID detection of virus from a variety of mosquitoes is continued.

Professor	Masahiro Takagi
Professor	Noboru Minakawa
Senior Assistant Professor	Hitoshi Kawada
Assistant Professor	Yukiko Higa
Assistant Professor	Takashi Tsunoda
Resercher Fellow	Kohei Takano
Post Doctoral Fellow	Kyoko Futami
Researcher Fellow	Shinya Oda
Secretary	Toshiko Ueno
Technician	Yuri Sonoda
Secretary	Junko Sakemoto
Postgraduate Student	Yoshihide Maekawa
Postgraduate Student	Masaki Sugiura
Postgraduate Student	Ataru Tsuzuki



Stereomicroscopic observation of mosquitoes



Ramp traps for collecting mosquitoes

Department of Immunogenetics

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

Research activities:

To clarify the molecular mechanisms in the protective and/ or pathogenic host response to human pathogens such as Dengue Virus, TB, Malaria, Trypanosoma cruzi, Schistosoma, and Filaria, the following research projects are going on in our laboratory.

1 . Malaria

- 1) Genetic susceptibility to severe forms of malaria (cerebral malaria, severe anemia) is analyzed by case-control study in South East Asia, South Pacific and West Africa.
- 2) Malaria vaccine development using the immunological characteristics of resistant persons living in the endemic area in Asia and West Africa.

2 . Schistosomiasis

- 1) Immunological regulation of the pathogenic anti egg response in the resistant and susceptible persons, to post-schistosomal liver fibrosis in China and Philippines.
- 2) Miniature pig schistosomiasis as a human model.
- 3) Vaccine development for schistosomiasis japonica and masoria using schistosomula antigens.
- 4) Production of the new diagnostic Kit for active infection.

3 . Chagas disease

- 1) Genetic susceptibility to different clinical types of chronic Chagas disease, namely, indeterminate, cardiac, and digestive forms, is analyzed by case control study in Bolivia where Chagas disease is still highly endemic.
- 2) Genetic analysis of Trypanosomes in Latin Americas by using local isolates and molecular biology.

Collaborations:

The research here is performed based on the well arranged collaborative projects with the following facilities.

- 1 . Malaria: Thammasat University (Thailand), Noguchi Memorial Medical Research Institute (Ghana), Institute of Medical Research (Malaysia), Karolinska Institute (Sweden), Ehime University (Matsuyama), WHO/TDR (Geneva Switzerland)
- 2 . Schistosomiasis: Jiangxi Provincial Institute of Parasitic Diseases (China), Jiangsu Provincial Institute of Parasitic Disease (China), Univ. Philippines and RITM (Manila, Philippines), Tokyo Medical Dental Univ. (Tokyo)
- 3 . Chagas Disease: Center of Tropical Medicine and Hospital Japonese (Bolivia), IICS University of Asuncion (Paraguay)
- 4 . Dengu virus
 - 1) Pathogenesis of the DHF (Dengue Hemorrhagic Fever)
Host factors will be detected by the Populational genetic analysis of the patients with DHF and non DHF.

Staffs

Professor	Kenji Hirayama
Professor (Project)	Michio Yasunami
Associate Professor	Nobu Ohwatari
Senior Assistant Professor (Project)	Mihoko Kikuchi
Assistant Professor	Nguyen Huy Yien
Assistant Professor (Project)	Hiroki Shibata
Industry Academia Government Collaboration Researcher	Shuaibu Mohammed Nasir
"	Pandy Kishor
Technician	Junko Hayashima
Technician	Hitomi Horie
Assistant Staff	Makiko Okamoto
Ph. D. Student	Akiko Takaki
Ph. D. Student	Ekhlas hamed Abdel Hafeez Abdow
Ph. D. Student	Nguyen Thi Phuong Lan
Ph. D. Student	Akiko Yamazaki
Ph. D. Student	Helegbe Gideon Kofi
Ph. D. Student	Edelwisa Segubre Mendoza
MSc Student	Del Puerto rodas Ramona Florencia
Ph. D. Student	Tran Thi Ngoc Ha



Department of Immunogenetics



Experiment scenery

Center for Infectious Disease Research in Asia and Africa

Kenya Research Station

Outline of the program

The Institute of Tropical Medicine (ITM) has received a government grant for the promotion of research on tropical diseases and emerging and re-emerging infectious diseases. With this special, ample grant of money, ITM established a research station in Nairobi, Kenya. The unique feature of the Nairobi Station's research program is long-term, extensive, and multidisciplinary studies based on the Japan-Kenya collaboration. The program provides training for young researchers both Japanese and Kenyan, and in collaboration with JICA, contributes to the disease control and health promotion in the tropics with the fruits of its research.

