ＭＲＩ機材リスト及び要員資料

විදුලි පණිවුඩ / தந்தி / Telegrams } DEPDIRLAB
දුරකථන / தொலைபேசி / Telephones } 93532 93533 93534

අපේ අංකය / எமது இல. / Our Ref. No.
ඔබේ අංකය / உமது இல. / Your Ref. No.

වෛද්‍ය පර්යේෂණායතනය
மருத்துவ ஆராய்ச்சித் தாபனம்
MEDICAL RESEARCH INSTITUTE

තැ. පෙ. 527, කොළඹ 8. ශ්‍රී ලංකාව
த. பெ. இல. 527, கொழும்பு 8, இலங்கை
P. O. Box 527, Colombo 8, Sri Lanka

දිනය / திகதி / Date } 3rd April, 1987

Dr. Yuichiro Hirano
First Secretary
The Embassy of Japan
20, Gregory's Road
Colombo 7

Dear Dr. Hirano,

I am sending you the balance information that the Preliminary Study Team for Grant Aid requested. I shall be grateful if you can have this sent to them as soon as possible.

I have made all the arrangements to leave for Japan in April and I shall be happy if you could try to expedite my visit as soon as possible. If there is any possibility I would like to visit the Medical Research Institute in Osaka as part of my programme in Japan.

Thank you.

Yours sincerely

(Tissa Vitarana)
Director
Medical Research Institute

LABORATORY EQUIPMENT PRESENTLY AVAILABE AT THE MRI

(1) Department of Virology - MRI
(2) Department of Virology - Colombo South
(3) Department of Biochemistry
(4) Department of Bacteriology I
(5) Department of Bacteriology II
(6) Department of Parasitology
(7) Department of Pathology
(8) Department of Mycology
(9) Department of Rabies
(10) Department of Nutrition
(11) Department of Entomology
(12) Department of Bacterial Vaccine
(13) Department of Food & Water Bacteriology
(14) Department of Serology
(15) Department of Leptospira
(16) Department of Natural Products
(17) Department of Drug Quality Control
(18) Department of Parmacology
(19) Department of Micrography
(20) Lecture Hall
(21) Salmonella Department

(1) DEPARTMENT OF VIROLOGY

I T E M	Functioning	Not Functioning	Total
Autoclave (Gas)	01	-	01
Refrigerator	02	02	04
Automatic Gamma Counter	-	01	01
Balance Electric Metler	01	-	01
Centrifuge Low Temp. Hitachi	01	-	01
Sub-Zero Low Temperature Canbinet - Revco	01	-	01
Cabinets Pathological	01	-	01
Centrifugal Freeze Dryer	01	-	01
Refrigerated Centrifuge	01	01	02
Incubator Electric	01	-	01
Centrifugal Machine (Table Model)	01	-	01
Microscope Zeis Binocular with attachment for Immuno-fluorescence work	01	-	01
Microscope Zeis optan	01	-	01
Millipore Filter with accessaries	01	-	01
Shaker Laboratory	01	-	01
Incubator Cooled Electric	02	-	02
Icemaker	-	01	01
Microscope - Olympus	01	-	01
Binocular Microscope Stero	02	-	02
Incubator LEEC Automatic CO_2	01	-	01
Magnetic Stirrer	01	-	01
Centrifuge Haematocrit	01	-	01
Shaker Votex	01	-	01
Ultrasonic Probe	01	-	01
Freezer-Kelvinator-60°C	01	-	01
E.I.A. Reader	01	-	01
Freezers - 20°C	03	-	03

(2) VIRUS LABORATORY COLOMBO SOUTH

I T E M	Functioning	Not Functioning	Total
Autoclaves	3	-	3
Angle Poise Lamps	1	-	1
Balences	3	-	3
Brushing Machines	1	1	2
Centrifuges	3	-	3
Deionisers	1	-	1
Hot Air Ovens	1	1	2
Incubators	2	7	9
Plate Readers	-	1	1
pH Meters	-	1	1
Microscopes	2	-	2
Refrigerators	2	-	2
Sub-zero Low Temperature Cabinets	4	1	5
Sterilizers-Boiling Water	2	1	3
Stills	-	2	2
Shakers	-	1	1
Vaccum Pumps	1	-	1
Water Baths	1	2	3
Liquid N2 Vessels	1	-	1
LD Transport Vessels	-	2	2

(3) BIOCHEMISTRY DEPARTMENT

ITEM	No.
Analytical Balance Electronic Mettler AE 160	1
Corning Colorimeter 253	1
pH Meter - Model 291 MK2 Pye unicam	1
Klette Summersion Colorimeter	1
Refrigerator - (USHA)	1
Deep Freezer (Skandiluxe)	1
Centrifuge Table Model MSE	1
Hot Air Oven - B & T unitemp.	1
Spectrophotometer L.K.B.	1
Vortex mixer	1
Water Bath (with Thermostate) L.T.E.	1
Centrifuge (M.S.E.)	1
Colorimeter (Klette summersion)	1
Water Bath (Baird & Tatlock)	1
Flame Photometer (Corning)	1
International Refrigerated Centrifuge	1
Smith Fridge	1
Deep Freeze (Hot point)	1
Incubator (Gallenkamp)	1
Electrophorosis Apparatus (Elphor)	1
Balance (Sartorins)	1
Precisa 300CI - Balance	1
Hot Air Oven (Chas-Hearson)	1
Unitemp Laboratory Oven	1
Centrifuge (M.S.E.)	2
Refrigerator (Philcon)	1
Water Bath (Baird & Tatlock)	1

(4) Equipments in use - Bacteriology - I

Refrigerators (08 cu.ft. - SISIL)	- 01
Refrigerators (08 cu.ft. - USHA)	- 01
Refrigerators (08 cu.ft. - PHILIPS)	- 01
Deep-Freezer (15 cu.ft. - PHILIPS)	- 01
Incubators (GALLENCAMP)	- 03
Hot Air-oven (GALLENCAMP)	- 01
Microscopes (Binoccular) (OLYMPUS)	- 02

Equipments not in use

(1)	Incubators (GALLENCAMP)	- 03
(2)	Microscopes	- 05
(3)	Hot Air-ovens	- 01
(4)	Refrigerators (SISIL)	- 01

(5) BACTERIOLOGY II

Equipment Useable, Capital

Cabinet Instrument	- 1	serviceable
Cylinders, gas	- 4	
Puncture	- 1	
Typewriter	- 1	
Blender, warning	- 1	
Incubator, electric	- 2	
Anaerobic Jars	- 4	
Centrifugal Machine	- 1	
Microscope, Leitz (petridish culture)	- 1	unserviceable
Microscope Zeiss (binocular)	- 1	serviceable
Microscope, Olympus binocular	- 2	
Sterilizers, electric nickel plated	- 1	
Vaccum pump with compressor	- 1	
Refrigerators	- 1 serviceable 3 unserviceable	
Water Bath electric	- 1	serviceable
Cool Incubator, electric	- 1	

Dept. of Parasitology,
Medical Research Institute,
Colombo - 08.

01st April, 1987

Refrigerators :-	Eight	:- All over twentyfive years old. Four not in working condition.
Freezers -20°C :-	Four	:- Two not in working condition.
Centrifuges :-	Three	:- Two of which are over twentyfive years old. One not in working condition.
Water Bath :-	Two	:-
Cool Centrifuge:-	One	:- Not in working condition.
Ultra Deep Freezer :-	One	:- Not in working condition.
Hot Air Ovens :-	Two	:- One not in working condition.
Incubators :-	Three	:- Two not in working condition.
Fluorescent Microscopes :-		Two - Both over fifteen years ol
Microscopes :-	Five	
Blenders :-	One	
Suction Pumps :-	One - Not in working condition	
Distilled water still :-	One	
Sterilizers :-	One	
Autoclave :-	One	

Y.Wijayaratnam
R.O.

(7) DEPARTMENT OF PATHOLOGY

	No.
Microscope (Olympus CH)	01
pH Meter (Kent EIL)	01
Votex Mixer	01
Weighing Machine (o.1 mg - 160 g Mettler)	01
Microtome Rotary Cambridge - defective	01
Hot Air Oven Gallenkamp size one	01
Haematocrit	01
Colorimeter - double cell (Klett summersion)	01
Centrifuge (MSE Bench Model)	01
Centriguge (MSE Angle Headed)	01
Water Bath (LTE 0°C - 100°C)	01
Refrigerators 4°C (more than 20yrs old)	02
Refrigerator (more than 10 yrs old)	01

(8) DEPARTMENT OF MYCOLOGY

ITEM	NO.
Refrigerators	2
Incubators	3
Electric Centrifuges	2
Microscopes	3
Automatic Processor	1
Microtome	1
Water Baths	2
Freeze Drier	1
Inoculation Cabinet	1
Electric Balance	1

(9) Rabies Department,
M.R.I.

01-04-1987.

D/M.R.I.

Equipment in Working Order

Refrigerator - Usha - One

Refrigerator - National - One

Microscope Olympus Standard Biological Complete with Iluminator

Instrument sterilizer immersion type - One

Instrument sterilizer hot-air type (Hot air oven) - One

Incubator 37°C

Laminar Flow - One

Test Tube Washer - One

S/M.L.T.

(10) SERVICEABLE ITEMS AVAILABLE AT THE DEPARTMENT OF NUTRITION, M.R.I.

Items from General Inventory.

1.	Calculator(Electronic) - Make Hewlett-Packard	- 1
2.	Canonn Scientific Statistical calculators	- 2
3.	Triumph Electric Calculator	- 1
4.	Type-writer English (Olivetti Linea 98)	- 1
5.	Primer Pressure Lamps	- 2
6.	Refrigerator - Make USHA	- 1 (one)
7.	Detecto Doctors Scale (Personnel weighing)	- 1
8.	Seca Personnel Weighing Scale	- 2
9.	Seca Infants Weighing Scales - ~~25kgxxxx100g~~	- 8
10.	Salter Infant Weighing Scales - 25kg x 100g	-11
11.	Salter infant Weighing Scales - 25kg x 500g	-30
12.	Salter Kitchen Scales	- 6
13.	Portable Overhead Projector	- 1
14.	Portable Slide Projector (Kodak Carousal)	- 1
15.	Canon 150 Photocopier	- 1

Laboratory Items.

1.	Bomb Calorie Meter (Gallenkamp) - To be repaired	- 1
2.	Klett-Summerson Photo Electric Colorimeter -do-	- 1
3.	Bausch & Lomb Spectronic 20 -do-	- 1
4.	Oven (Gallenkamp)	- 1
5.	Water Bath (Gallenkamp)	- 1
6.	Centrifuge(MSE)	- 1
7.	Clinical Centrifuge (Damons)	- 1
8.	Kenwood Chef	- 1
9.	Waring Blender	- 1
10.	Anti Vibration Electric Balance - do-	- 1
11.	Rotary Mixer	- 1
12.	Bunsun Burners	- 4
13.	Disecting Set (Gallenkamp)	- 1
14.	Haemoglobinometers	- 4
15.	Haemocitometer	- 2
16.	Microhaemotocrit Centrifuge	- 1
17.	Hawksley Microhaemotocrit Reader	- 2
18.	Carbolite Furnace Electric - do-	- 1

NB Some of the Laboratory Equipment not included above are unserviceable. The rest consist of glassware and consummables.

(Dr.Mrs.) C.L.Piyasena,
M.O.Nutrition

1st. April 1987

(11) DEPARTMENT OF ENTOMOLOGY

Entomology (LIST OF EQUIPMENT PRESENTLY AVAILABLE).

		Period in use	Condition
1 Refrigerator	Hot point	35 yrs	Not satisfactory
1 Binocular dissecting (field) microscope	Wild ~~Hee & brugg~~ HEERBRUGG	6 yrs	Satisfactory
1 Binocular dissecting microscope	Olympus	1 yr	Satisfactory
2 Binocular microscopes	Olympus	3 yrs	Satisfactory
5 Binocular Microscopes	Baired & Tatlock Watsons	35 yrs	Not satisfactory
3 Binocular dissecting microscopes	Watsons	35 yrs	Not satisfactory
4 Monocular microscopes	Zeiss	35 yrs	Not satisfactory
3 Sterco Binocular microscope	Leitz	35 yrs	Not satisfactory
1 Liquid Nitrogen Cylinder.		1 yr.	Satisfactory

[signature]

(12) BACTERIAL VACCINE DEPARTMENT

ITEM	Nos.	Nos. in use	Nos.not in use
Refrigerators	5	4	1
Incubators	4	2	2
Sterilizers (Wet & Dry)	2	1	1
Autoclaves (gas operated)	2	1	1
Hot Air Oven	1	1	-
Balance	1	-	1
Box of weights	1	1	-
Microscope	2	1	1
Vaccuum Pump	2	2	-
Centrifuge	1	-	1
Rhetort Stand	3	3	-
Timers (Smith)	3	1	2
Stainless Drums & Boxes	12	12	-
Colorimeter	1	1	-
Trolley	1	1	-
Instrument Cabinet	1	1	-
Bullocks Apparatus (glass)	2	1	1
Water Baths	5	2	3
Shaker	1	1	-
Boiler	1	1	-
UV Lamps	4	1	3
Air Conditioning Plant	1	1	-

(13) FOOD AND WATER BACTERIOLOGY

Incubators Electric (Charles Hearson)	- 2
Drying Cabinets Gallenkamp	- 2
Refrigerators	- 2
Autoclave	- 2
Colony Counter	- 2
Cold Incubator	- 1
Water Bath	- 1
Centrifuge MSC Minor	- 1
Balance (Ordinary Chemical)	- 1
Blenders Electric	- 2

(14) SEROLOGY SECTION

Water Baths - 3 — 2 small 37°C & 56°C
1 Gallenkamp 70 Litres (not working)

Centrifuges - 4 — 1 B & T AutoBench Centriguge (2yrs old)
2 angle centrifuges (MSE) over 30
MSE large flooe model years old

Vaccum Pump - 1 (Edward)

Incubators - 1 37°C (Gallenkamp)

Shaker (Electric) - 1

Automatic Pipetting Machines - 2 (Baltimore)

Refrigerators - 3 — 1 Usha 6cu. ft. =4°C
1 Hot point - 12 cu.ft. +4°C-over 30 yrs old
1 Freas - 12 cu.ft. (not working)

Deep Freezer (-20°C) - 1 (Philco) not working

Hot Air oven - 1

(15) Leptospira Section.

