Expert	Counterpart	Period	Job
Dr. Shudo Yamazaki Dr. Shigeharu Ueda Dr. Haruo Watanabe Mrs. Michiyo Hashiguchi	DMS	Dec. 10-16, 1990	Mission
Dr. Hirofumi Danbara	Dr. Vinita Boriraj Mrs. Aroon Bangtrakulnonth Ms. Orn-Anong Ratchtrachenchai	Dec. 25, 1990-Jan. 24, 1991	Molecular surveillance of salmonella of foods
Dr. Kuniaki Nerome	Ms. Sirima Pattamadilok	Dec. 25, 1990-Jan. 17, 1991	Molecular epidemiology of Influenza virus
Dr. Kouki Taniguchi	Dr. Yaowapa Pongsuwanna	Dec. 26, 1990-Jan. 15, 1991	Molecular epidemiology of Rota virus
Dr. Kazuo Goto	Dr. Tanawat Nantamingcharoen	Jan. 19-Mar. 2, 1991	Microbiological monitoring of experimental animals
			Pilot production and quality control of rubella vaccine
			Component purification for pertussis vaccine
			Viral hepatitis (HBV, HCV)
			Immunoelectron microscopy
			Taxonomy of gram-negative bacteria

EQUIPMENT FOR FY 1990/91

(Unit : Baht)

No.	Equipment	Specification	Manufacturer	Agent	Estimation Price (Baht)
1.	High Pressure Steam Sterilizer	SRSP-II-24-D	Udono	B.K. Tech Associates Co., Ltd.	1,916,230
2.	Duplicator	Xeroprinter 100	Xerox	Thai xerographic Systems Co., Ltd.	300,000
3.	Computerized Elisa plate Reader	Multiscan plus MKZ	Flow Lab.	Kosmik International Enterprise Co., Ltd.	411,460
4.	Concentrator (For HIV)	SS4 Large Capacity	Savant	Science Tech co., Ltd.	365,000
5.	Polymerase Chain Reaction Machine	Cat. No. N801-0177	Perkin-Elmer Cetus	Pure Science Instrument co., Ltd.	290,000

(Unit : Baht)

No.	Equipment	Specification	Manufacturer	Agent	Estimation Price (Baht)
6.	Microcentrifuge	H-1500 FR	Kokusan	Kosmik Internation Enterprise Co., Ltd.	195,000
7.	Autoclave	SP-51	Yamato	Kosmik Internation Enterprise Co., Ltd.	90,720
8.	Cooler System, Handy Aspirator	BP-51	Yamato	Kosmik Internation Enterprise Co., Ltd.	72,850
9.	Microfilm Reader Printer	Canon NP Printer 780 FS II	Canon	FMA Corporation Ltd.	446,400
				Grand total	4,087,680 Baht

MIDDLE LEVEL STAFF TRAINING COURSE FY 1990/91

No.	Course	Budget (Baht)
1.	Maintenance of Rural Area Laboratory Instruments	20,000
2.	Workshop on Management of Infectious Diseases Diagnostic System	35,000
3.	Laboratory Management	200,000
4.	QCC	200,000
5.	Research Methodology	100,000
6.	Application of Biotechnology	100,000
7.	Phage Typing Technique of Staphylococcus aureus	40,000
8.	Training Courses in Public Health Promotion	
	8.1) Clinical Microbiology	50,000
	8.2) Food Sampling Technique for Microanalysis Qualitation	12,000
	8.3) Transfer of Appropriate Technology of Diagnosis Shigellosis	60,000
	8.4) Workking Cooperation and Coordination	78,000
	Total	895,000

SUMMARY OF ACTIVITIES

RESEARCH PROMOTION PROJECT

NATIONAL INSTITUTE OF HEALTH (NIH)

DEPARTMENT OF MEDICAL SCIENCES

October 1989 to September 1990

Prepared for the Japanese Consultation Team

JAPAN INTERNATIONAL COOPERATION AGENCY

visiting the NIH, Thailand, in December 1990

TABLE OF CONTENTS

	Page
- Introduction	2
- ACHIEVEMENT OF ACTIVITIES	3
1. BASIC RESEARCH	3
2. DEVELOPMENT AND IMPROVEMENT OF DIAGNOSTIC PRODUCTS AND TECHNIQUES	7
3. VACCINE DEVELOPMENT AND VACCINE TRIAL	10
4. EPIDEMIOLOGICAL STUDIES OF INFECTIOUS DISEASES	12
5. RESEARCH IN MEDICAL ENTOMOLOGY	14
6. ESTABLISHMENT AND STRENGTHENING OF REFERENCE SYSTEM	15
7. COMMON LABORATORY ACTIVITIES	16
8. TRAINING PROGRAMME	17
- FUTURE PLAN	21
- Man Power of NIH	23
- Source of NIH FUND, October 1989 - September 1990	24
- Appendix I, Organization chart of DMS 1990	25
- Appendix II, Steering Committee 1990	26
Coordinating Commmittee 1990	28