Progress of the program

1 . Research station in Kenya

The Research station was set up in the Kenya Medical Research Institute (KEMRI), Nairobi. KEMRI is one of the research organizations with which ITM has long been doing a cooperative research. Based on the academic agreement between Nagasaki University and KEMRI, the signing ceremony for the new research program's Memorandum of Understanding was held on September 13, 2005. The Research Station is now equipped to facilitate bio-medical and epidemiological studies in tropical diseases. A P3 laboratory and Demographic Surveillance System have been prepared.

2 . Dispatch of Japanese researchers

Four professors, one is a program leader, and one administrative staff member work in the Kenya Station. They are to be provided with special logistic support by one professor of ITM.



Kenya Research Station, Nairobi, Kenya

3 . Study areas for the long-term and extensive research work

The Demographic Surveillance System (DSS) and Mosquito Surveillance System (MSS) are in operation in the Suba area in Western Kenya. DSS will be put in the Kwale area on the Coast.

4 . Studies in infectious tropical diseases

Based on the DSS in Suba, research on malaria and bacterial diarrhea were launched in 2006 and 2007. Study on arbovirus and parasitic diseases started in 2008. In Kwale, research on schistosomiasis was launched.

5 . Training program

Under the patronage of JICA and MEXT, Kenyan researchers and doctors were given opportunities to visit ITM and were trained in research on tropical medicine. Professors of ITM served as advisers in the JICA-sponsored International Parasite Control which took place in Kenya.

Program Staff

Program Leader and Professor Masaaki Shimada (Kenya Station)

Professor Yoshio Ichinose (Kenya Station)

Professor Noboru Minakawa (Kenya Station)

Professor Satoshi Kaneko (Kenya Station)

Professor Masahiro Horio (Tropical Medicine Museum)

Administrative Staff Shiho Honda (Kenya Station)

Post-doctorate Fellow Kyoko Futami (Kenya Station)



JSPS Asia-Africa Science Platform Programme Seminar, Nairobi

Center for Infectious Disease Research in Asia and Africa

Vietnam Research Station

Outline of the program

In 2005, the Government of Japan (Ministry of Education, Culture, Sports, Science and Technology) provided special funds to certain grant-winning Japanese universities for the purpose of establishing research centers for emerging and reemerging infectious diseases in order to make joint studies with overseas research institutions. Nagasaki University, one of the recipients, set up Research Centers in Nagasaki and Hanoi, Viet Nam to study clinical epidemiology of emerging and reemerging infectious diseases, including disease ecology, intervention, and protection and prevention, thereby contributing to the control and/or elimination of infectious diseases, which is today's global concern.

The Research Centers have been managed in collaboration with four institutions, the Institute of Tropical Medicine (ITM) of Nagasaki University, the International Medical Center of Japan, Tokyo, the National Institute of Hygiene and Epidemiology (NIHE), Hanoi, and Bach Mai Hospital, Hanoi, with ITM and NIHE playing a major role in the operation. NIHE has the NIHE-Nagasaki University Friendship Laboratory in which Japanese researchers are now carrying out infectious diseases research. In Nagasaki, the research projects focus on basic strategic research and product development, and also provide guidance for ethical consideration and determining of perfect strategies to counter any potential infectious disease outbreak.

Meanwhile, the research work in Viet Nam will concentrate on the following areas:

- 1) zoonotic infectious diseases including avian influenza, hanta, nipah virus infection, and rabies;
- 2) vectorborne infectious diseases, including malaria and dengue virus infection;
- 3) fecal-oral infection including rotavirus, norovirus infection, and cholera;
- 4) human to human infection, including acute respiratory infections.

Update status

The project document has been approved by the Vietnamese Government, and the Friendship Laboratory has been equipped with apparatus for bio-medical and epidemiological studies on infectious diseases.

The Center had its opening ceremony on March 17, 2006 in Hanoi, and started epidemiological study on avian influenza and dengue fever infection while developing the Demographic Surveillance System for longbased and extensive infectious diseases studies.