List of Equipment.

Refrigerator (Usha) - 1

Refrigerator(Frigidaire) - 2

Deep Freezer - 1
Water bath - 2

Vaccum pump - 1

Microscope(Watson) Dark ground - 1

Centrifuge - 1

Microscope Leitz - 1

Chemical Balance (Rough) - 1

Incubator - 1

Rotating apparatus - 1

Seitz filter - 2

Hot air oven - 1

1/4/1987

(16) NATURAL PRODUCTS _ 1987. 04. 01.

01.	Auto clave (Large_copper gas working)	03
02.	Hot air oven(Electric))	03
03.	Refrigerators	03
04.	Chemical balance	01.
05.	Electrical balance (Mettler _ AE 160)	01
06.	Melting point apparatus _ Buchi 512	01
07.	Shaker (Electric)	01
08.	Rotavapors Buchi Oil	02.
09.	Uitra violet lamp apparatus Black ray _B_ 100A	01
10.	Ozanizer	01
11.	Quickfit extractors	04
12.	Water baths	05

HEAD. DEPT. OF NATURAL PRODUCTS

(17) DRUG QUALITY CONTROL

Item	No.	
Hot Air Oven	1	unserviceable
Incubator	1	unserviceable
Electric Balance	1	serviceable
Refrigerator	1	unserviceable
Water Bath	2	(one serviceable & one unserviceable)
Deep Freezer	1	serviceable
Fume Cupboard		

(18) PHARMACOLOGY SECTION

Water Bath - adjustable	- 1
Water Bath - non. ajustable	- 1
Steriliser - Nickel Plated - Electric	- 1
Refrigerator	- 1
Centrifuges MSE	- 2
Colorimeter - Klett	- 1
Flask Shaker	- 1
Microscope - Binocular	- 1
Thermal Heating Mantles (Electric)	- 1
Incubator with Thermostatic Control	- 1
Salter Balance - (Kilogram Subdivisions)	- 1
Heating Unit Infra-Red	- 1
Hair Cutter Clipper	- 1
Typewriter - Scientific	- 1

The above items are over 25 years old

(19) MICROGRAPHY DEPARTMENT

I T E M	Period in Use	Condition
Fluorescence Microscope Reichert one	25yrs	not satisfactory
Photomicrography Leitz one	35yrs	not satisfactory
Copying 35mm Leitz one	35yrs	not satisfactory
Refrigerator General Electric one	30yrs	not satisfactory
Cannon Photocopying Machine one	12yrs	not satisfactory
Leica M3 Camera 35mm one	25yrs	not satisfactory
Leica IIIF Cameras two	35yrs	not satisfactory
Enlarger One Agfa	35yrs	not satisfactory

(20) LECTURE HALL

ITEM	Period in Use	Condition
35mm Slide Projector Aldis one	33yrs	not satisfactory
35mm Elmo S 300 (two) (gift from Postgraduate Institute of Medicine)	5yrs	slides get jammed
Over Head Projector (one) loan from Postgraduate Institute of Medicine	not known	not satis-factory
16mm Cine Projector (one) Bell and Howel	30yrs	Beyond repairs

(21) SALMONELLA DEPARTMENT

Incubator at 37°C Temp.	- 1
Refrigerators	- 2
Cooled Incubator	- 1

CURRICULUM VITAE

1. Name : Dr. Suppiah Senthishanmuganathan
2. Date of Birth : 09th June 1926
3. Present Designation : Research Officer & Head Dept. of Biochemistry, M.R.I.
4. Institution of Secondary education : i. St. Henry's College, Illavali, Jaffna
   ii. Jaffna College, Jaffna
5. University education dates and qualifications : University of Colombo, Ceylon
   June 1946 - March 1950.
   B.Sc. (Hons) Second class specialized in Chemistry.
   Awarded the Khan Memorial Prize for Chemistry.
6. Post Graduate education dates and qualification :
   i. University of Sheffield, U.K., Sept. 1955-Aug. 1958. Ph.D. in Microbio & Biochemistry.
   ii. Pfizers Post Doctorate Fellow Institute of Microbiology. Rutgens The State University Newsbronswick street, New Jersy, U.S.A. Worked on the Morphogemesis of yeast.
   iii. Senior Fulbright Fellowship offered by U.S. State Dept. U.S.A., Worked in the above university on Photooxidation of Amino acids.
7. Special Training :
   i. Trained in the use and handling of Radio Isotope at Havvell. Atomic Energy Research Establishment Oxford, U.K.
   ii. Attended a seminar on Nicleonic medicine at Boston, U.S.A.
8. Prefessional experience:
   Fellow of the Institute of chemistry Sri Lanka.
   Hony. General Secretary of the Institute of Chemistry from Jan. 1969 - Dec. 1972
   President of the Institute - 1972
   Representations of associations in Foreign countries Science Symposium
   i. Peking, China
   ii. British Association for the Advancement of Science, U.K.,
   iii. Visited all Scientific Research Institutes in India and China.

9. No. of talks delivered and publications : See annexure.

i. Papers published: 1, 2, 5, 6, 7, 8, 10, 11, 12, 19, 22, 27, 29, 34, 36, 45, 47, 48, 50, 51, 52, 53, 54, 55, 56, 57, 58

Papers read

ii. 3, 4, 9, 13, 14, 15, 16, 17, 18, 20, 21, 23, 24, 26, 28, 30, 31, 32, 33, 35, 37, 38, 39, 40, 41, 42

ANNEXED SHEET

PAPERS PUBLISHED FROM 1951

Country		
Ceylon	1.	1954 Part I, p.33, Proc. Cey. Assn. for Adv. Sci. S. Sentheshanmuganathan and A. A. Hoover. Loss of lysine during acid hydrolysis of protein materials containing carbohydrates.
Ceylon	2.	1955. VII 211-221. Cey. K. Mod. Sci. S. Sentheahanmuganathan and A. A. Hoover. Specificity of Lacto Bacillus formanti 36 for the assay of thiamino.
Ceylon		(1) Factors on the growth medium influencing the essentiality of this vitamin for this organism.
		(2) Competitive inhibition in the growth of Lacto Bacillus fermenti 36 by pyrithiamine.
Dublin U.K.	3.	1956, 354th Meeting of the Biochemical Society, University College, Dublin, Ireland. S. Sentheshanmuganathan. The formation of Tyrosol (2-p-Hydroxyphenyl) from tyrosine by Saccharamyces cerevisiae.
Vienna Austria	4.	1958, 4th International Congress of Biochemistry, Vienna. S. Sentheshanmuganathan. The purification and properties of the Tyrosine 2-Oxeglutrate Transaminase of Saccharomyces cerevisiae.
U.K.	5.	1958, 68, 621, The Biochem. J. S. Sentheshanmuganathan & A. A. Hoover. Some aspects of the destruction of lysine under conditions of acid and enzyme hydrolysis of protein materials containing carbohydrates.
U.K.	6.	1958, 69, 210. The Biochem. J. S. Sentheshanmuganathan & S. R. Elsden. The mechanism of tyrosol formation by Saccharomyces cerevisiac.
U.K.	7.	1960, 74, 619. The Biochem. J. S. Sentheshanmuganathan. The mechanism Higher Alcohols formation by yeast.
U.K.	8.	1960, 77, 619. The Biochem. J. S. Sentheshanmuganathan. The purification and properties of the Tyrosine - 2 - exeglutrate. Transaminase of accharom yces cerevisiae.
Ceylon	9.	1961, Part I, p.31, Proc. Cey. Assn. for Adv. Sci. S. Sentheshanmuganathan. Determination of TMA on some varieties of Ceylon Sea Fish with Time.
U.K.	10.	1962, 27, 466, J. Gen. Microbiology.

U.K. 11. 1962, 27, 466. J. Gen. Microbiology. S. Sentheshanmuganathan and Walter J. Nickerson. Composition of cells and cell walls of Triangular and Ellipsoidal Forms of Trignopsis variabilis.

U.K. 12. 1962, 27, 437, J. Gen. Microbiology. S. Sentheshanmuganathan & Walter J. Nickerson. Nutritional control of Cellular form of Trigonopsis variabilis.

Ceylon 13. 1963, p.31. Proc. Cey. Assn. for Adv. Sci. S. Sentheshanmuganathan and A.P.D.G. Fonseka, Serum Iron, Iron binding capacity and unsaturated Iron binding capacity studies in Ceylon Male Subjects.

Ceylon 14. 1965, Part I, p.4. Proc. Sey. Assn. for Adv. Sci. S. Sanmuganathan and B.V. de Mel. Further studies of Anaemia in Pregnant Mothers.

Ceylon 15. 1965. Part I, p.7. Proc. Cey. Assn. for Adv. Sci. K. Mahadeva and S. Sentheshanmuganathan. Iodine content of Ceylon Waters - Goitre Survey.

Ceylon 16. 1966, Part I. p.6. Proc. Cey. Assn. for Adv. Sci. S. Sentheshanmuganathan. Isolation and composition of leaves of plants grown in Ceylon.

Ceylon 17. 1966, Part I, p.6. Proc. Cey. Assn. for Adv. Sci. K. Mahadeva, S. Sentheshanmuganathan, P. Oannanwela and N. Nagarajah. Iodine content of Ceylon Foods.

Ceylon 18. 1966, Part I, p.17. Proc. Cey. Assn. for Adv. Sci. B.V. de Mel & S. Sentheshanmuganathan, Studies of Anaemic in Pregnant Mothers.

U.L. 19. 1967, 27, 341. British J. nutrition. K. Mahadeva & S. Sentheshanmuganathan. The problems of Goitre in Ceylon.

Ceylon 20. 1968, Part I, pp.61062. Pro. Ceyl. Assn. for Adv. Sci. S. Sentheshanmuganathan, Susan Durand and W. J. Nickerson Photochemical cleavage of methionine and related compounds by Riboflavine under acrobic and anaerobic conditions.

Ceylon 21. 1968, Part I, pp.65 - 66. Proc. Cey. Assn, for Adv. Sci. S. Sentheshanmuganathan and W. J. Nickerson. The formation of Ethylene from Methionine in the Photooxidation of Methionine in the presence of Riboflavine.

U.K. 22. 1968. 22, 527, British J. Nutrition, K. Mahadeva, D. A. Seneviratne, D. D. Jayatillake, S. Sentheshanmuganathan, P. Premachandra and N. Nagarajah. Further studies on the problem of goicle in Ceylon.

Ceylon 23. 1968, Part I, pp.66. Proc. Cey. Assn. for Adv. Sci. S. Sentheshanmuganathan and W. J. Nickerson. Formation of 4-5 Dihydro Isothiazole-3-carbolic acid from Methioine in the photochemical reaction of Methionine in the presence of Riboflavine (Structural investigation).

Ceylon 24. 1968, Part I, pp.62-63. Proc. Cey. Assn. for Adv. Sci. S. Sentheshanmuganathan and D. J. B. Perera. A rapid method for the separation of protein - bound and Ionised Calcium in Human Serum and the establishment of the clinical norm for Ceylon Subjects.

Ceylon 25. 1969, 18, 51 - 60. Cey. J. Med. Sci. N. Nagaratnam, Dawn F. de Silva, S. Sentheshanmuganathan, H. R. Peiris and N. Nagarajah. Spread of infectious Hepatitis in the family group.

Ceylon 26. 1969, Part I, pp.6. Proc. Cey. Assn. for Adv. Sci. N. Nagaratnam, Dawn F. de Silva, S. Sentheshanmuganathan, H. R. Peiris and N. Nagarajah. Spread of infectious Hepatitis in the Family Group of a report of biochemical investigations.

U.K. 27. 1969, 20, 603 - 607. J. of Food Science and Agriculture. S. Sentheshanmuganathan and Susan Durand. Isolation and Amino acid composition of Leaf proteins from some species of Ceylon Flora.

Ceylon 28. 1969, Part I, pp.88 - 89. Proc. Cey. Assn. for Adv. Sci. S. Sentheshanmuganathan, Seetha I. Rodrigo and S. Kamalanathan. A rapid method for the separation Pf Phenylalanine in Human Serum by Thin Layer Chromatography and establishment of the clinical Norm for Ceylonese Subjects.

Ceylon 29. 1970, 19, 1 - 14, Cey. J. Med. Sci. S. Sentheshanmuganathan, S. Sachithanandam and D.J. B. Perera. A rapid method for the separation of Protein Bound and Ionised calcium in Human Serum and the establishment of the clinical Norm for Ceylon subjects.

Ceylon 30. 1970, pp.94 - 96. Proc. Cey. Assn. for Adv. Sci. S. Sentheshanmuganathan and M. Rajaratnam. Some studies of Human Serum Cholinesterase and its action towards organophosphate insecticides.

Ceylon 31. 1970, pp. 96 - 97. Proc. Cey. Assn. for Adv. Sci. S. Sentheshanmuganathan and Erc Karunanayake. A shortened method for the Colorimetric estimation of Histamine in Blood and the establishment of clinical Norm for Ceylonese subjects.

Ceylon 32. 1970, Part I, pp. 23 - 24. Proc. Cey. Assn. for Adv. Sci. S. Sentheshanmuganathan and A.W. Liyanage. Comparative studies of yeasts isolated from fermented saps of Palm in Ceylon.

Ceylon 33. 1971, Part I, pp. 23 - 24, Proc. Cey. Assn. for Adv. Sci. S. Sentheshanmuganathan, B.P. Ratnapala and T. W. Goonawardena. Investigation of Family members of Patients sensitive to suxamathenium.

U.K. 34. 1971, 55, 130 - 132. Bri. J. of Dohthal. P.I.R. Dias, S. Sentheshanmuganathan and M. Rajaratnam. Lactic Dehydrogenase activity of aqueous Humour in Retinoblastema.