Summary of Activities of NIH, October 1989 to September 1990

INTRODUCTION

Following the JICA GRANT AID for the establishment of National Institute of Health (NIH), Thailand, the Research Promotion Project was formulated to support the research capabilities of NIH. The Project has started from the 1st August 1985 and completed in July 1990. In accordance with the Record of Discussion signed on the 31st July 1990 the project was extended for two years from the 1st August 1990.

During the first year of the extension of the Project, the activities of NIH were carried out smoothly following the objectives, implementation plan and management described in the Summary of Activities of NIH, August 1985 to September 1989.

In 1989, the intrastructure of the Department of Medical Sciences (DMS) has been reorganized. Four more divisions and three more Regional Medical Centers were established in DMS. The new organization chart is shown in Appendix I. Two new divisions under NIH are Division of Biological Products, and Health Science Research Institute. The Division of Biological Products covers all activities of Biological Products Laboratory, and the Health Science Research Institute covers Laboratories of Immunology, Biotechnology, Radioisotope, Rickettsia, Animimal Experiment Center and Scientific Equipment Center. The Rickettsia Laboratory is newly set up this year, 1990.

The fourth Annual Report of NIH activities (August 1988 - July 1989) has been issued. The research activities and the information on the management of NIH during October 1989 to September 1990 are published in the biannual Progress Reports of 1990. This summary report recorded only the highlights from all activities

ACHIEVEMENT OF ACTIVITIES (October 1989 - September 1990)

1. BASIC RESEARCH

1.1 Detection of proviral DNA of the human immunodeficiency virus in peripheral blood mononuclear cells of intravenous drug users in Thailand

To detect early infection of HIV the polymerase chain reaction (PCR) was conducted in comparison with particle agglutination and ELISA antigen detection. Fourty-eight samples of plasma and peripheral blood mononuclear cells (PBMCS) collected from intravenous drug users (ICDU) in Thailand in July 1990, were tested for HIV-1 antibody and antigen by GPA and EIA. Proviral DNA of HIV-1 in PBMCs was detected by PCR, an in vitro gene amplification technique using three pairs of primer from gag, env and LTR regions. Among 24 samples from seropositive ICDU, 13 (54%) were positive by PCR, but only 6 from 24 (25%) seronegative IVDU were PCR positive. There were 7 (14.5%) from 48 samples were HIV-1 antigen positive and 3 of them (43%) were PCR positive. IVDU who are seronegative of HIV-1 infection but PCR positive will be followed up to see any progress of the disease and seropositivity.

1.2 Isolation of HIV from peripheral blood mononuclear cells of asymptomatic HIV infected and ARC patients

Blood specimens from 4 asymptomatic HIV infected and 2 ARC patients were collected for virus isolation. Antibody to HIV and antigen were tested by ELISA. After cultivation of PBMCs of the patients with activated cord blood cells for 7 weeks, no virus was found from blood specimens of asymptomatic infected patients but HIV antigen were detected in fluid culture of 4 months infant born to infected mother by ELISA. The child came to hospital with chronic diarrhoea. The virus was also found in plasma and culture fluid of woman who had generalized lymphadenopathy. spleenohepatomegaly and no antibody to HIV. From the study, it seems to be that virus production was active during progressive of the symptom.

More isolation of HIV from other blood samples will be carried out to get more information. Polymerase chain reaction will be developed to detect viral gene from blood specimens. Sensitivity and specificity of PCR for diagnosis of early infection and infection in newborn will be evaluated.

1.3 Molecular and Antigenic Characterization of Human and Bovine Rotavirus in Thailand: Analysis with [32p] RNA probe and MnAbs.

To provide information for the epidemiology of rotavirus, the serological and genetical characterization of rotaviruses isolated in Thailand were studied.

A total of 99 human and 70 bovine strains of group A rotavirus were examined by ELISA for their serological properties of VP4, VP6 and VP7 by ELISA. Out of 99 strains of human rotavirus (HRV) collected in Bangkok and Songkla Province, 70 were VP7 serotype specificity, 51 type1, 12 type2, 2 type3 and 5 type4. Variable reactivity pattern of HRV to three anti VP4 neutralizing monoclonal antibodies were detected. It is suggested that the precise structure epitope on VP4 is quite different among HRV strains, even if they have the same serotype specificity of VP7.