NIHE-Nagasaki University Friendship Laboratory Staff

Project Leader and Professor	Koichi Morita
Professor	Tetsu Yamashiro
Professor	Futoshi Hasebe
Professor	Hideki Yanai
Assistant Professor	Takashi Tsunoda
Assistant Professor	Motoi Suzuki
Assistant Professor	Gen-ichiro Uechi
Administrative Staff	Yoshio Furuya
Research Assistant	Ngo Khanh Phuong
Research Assistant	Quach Thi Thu Huong
Secretary	Bui Thu Tra



National Institute of Hygiene and Epidemiology (NIHE)



Opening ceremony of the Research Center in NIHE

Center for Infectious Disease Research in Asia and Africa

Fiji Research Station

The Japanese support to the Pacific Immunization Program Strengthening (J-PIPS) is a 5-year JICA project in 13 South Pacific island countries. The project aims to strengthen capacity development in the Pacific in the area of immunization services through resource development of EPI management staff and to improve the quality of EPI services provided. The Institute of Tropical Medicine (ITM), Nagasaki University (NU), is responsible for the administrative management of J-PIPS. J-PIPS started its operation in February 2005 under the leadership of Dr. Kouichi Morita, Professor and Head, Department of Virology, ITM, NU, as its Chief Advisor. In March 2005, four other professionals were assigned to the project office in Suva, Fiji.

The project's two main objectives are: to establish a functioning regional training system for vaccine logistics, cold chain maintenance, safety injection and EPI waste disposal management; and to strengthen the Pacific island countries' EPI program planning and monitoring system of vaccine-preventable diseases, such as poliomyelitis, measles, Hepatitis B and influenzae bacillus.

As part of its capacity enhancement program, J-PIPS holds regular "regional trainings" in Suva for immunization project leaders, as well as supplementary health workers "country trainings" in each target country with the active participation and in collaboration with the Fiji Ministry of Health, WHO and UNICEF. The first regional meeting was held from 12 to 16 Dec. 2005, with 43 trainees participating from 13 Pacific island countries. Cold chain maintenance, vaccine logistics, injection safety, and EPI waste disposal management were discussed at the training. The second regional training was held the following year, on 20-24 Nov. 2006, with 38 trainees from 14 Pacific island countries participating in two group sessions. One session dealt with EPI program management, while the other was on cold chain maintenance. Aside from being a technology transfer activity, the regional trainings are conducted as an evaluation and skills improvement activity for trainers on EPI management, as well as to enhance their training capacity. The third regional training was organized along the same concept and was held from 19 to 23 Nov. 2007.

When a Measles outbreak occurred in Fiji in 2006, a J-PIPS Epidemiology Consultant actively participated in its containment by providing technical sup-

port to the Government and conducting a supplementary immunization activity (SIA) campaign. The Consultant also took part in the creation of an improvement plan for outbreak response. Technology transfer in this area is consistently provided through country trainings to improve knowledge and diagnosis of EPI targeted diseases. In 2007, through a technology transfer activity, the Department of Virology provided the Mataika House (Fiji Centre for Communicable Disease Control) skills training on viral diagnostics.

Annual surveys continue to be conducted by J-PIPS in the 13 South Pacific island countries, in order to assess, determine and discuss with counterparts updates on the occurrence of target communicable diseases and other project issues. Survey results are gathered and published as annual reports. In October 2007, J-PIPS completed the vaccine wastage survey in Fiji in cooperation with divisional EPI coordinators. This survey is the first of its kind to be conducted in the 13 Pacific island countries.

J-PIPS maintains close communication and collaboration with its international agency partners such as WHO, UNICEF, AusAID, NZAID, SPC, as well as other international agencies to ensure a sustained maximum degree of effectiveness in terms of technical cooperation.

Significantly, the J-PIPS project serves as an avenue for communicable disease control activities, particularly vaccine-preventable diseases, in the Pacific island countries and, thus, is in conformity with the ITM mission to "spearhead research in international health" and make a "global contribution through health promotion by applying the results of research"

Project Staff

Kouichi Morita, Professor
Yasuhiko Kamiya, Professor
Tatsuhiko Tsukakoshi, Associate Professor
Kenzo Sasagawa, Technician
Hiroshi Osawa, Administrative Staff
Yumiko Nakamura, Administrative Staff



Third PIPS Regional Training (19-23 November, 2007)

Tropical Medicine Museum

Museum of Tropical Medicine was preceded by the Tropical Medicine Reference Centre, which was established in 1974 and was reorganized in 1997 as Tropical Medicine Reference and Information Center. In 2001, it was renamed as Research Center Tropical Infectious Diseases (RECTID) and in 2008 it was established as an auxiliary institution. The institution performs the following 3 functions.