Ceylon 35. 1971, Part I, pp. 86 - 87. Proc. Cey. Assn. for Adv. Sci. A.W. Liyanage and S. Sentheshanmuganathan. Mechanism of assimilation of amino acids by the yeasts isolated from the fermented saps of coconut (cocoa nucifera), Kitul (Karyoto urens) and Palmyrah (Borassus flapellifer) using cell free system.

U.S.A. 36. 1972, 33, No.3, 659 - 651. Amer. S. Vet. Sci. M.R. Jainudeen, S.T. Fernando and S. Sentheshanmuganathan. Certain Biochemical constitutents of Seminal Plasma of Elephant (Elephas maximus).

Ceylon 37. 1972, Part I, pp. 17. Proc. Cey. Assn. for Adv. Sci. C.C. Mahendra, S. Sentheshanmuganathan, N.P.A. Pereca and R.L. Wickremesinghe. Effect of Tea and Coffee on the Serum Lipid levels of rat.

Ceylon 38. 1972, Part I, pp. 108. Proc. Cey. Assn. for Adv. Sci. P. Jayatillake and S. Sentheshanmuganathan. The effect of UV light on yeasts isolated from (Borassus Clabellifer), Coconut (Cocoa nudifera) and Kitul (Karyeta uren) toddy.

Ceylon 39. 1972, Part I, pp. 30. Proc. Cey. Assn. for Adv. Sci. S. Sentheshanmuganathan, N.E.J. Aiyatharai, S. Thalgahagala and D.P. Kuruppu. Pentoseuria in viral diseases.

Ceylon 40. 1973, Annual Sessions of the Ceylon Paediatric Association. Aiyathurai, J.E.J., Sentheshanmuganathan, S., Parameshwaran, N., Samarasinghe, M.P. and Muthiah, C.Y.T. Hypertriglyceridaemia in viral Ketoacidosis.

Ceylon 41. 1973, Proc. Inst. of Chemistry Ceylon 2nd Annual Session pp. 1-9. Transformation of carbon compounds by Micro-Organisms. S. Sentheshanmuganathan. Presidential address. Inst. of Chemistry.

Ceylon. 42. 1974, Annual Session of the Ceylon Paediatric Association. The Pathogenesia and Rationale of Treatment of Abdominal Pain: Viral Disease.

Ceylon 43. 1974, Part I, pp. 26. Proc. Cey. Assn. for Adv. Sci. Aiyathurai, J.E.J., Ratnayake. D., Arulkumar. S., Sentheshanmuganathan. S., Silva. D.K.D., and Nagahawatte C. The probable significance of raised Serum Glutamic Pyruvic Transaminase in viral Hepatitis.

Ceylon 44. 1975, 88th Anniversary Sessions (Scientific). Ceylon Med. Assn. The probable Significance of Hypertriglyderidaemia in Viral Hepatitis.

Ceylon 45. 1975, J. Natn. Sci. Coun. Sri Lanka 3(1) 51 - 63. In vitro studies on human blood cholinesterase and its action towards organophosphate. S. Sentheshanmuganathan and M. Rajaratnam.

Singapore 46. 1975. International Rubber Conference. Kuala Lumpur, Malaysia. "Some aspects of Lipid Chemistry in Natural Rubber".
S. Sentheshanmuganathan, S. Kasinathan, P.A.J. Yapa and M. Nadarajah.

Ceylon 47. 1974, J. Nat. Sci. Coun. Sri Lanka 2(2) 135 - 140. A shortened method for the separation and estimation of plasma phenyl alanine and the establishment of the clinical norm for Ceylonese Subjects. S. Sentheshanmuganathan, Seetha. I. Rodrigo and S.S. Kamalanathan.

U.K. 48. 1975, Bri. J. of Anaeath. 47 No.8, 889 - 893. Accidental sub-arachanoid injection of Gallamine and its Management.
S. Sentheshanmuganathan, T.W. Gunawardena and R. Kanagasunderam.

Singapore 49. 1975. Proceedings of the 9th Singapore - Malaysia Congress of Medicine, Probable significance of Hypertriglyceridaemia and raised Serum Glutamic Pyruvic Transaminase in viral Hepatitis. J.A.J. Aiyathurai, S. Sentheshanmuganathan, C. Nagahawatte & others.

Ceylon 50. 1975, J. of Natn. Sci. Coun. Sri Lanka 3(2), 117 - 127. Clinical Norm for Pacudocholinesterase with distribution of a typical enzyme in Ceylonese; with two families oxibiting abnormal enxymes. S. Sentheshanmuganathan, T.W. Gociawardena and B.P. Ratnapala.

U.K. 51. 1976. Brit. J. Trop. Med. & Hyg. Vol. 79, 97 - 101. Serum Proteins in Hepatic Amoehiasis.
S. Ramachandra, S. Sentheshanmuganathan and N. Nagarajah.

Australia and New Zealand 52. 1976, Aust. & New Zealand of Med. Vol. 6, 532 - 536. Trigayceride in Viral Keto acidosis.
S. Sentheshanmuganathan and J.E.J. Aiyathurai and others.

Ceylon 53. 1975. Presidential address - "Researches on Lipidaemia", Section S.L.A.A.S.

Ceylon 54. 1976. Antibacterial Action of Plectranthus Zcylanicue and Coleus aromaticus. Proc. Cey. Asso. for Adv. Sci. Part I.
L.B. de Silva, S. Sentheshanmuganathan, R.S.B. Wick Tukev de Silva and K. Sangara Iyen.

U.K. 55. 1976. Brit. J. of Trp. Med. & Eyg. Vitamin B_{12} in Amoebic abscess. R. Ramachandra, S. Sentheshanmuganathan and N. Nagarajah.

Ceylon 56 1986. J. of the Nati. Sa. council. A Rapid method for the Estimation of Caercloplasmin Levels in Human Serum, the Establishment of the clinical. Noun and the studies of the Caercloplasmin Levels in various conditions.

Ceylon 57 1987. J. of Ceylon medical Science. Serum copper in Normal Sri Lankan Subjects and in Varrious pathelogical states.

U.K. 58 1985. Pyridexine states in patients with oral cencer. J. of radiology.

CURRICULUM VITAE

1. Name: Dr.(Mrs.) Nalini Withana
2. Date of Birth: 27th February, 1943.
3. Present Designation: (Section)
   Virologist - Colombo South.
4. Institution of secondary education and Date of Completion:-
   Musaeus Buddhist Girls' College - Colombo. 1962.
5. University Education: with dates and qualifications:-
   University of Ceylon - Peradeniya. M.B.B.S. (Cey.) -1968.
6. Postgraduate Education & Qualifications:
   University of Manchester U.K. - Diploma in Bacteriology & Virology 1979.
   University of Liverpool - U.K. - M.Sc (Virology) - 1982.
7. Special training:-
   (a) Clinical Bacteriology and Virology - 1 yr. U.K.
   (b) Enteroviruses and potency testing of Oral Polio Vaccine - 3 months. India.
8. Professional Experience:
   Isolation and typing of viruses & Chlamydia
   Enterovirus and Infulenza Serology.
9. Research Insterests:
   (1) Prevalence of Enteroviruses in the community
   (2) Incidence of chlamydial infections
   (3) Acute haemorrhagic conjunctivitis
   (4) Viral aetiology of acute respiratory infections
   (5) Antiviral sensitivity testing in tissue culture.
10. No. of talks delivered of Scientific Meetings in Sri Lanka:-
   (1) Enterovirus isolation from faecal samples.- a 25 yr. study.
   (2) Assessment of Polio antibody pattern in new born babies.
   (3) Laboratory investigations of 2 outbreaks of Acute Haemorrhagic conjunctivitis.

   (Short papers - S.L.M.A. Sessions 1987)

Mrs. N. Jayasekera / Entomologist, M.R.I.

1. Name : Nalini Jayasekera

2. Date of Birth : 23-08-1942

3. Present Designation:

   Entomologist (Head, Department of Entomology)

4. Institution of Secondary Education and date of completion : Visakla Vidyalaya

   31-12-1962

5. Univeristy Education :

	Degree	Year	Subjects
(University of Ceylon, Colombo) :	B.Sc. (Gen)	1965	Zoology Botany Chemistry
	B.Sc. (Hons)	1968	Zoology with Entomology (major) Chemistry (minor)

6. Post Graduate Education:

   M.Sc. (1977) in Medical Parasitology including Medical Entomology and Statistics, London School of Hygiene and Tropical Medicine)

7. Professional experience (17 years):

   Date of appointment 01st Aug. 1969. as Research Officer, Entomology.
   Appointed as Head of Dept. Entomology in January 1982.

Previous posts held:

Assistant Lecturer, University of Sri Jayawardenapura. 1-04-69 to 01-08-69.

Research Interests:

On insect vectors of Medical Importance with special emphasis on mosquitoes, involving field activities as well as laboratory investigations.

No. of Publications :

a. Mosquito vectors of Dengue and DHF in Sri Lanka (2)
b. Transmission studies in Filariasis (3)
c. Mosquito Ecology (2)
d. Mosquito systematics (2)

Professional Associations and other Activities:

1. Member of the advisory committee of Communicable Diseases Ministry of Health
2. Member of the Panel of Institute of Biology
3. Lecturer & Examiner in Medical Entomology for Middle Level Technical Officers - Ministry of Health

CURRICULUM VITAE

1. Name : Dr. Veluppillai Karunakaran Samuel

2. Date of Birth : 4th September 1933

3. Present Designation : Head Nuclear Medicine Unit, Class I Sri Lanka Scientific Service

4. Institutes of Secondary education and date of completion : Hartley College, Point Pedro 1942 - 1952 Standard 4 to University Entrance

5. University education with dates and qualification : B.Sc. (Special Chemistry) Colombo University of Ceylon 1958

6. Post graduate education with dates and qualifications : Ph.D. (Biochemistry) London 1973

7. Special Training :
   i. Inter-regional Training course on Nuclear Techniques for Chemical residue and poll pollution problems IAEA Fellowship, Colombo, March 1977
   ii. Inter-regional training course on preparation and control of Radiophamaceuticals in Czechoslovakia and East Germany IAEA Fellowship, Aug.-Sept. 1980
   iii. a. Post-Doctoral studies- IAEA Fellowship in RIA of Thyroid Hormones
   b. Dept. of Endocrinology Medical Academy Poznam, Poland, Sept. to Nov. '80
   c. Dept. of Nuclear Medicine, Meddlesen Hospital, Medical School, London Nov. 1980 to Feb. 1981

   These studies involved the user of 125 I labelled compound & counter and computer
   iv. Regional Train the trainers course in Medical Radioimmunoassay Beijing, China 7th - 25th October 1985

8. Professional Experience:
   Senior Biochemist in the following institutions, General Hospital, Jeffna, Colombo, Kurunegala, Colombo (1959-1974) Visiting lecturer in Biochemistry Faculty of Medicine university of Colombo (1968-1969) Research Officer in Biochemistry Medical Research Institute (1974-1982) Presently Head. Dept. of Nuclear Medicine.

9. Research Interest giving number of publications:
   Two in the field of radioimmunoassay and one in oral cancer.

Collaborative work was done with the dept. of Parasitology on possible Biochemical changes in amoebic hepatitis and hepatic abscess. Also work hasbeen done with the Dept. of Pathology on GBPD level of patients presented with Haemolytic anaemia.

10. Number of talks delivered at Scientific meeting in Sri Lanka and abroad. Courtanld Institute of Biochemistry London presented a paper on the Radioimmunoassay of steroid glucoronosidis Gave a talk at the Inter-regional Training Course on preparation and control of Radiopharmaceuticals in Czechoslovakia.

11. Professional Associations and Activities:
Member of the Committee Nuclear Medicine Unit, Colombo, AEA, Sri Lanka.
Member of the Committee of Radiopharmaceuticals AEA, Sri Lanka.

CURRICULUM VITAE

1. Name : DR. (MRS.) PIYASEELI PREMACHANDRA

2. Date of Birth : 21st October, 1938.

3. Present Designation : Research Officer

4. Institute of secondary Education :

   Holy Cross College, Campaha.

5. University Education: University of Ceylon. June 1959.

   Date and Qualifications : March 1963.
   B.Sc. (Hons.) Second Class
   Specialised in Chemistry.

6. Post Graduate Education : University of Manchester, U.K.

   Dates and Qualifications: Sept. 1968 - Dec. 1971. Ph.D. in Biological Chemistry.

7. Special training :

   i. Attended a W.H.O. workshop on quality control in Clinical Chemistry held at Kualalampur in 1979.

   ii. Six months training in Nuclear Medicine at Chelsea Hospital for Women, London U.K. April 1981 - Oct. 1981.

   iii. Three months training on quality control in clinical chemistry. Preparation and evaluation of liquid quality control material stabilised with ethanediol. Derbyshire Royal Infirmary U.K. - Sept. 1985 - Dec. 1985.

   iv. Attended a W.H.O. workshop on Reagent preparation in Clinical Chemistry 1986 April, Islamabad.

8. Prefessional experience :

   i. Member of the Institute of Chemistry, Sri Lanka.

   ii. Member of the Association of Clinical Biochemists, U.K.

   iii. Organized a W.H.O. sponsored workshop on quality control in Clinical Chemistry. Held at M.R.I. from Oct. 22 - 2nd Nov. 1984.

9. No. of talks delivered and Publications : See Annexure.

i. Papers read: 1 and 6

ii. Papers published: 1, 2, 3, 4, 5, 7, 8, 9.

PUBLICATIONS

1. The isolation and preliminary studies of a glycine decomposing organism.
   Proc. Ceylon Association Advancement of Science 1965. 21-49.

2. Iodine content of Ceylon diet in relation to goitre endemicity.
   Proc. Ceylon Assn. Advancement of Science, 1966. 22-6.