All 70 strains of bovine rotavirus (BRV) examined were subgroup I. However serotype specificity of the BRV strains could not be determined except on strain of serotype 6 specificity. In RNA-RNA hybridization using [32P] RNA probe from reference NCDV strain, only 3 or 4 RNA segments were hybridized between the RNAs from Thai samples and NCDV. These results suggested that BRV isolated in Thailand are serologically and genetically distinct from the reference serotype 6 bovine strain, NCDV.

1.4 Genetic differences of poliovirus between vaccine strain and isolated strain in Thailand using nuclear technique.

To support the national and global eradication of poliomyelitis, a specific technique for genetic differentiation of wild strains and attenuated vaccine strains of poliovirus has been studied. Seven strains of polioviruses isolated from paralytic patients in 1983 and 1989 and 3 Sabin strains were propagated in tissue

culture and purified. The viral pellets were extracted by phenol / chloroform to get RNA. The RNAs obtained will be subjected for oligonucleotide finger printing analysis. The study is in progress.

1.5 Growth and persistence of Psudomonas pseudomallei in acidic environments.

Growth and persistence of Pseudomonas pseudomallei in in vitro environments different in nutrients, initial pH, and aeration were studied in comparison with Pseudomonas cepacia and Pseudomonas aeruginosa. The observations led us to a definite conclusion that P.pseudomallei has the most adaptive nature to unfavourable conditions among the three species. It grew in heart infusion broth of pH 4.5 under aeration and persisted keeping a high level of viable counts as long as 30 days. This cost at adaptation was found to be accelerated in the media of poor nutrition and under limited aeration. The above results indicated there outstanding ability to persist in environment and human.

1.6 Separation and analysis of outer membrane protein of Pseudomonas pseudomallei

In order to determine the specific antigen of p.pseudomallei, outer membrane protein (OMP) was studied. OMP from 8 strains of P. pseudomallei were separated and analysed by means of SDS-PAGE. OMP patterns revealed that all strains had common protein

bands of molecular weight (MW) ranging from 80 to 14 kilodaltons. As determined by western immunoblotting, sera from meleoidosis patients reacted specifically with protein of MW 80, 74, 48 and 38 KD. The results revealed that these proteins were immunogenic and could be used in the development of a diagnostic test for *P. pseudomallei* infection.

1.7 Identification of enterotoxigenic Escherichia coli by colony hybridization using nonradioactive-labeled trivalent probe

This study is aimed to develop technique for the detection of enterotoxigenic *E.coli* (ETEC) by a single colony hybridization. A trivalent probe for enterotoxins of *E.coli* (LTh, ST1a, ST1b) was conjugated with horseradish peroxidase then hybridized with 41 strains of ETEC and 20 strains of non-ETEC. The HRP-conjugated trivalent probe clearly identified all ETEC strains. The results suggest that the HRP-conjugated trivalent probe would be useful for specific diagnosis of ETEC strains in the clinical laboratory.

2. DEVELOPMENT AND IMPROVEMENT OF DIAGNOSTIC PRUDUCTS AND TECHNIQUES

2.1 Production of immunofluorescence assay kit for detection of HIV antibody

Cultivation of HIV infected cell line and production of IFA kit for HIV-1 antibody detection have become a routine activity of this laboratory. Most IFA slide kits have been distributed

and used as confirmatory test for anti-HIV at the Regional Medical Sciences Centers. About thirty-five thousand tests of IFA slide kits were produced and distributed last year.

2.2 ELISA kits for diagnosis of Japanese encephalitis and dengue infections

IgM ELISA kits for diagnosis of Japanese encephalitis and IgM and IgG ELISA kits for diagnosis of dengue infection have been produced and used for routine diagnosis at NIH. The mass production for supply to the regional and provincial laboratories are being undertaken.

2.3 Production and supply of diagnostic kits for other virus infections

The following kits are produced and supplied to the Regional Medical Sciences Centers and other laboratories.

- Rubella kits 52 kits (50 tests/kit)
- Viral hepatitis B kits 444 kits (60 tests/kit)
- Dengue kits 84 kits (30 tests/kit)

2.4 Production and supply of diagnostic kits for bacterial infection

IHA kits for serodiagnosis of melioidosis were produced and distributed to the 6 Regional Medical Sciences Centers.

2.5 Production of diagnostic reagents for detection of fungal infections.

The following reagents for diagnosis of fungal infections are developed.

(1) FITC-labelled Aspergillus antiglobulin for the diagnosis of Aspergillosis by direct fluorescent antibody technique.