The institute primarily functions as a museum and resource center for tropical disease. Currently, on the 1st floor of the Institute of Tropical Medicine Nagasaki University, there is a general section providing information on tropical diseases, parasites/bacteria/viruses/poisonous insects and specimen of dangerous animals, valuable books, and displays images of the data. Moreover, it has an audio-visual room accommodating a few numbers of people. Furthermore, a system is being developed for using this collection of resources to strengthen public science and risk communication with thousand points relating to the history and philosophy of tropical medicines and infection symptoms. In the near future we would like to expand the exhibition room to the museum of tropical medicine and can be used as an educational resource for society and educators and provide tropical disease related research and successful results for the public. In addition, we plan to display “Africa's Nature, Development, and People,” in March 2009, as part of the Ueno Yama Decade of Information series of National Museum of Nature and Science, Tokyo.

It also functions as an information center for the dispatch, collection, organization, and analysis



of information on tropical medicine. This has become an essential component of the daily research activities related to tropical medicine. Due to infrastructure rearrangement in 2007, network tools were updated with technological innovation and long lasting safety; thus responding to every need of the users. We also serviced various databases, using a research evaluation system and a database of the tropical medicine museum. Moreover, within this year we are trying to provide a similar environment to research universities overseas with VPN by including video conferencing system to promote international conferences and e-learning plans.

The third function is to perform a logistics support role for the Kenya base. The network is also used for communication with the base, equipment supply for experiments, and for the database of research results.

Professor and head	Kenji Hirayama
Professor	Masahiro Horio
Research Assistant	Kazuo Araki
Technician	Kiyomi Suda
Technician	Youji Shimizu



Animal Research Center for Tropical Infections

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 for experimental animals, 3 laboratories, one breeding room for snails and insects, and a P3-level biohazard laboratory. The air pressure is kept always negative to avoid outflow from inside even at the entrance. Since the building has the most thorough ventilation through HEPA filters, any microbe cannot leak out to outside of the building. The used water is given chlorination and drained off. The breeding and experiments are done according to Nagasaki University Animal Experiment Regulations. The laboratory animals bred in the center are mice, rats, hamsters, gerbils, rabbits, snails and mosquitoes.

Director	Osamu Kaneko
Research Associate	Tetsuo Yanagi
Technician	Junko Kawashima



Mongolian gerbil (*Meriones unguicalatus*)

Central Laboratory

There are equipments shared in the institute. Those equipments are maintained and operated by the staffs listed below. There are three major laboratories to be set up, namely electron microscope lab, P3 and cell culture lab and molecular biology lab. Electron microscopies (TEM and SEM of jeol), a Ultramicrotome (Reichert), con-focal laser microscope system (LEICA DMIREZ), a flow cytometer (Becton), Bioimage analyzers (Hamamatsu Photonics, Bio rad GS-250 and Pharmacia Image master), DNA sequencers (Perkin-Elmer), a DNA/RNA extraction system (Qia-gen), two P3 rooms, and 2 dimensional protein purification system (Beckman). Following are the major equipments.

Professor	Kouichi Morita
Research Associate	Akitoyo Ichinose
Technician	Takako Chiba



Lab for Genetic Analysis

Clinic at the University Hospital

The Department of Clinical Medicine is the only one clinical department at the Institute of Tropical Medicine. It has a clinic and a medical ward with about 17 beds on the 11th floor of the Nagasaki University Hospital. We specialized in the Infectious Diseases and Chest Medicine; diseases that we handle are systemic infectious diseases, including “ tropical ” diseases and HIV infection, and pneumonia including tuberculosis, and various neoplastic and inflammatory respiratory diseases. We actively receive consultations regarding diagnosis and management of infectious diseases from other departments. The outpatient clinic is open two days a week ,which includes a travel clinic. We are also involved in various clinical trials such as cancer treatment, antibiotics, GM-CSF therapy for pulmonary alveolar proteinosis. We have also responsibilities for training medical students (lectures and bed-side teaching) and for postgraduate training programs for general internal physicians and infectious disease and chest medicine specialists. Since April 2006, we have been organizing a clinical case conference (in English) for tropical diseases as a part of Master of Tropical Medicine course.