3. Further studies on the problem of goitre in Ceylon British Journal of Nutrition 1968, 22, 527-534.

4. Fractionation of rapidly lebelled nucleic acids from Rhodospirillum rubrum using poly-lysine kieselghur column chromatography. J. of Chromatography 1971, 58, 235-245.

5. The pathogenesis and rationale of treatment of Abdominal pains in viral diseases Annual Session of Ceylon Paediatric Assn. 1974.

6. Biochemical findings in chronic liver diseases. W.H.O. workshop/ Seminar on chronic liver disease in Sri Lanka 1981.

7. Acute vitamin. A toxicity from ingesting fish liver curry. British Medical Journal 1983, 287, 897.

8. Quality Control in Clinical Chemistry. J. of the Med. Res. Ins. S.L. 1985, 1, 29-34.

9. The preparation and stability of liquid quality control serum stabilised with Ethanediol Accepted for publication. J. Clinical Chemistry.

ＭＲＩより提出されたＭＲＩの現状と技術協力に対する要請

තැපැල් ලිපිනය
தந்தி
Telegrams
DEPDIRLAB

දුරකථන
தொலைபேசி
Telephones
93532
93533
93534

වෛද්‍ය පර්යේෂණායතනය
வைத்திய ஆராய்ச்சித் தாபனம்
MEDICAL RESEARCH INSTITUTE

අපේ අංකය
எமது இல.
Our Ref. No.

ඔබේ අංකය
உமது இல.
Your Ref. No.

කැ. පෙ. 527, කොළඹ 8, ශ්‍රී ලංකාව
த. பெ. இல. 527, கொழும்பு 8, இலங்கை
P. O. Box 527, Colombo 8, Sri Lanka

දිනය
திகதி
Date 4th June, 1987

Dr. T. Kobayakawa
Head, Medical Cooperation Division
JICA Head Quarters
Mitsui Building
Nishi Shinjiku
Tokyo

Dear Dr. Kobayakawa,

Japanese Grant Aid and Technical Cooperation Project for Development of the Medical Research Institute

I am sending the information that you requested to facilitate the early visits of the Preliminary Study and Basic Designs Teams.

I give below an introduction to the information provided:-

(1) Plan Showing Location of Proposed Buildings

I regret to inform you that it is not possible to have the DLS Stores vacated and demolished in time for the commencement of the project (to fit into Dr. Hashimoto's request). I should like therefore to suggest that in Phase I the Main Laboratory Complex (MLC), the Animal House (AH) and the Dormitories (D) be constructed. This would enable room to be made available in the present main Medical Research Institute. Building to house the stores items from the DLS Stores. It would then be possible to break down the DLS stores and the old Animal House so that the new Audio-visual Hall (AVH) can be built. The Production Unit (PU), Quarantine Shed (QS)

and Incinerator and Rabies Dissection Room (I) could also be constructed in Phase 2. The garages (G) were not part of our earlier discussions. If it is too late to include them it should be possible for us to construct them subsequently.

From an aesthetic and functional point of view we would like the hill on which the main laboratory complex is to be built to remain. This would make the four story MLC a very prominent landmark and also permit more attractive landscaping to be done in front of it. It is preferable if the main entrance (ME) could be from Baseline Road, with a side entrance (SE) further up the road on the other side of MLC. There should also be a covered overhead bridge (OHB) linking Floor No. 1 (ground floor) of MLC with Floor No. 2 of the old MRI main building. There should be a side entrance (SE) from Serpentine Road as shown.

Details of Buildings

(a) Main Laboratory Complex (MLC)

The sections have been grouped so that related sections will be on one floor (See annexed paper giving the grouping of sections). But additional rooms have been added to each floor according to our requirements as follows:

Floor 1 - The sections are Entomology, Parasitology, Immunology, Library, Photomicrography and Medical Illustration, Maintenance and Heavy Instruments. The additional rooms are Computer Room, Director's Room, Senior staff Room with toilet, Seminar Room and a room for the Switch Board. The specifications for all these rooms are given in the annexures.

Floor 2 - The sections are Biochemistry, Natural Products, Radio-isotope Diagnostics, Pharmacology and Pathology. The additional rooms are Seminar Room, Computer Room and Junior Staff Room with toilet. The specifications are also given in the annexures.

Floor 3 - The sections are Bacteriology I, Bacteriology II, Entero Bacteriology, Mycology, Leptospira, Food & Water and Quality Control. The additional rooms are Computer Room and Seminar Room.

Floor 4 - This floor will house the various Virology sections (4.1. - 4.7.). In addition this floor too should have a Seminar Room and a Computer Room. In addition there is a Cold Room and a Walkin Incubator.

The building should have one service lift towards the Animal House sections. A small lift for visitors and senior staff may be provided. There should also be a set of toilets (Male and Female) on each floor.

The floor area of the rooms mentioned comes to approximately - Floor 1 - 1203 sq.m, Floor 2 - 1456 sq.m, Floor 3 - 1476 sq.m and Floor 4 - 1330sq.m. In order that each floor may have the same area it may be necessary to shift some of the rooms as follows: (a) from Floor 2 to Floor 1 - the radio isotope diagnostic section and the junior staff room and (b) From floor 3 to Floor 2 - the media preparation and wash room from Bacteriology I, or the leptospira section, or the food & Water Bacteriology plus quality control.

It is also preferable if there will be no central air conditioning.

The Animal House should be on two levels, an upper level to service MLC and lower level to service P.U. The Production Unit (P.U.) should preferably be of four floors.

MLT School - A separate document has been prepared for technical cooperation and in this the bulk of this school will be accommodated in the old MRI Building after suitable modifications to be done by us. The only additional requirement with regard to building space from the Project will be provision of two Lecture Halls each to seat 60 students along with the Audio-visual Hall and the Main Conference Room.

(2) Specifications of Individual Rooms

This is given as a separate annexure marked (A) for each section. The main equipment items are listed and include some of the existing items.

(3) Technical Cooperation

The proposals for Technical Cooperation are given in separate annexures marked (B). These are not confined to research projects. These could be modified and prioritized after the visit of the next team ~~for~~ from Japan.

(4) Equipment List

The overlaping of orders for equipment items has been minimised as requested by you. However, it has been decided not to have common rooms for shared equipment items, as far as is possible, so as to ensure that particular sections are incharge of these equipments.

(5) Common List of Activities

In certain areas such as the setting up of a Computer net work and the anti-snake venom production it will be necessary for Japanese Consultants to advise us on the detailed requirements.

I am sure that there are other areas that may not be clear to you in the material provided by me. If so please let me know so that I could clarify matters.

I thank you, Mr. Sato and everyone at JICA for having received us so hospitably in Japan and I look forward to meeting you in Sri Lanka.

Yours sincerely,

T. T. Vitarana

(Tissa Vitarana)
Director
Medical Research Institute

GROUPING OF SECTIONS AT THE M.R.I.

GROUP		SECTIONS	LOCATION	FLOOR AREA
1	1.1.	Entomology	Main New Laboratory Complex (MLC)floor I	300sq.m
	1.2.	Parasitology	Main New Laboratory Complex(MLC) floor I	
	1.3.	Immunology	Main New Laboratory Complex(MLC) floor I	
	1.4.	Library	Main New Laboratory Complex(MLC) floor I	
	1.5.	Photomicrography & Medical Illustration	Main New Laboratory Complex(MLC) floor I	
	1.6.	Maintenance & Heavy Instruments (EM,NMR)	Main New Laboratory Complex(MLC) floor I	
2	2.1.	Biochemistry	Main New Laboratory Complex(MLC) floor 2	
	2.2.	Natural Products	Main New Laboratory Complex(MLC) floor 2	
	2.3.	Radio-isotope Diagnostics (Nuclear-medicine)	Main New Laboratory Complex(MLC) floor 2	
	2.4.	Pharmacology	Main New Laboratory Complex(MLC) floor 2	
	2.5.	Pathology	Main New Laboratory Complex(MLC) floor 2	
3	3.1.	Bacteriology I	Main New Laboratory Complex(MLC) floor 3	
	3.2.	Bacteriology II	Main New Laboratory Complex(MLC) floor 3	
	3.3.	Entero Bacteriology	Main New Laboratory Complex(MLC) floor 3	
	3.4.	Mycology	Main New Laboratory Complex(MLC) floor 3	
	3.5.	Leptospira	Main New Laboratory Complex(MLC) floor 3	
	3.6.	Food & Water	Main New Laboratory Complex(MLC) floor 3	
	3.7.	Quality Control	Main New Laboratory Complex(MLC) floor 3	

GROUP		SECTIONS	LOCATION	FLOOR AREA
4	4.1.	Tissue Culture	Main Laboratory Complex(MLC) Floor 4	
	4.2.	Diarrhoea & Entero-virus	Main New Laboratory Complex(MLC) Floor 4	
	4.3.	Arbovirology	Main New Laboratory Complex(MLC) Floor 4	
	4.4.	Rabies & Neurological	Main New Laboratory Complex(MLC) Floor 4	
	4.5.	Resiratory & Congenital	Main New Laboratory Complex(MLC) Floor 4	
	4.6.	Chlamydiae, Rickettsiae & Mycoplasma	Main New Laboratory Complex(MLC) Floor 4	
	4.7.	Dangerous Viruses (HIV, HFRS, Hepatitis)	Main New Laboratory Complex(MLC) Floor 4	
5			Production Unit	
	5.1.	Diagnostic sera & Lab Pharmaceuticals	Floor - I	
	5.2.	Anti-venin (snake)	Floor - 2	
	5.3.	Bacterial Vaccines	Floor - 3	
	5.4.	Viral Vaccines	Floor - 4	
6	6.1.	Animal-breeding	Animal House -Level 2	
	6.2.	Animal-diagnostic & Experimental		
	6.3.	Insectory		
	6.4.	Animal-Production	Level - I	
7	7.1.	Administration	MRI old block	
	7.2.	Nutrition		
	7.3.	Training (MLT)		
	7.4.	Carpentry & Glass blowing		

Computer Network

Equipment

We would like to have a network of microcomputers distributed as follows:-

		No.	Location
1.	New Laboratory complex	05	(One on each floor Two on floor 2)
2.	Library	01	-
3.	Production unit	01	-
4.	Old I.R.I. Building	02	Administration unit & Nutrition unit
	Total ..	09	

Each should have a voltage stabiliser. There should be four (04) word processors, two for the new laboratory complex and one for each of the other two buildings.

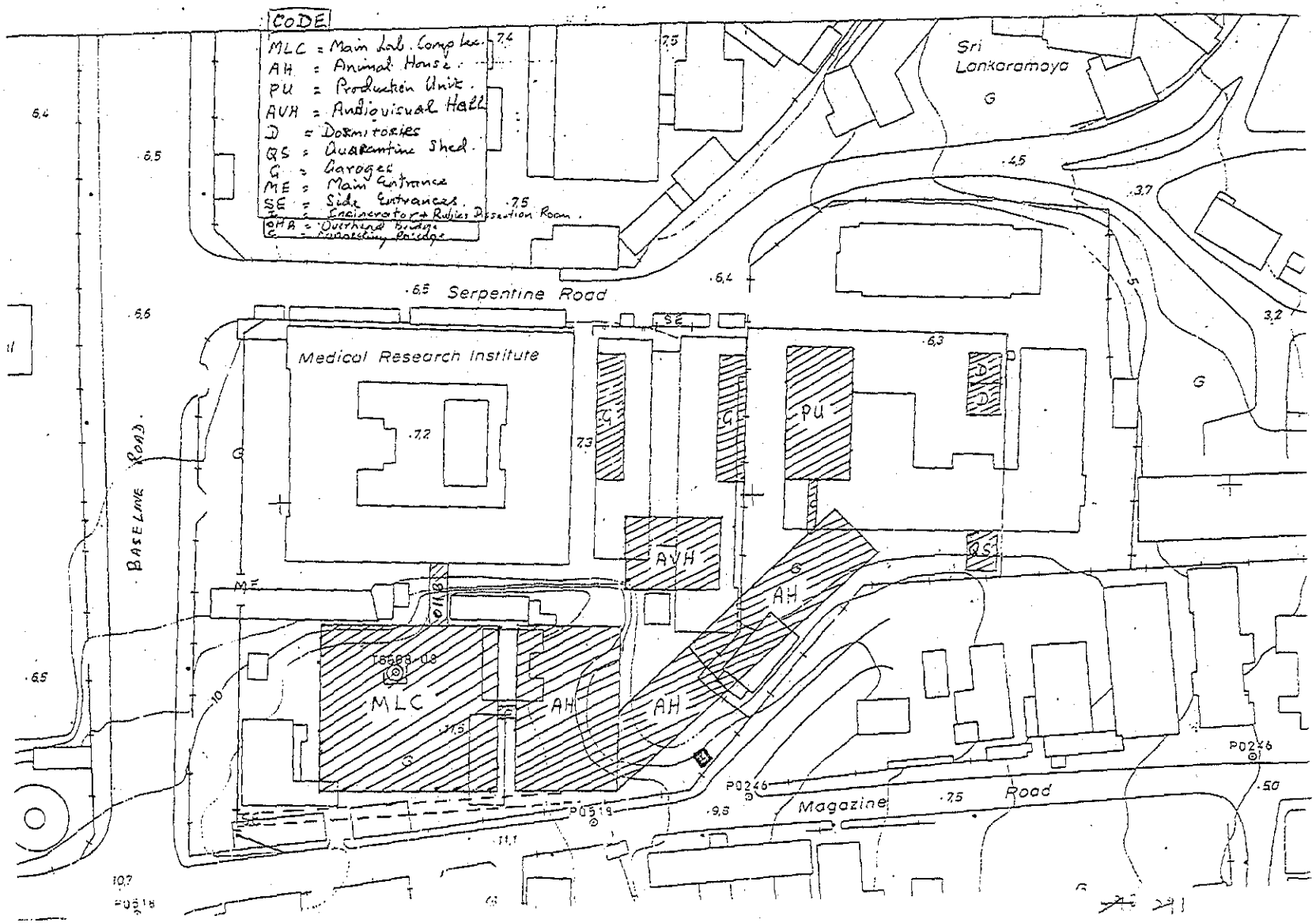
The software required should be supplied.