(2) Antigen and Antiserum of Candida albicans for serodiagnosis of candiasis

2.6 Production of reference materials for biological products

The following reference preparations, reference standards for the control of biological products have been prepared and being calibrated:

1.	Reference seed JE virus, challenge strain	60 x 0.5 ml
2.	Reference seed JE virus, vaccine strain	150 x 0.4 ml
3.	Reference rabies vaccine (SMB), lyophilized	56 x 10 ml
4.	Reference preparation of mumps antiserum	50 ml
5.	Reference preparation of measles antiserum	50 ml
6.	Reference preparation of rubella antiserum	50 ml
7.	Standard for diphtheria antitoxin (lyophilized)	65x1 ml
8.	Standard for tetanus antitoxin (lyophilized)	70x1 ml

2.7 Development of appropriate RI technology in monitoring and control of Iodine Deficiency Disorders Programme in Thailand

Iodine deficiency disorders have turned to be one of the important problems in the public health programme of the country due to the effect of iodine deficiency, e.g. causing spontaneous abortion, infant mortality, endemic goitre, cretinism and disorders of brain development. Evidences showed that 14 provinces in Northern Part of Thailand are endemic areas of iodine deficiency. Thus, in 1989 the government has declared the policy to prevent

and control of iodine deficiency disorders (IDD) by setting up the national IDD programme which includes the laboratory monitoring and evaluation of IDD patients.

On the laboratory aspect, the Department of Medical Sciences as supported this programme by emphasis on the development of appropriate technologies and transfer them to rural areas laboratories in this programme. One of the technique that has been developed at the National Institute of health is the development of RI diagnostic kit for thyroid diagnosis. All the kit constituents has been developed by utilizing the RI facilities as well as the AE facilities in NIH project. The process involved are:

- Monoclonal and polyclonal antibodies production (specific to T3, T4 and TSH).
- Iodination of radioisotope tracer.
- Development of the appropriate assay protocal.

In 1990, up to 53,100 tests of thyroid diagnostic kits have been distributed to rural area laboratories in the national IDD programme so that the early detection of the IDD patients can be found resulted in proceeding the IDD programme effectively.

3. VACCINE DEVELOPMENT AND VACCINE TRIAL.

3.1 VACCINE DEVELOPMENT

3.1.1 Development of acellular pertussis vaccine

Three batches of about 1200 ml of purified material were prepared, detoxified and adsorbed onto aluminium hydroxide. The

proportion of PT and FHA antigens determined was 1:3. The protein nitrogen content was 49.5 ug/ml. The tests for safety and potency are being performed. The yield of production of PT content was rather less than expected, therefore improvement of production method is needed.

3.1.2 Development of purified chick embryo cell rabies vaccine

Three batches of about 3 litres of inactivated and purified rabies virus culture were prepared. The HA-titre of each batch was about 1:1056. The vaccine was dispensed 1 ml into 2 ml vials to be freeze-dried. The freeze-dried products are now being tested for sterility, toxicity, potency, stability, moisture content and protein content. The yield of production of rabies virus culture is satisfied. After passing all tests, the freeze-dried vaccine will be used for field trial.

3.2 VACCINE TRIAL

3.2.1 Study of JE vaccination in simultaneous with EPI vaccines in infants.

To provide information for formulation of the national JE vaccination programme, JE vaccination in simultaneous with EPI vaccine was studied at Well Baby Clinic Children Hospital during April 1989 to September 1990. Four groups of 304 infants were immunized with following schedules: Group I, DPT, OPV and JE vaccines at 4 months and 6 months old; Group II, DPT, OPV and JE vaccines at 6 months and measles and JE vaccines at 9 months old; Group III, DPT, OPV and JE vaccines at 6 months old and at 7 days later; Group IV, DPT, OPV and measles only at 4, 6 and 9 months old.

There was no adverse reactions observed among vaccinees. NT antibody titer against JEV examined in non immune infants among group I to IV one month after the second vaccination showed the conversion of 97.6% (G.M 166 ± 2.8), 100% (G.M 363 ± 2.0), 100% (G.M 77 ± 1.8) and 0% (5 ± 0), respectively. A one-year follow-up study showed antibody response of 96.0% (G.M 21 ± 2.6), 86.7% (G.M 36 ± 3.4), 100% (99 ± 5.0), 6% (8 ± 2.1) among group I to TV, respectively.

It is condluded that it is possible to immunize JE vaccine in simultaneous with EPI vaccines. JE vaccination is safe and induced high immunogenicity in infants under 1 year old. Two and three month intervals of two dose JE vaccination are not different from the 7 days interval in inducing immunogenicity.