Clinic at the University Hospital

Professor	Koya Ariyoshi
Associate Professor	Konosuke Morimoto
Lecturer	Yoshiko Tsuchihashi
Assistant Professor	Akitsugu Furumoto
Assistant Professor	Masayuki Ishida
Research Fellow	Kazuhiko Koyama
Research Fellow	Mayumi Terada
Research Fellow	Yoshitaka Harada
Research Fellow	Takeshi Tanaka
Research Fellow	Kei Matsuki
Research Fellow	Mugen Ujiie
Resident Physician	Toshiyuki Kusabiraki
Resident Physician	Takaharu Shimazaki
Assistant Professor	Shoko Honda
Assistant Officer	Kumi Ichise



Clinical conference

Administration

Toshihiro Furukawa, Head Official

Hiroaki Suetsugu, Expert Staff

General Affairs Unit

Makoto Matsuo, Chief

Risa Yamashita, Sub-Chief

Naomi Ota, Staff

Miyuki Yamashita, Assistant Staff

Accounting and Facilities Management Unit

Takenobu Hayashida, Chief

Tomohiro Ito, Sub-Chief

Yoko Oya, Staff

Junko Suenaga, Assistant Staff

Yumiko Matsumoto, Assistant Staff

Asuka Matsuo, Assistant Staff

Overseas Research Station Unit

Kenta Sasada, Chief

Fumiko Hashiguchi, Sub-Chief

Shiho Honda, Staff

Rie Ishikawa, Staff

Idumi Hasegawa, Assistant Staff

Number of Staff (as of August, 2008)

Divisions	Professor	Associate Professor	Lecturer	Assistant Professor	Assistant	Sub total	Others	Total
Enrollment	10 (7)	4 (2)	3	16 (10)	3	36 (19)	10 (8)	46 (27)

() number of fixed-term staff

Accounting

Revenue (in 2007)

Divisions	Amount (in thousands)
Tuition and Matriculation Fee	2,333
Others	156
Total	2,489

Expenditure (in 2007)

Divisions	Amount (in thousands)
Personnel expenses	497,342
the cost of equipment	352,737
Total	850,079

Grant-in-Aid for Scientific Research from the Ministry of Education, Culture, Sports, Science and Technology (in 2008)

Classification	Scientific Research on Priority Areas	Scientific Research (A)	Scientific Research (A)	Scientific Research (B)	Scientific Research (B)	Scientific Research (C)	Exploratory Research	Young Scientists (B)	Total
Number of Grants	1	2	1	6	1	3	1	3	18
Amount (in thousands)	7,900	22,620	16,510	27,040	7,930	6,370	600	6,500	95,470

Grant-in-Aid for Scientific Research from the Ministry of Health, Labour and Welfare (in 2008)

Classification	International Medical Cooperation	Emerging and Reemerging Infectious Diseases	AIDS Control	Research Fund Project on Health Sciences focusing on Drug Innovation	Clinical Cancer	Total
Number of Grants	2	3	2	1	1	8
Amount (in thousands)	16,461	6,800	6,800	2,000	500	32,561

Grant-in-Aid for Forming Research Locations etc (Global COE)