Data -Base, Word star
Statistical programmes
Lotus 1-2-3
Multiplan
DR. Graph
Mini Tab

Training

It is proposed to recruit a staff officer for the post of statistician/Biometrician and 2 technologists to be trained as Programmer/Analyst. These personnel would require a suitable period of training in Japan.

LOCATION OF NEW BUILDINGS ▨ AT MRI, COLOMBO.



1:1 ENTOMOLOGY

(B) TECHNICAL COOPERATION

I. Research Project for ... Scientific Collaboration

Project Title

Studies on Japanese encephalitis vectors in Sri Lanka in relation to Vector competence, Cytogenetics and Behiourial Aspects

Japanese encephalitis is now considered to be a health problem of growing concern in the country, as a direct consequence of newly implemented irrigation schemes. The first project of the irrigation schemes completed in 1976 provided 12,000 hectares of new land for irrigation. With the accelarated Mahaweli Development Programme, 128,000 hectares of additional land is available for irrigation.

It is established that rice-fields are the major source of breeding of potential JE vectors in Sri Lanka.

Baseline data is already available in the Department of Entomology, M.R.I., on the seasonal distribution and prevalence of potential J.E. vectors in the island. Feeding and resting behaviour have also been studied to some extent. However, detail field studies need to be carried out on man-vector contact, animal reservoirs of infection and the larval ecology in relation to rice cultural practices of Sri Lanka. Support is also necessary to strengthen laboratory studies on culturing the potential vector species and to carry out vector competence studies and for blood meal identification of mosquitoes. Cytogenetic studies of JE vectors and immunocyto chemical techniques to study the distribution of viruses in mosquitoes need to be developed. Eventually these studies should be extended to examine behaviourial aspects of infected and non-infected mosquitoes. The resistance of JE vectors to pesticides commonly used for agricultural purposes should also be studied in greater depth.

(2) Routine Functions:

I. Mosquito surveys in Colombo and new capital of Sri Lanka, in Airports and Sea-port of Colombo.

Strengthening of this function is necessary by,

(a) Training the field staff (Entomological Assistants) in mosquito surveillance techniques.
(b) Vehicles are necessary for field work. At present public transport is used which is unsatisfactory.
(c) Storing facilities for collected field material.

II. Pesticide Residue Analysis in Vectors of Disease.

This is an important function which has to be introduced as a routine function in the future. Thereafter, the services of a consultant is necessary for a period of one year, to train the laboratory staff.

Research Functions

(a) Biological control of insect vectors. Training of technicians and research officers in Bio-control work and culture methods.
Technicians to be given a training in different culture methods and application of Bio-control methods. (six months in Japan for each technician).

(b) Cyto-genetic studies of insect vectors.
This research function needs to be strengthened. A research officer should be trained for one year in Japan in this discipline. A technician should undergo a minimum period of six months training in Japan in Cyto-genetic techniques.

Duration of Project: a minimum of five years

Training of Personnel

Technician to be trained in laboratory techniques - 6 months in Japan.

Field Officers: Training of field techniques 6 months in Japan

Entomologist to visit different institutions in Japan to update knowledge in current techniques (one month duration). Consultants from Japan to visit on short-term consultancies (three month duration) to advise on the project.

TECHNICAL COOPERATION - EQUIPMENT LIST

ITEM	
Insect mounting boxes	I2
Maggi Boards	2
Insect Killing jars	I2
CO_2 mosquito traps	I2
Point punch	I
Water sampling bottles	6
Altimeter	I
Compass	I
Riker mounts	I pack
Foam sheets	I pack
Calculators (solar power)	2
Protective wear and gloves	6
Dissecting sets	6
Insect suction apparatus - (suction motor driven fan mounted on one metere length of I00mm PCV - complete with handle - battery operated - I2 V DC, Size I40 x 85 x I40mm)	6
Shoulder packs	6
Camping tents with sewn inflor and flysheets for upto 8 adults	4
Microscope stage	2
Protein blocks	I2
Forceps (fine)	I2
Petri dishes	I00
Cryoliser and growth chambers	6
Specimen containers	I gross
Plastic tubes	I gross
Folding Tables	6
Folding chairs	I2
Vehicles suitable for field [illegible]	2

contd.

TECHNICAL COOPERATION EQUIPMENTS LIST (Contd.)

Item			Quantity	
Graduated pipettes	(delivery)	1.0 ml	5	doz.
		2.0 ml	2	doz.
		5.0 ml	2	doz.
		10.0 ml	2	doz.
Test tubes		13 mm x 150 mm.	1	gross
Bijou bottles	(small)		2	gross
	(large)		2	gross
Mac Cartney bottles			1	gross
Universal bottles			1	gross
Roux flasks			24	
Medical flats bottles	(500 ml)		50	
	(200 ml)		50	
Flat bottom flasks	glass	1 l.	12	
Gas lighters			4	
Lighter flints			4	packets
Automatic pipette washers			2	
Glass jars		small	4	
		large	4	
Cover slips	square	15 x 15 m.m.	50	oz.
	round	15 m.m. diametre	50	oz.
Pasteur pipettes	(50 droppers)		12	doz.
Pipettes canisters			4	
Rubber teats	small		10	packets
	large		1	doz.
Rubber tubing	7.5 m.m. diameter		100	metres
Steal test tube racks			6	
Cotton wool	500 gm	1	10	packets
Chinagraph pencils	red		12	
	green		12	
	blue		12	
Filter papers	(Whatman No. 1	150 mm	20	packets
Susceptibility Test Kits				
Exposure tubes			100	
Control tubes			100	
Copper rings			100	
Silver rings			100	
Silicon solution			500	ml
Orcein			500	ml.

(B) TECHNICAL COOPERATION

(1) Requirements for Future Routine Work

Introduction of Electrophoretic methods for diagnosis of Amoebiasis, Filariasis and Malaria

(a) Enzyme Electrophoresis - Amoebae/Filaria
(b) Molecular (Protein) Characterization - Filaria/Malaria etc.

(2) Introduction of ELISA methods for detection of antibodies to Toxoplasma, Filaria etc.

Requirements

(1) Training abroad in centres of excellence for MLTT (approx. 6 months for each) and Medical Officers (1-2 yrs) of the Parasitology Department for a sufficient period of time to master the above techniques.

(2) Visiting Consultants to supervise for a sufficient period, after commencement of the above work.

(3) Supplies for above and other routine work.

Bottles Tk - Dropping with grooved stopper 60ml	- 36
Baskets - wire	- 6
Cover glasses (22x22)mm Boxes	- 50
Cover glasses (22x50)mm Boxes	- 50
Diamond - glass writing	- 3
Dymo-Label Marker (12mm) with Labels	- 1
Dissecting Sets	- 3
Forceps	- 12
Photo-copier - Personal	- 1
Themometers o°C - 110°C	- 12
Themometers 0°C - 200°C	- 6
Themometers -80°C - +30°C	- 3
Scalpals	- 12
Scissors	- 12

(3) Supplies (Continued)

Slide Projector	- 1
Slides - glass ordinary 3x1	- 1000
Slides - PTFE coated multispot	- 500
Slides - Multitest (12 well) Flow Laboratories	- 500
Troughs Glass heavy wall	- 6
Tubing PVC (commonly used sizes)	- 200 meters

(8) Continued

(a) Routine Work (Current):

1. Examination of stools for - A.O.C.
   - M.T.F.C.
   - Amoebic Culture

2. Examination of blood for - M.P.
   - M.F.

3. Pus and Liver aspirations for amoebae direct smear & IFA

4. Vaginal swabs for Trichomonas

5. Serological tests for -
   i. F.A.T./Filariasis
   ii. F.A.T. for Amoebiasis
   iii. F.A.T. & I.H.A. for Toxoplasma

6. C.S.F. for Toxoplasma - IHA & IFA

(b) Research Projects in Progress:

1. Dectection of Microfilaria in Hydrocoele fluids and its relationship to FFAT
2. A survey for the detection of Cryptosporidium and determination of its incidence in children and adults in the Colombo region.

(B) TECHNICAL COOPERATION (Continued)

Project Title

I. Age-specific prevalence survey of human intestinal helminth infection in Sri Lanka and a study of its probable relationship to (a) Socio-economic status
(b) Stunted growth
(c) Anaemia
(d) Allergic manifestations

II. A study to determine the IgE response to intestinal helminth infection and its probable association with allergy, in a sample of the above population.

Introduction

Intestinal helminth infection continues to be a common problem in Sri Lanka which is a developing agricultural country and is a major contributary factor to the prevailing malnutrition. Data as specified in (i) above would be of immense value for future reference work.

An association between helminth infection and asthma has been postulated where in both conditions similar immune phenomena, i.e. eosinophilia and increased serum IgE occur. It has also been postulated that parasitic infections may predispose to or protect against asthma. Therefore a study as specified in (II) above would be of undoubted value.

Outline of Study

I. (a) A field survey in different socio-economic population
(b) Age group 1-4 years
(c) Sample - approx. 10,000
(d) Period - approx. two years

Requirements - vehicle for field work.

II. To be carried out in collaboration with the Immunology Department.

Training Programme

Two Medical Officers and one MLT of the Parasitology Department, to be trained in the technique of measuring IgE levels in the centres of excellence in Japan.

Visits of Experts

A visiting consultant to assess the progress of work, while the study (specially II) is being carried out.

Funds

For field work including vehicle maintenance and fuel and to pay subsistence for MLTT.

DEPARTMENT OF IMMUNOLOGY

A department of immunology is being established in this institute. A medical immunologist and an immunochemist have been recruited and will be sent overseas for a short period of specialised training in immunology soon.

The functions of the department: (1) The assessment of immunological responses (humoral and cell mediated) in infectious diseases for diagnostic and research purposes and (2) The study of allergy in relation to human disease.

Requirements:

(1) A Japanese consultant (medical immunologist) to oversee the establishment and smooth functioning of the unit and to assist in the further training of personnel - period for about two years.

(2) Two laboratory technologists to be trained in immunology for six months in Japan.

(3) Materials and equipment for the establishment and functioning of the unit.

1.3 IMMUNOLOGY DEPARTMENT

PROJECT TITLE :

Clinical & Paraclinical studies of allergy in the Sri Lankan community.

PROJECT PLAN :

(1) Clinical data obtained from an allergic questionnaire & clinical examination of selected patients (allergic rhimitis, urticaria, hayfever, bronchial asthma & anaphylaxis).

(2) Paraclinical data obtained from laboratory investigations.

(3) Statistical analysis of the data collected using computer facilities.

BASIC PROTOCAL :

Investigations to be carried out in the Immunology Dept. :-

(1) Blood eosinophil count
(2) Total IgE (RIST/PRIST)
(3) Allergen extract reactions :-
    i) Skin prick test - following the injection of the allergen wheal area was compared with the histamine wheal.
    ii) Radio allergoserbent test (RAST)
    iii) Histamine release from basophil leucocytes (HRB)
    iv) Bronchial provocation
    v) Nasal provocations.

PARAMETERS TO BE STUDIED :

(1) Extract parameter
(2) Animal parameter
(3) Mould parameter
(4) Food parameter
(5) House dust allergen
(6) Drugs.

EQUIPMENT & MATERIAL :

(1) Immuno-electrophoretic apparatus

(2) Test kits for RAST (Radio - allergosorbent test)

(3) ELISA reader and test kits of ELISA, & for IgE measurements

(4) PRIST (Phamacia, Uppsala) kits for total IgE levels

(5) Inhalation instrument - (Inhalier Boy) - for bronchial provocation.

(6) De Vilbiss automiser No. 15 for nasal provocation.

SCIENTIFIC CO-OPERATION :

Technical advice from Japan regarding IgE measurements Allergen extract reactions & study of parameters :-

(1) Training of a staff officer & a MLT for the above studies.

(2) Experts visits from Japan for technical advice.

Medical Illustration and Photomicrography Unit

This unit should have :

1. Dark Room
2. Specimen Room
3. Office Room

Equipment

1.	Electric type writer	-	01
2.	Photomicrography equipment - Microscope, Camera, dual viewing set up, video unit cassettes)	-	01
3.	Camera with 50mm. lens, 105 macro lens, electronic flash	-	01
4.	Slide projector with 5 round carousels to hold 50 slides each and remote control attachment	-	01
5.	Slide developing & processing equipment, slide duplicator	-	01
6.	Photocopying machine	-	01
7.	Enlarger	-	01
8.	Studio light set up	-	01
9.	Copying light unit - making slides for seminars etc.	-	01.
10.	Positive 35 mm. fine grain inward winding film with double perforation in 50m length	-	03 tins
11.	Low speed similar to copex pan AHU B & W 35 mm x 100ft. with double perforation for making slides	-	03 tins
12.	35 mm. mounts	-	5000

1. Japanese consultant to help set up the unit, equip it and advise on training of suitable personnel.

2. Training in Japan for a suitable period of the personnel selected.

1-6 Maintenance And Repair Unit

Preamble

Functions of the maintenance unit

1. Maintenance of

   1.1 Specialised equipment eg. E.M., N.M.R. etc.
   1.2 All electrical equipment
   1.3 All electronic equipment
   1.4 Microscopes.

2. 2.1 Repairs to above equipment and replacement of components (a stock of spareparts that are commonly needed should be stored).

   2.3 A fully equipped glass-blowing unit to repair and fashion glassware as required.

   2.3 A fully equipped carpentry workshop to repair damaged tables and other supports to equipment, and also to fashion suitable wooden containers and boxes for despatch of vaccines and serum.

   (rooms will be provided in the existing building for 2.2 and 2.3)

Equipment

1. Electric tool set (saw, sander, bench drill, hand drill)
2. Lathe (desk top) and tools
3. Spanners, screw drivers, hammers, pliers, bench vice soldering iron, Allen keys - B.S.W. type and metric type, sharpener.
4. Ammeter, multimeter (digital), Oscilloscope, R.F.meter (V.T.V.M.) , photomultiplier, power supply-photomultiplier, spectrum analyser, survey meter, U-V monitor
5. Workshop furniture, Electrical fittings.
6. carpentry tool set.
7. Equipment required for a glass-blowing unit.