4. EPIDEMIOLOGICAL STUDIES OF INFECTIOUS DISEASES

4.1 Japanese encephalitis antibody servey in northern Thailand, 1989

To provide information for the national JE vaccination programme, an antibody survey to study immune status of JE was carried out in northern Thailand in 1989. A total of 3,226 blood samples was statistical randomly collected from children under 1, to 14 years old in 5 provinces, Nan, Lampang, Payao, Pitsanulok and Tak. The results of neutralization test against JEV so far in 1,702 samples (selected by one out of two) showed that in apparent JE infection occurred in children under 1 year old as indicated

by the presence of JE antibody. The antibody level increased as the children are older. The average of children under 4, 5-9, 10-14 years old were 15.1%, 27.5% and 45.7%, respestively. The study clearly indicates that children under 4 years old are the first priority group for JE vaccination. In addition, children under 14 years old are equally susceptable to JE infection regardless of where they live rural or urban areas. The NT test of the rest of samples is in progress.

4.2 Epidemiological study of Human Herpes virus-6 in Thailand

In order to know the epidemiological pattern of human herpes virus-6 (HHV6) infection in Thailand, a preliminary study on serosurvey was carried out by determination of immunofluorescence antibodies. Serum samples of 184 children aged 1 month to 14 years and 273 women, collected in 1987 were examined. No significant difference was detected in the antibody positive rate and antibody titer between pregnant women and control groups (married and single women). The antibody titers in sera collected from pregnant women at the 1st and 3rd trimesters remained unchanged. Next, the antibody prevalence in infants were examined and the positive rate decreased until 3 months and started to increase from 6 months after birth. The present results suggest that the reactivation of HHV-6 might not occur during prenancy and this virus infects infants postnatally.

5. RESEARCH IN MEDICAL ENTOMOLOGY

5.1 A study of Japanese encephalitis virus in mosquitoes collected from endemic areas, Thailand 1989-1992

To establish the JE vector surveillance system, a study on seasonal and local changes of Japanese encephalitis virus (JEV) infection in mosquitoes have been carried out in endemic areas in the country. During June 1989 to August 1990, 752 pools of 150400 mosquitoes collected from 9 stations in rural areas of 3 provinces, Chiang-Rai, Phayao and Uttaradit were detected for JEV antigen by ELISA method. The results showed that virus infection rate examined in 1989 and 1990 varied from 1.3-45.2% and 1.3-15.8%, respectively. There were remarkable differences of JEV infection rates in collected mosquitoes by areas and seasons. However more data is needed to give the conclusion.

5.2 A study on the toxigenic bacteria for control of mosquito larvae

A search for toxigenic bacteria against mosquito larvae has been conducted to find out local strains possessing toxicity since 1989. So far 2 out of 183 isolates from mosquito larvae collected from Ayuthaya province were recorded as the promising one. Further study to develop the promising isolate as the safe control agents will be undertaken.

6. ESTABLISHMENT AND STRENGTHENING OF REFERENCE SYSTEMS

6.1 WHO National Phage Typing Center

The technique of phage typing for Salmonella typhi and S. paratyphi A was reinforced. Subsequently, phage typing of Staphylococcus aureus was set up in order to search for agents causing nosocomial infection and food poisoning outbreaks.

6.2 Establishment of Type and Reference Culture Collection

The clinical isolates in the country and reference strains were collected for furthur study and supplied to other laboratories upon reguest.

6.3 Establishment of Mycoplasma Laboratory

Mycoplasma laboratory was established under the guidance of Dr. K. Kihara. The techniques for serodiagnosis and isolation of Mycoplasma pneumoniae were set up. This laboratory will serve the hospitals and public health institutions for confirmation of clinical diagnosis and epidemiological survey.

6.4 Establishment of Rickettsial Laboraotry

Rickettsial Laboratory was established in NIH, in 1990. The technique for serodiagnosis by IFA was set up. To participate in the WHO project on global surveillance of rickettsial diseases, WHO diagnostic kit for identification of anti-rickettsial antibodies has been used for detection of R. conorii and R. prowazakit.

In future, production of antigens for diagnosis of scrub typhus (R. tsutsugamushi) using L929 tissue culture will be undertaken and used for surveys and diagnosis.