Fiscal Year	2008
Amount (in thousands)	342,940

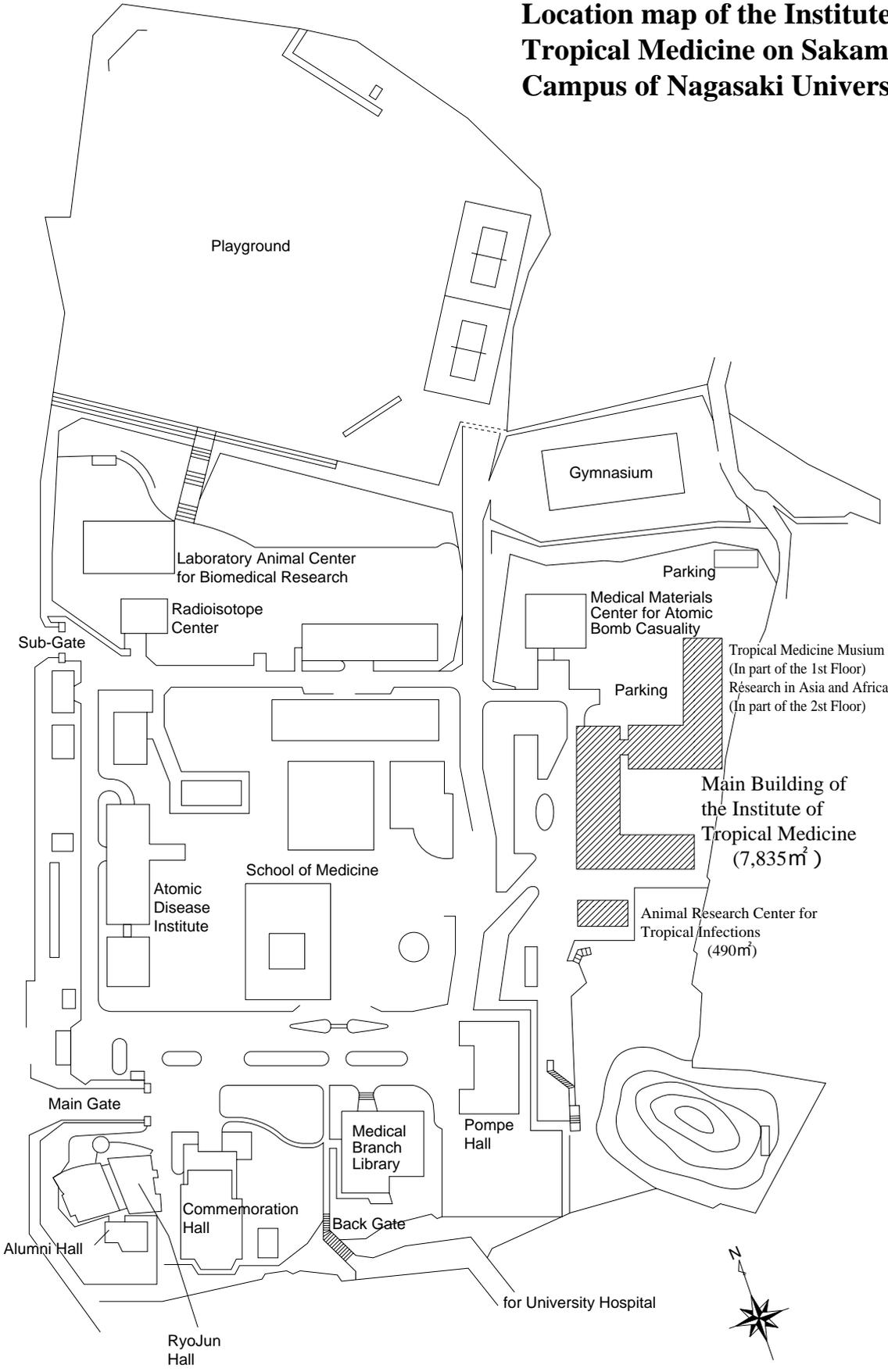
External Funding (in 2008)

Divisions	Cooperative Research	Commissioned	Endowments
Number of Sources	1	8	22
Amount (in thousands)	2,000	15,715	15,101

Agreement of Educational, Scientific and Scholary 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, 2001
Institute of Hygiene and Epidemiology (Vietnam)	June, 2001
Airlangga University (Indonesia)	January, 2004
St. Luke's Medical Center (Philippines)	February, 2004
SAH LAZARO HOSPITAL MEDICAL CEHTER (Philippines)	August, 2004
KENYA MEDICAL RESEARCH INSTITUTE (KENYA)	November, 2004
THAMMASAT University (Thailand)	March, 2006