6. Pressure gauge , Vacuum pump , Thermo meters , Plumbing equipment , Refrigerant gas cylinders , Blow lamp , Electric welding plant, Oxyacetylene welding set , Spray gun , Air compressor , Vacuum cleaner Grinding wheel (Portable) , Grinding wheel (Bench mounted)

7. Electronic and electric measuring instruments suitable for testing and troubleshooting of various analogue and digital electronic control systems including power electronic network.

Training

Training of maintenance unit staff who are to be recruited in 1986.

1. Physicist (or engineer) - 01

2. Middle level Technologist - 04

3. glass blowing training for one (01) Medical Laboratory technologist.

(b) TECHNICAL COOPERATION 1

Quality control in General Biochemistry.

(a) Organisation of national external Quality Assessment Scheme for General Biochemistry.

(b) Preparation of freeze dried quality control sera.

TRAINING

Training of Biochemist on the techniques of preparation of freeze dried quality control sera at different levels for use in general biochemistry for 3 months in Japan.

Training of one M.L.T. in quality control procedures and in the preparation of freeze dried quality control serum for 6 months in Japan.

Experts

Consultant Biochemist to advise on the organisation of National Quality Assessment Scheme for General Biochemistry.

EQUIPMENT AND REAGENTS

1. Deep Freezer - 70°c
2. Refrigerator
3. Freeze Drier Shelf type of larger capacity
4. Refrigerated Centrifuge floor model
5. Centrifugal autoanalyser
6. Automatic pipettes
7. Dispensers
8. Centrifuge Bench Type.

9. Ph meter

10. Drying Cabinet

11. Water Bath 25°c - 100°C

12. Flame Photometer with an Internal Standard

13. Voltage Stabilizer

14. Plastic bottles, Polystyrene boxes for packing

16. Reference samples and standards for General Biochemistry

17. Chemicals for the preparation of Quality Control sera.

18. Computer

FUNDS

Travelling expenses for the collection of animal serum for the preparation of quality control serum. For distribution of quality control samples to other laboratories . Approxinately $ 2000.

2.1 DEPARTMENT OF CLINICAL CHEMISTRY

(b) Technical Cooperation 2

Development and improvement of the Clinical Chemistry Department.

2.A. Introduce techniques for the detection and determination of Isoenzymes of lactate Dehydrogenase , Alkaline Phosphatase ~~and~~ Creatine kinase. and Cholinesterase

TRAINING

Training of a M.L.TT for 6 months in Japan in techniques for the seperation of isoenzymes. Japanese expert to come to Sri Lanka for a month after the training period is over.

EQUIPMENTS

Electrophoresis apparatus with all other accessories . Densitometer equipped with ultraviolet detection capability and 600 nanometer capability Electrophoresis cells capable of containing 3 inch gels and all other accessories for electrophoresis.

Buffer

Chemicals

Stains

Spectrophotometer UV/visible

Analytical balance.

2.1 BIOCHEMISTRY DEPARTMENT

(B) TECHNICAL COOPERATION

2.B PROJECT TITLE

Investigations for disorders of Immunoglobulin synthesis in Sri Lankan subjects .

There are two broad categories.

1. In one plasma immunoglobulins are discreased ,
2. In the other , plasma immunoglobulins are increased.

1- (a) Inherited deficiencies of immunoglobulin synthesis

Hypogammaglobulinaemia)
) These two are very rare.
(b) Dysgammaglobulinaemia)

2. i. Diffuse hypergammaglobulinaemia

ii. Discrete hypergammaglobulinaemia (paraproteinaemia)

1. Malignant paraproteinaemia
2. Benign parap=rotenaemia.

3. Waldenstrom's macroglobulinaemia
4. Cryroglobulins.

Electrophoresis of the proteins of human serum in conjunction with urine and cerebrospinal fluid affords an excellent diagnostic tool for the study of dysgammaglobulinaenia, Polyclonal gammanopathis and monoclonal gammapathies.

1. Electrophoresis of serum and urine

ii. Quantitative estimation of IgG , IgA,IgM, by immunological methods and chemical methods.

111. Estimation of paraproteins by Electrophoretic scan.

The type and amount of paraprotein and the concentration of normal immunoglobins can be determined . The type IgG, IgA , and IgM identified by immunoelectrophoresis and the amount of paraprotein is determined by serum electrophoretic scan. The concentration of normal immunoglobulins is measured using an immunological method. In patients with a malignant paraprotein aemia, determination of the amount of the normal immunoglobulins may help to assess the likelihoc that infection will develop and this may influence the choice of treatment.

The most important diagnostic decision to be mdae if a paraprotein is detected , is whether the condition is benign or malignant.

TRAINING :

Training of a M.L.TT for 6 months in Japan in techniques of Immunoelectrophoresis and other Immunological methods.

Japanese Expert to come to Sri Lanka for a month after the training period is over.

EQUIPMENT :

Immunoelectrophoresis apparatus

gels

Chromatographic paper cellulose acetate paper

Electrophoresis apparatus with power pack

Densitometer with ultraviolet detection capability

Electrophoresis cells capable of containing 3 inch gels and other accessories for electrophoresis

Buffers

Chemicals

Stains

Analytical balance

Nephlometer

Immunological Reagents - Standards for

Immunoglobulins IgG , IgA ,IgM

2.1 Dept. of Biochemistry

Preparation of laboratory reagents kits.

(B) Technical Cooperation

1. Preparation of Reagent kits for the estimation of glucose, urea, protein, albumin, bilirubin, Aspartate Transaminase, Alanine Transaminase, and Alkaline phosphatase.

   Glucose - Glucose oxidase method

   Urea - Thiosemicarbozide method

   Protein - Biuret method

   Albumin - Dye binding method

   Bilirubin - Caffein Benzoate Method

2. Standard solutions for glucose, urea, protein, bilirubin and electrolytes.

REQUIREMENTS

(1) Consultant to initiate the Project
    visit Sri Lanka for one month

(2) Glassware like Volumetric flasks

	Beakers	$ 500
	Conical Flasks etc.	$ 1000

(3) Chemicals $ 1000

(4) Packing kits $ 1000

(5) Hot air oven

(6) Analytical Balance

(7) All glass still for distilled water

2.2 Natural Products Chemistry Division

(B) Projects for Scientific and Technical Co-operation

(1) Titles of Projects

a. Chemical Investigation of Medicinal Plants

b. Chemical Investigation of Antibiotics isolated from Microorganisms.

c. Synthesis of Natural Products.

(2) Background

This section has been solely devoted to the isolation and characterization of Natural Products, mainly from medicinal plant sources.

(3) Objectives

To isolate and characterize new biologically active compounds.

(4) Requirements

a. We wish to establish collaborative researchs with universities doing Natural Products Research like Tokyo, Kyoto etc.

b. One Post-Doctoral Fellow from a Japanese University, undertaking Phytochemical research could come to M.R.I. and work on the Sri Lankan medicinal plants for a period of 9 - 12 months.

c. A Research Officer can be sent to the same university for a period of one year to carry out Phytochemical work on Sri Lankan Medicinal Plants. The plant extracts for the collaborative project would be taken to Japan. This will give an opportunity for the researches to be exposed to new techniques in isolation and spectoscopic techniques.

d. Depending on the evaluation of this programme , it could be continued for another year with a separate Research Officer and a different Post Doctoral Fellow.

(5) Benefits and Justification

Natural Products research offers three important applications :

a. Constituents isolated, find direct therapeutic use - reserpine, vincristine, digitoxin etc. which are still unsurpassed in their respective fields.

b. Constituents which are used as starting materials for synthesis of useful drugs. Steroid hormones are normally synthesized from steroidal sapogenins.

c. Natural products present us with novel and unexpected structures, which are unlikely to be synthesized a priori in a search for new drugs.

Further , the steriochemistry of plant products in general is complex and the natural isomers seem to have the most activity. This leads to the hypothesis that the compounds produced biologically tend to have biological activity. When screened, natural products show a high percentage of activity, compared to synthetic compounds

(B) Technical Cooperation

Project Title

Biochemical study of inborn error of metabolism in Sri Lankan subjects.

The following inborn error of metabolism will be studied

1. Muscular dystrophy
2. Amino acid metabolism
3. Lipid metabolism
4. Protein metabolism

Muscular dystrophies

1. Morphological and biochemical research in muscular diseases.
   In the myopathies the increased enzyme production muscle fibre necrosis or increased muscle fibre membrane permeability may result in enzyme release from muscle and increased serum enzyme activity . Generally such increased serum activities accompanies by a decreased level of the enzyme in the muscle itself. Several enzymes routinelt determined in the clinical laboratory , creatine kinase , aldolase lactate dehydrogenase and aspartate and alanine transaminase are abundant in muscle and may be increased in the serum. Of these creatine kinase shows the highest enzyme activity in muscle and every variety of myopathy this is the enzyme which is most frequently raised in the serum and which shows the greatest degree of elevation. Determination of serum creatine kinase activity is therefore the enzyme procedure of choice for the investigation of muscle diseases.

Muscular dystrophies	Investigations
Duchenne dystrophy	Serum creatine phosphokinase
(severe and benign forms)	" aldolase lactic dehydrogenase
Limb-girdle dystrophy	" aspartate transaminase
Fasciosxapulohu meral dystrophy	" alanine transaminase
Myotonic dystrophy	Electrophoresis of CPK isoenzymes.

Detection of the carrier state

Duchenne dystrophy is transmitted as a sex-linked recessive disease by female carriers , who transmit the disorder to approximately half their sons annd the carrier state to half their daughters.

The simplest , most sensitive and most reliable means of carrier detection is by serum creatine kinase measure ment.

2. Investigations in disorders of amino acid metabolism

Diseases	Investigation
1. Phenylketonuria	Blood for phenylalanine
	Urine for phenyl pyruvic acid
	" " phenyl acetylglutomine
2. Cystinuria	Cystine ,urine and plasma
3. Histidiaemia	Plasma Histidine urine
4. Alkaptonuisa	Urine Homogentistic acid
5. Tyrosinaemia	Plasma and urine tyrosin level
	urine p-hydroxyphenyl pyruvic acid
6. Maple sugar urine disease	Amino acids on blood and urine of valine , leucine, isoleucine
7. Hartnup disease	amino acids in urine , alanine, histidine, isoleucine, leucine, serine, threonine, tryptophan , tyrosine.

3. Investigations on disorders of lipid metabolism

Primary hypercholestermia	Serum cholesterol
, (essential hypercholesterine xanthomatosis)	electrophoresis lipoproteins
	Free fatty acid
	Triglycerides.

4. Investigations in disorders of protein metabolism.

Blood proteins and electrophoresis

Blood Ceruloplasmin

" Cholinesterase

" Transfferin

Serum ~~immuglo~~ immunoglubulins of IgG , IgA , IgM and paraproteins.

TRAINING

Training of two M.L.TT for 6 months in Japan .

Training of personnel to operate the following instruments , amino-acids analyser , HPLC , GLC.

EXPERTS

Experts to come to Sri Lanka for 1-2 months after the training period is over (instal and operate the instruments).

EQUIPMENT

1. Amino acid analyser
2. HPLC
3. GLC
4. Electrophoresis apparatus with all other accessories.

5. Buffer

6. Chemicals

7. Stains

Glassware

Centrifuge

Incubator

Spectrophotometer UV/visible

Analytical Balance

PHARMACOLOGY.

2.4

(B) TECHNICAL COOPERATION

Proposed Research Projects

(1) The study of the pharmacology of medicinal plants.
(See Addendum)

(2) Mechanisms of actions of drugs on cardio vascular system

(3) Regulation of cardiac function and coronary circulation by endogenous substances.

Requirements

(1) A scientist (or medical officer) and a technologist from the MRI should receive suitable training in Japan

(2) As this department is very weak now (due to the departure of senior scientist to IAEA and WHO) it is important that a suitable Japanese consultant should spend about 2 years to revive the activity of this section and direct its development.

(3) The necessary equipment and reagents should be supplied on the lines of the annexed list (which is only tentative).

LIST OF EQUIPMENT

Carotid Pressure Transducers - 6
(with spare parts)

Phonocardiogram - 1

Four channel chart recorders

Equipment for recording BP
(intra-arterial BP monitoring)

Equipment for measuring blood
flow - e.g. cardiac output with
dye dilution method

Holter monitoring

Instruments to use Doppler
technique in blood flow studies

Random zero Sphygmomanometer - 1

Plethysmographs for venous flow
studies in extriemities

Osciloscopes and stimulaters

Microscopes (Olympus) - 1

16 bit micro computer for data
processing

Agregometer - 1

Positive pressure ventilater - 1

(B) TECHNICAL COOPERATION - ADDENDUM

The Study of the Pharmacology of Medicinal Plants

(I) Objectives

To carryout the following pharmacological studies on medicinal plant extract and isolated compounds.

(a) Antifertility testing
(b) Hypoglycaemic activity
(c) Antilipaemic activity
(d) Effect on respiration, cardiovascular system and nictitating membrane
(e) Effects on isolated tissues
(f) Gross effects and effects on central nervous system
(g) Anticancer screening
(h) Toxicity

(II) Requirements

(a) A pharmacologist from a Japanese University should come to MRI and carry-out the above mentioned pharmacological studies for a period of one year.

(b) A staff officer can be sent to the same university to undergo training in the above mentioned fields for a period of one year.

Benefits

In Sri Lanka, there are over 300,000 species of higher plants and only a small proportion of this has been investigated pharmacologically.

We have a buoyant indigenous system of medicine which still appeals to the rural population. A large number of medicinal plants are documented for their therapeutical usage. Quite a number of medicinal plants are indigenous to Sri Lanka alone and provide a wealth of material for the pharmacologist.

Wherever possible plants belonging to the families Rutaceae, Compositae and Rubiaceae are selected for studies as they are considered to be rich in biologically active compounds, specially with anti-tumor properties.