7. ACHIEVEMENT OF COMMON LABORATORY ACTIVITIES

The achievement of four common laboratories during 1990 can be summarized as follows:

7.1 Animal Experimental Center

7.1.1 Establishment of SPF Japanese Quail Colony

A 400 /spf Japanese quail's eggs received from Japan were incubated and hatched in a sterile egg incubator. Day-old quails were transfered to sterile quail isolators. The broading temperature during the first week was 37°C, then 35°C, 30°C, 26°C for then 2nd, 3rd and 4th week respectively. Quail diet was steriled by 3.0 Mrad of gramma ray and drinking water was steriled by autoclave. The adult quails were sampled and sacrified for microbial monitoring by autopsy, bacterial culture and serological tests. The result of microbial monitoring shows that the quails produced at AE Center are specific pathogen free (SPF).

Therefore, the AE Center is now capable to supply the SPF Japanese Quail's eggs upon request.

7.2 Supportive Activities Animal Experimental Center (AE Center)

- Routinely services on experimental areas for both infectious and non-infectious aspect
- Routinely supply of experimental animals, mice, ckicken etc.

7.3 Biohazard Laboratory

- Routinely services on experimental areas for biohazard experiments and waste treatments.

7.4 Radioisotope Laboratory

- Routinely services on experimental areas and supplies for both infectious and non-infectious aspects
- Management of redioisotope waste products and treatment
- Monitoring and control of radioisotope used in research activity

7.5 Scientific equipment Centre

- Routinely services on central equipment facilities and supplies
- Routinely services on repairing of scientific equipments and installation of new equipments in both central and regional laboratories
- Routinely services on public utilities and supplies for NIH building
- Routinely services on computer applications and programme development

8. TRAINING PROGRAM

Training program have been yearly organized and primarily designed for DMS middle level staff to promote their research capabilities. With the obtained knowledge as well as experience gained from their research activities, the DMS staff could organize training courses and transferred the technical know-how to medical-related personnels from various organizations, both in central and regional regions. In 1990 fiscal year, 7 courses and

4 sub-courses arranged for participants from DMS and other government units will be completed.

Fourthermore, DMS staff have also cooperated with the international organizations in organizing international trainingcourses, and expect to further the cooperation in the future.

The summary of training program is shown on the next page.

Middle-Level Staff Training Program (1990)

Course	Responsible Division	Location
1. Maintenance of Rural Area Laboratory Instruments	Health Sciences Research Institute	NIH
2. Workshop on Management of Infectious Diseases Diagnostic System	Health Laboratory Quality Control Division	NIH
3. Laboratory Management	Technical Coordinating Center	Chonburi
4. Q.C.C.	Technical Coordinating Center	Chonburi
5. Research Methodology	Technical Coordinating Center	NIH
6. Application of Biotechnology	Technical Coordinating Center	NIH
7. Phage Typing Technique of Staphylococcus aureus	Clinical Pathology Division	NIH
8. Training Courses in Public Health Promotion		
8.1 Clinical Microbiology	Health Laboratory Quality Control Division	DMS
8.2 Food Sampling Technique for Microanalysis Qualitation	Regional Medical Sciences Center (RMSC)2	RMSC 2
8.3 Transfer of Appropriate Technology of Diagnosis Shigellosis	Regional Medical Sciences Center (RMSC) 1-6	RMSC 1-6
8.4 Workshop on Working Cooperation and Coordination	Technical Coordinating Center	Kanchanaburi

Training to Overseas Participants in 1990

No.	Subject / Field	Duration	No.of Participants	Country
1	Dengue Test Kit	1 day	1	Singapore
2	Influenza	15 days	1	Philippines
3	Arbovirus	3 months	1	Republic of China
4	Virology	1 day	1	Republic of China
5	Arbovirus	2 months	2	Laos
6	Environmental Toxicology on Water, Food and Beverage	18 days	1	Indonesia
7	Bacteriological Analysis of Food and Water	3 months	2	Laos
8	The Use of Manual in Training in Cultivation, Production and Utilization of Herbal Medicines in Primary Health Care	26 days	6	Indonesia, Philippines, Thailand
9	Traditional Medicine and Drug Control System, Good Manufacturing Practice of Traditional Medicine and Research and Development of Medicinal Plants	12 days	2	Indonesia
10	Radiation Protection	10 days	1	Singapore
11	Chemical Training on the Production of Reference Substances	12 days	5	ASEAN Countries
12	Drug Quality Control	25 days	1	Nepal
13	Drug Quality Control	5 days	1	Indonesia
14	Environmental Toxicology on Water, Foods, and Beverages, Drug, Cosmetics and Air Pollution	2.5 months	1	Indonesia
15	Analytical Technique for Drug Abuse	5 days	1	Indonesia

FUTURE PLAN

Future plan of the activities to be conducted during the next few years will be in line with the master plan, and will be modified following the policy of the seventh National Socio-economic Development Plan (1992-1996).