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



Telephone Number

Institute of Tropical Medicine, Nagasaki University

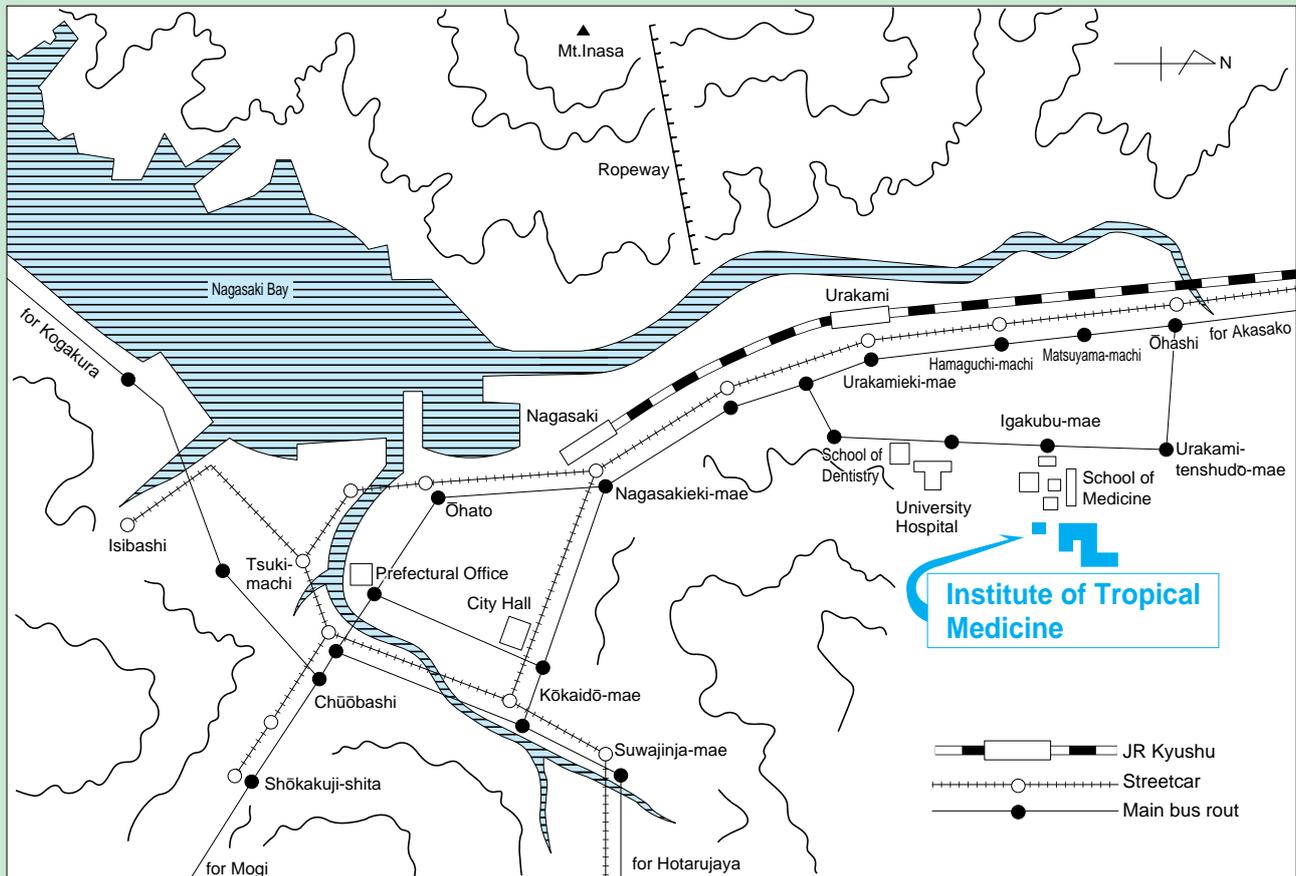
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Extensions