Upto now we have no facilities to carry-out above mention pharmacological studies in Sri Lanka.

2.5

(B) TECHNICAL COOPERATION

(i) Development and Improvement of the Pathology Department

TEST	EQUIPMENT	REAGENTS
1. Internal & External Quality Control i.e. development of standards for use in our laboratory and outside-which involves preparation of standards reagents sera etc. distribution, collection of data and analysis	Large centrifuge Tachometer Shaker Water vacuum pump Buchner Funnel Leucocyte fitter-Leukopak fennel Haemocytometer 08mm glass beads 150ml screw capped bottles Roller misture 20nm high capacity transfusion fitter -Fennel Eppendorf pippette	Toluene, Glycerol, Penicillin, Streptomycin, Sodium chloride, Acetic acid, Sodium dihydrogen phosphate, Anhydrous disodium hydrogen phosphat, Glutaraldehyde, Glycine, Trisodium citrate (dehydrate), Citric and monohydrate, Dextrose, Isoton (Coulter), Mercury, Calorimeter Fitters, Accuglobin
2. Blood Cytochemistry		
(a) Sudan Black B.Staining		Formaldehyde, Sudan Black B Crystalline phenol, Ethanol, May-Grunwald Giemsa, Safranin, Saponin
(b) Neutrophil Alkaline Phosphatase (NAP)		Methanol, Formalin-neutral Naphthol AS phosphate N N-dimethylformamide Tris, Diagonium salt Fast blue BB BBN Neutral red
(c) Periodic Acid-Schiff (PAS) Reaction		Periodic Acid, Basic fuchsin Thionyl chloride, Activated charcoal, Sodium metabisulphite, Myer's Haemalum

Cont'd

TEST	EQUIPMENT	REAGENTS
2. (d) Acid Phosphatase Reaction		Acetone, Citric acid, Sodium hydroxide, Sodium acetate, Tri-hydrate, Sodium barbiturate, Naphthol, AS-B1 phosphate, N-N dimethylformamide, Sodium Nitrite, Pararosanilia hydrochloride, Methyl green, Gelatin, Methyl violet, Acetylphenylhydrazine.
3. Investigation of Haemoglobinopathies	Electrophoresis System with a Densitometer	Cellulose acetate strips Diethylaminoethyl Cellulose (DE 52) Amido Black, Orthotolidine Cellogel, Orthophosphoric acid, Polyacrinomide gel
4. The Study of Coagulation Disorders which are to be introduced	Stop watches Glass beads 0.5 mm Platelet aggregometer Chart recorder	Russels Viper Venom (Diagen)/ Cephalin reagent. Bovine thrombin topical freeze dried human thrombin phospholipid, Aluminium hydroxide gel, Folin-Ciocalten phenol reagent, Human fibrinogen, Epsilon aminocaproic acid (6 Aminohexanoic acid) Protamine sulphate Factor deficient plasma for various factors (freeze dried) Thromboplastin Reagents for latex agglutination method for Fibinogen degradation product, ADP sodium salt anhydrous, Collagen, Ristocetin sulphate, Arachidonic acid sodium salt, Adrenaline, Kaolin, Paraformaldehyde

Cont'd

TEST	EQUIPMENT	REAGENTS
5. Tests for diagnosis of Auto-Immune Diseases		
(a) ANA, ASMA, AMA, ATA	Cryostat	Fluorescent labelled anti IgG, IgM, anti-human serum
(b) AFP	Cytospin	Anti-AFP sera AFP standards
6. Immunohistochemistry	For the identification of tumour antigens of classification of leukaemias and lymphomas using Monoclonal antibodies. Since this is a completely new field where no work on this aspect has been done at all, relevant training of personnel both medical and technological and relevant equipment (?Electron Microscope) is required. This would require initial training in your institute and assistance thereafter in setting up of the unit in Sri Lanka. Once established our unit can serve as a reference and diagnostic unit for the island.	

2.5 (B) TECHNICAL COOPERATION - DEPARTMENT OF PATHOLOGY

Histopathology and Cytological Techniques to Diagnose early Malignancy, of

- Cervix uteri
- Bladder

Objective

To establish incidence of early malignancy of bladder and cervix in relation to age, parity, symptomatology in the Sri Lankan population.

Scope & Methodology

Literature survey to be done with a view to getting information on 'risk groups' past surveys in other countries and techniques adopted.

Data collection - samples to be collected from at risk groups attending corresponding clinics, out patient departments and from volunteer healthy population.

Basic methods to be adopted will be:

(1) Cytological
(2) Histological (whenever possible)

Samples to be collected

Bladder	Urine Bladder biopsy
Cervix	Cervical smear Cervical biopsy

Follow up for one year atleast with repeat collection of samples whenever possible.

Survey results to be analysed, tabulated and documented. Preservation of slides, photomicrographs to be encouraged.

Output Expected

(1) To establish statistical data regarding prevalence etc.

(2) Training of future personnel in techniques adopted.

(3) To provide a diagnostic facility for patients with early malignancy.

Inputs

Equipment - Necessary for

(1) Collection of samples

(2) Processive and examination of samples

Chemicals required for stains etc.

Personnel

(1) Atleast one MLT to be trained in the adopted technique for 3 months Overseas initially and Sri Lanka thereafter.

(2) Training in interpretation of slides to medical personnel overseas initially and Sri Lanka thereafter.

Cash allowance

- Transport
- Documentation
- Incentives to donors of samples

Duration of Project

Literature Survey:
Training in techniques and interpretation - 6 months
Collection of Data - one year
Analysis and followup - one year

3.1

(B) Projects for Technical Co-operation - Dept. of Clinical Bacteriology (Bacteriology I) ...

Project I

A study of the aetiological agents of Pneumonia in Sri Lanka.

Introduction

Pneumonitis (Lobar and Bronchopneumonia) is a common cause of respiratory disease in Sri Lanka leading to considerable mortality and morbidity (both short and long term). A systematic study of the aetiological agents have not been performed as yet in Sri Lanka. The agents to be studied include (besides Pyogenic respiratory bacteria) Legionella sp. Pneumocystis, Chlamydia and Mycoplasma. The techniques employed would include culture methods, Serology, Immunofluorescence and Elisa from sputum, Naso-pharyngeal aspirates and bronchoscopy specimens and blood culture to detect concomitant bacteraemia. Gas liquid chromatography will be employed for cellular fatty acid analysis of Legionella cultures.

Equipment and Materials Required

1. Immunofluorescent microscope.
2. Bactec machine (Becton-Dickinson) for blood culture.
3. i. Media, antisera and immunofluorescent (IF) conjugate for identification of legionella cultures.

   ii. Antigen and conjugate for IFA for serological diagnosis of legionella.
4. Elisa reader for chlamydia identification.
5. Materials and sera for culture of mycoplasma.
6. Gas liquid chromatography machine (Requested separately by Bacteriology II)

Training Programme

1. Visit of Microbiologist to centres where work on these agents is being performed.
2. One/Two M.L.TT. to be trained in these fields.

Visiting Experts

The visit of an expert/experts in these fields for quality control and check on equipment.

Further Projects - PROJECTS - SEE ANNEXED PROTOCOL

3. The role of Campylobacter Pyloridis in the pathogenesis of peptic ulcer in Sri Lanka.
4. The aetiology of meningitis in Sri Lanka.

RSBWickremesinghe

Dr. R.S.B. Wickremesinghe

DR. R.S.B. WICKREMESINGHE

M.B.B.S. (Ceylon)

D.C.P. (Lond.)

CONSULTANT PAEDIATRICIAN

3-1

Routine work in Dept. of Clinical Bacteriology

Bacteriology I

1) Bacteriological examination of following specimens

   1. Urine
   2. Cerebro spinal fluid
   3. Throat swabs
   4. Sputum
   5. Vaginal and urethral swabs
   6. Pleural pericardial ascitic fluid
   7. Joint fluids
   8. Pus and wound swabs.

2) Antibiotic susceptibility testing

3) Preparation of antibiotic discs

4) Testing of disinfectants

5) Bacteriological quality Control

Research Projects in Progress in Bacteriology I

1) Incidence of bacteriology proven pertussis cases their serotypes and relevance to immunisation.

2) Bacteriology of Pyoderma among children in Colombo.

3) Incidence of Cryptosporidum as an aetiological agent of diarrhoea among children and adults in Colombo.

Teaching Commitments in Bacteriology I

1) Teaching of Post Graduate Medical and Dental students.

2) Conducting of exams for medical and dental students.

3) Teaching and conduct of examinations for medical laboratory technologists.

CURRENTLY

Equipment in use - Bacteriology - I

A.	Refrigerators (08 cu.ft. - SISIL)	- 01
B.	Refrigerators (08 cu.ft. - USHA)	- 01
C.	Refrigerators (08 cu.ft. - PHILIPS)	- 01
D.	Deep-Freezer (15 cu.ft. - PHILIPS)	- 01
E.	Incubators (GALLENCAMP)	- 03
F.	Hot Air-oven (GALLENCAMP)	- 01
G.	Microscopes (Binocular) (OLYMPUS)	- 02

Equipment not in use

H.	Incubators (GALLENCAMP)	- 03
K.	Microscopes	- 05
L.	Hot Air-ovens	- 01
N.	Refrigerators (SISIL)	- 01

3.2 ANAEROBIC BACTERIOLOGY

TECHNICAL COOPERATION

Presence of Campylobacter jejuni infection in cases of diarrhoea in adults and children have not been determined satisfactorily in this country. The surgeons and Physicians in the hospitals in Colombo , think this infection is present in diarrhoea cases they see in their wards. Therefore it would be helpful to the medical personnel to determine the extent of this infection in Sri Lanka .

For this purpose an M.L.T. from Sri Lanka could be sent to a specialised Institution in Japan for training in this field , after the training a Consultant on this subject is wellcome to commence the project.

EQUIPMENT REQUIRED

1. Deep Freezer - (-40-90°C)
2. Water bath (30-100°C)
3. pH meter
4. Microphotographic Camera to fit the Research Microscope.
5. Freeze Drier
6. Research Microscope.

DR. T. J. P. RATNAYAKE.
[illegible]
29/5/1987

ANAEROBIC BACTERIOLOGY

(B). TECHNICAL COOPERATION.

RESEARCH FUNCTIONS

1. Determine the extent of the following infections.

   a. Anaerobic organisms in Post Surgical Infections.

   b. Anaerobic organisms causing diarrhoea in adults and children.

   C. Determination of the extent of anaerobic infections in cases of road accidents.

2. EQUIPMENT

   Anaerobic Chamber (Glove Box) - one

   " Jars - six

   Incubator (40-45°C) One

   Vacuum Pump 1/4 h.p. - One

   Deep Freezer - (70-90°C; One

   Refrigerator centrifuge - one

   Laminar Flowcabinet to protect person and material.

3. An M.L.T. to be tradned in Japan for three months to enable him to undertake the above Project.

DR. T. J. P. RATNAYAKE.

29/5/1987.

3.3 Enteric Bacteriology

(B) Collaboration in the following studies

(1) Survey of E.coli for production of heat table and heat stable enterotoxin.

Assistance Needed

1. Training

   a. Training in Japan for 1 M.L.T. - 3-6 months.

   b. " " " " 1 Junior -

   c. Medical officer - 3-6 months

2. Equipment ; Consumables & Media :- Needs to be worked out between the two laboratories.

3. Consultant from Japan - To set up experimental procedures - 3 months.

(2) Isolation of campylobacter jejuni and non O-1 Vibro Cholerae from diarrhoeal stool specimens.

Training of staff M.R.I. - in Japan

1 M.L.T. 3 - 6 months

1 M.O. 3 - 6 months

Supply of equipment , media & consumables.

3-1

Project 2

A study on Streptococcus agalactiae (group B streptococci) infections in infants and adults in Sri Lanka.

Introduction

Streptococcus agalactiae (group B streptococcus) is a well known cause of Neonatal sepsis , meningitis and adult urinary tract infection. No systematic study of the incidence of these infections have been conducted in Sri Lanka. The serotypes causing group B streptococca disease and the local antibiotic ressistance patterns are unknown.

Proposed Methodology

The project would be conducted in close collaboration with the Childrens' Hospital, Colombo and Castle Street Hospital for Women, Colombo. Vaginal swabs will be taken from women periodically in the last 2 weeks of pregnancy and swabs plated on blood agar for group B streptococci isolation. The infants will be followed up in the ward and subsequently and appropriate specimens examined if necessary , for meningitis and pyoderma.

Infants warded at the Childrens' Hospital with meningitis will be examined for all pathogens especially for group B streptococci. Mid stream urine specimens of women at Castle Street Hospital with symptoms suggestive of urinary tract infection will be examined for incidence of pathogens including group B streptococci.

Continued Project 2

Bacteriology - Vaginal Swabs and Pyoderma

Swabs will be plated on blood agar and MacConkey agar and incubated aerobically at 37°C for 24 hours. Colonies suggestive of group B streptococci would be subculture , examined for purity and subjected to (1) Camp test (2) grouped by (a) coagglutination (Phadebact) or streptex and by lancefields Acid extraction or Likholy Nitrous acid extraction methods. Group B streptococcai isolates will be serotyped by immuno diffusion employing antisera to type 1a, 1b, and III.

Urinary Tract Specimens

Mid-stream urine specimens collected from patients suspected of urinary tract infection will be cultured on blood agar and macConkey agar employing standard loops group B . Streptococci isolated from urines with significant counts would be further examined by methods indicated earlier.

Cerebro - Spinal Fluid (CSF)

CSF specimens will be examined biochemically for content of sugar, protein and chlorides. Cell counts will be performed for erythrocytes and leucocytes (total and differential). Latex agglutination tests are to be performed for rapid diagnosis of group B streptococcus H. influenza , N. meningitidis and Strep. pneumonia.

Western blot analysis of CSF for group B streptcoccal antigen will be conducted. All specimens will be streaked on blood chocolate and MacConkey agar and incubated aerobically for 24 hours. Pathogens isolated would be identified by standard microbiological methods and group B streptococci identified as indicated earlier.