Besides the on-going activities and research projects, new activities and research will be carried out on the following areas.

1. Basic and applied research emphasizing in molecular biology in immunology, virology, bacteriology, to promote and strengthen reference laboratories, and in medical entomology for vector control. For example,

- Production of monoclonal antibodies
- Production of DNA probe
- Necleotide sequence of DNA or RNA for genetic study of viruses
- DNA probe for diagnosis of melioidosis
- DNA-DNA hybridization of E.coli and other bacteria

2. Promotion and development of new diagnostic techniques including the improvement and simplification of existing techniques for practical use in NIH, DMS and provincial health laboratories, e.g. production of reagents and kits for diagnosis of viral diseases: AIDS, JE, and viral hepatitis, CMV and EBV infections; production of kits for detection of phenylalanine in phenyl ketone nurea (PKU) and kits for detection of iodine deficiency disorder.

3. Research and development of vaccines and field trials of new vaccines. Research on the vaccine strains will be conducted. Continue the development of a cellular pertussis vaccine and tissue culture rabies vaccine.

4. Epidemiological studies of infectious and non-infectious diseases of public health importance by employing conventional and new technologies, e.g. prospective study of AIDS in high risk groups, study on the impacts of the national JE vaccination programme, surveys of rickettsial diseases and etiologic agents of PUO, and surveys of PKU.

5. Strengthening of the National Reference Systems in virology, bacteriology, biological products, medical entomology and radioisotope laboratories.

Manpower of Department of NIH 1990

Division	Scientific Staff				General Administrative Staff				Sub Total	Workers	Total
	Ph.D.	Master	Bachelor	Others	Ph.D.	Master	Bachelor	Others			
Office of the Secretary	-	-	-	-	-	-	5	3	8	12	20
Biological Products Division	-	2	6	1	-	-	-	2	11	4	15
Clinical Pathology Division	1	10	12	16	-	-	-	5	44	13	57
Health Sciences Research Institute	-	1	27	8	-	-	-	7	43	20	63
Medical Entomology Division	-	10	4	8	-	-	1	3	26	27	53
Medicinal Plant Research and Development Division	2	16	21	9	-	-	1	12	61	30	91
Virus Research Institute	-	12	18	17	-	-	3	4	54	25	79
Total	3	51	88	59	-	-	10	36	247	131	378
	201				46						

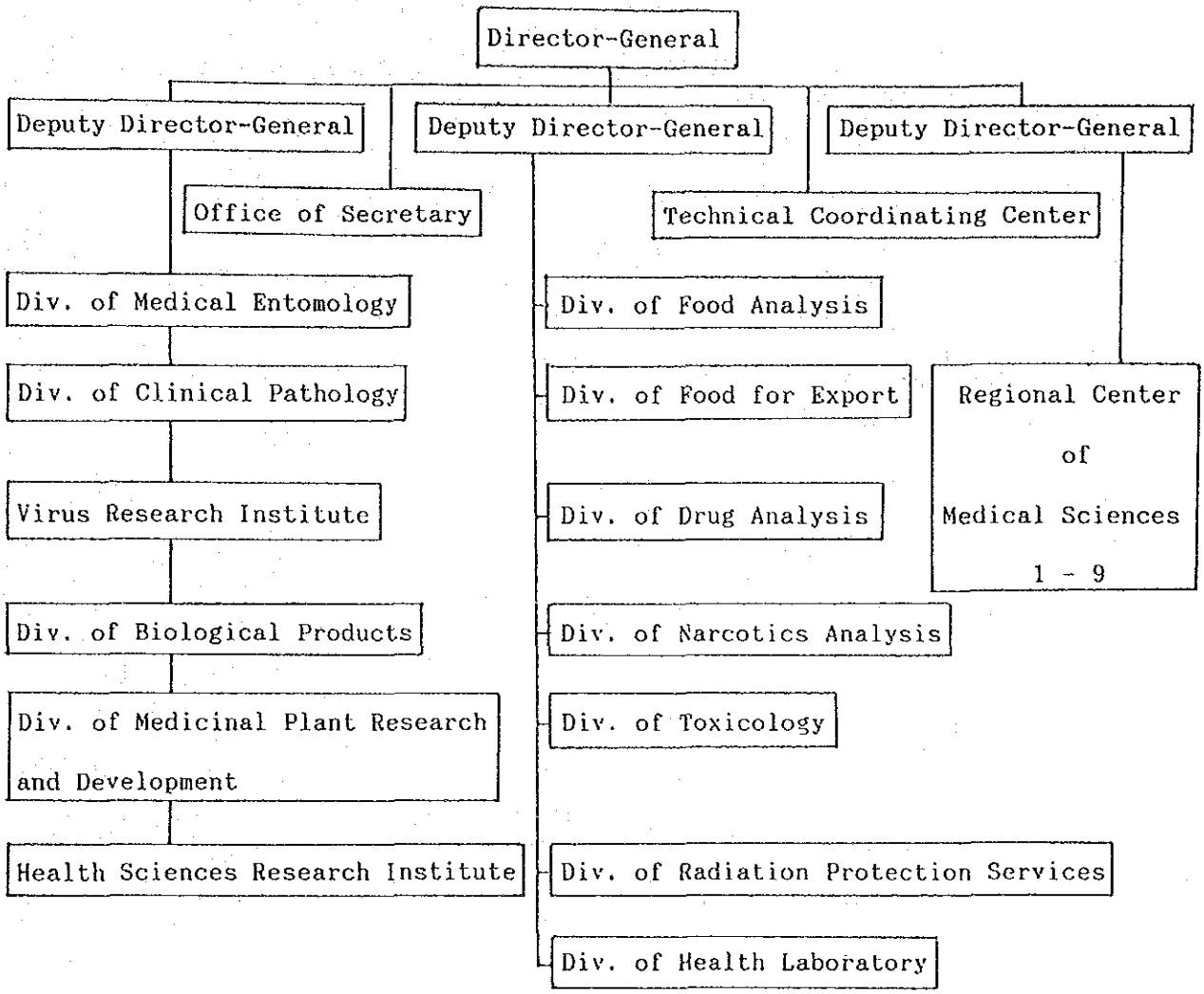
Ph.D.	3	=	1.2 %
Master Degree	51	=	20.6 %
Bachelor Degree	98	=	39.7 %
Others	95	=	38.5 %
Total	247	=	100 %