Dean	7 8 0 1	8 1 9 - 7 8 0 1
Head of Administrative Office	7 8 0 2	8 1 9 - 7 8 0 2
Expert Staff	7 8 1 3	
Chief of General Affairs Unit	4 7 0 2	8 1 9 - 7 8 0 3
General Affairs Unit	7 8 0 3	
Chief of Accounting and Facilities Management Unit	4 7 0 6	8 1 9 - 7 8 0 7
Accounting and Facilities Management Unit	7 8 0 7	
Accounting and Facilities Management Unit	7 8 1 6	
Chief of Overseas Research Station Unit	4 7 0 9	8 1 9 - 7 8 0 6
Overseas Research Station Unit	7 8 0 6	
Facsimile	7 8 0 5	8 1 9 - 7 8 0 5
Meeting Room	4 7 1 1	
Department of Virology		
Professor	7 8 2 7	8 1 9 - 7 8 2 7
Associate Professor	7 8 2 8	8 1 9 - 7 8 2 8
Information	7 8 2 9	8 1 9 - 7 8 2 9
Facsimile	7 8 3 0	8 1 9 - 7 8 3 0
Department of Bacteriology		
Professor	7 8 3 1	8 1 9 - 7 8 3 1
Lab.2.....	7 8 3 2	8 1 9 - 7 8 3 2
Lab.1,Lab.3	7 8 3 3	8 1 9 - 7 8 3 3
Department of Protozoology		
Professor	7 8 3 5	8 1 9 - 7 8 3 5
Lab.2.....	7 8 3 6	8 1 9 - 7 8 3 6
Lab.1.....	7 8 3 7	8 1 9 - 7 8 3 7
Information	7 8 3 8	8 1 9 - 7 8 3 8
Department of Parasitology		
Professor	7 8 2 2	8 1 9 - 7 8 2 2
Staff room	7 8 2 3	8 1 9 - 7 8 2 3
Facsimile	7 8 2 4	8 1 9 - 7 8 2 4
Information	7 8 2 5	8 1 9 - 7 8 2 5
Department of Molecular Epidemiology		
Professor	7 8 6 0	8 1 9 - 7 8 6 0
Department of Clinical Medicine		
Professor	7 8 4 0	8 1 9 - 7 8 4 0
Associate Professor	7 8 7 3	8 1 9 - 7 8 7 3
Information	7 8 4 1	8 1 9 - 7 8 4 1
Information	7 8 4 2	8 1 9 - 7 8 4 2
Facsimile	7 8 4 3	8 1 9 - 7 8 4 3
Department of Host-Defense Biochemistry		
Professor	7 8 4 8	8 1 9 - 7 8 4 8
Lab.1.....	7 8 4 9	8 1 9 - 7 8 4 9
Culture room	7 8 5 0	8 1 9 - 7 8 5 0
Information	7 8 5 1	8 1 9 - 7 8 5 1

Department of Pathology		
Professor	7 8 1 3	8 1 9 - 7 8 1 3
Assistant Professor	7 8 1 4	8 1 9 - 7 8 1 4
Staff room	7 8 1 5	8 1 9 - 7 8 1 5
Staff room	7 8 1 6	8 1 9 - 7 8 1 6
Information	7 8 7 0	8 1 9 - 7 8 7 0
Department of Preventive Medicine and AIDS Research		
Laboratory	7 8 4 4	8 1 9 - 7 8 4 4
Information1	7 8 4 5	8 1 9 - 7 8 4 5
Information2	7 8 4 6	8 1 9 - 7 8 4 6
Department of Eco-epidemiology		
Professor	7 8 5 4	8 1 9 - 7 8 5 4
Information	7 8 6 8	8 1 9 - 7 8 6 8
Department of International Health		
Professor	7 8 6 9	8 1 9 - 7 8 6 9
Associate Professor	7 8 5 3	8 1 9 - 7 8 5 3
Lab.1.....	7 8 5 3	8 1 9 - 7 8 5 3
Information	7 8 6 8	8 1 9 - 7 8 6 8
Department of Global Health Development Policy Sciences		
Professor	7 8 6 4	8 1 9 - 7 8 6 4
Staff room	7 8 6 5	8 1 9 - 7 8 6 5
Information	7 8 6 6	8 1 9 - 7 8 6 6
Facsimile	7 8 6 7	8 1 9 - 7 8 6 7
Department of Vector Ecology and Environment		
Professor	7 8 1 0	8 1 9 - 7 8 1 0
Staff room	7 8 1 1	8 1 9 - 7 8 1 1
Information	7 8 0 9	8 1 9 - 7 8 0 9
Facsimile	7 8 1 2	8 1 9 - 7 8 1 2
Department of Immunogenetics		
Professor	7 8 1 8	8 1 9 - 7 8 1 8
Assistant Professor	7 8 1 9	8 1 9 - 7 8 1 9
Information	7 8 2 0	8 1 9 - 7 8 2 0
Facsimile	7 8 2 1	8 1 9 - 7 8 2 1
Animal Resach Center for Tropical Infections		
Information	7 8 5 6	8 1 9 - 7 8 5 6
Tropical Medicine Museum		
Professor	7 8 1 7	8 1 9 - 7 8 1 7
Information	7 8 6 8	8 1 9 - 7 8 6 8
Central Laboratory		
Electron Microscope Room	7 8 5 9	8 1 9 - 7 8 5 9

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



How to get the Institute

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