Source of NIH Fund 1990

Source of Fund		Budget (Baht)
Government Budget		42,787,082
Other		2,655,632
Foreign Aids		1,580,302
	Sub Total	47,023,016
JICA		5,323,666
	Total	52,346,682

Organization Chart

Department of Medical Sciences



Steering Committee 1990

1.	Khunying Preeya Kashemsant Director-General, DMS	Honorable Consultant
2.	Dr. Nadhirat Sangkawibha	Honorable Consultant
3.	Dr. Sompop Ahandrik Deputy Director-General, DMS (Director, NIH)	Chairman
4.	Dr. Boonluan Phanthumachinda Deputy Director-General, DMS	Member
5.	Dr.ML. Ratanasuda Phan-urai Principal Medical Officer	Member
6.	Dr. Chuinrudee Jayavasu Principal Medical Officer	Member
7.	Dr. Damrong Chiewsilp Director, Division of Clinical Pathology	Member
8.	Dr. Paijit Warachit Director, Virus Research Institute	Member
9.	Mr. Prakong Phan-urai Director, Division of Medical Entomology	Member
10.	Mrs. Kanchana Leelasiri Director, Division of Biological Products	Member
11.	Dr. Chakradham Dharmasakti Director, Health Sciences Research Institute	Member
12.	Mr. Kamol Sawasdimongkol Director, Division of Medicinal Plant Research and Development	Member

13. Dr. Komi Kanai — Member
    Japanese Project Leader
14. Mr. Kohei Nakajima — Member
    Japanese Coordinator
15. Japanese Experts — Member
16. Dr. Chongdee Wongpinairat — Member and Secretary
    Director, Technical Coordinating Center
17. Mrs. Siripan Wongwanich — Assistant Secretary
    Division of Clinical Pathology

Coordinating Committee 1985 up to Present

1.	Permanent Secretary Ministry of Public Health	Chairman
2.	Dr. Nadhirat Sangkawibha	Honorable Consultant
3.	Director General, DMS	Member
4.	Deputy Director-Generals, DMS	Member
5.	Principal Medical Officers	Member
6.	A representative of the University Affairs Office	Member
7.	A representative of the Department of Technical and Economic Cooperation	Member
8.	Dr. Komi Kanai Japanese Project Leader	Member
9.	Experts (dispatched by JICA)	Member
10.	Resident Representative of the Bangkok Office, JICA	Member
11.	Mr. Kohei Nakajima Japanese Coordinator	Member
12.	Dr. Sompop Ahandrik Deputy Director-General, DMS (Director, NIH)	Member and Secretary
13.	Dr. Chongdee Wongpinairat Director, Technical Coordinating Center	Member and Assistant Secretary
14.	Miss Wiyada Charoensiriwatana Health Sciences Research Institute	Assistant Secretary