Continued Project 2

Antibiotic Susceptibility Testing

Antibiotic susceptibility testing will be performed by standard diffusion and minimum inhibitory concentration methods. Plasmid mediated antibiotic ressistance would be examined by conjugation methods and plasmid extraction and profile study according to methods employed at Department of Microbiology, Nigata Prefectural Research Laboratory, Nigata, Japan.

Blood Culture

Blood cultures will be performed on all infants suspected of meningitis by the Bactec radiometric method.

Materials and Equipment Required

1. Streptococcal grouping antisera (Including group B)
2. Coagglutination (Phadebact) and streptex agglutination for streptococcal grouping.
3. Group B streptococcal type antisera (Type 1, 1A, II and III)
4. Agarose or Iron agar for immunodiffusion.
5. Bactec machine (Becton Dickiason) for blood culture and appropriate culture media (See project 1)
6. Latex kits for rapid diagnosis of Bacterial pathogens in C.S.F.
7. Necessary materials for plasmid studies of antibiotic ressistant strains of streptococcus agalactiae .
8. Materials for western blot analysis of streptococcal group B antigen in C.S.F.

Continued Project 2

Training Programme

1. Visit of Bacteriologist to Department of Microbiology Nigata Prefectural Research Laboratory for Health and Environment, Nigata city, Nigata, Japan for an appropriate period to study
   (a) Western blot analysis of streptococcus agalactiae antigen (for C.S.F. studies)
   (b) Studies on plasmid mediated ressistance to antimicrobial agents in group B streptococci.

2. One M.L.T. to be trained in these fields.

Visiting Experts

The visit of an expert/experts in these fields to check correctness of techniques applied locally and setting up of equipment.

Media Requirements For Research Projects

1. Blood Agar Base - 15 lbs. (15 x 500g)
2. Mac Conkey Agar Base without crystal violet (15 x 500gm)
3. Mac Conkey Agar Base with crystal violet - 5 lbs.
4. Kliglers Iron Agar - 12 x 500 G
5. Nutrient Agar 6 x 500gm
6. Charcoal Agar Base - 2 x 500 G
7. Lactose - 500gm
8. Glucose - 500 x 3 gm.
9. Sucrose - 500gm.
10. Mannitol - 500gm
11. Maltose - 500gm
12. Mannose - 50 gm
13. Arabinose - 50 gm
14. Salicin - 50 gm
15. Dulcitol - 50 gm
16. Trehalose - 50 gm
17. Xylose - 50 gm
18. Glycerol - 50 gm
19. Cellibiose - 50 gm
20. Raffinose - 50 gm
21. Sorbitol - 50 gm
22. Adonitol - 50 gm
23. Gelatin - 15 x 500 G
24. Agar (Bacteriological) - 15 x 500 G
25. Peptone (Bacteriological) - 10 x 500 G
26. Lab. Lemco - 2 x 500 G
27. Sodium Chloride - 500 G
28. Urea - 3 x 500 G
29. Sodium Hydroxide pellets - 3 x 500 g

30. Disodium Hydrogen Phosphates - 2 x 250g
31. Diptossium phosphate - 2 x 250g
32. Calcium Chloride - 2 x 250g
33. Magnesium sulphate - 2 x 250g
34. Bromocresol purple (powder) - 50gm
35. Neutral Red - 50 gm
36. Phenol Red Powder - 50 gm
37. Bromothymol blue (indicator solution) - 3 x 100ml
38. Phenol Red indicator solution - 3 x 100 ml.
39. Non-absorbant cotten wool - 30 kilos
40. Sodium Taurocholate - 2 x 250 gm
41. Ox gall - 2 x 500g
42. Bile Salts No. 2 - 2 x 250g
43. Sodium Desoxycholate - 2 x 100g
44. Muller Hinton Medium Base - 3 x 500g
45. Todd Hewith Broth Base - 3 x 500 gm
46. NIH Broth Base - 6 x 100 gm
47. NIH Agar Broth - 6 x 100g
48. Filter paper for Seitz Filter pads - 100 pads
49. Folded Filter paper Circlet - 2
50. Iodine crystals - 3 x 500gm
51. D.L. Arginine - 50 g
52. L. Lysine - 50 g
53. Ornithine - 50 g
54. L. Cystine - 50g
55. HCL - 2 Lo.
56. Boiling Flasks - 5 L. - 25
    3 L. - 25
    2 L. - 25
    1 L. - 25
    500ml. - 25
    250ml. - 25
    100ml. - 25
57. Measuring Cylinders - 2 L. - 10
    1 L. - 10
    500ml. - 10
    250ml. - 10
    100ml. - 10
    30ml. - 10
    25ml. - 10

58. Pipettes	- 50	50 ml.	- 25
		25ml.	- 25
		10ml.	- 25
		5ml.	- 25
		2ml.	- 25
		1ml.	- 25
		0.5ml.	- 25
		0.25ml.	- 25
		0.1ml.	- 25

59. Coloured Non absorbant cotton wool	-	11Kilos
Red	-	10 Kilo
Yellow	-	"
Green	-	"
Mauve	-	"
Blue	-	"
Pink	-	"

GLASSWARE FOR PROJECTS

1.	Petridishes (Pyrex) 90 mm.	12 gross
2.	Petridishes (Pyrex) 140 mm.	01 gross
3.	Universal containers	10 gross
4.	Macartney bottles	10 gross
5.	Small bijou bottles 7ml.	10 gross
6.	Large bijou bottles	10 gross
7.	Microscope coverslips - 22 mm x 22mm	36 pkts.
8.	Microscope slides 1" x 3	100 x 50 Boxes
9.	Pipettes delivery - 01 ml.	100
	02 ml.	100
	05 ml.	100
	10 ml.	100
10.	Khan tubes 12 x 75 mm.	02 gross
11.	Tubes for Sugar 10 x 95 mm.	12 gross
12.	Tubes for kligler 12 x 150 mm.	12 gross
13.	Microscope immersion oil	12 oz.
14.	Lens Tissue	06 boxes
15.	Grease pencils	06 dozens
16.	Indelible marking pens	03 dozens

Chemicals

1.	Methylene blue	25g x 6
2.	Grams Iodine	25g x 6
3.	Pot. Iodine	500gm x 3
4.	Acetone	2½ L x 5
5.	Malachite green	25gm x 3
6.	Basicfuchsin	25gm x 6
7.	Ammonium oxalate	500gm x 3
8.	Crystal violet	500gm x 3
9.	Tetra methyl - p- pheryldiamine	25gm x 6

(4)

VIROLOGY I - PRIORITY FOR SCIENTIFIC AND TECHNICAL COOPERATION

Subject - AETIOLOGY OF VIRAL DIARRHOEAS

Objective - To progressively establish a routine diagnostic service for viruses responsible for diarrhoea (commencing with rota viruses)

Reasons - The MRI is the national centre for the diagnosis of bacterial and parasitic causes of diarrhoea. It would be convenient to use the same specimens and test for the viral causes where the others have been negative.

Assistance required from Japan -

(1) One MLT should be trained in the diagnosis of viral diarrhoeas for a period of atleast six months. If possible he should also receive some training in the preparation of the reagents.

(2) Support for establishing ELISA and Electropherotyping for rotaviruses. The diagnosis of fastidious adenoviruses by EIA/tissue culture and/or Electronmicroscopy should follow. The other viruses such as Norwalk agent by electronmicroscopy or other suitable method.

(3) Equipment and Reagents - The equipment required for the above tests together with reagents should be supplied if it is at all possible (electronmicroscope however is a costly item to instal and maintain, and should be considered only if adequate funds are available).

(4) It may be advisable for a consultant or other suitable scientists working in the field of viral diarrhoea diagnosis to help set up these tests in the MRI (for a period of three to six months).

(4)

(B) PROJECT FOR TECHNICAL COOPERATION - COLOMBO SOUTH VIRUS LABORATORY

Aetiology of Acute Respiratory Infections (Viruses, Mycoplasma and Psittacosis Group)-Rapid Diagnostic Methods.

Acute respiratory infections is one of the commonest causes of morbidity and mortality in Sri Lanka. As the management of these cases depend on the aetiological agent responsible for the infection, the microbiology laboratory must be in a position to send out the reports early.

With regard to viruses, mycoplasma and psittacosis group, rapid diagnostic procedures are available and we would welcome technical cooperation to set up these in the Colombo South virus laboratory in the very near future.

The diagnostic procedures to be commenced are Immunoflorescence and ELISA and we would need the following:-

(1) Fluorescent microscope (NIKON)
'Immunowash'
ELISA reader
8 channel microtitre pipette with tip ejector

(2) A regular supply of reagents - atleast for 2 years.

(3) External quality control specimens.

(4) Training of one medical laboratory technologist - six months in the techniques and preparation of reagents for these tests.

(5) Visit of an expert in these fields to our laboratory.

(6) Visit of virologist to centres where the above work is carried out and where reagents are prepared - one month.

5.2. Production of anti-snake venom, and other specific immunoglobulins

Due to the increase in cases of human snake-bite victims, specially after the new irrigation development schemes in jungle areas, the need for anti-snake venom has increased considerably. The anti-snake venom imported from India does not neutralize some of the toxins of the Sri Lankan snakes and a much larger volume (exceeding 10 vials/patient at times) is required to treat a patient in Sri Lanka than in India - making it much more costly. The Sri Lankan Health Ministry therefore gives the highest priority to the production of atleast a part of our requirement as soon as possible, at the MRI. (The Zoological Gardens has agreed to supply the MRI with local snake venom).

With this purpose in view the following is being proposed for support by the JICA project:

(1) Grant Aid

(a) A floor area of 300 sq.meters should be set aside in floor 2 of the Production Unit to be utilized for the production of anti-snake venom and also of other specific immunoglobulines.

(b) Space should be provided in the lower level of the Animal House to house atleast 6 horses and about 25 goats for anti-snake venom production. Other smaller animals required for quality control should also be made available.

(2) Technical Cooperation

(a) A Japanese consultant (eg: Dr. Sawai or other person from NIH, Tokyo) should be dispatched as soon as possible to advise the Director MRI on the design of the rooms in the Production Unit. Floor 2 and on the equipment required, to facilitate Grant Aid.

(b) He should advise on the personnel to be recruited.

(c) Once recruited the key personnel should be sent to Japan to receive suitable training.

(d) The Japanese consultant should return with the necessary reagents and other requirements, that are not available in Sri Lanka, to initiate and supervise the production and quality control of the anti-snake venom.

(B) TECHNICAL COOPERATION 5.4. — Viral vaccine

TITLE OF PROJECT

Production of tissue culture anti-rabies vaccine for human use.

BACKGROUND

Medical Research Institute goat brain tissue anti rabies vaccine for local needs. This has been replaced with imported vero cell tissue culture vaccine since December, 1986.

OBJECTIVES

Since the imported vaccines is very costly it is necessary to undertake the production locally.

REQUIREMENTS

(a) Expertees from abroad
(b) Equipment

BUDGET

To be worked out

PERIOD

Only the initial training period

BENEFITS

(a) Saving of foreign exchange utilize in the importation of this vaccine.

(b) The technology of tissue culture vaccine production may be usefully applied to produce other vaccines like measles, mumps, rubella and Japanese encephalitis.

7.2. Nutrition.

(B) RESEARCH PROJECT.

LIPID PROFILE OF VARIOUS COMMUNITIES LIVING IN SRI LANKA.

POPULATION - (TARGET) Adult males and females (23 - 50 years)

A) URBAN -
   (1) Well-to-do
   (2) Poor - Colonizations

B) ESTATE -
   (1) Tea Plantations
   (2) Rubber Plantations

OBJECTIVE: To determine the lipid profile of various socio-economic groups of Sri Lanka.

SAMPLE SIZE: 6000 adults, male and female

A) URBAN -
   (1) Well-to-do - 1000
   (2) Poor - 1000

B) RURAL -
   (1) Well-to-do - 1000
   (2) Poor - 1000

C) Estate -
   (1) Tea plantations - 1000
   (2) Rubber plantations - 1000

METHODOLOGY - Laboratory Estimations
   (1) Total Cholesterol
   (2) Serum Triglycerides
   (3) Serum Free Fatty Acids - using gas liquid Chromatography.
   (4) Serum Phospholipids
   (5) Serum HDL after extraction of LDL

REQUIREMENTS -

A) Training -
   (1) Foreign Experts to work in collaboration with M.R.I. staff of Dept./Nutrition.
   (2) Training of M.O. and M.I.T. abroad on the above estimations.

B) EQUIPMENT -
   (1) Bausch & Lomb Spectronic 20 Spectrophotometer - already

estimated for under Laboratory Equipment.

(2) Apparatus for gas liquid Chromatography.

c) Chemicals for above Estimations

n) Per diem payments of Research Team.

m) Transport Costs -

(1) Vehicle for full time Project work.
Mitsubishi 9 seater (Petrol).

(2) Fuel costs

m) Costs of stationery, data forms, data analysis and publication.

1) Prevalence study of Vitamin A deficiency using Vitamin A Estimations.

2) Prevalence study of Iodine Deficiency Disorders using:

a) Thyroxine and Triiodothyronine estimations.

b) TSH estimations.

c) Plasma bound Iodine.

d) Urine Iodine estimations.

e) Food Iodine estimations.

f) Water Iodine estimations.

3) Anaemia Prevalence study using:

a) Haemoglobin estimations.

b) Serum Iron estimations.

c) Serum Ferritin estimations.

d) Transferrin saturation.

4) Food Analysis:

a) Inorganic compounds.

b) Proteins.

c) Lipids.

d) Energy using Bomb Calorimeter.

7.3. (B) PROJECT : Improvements & Developments to the School of Medical Laboratory Technology of the M.R.I.

(SUMMARY)

1. Two Lecture Halls to accomodate 60 trainees each. Auditorium to accomodate 150 - 200 participants.

2. New Laboratory Complex - Production Unit, Vaccines, Anti-sera

3. Modifications necessary to the upper wings of the existing M.R.I. buildings to house the School - Annexure 1.

3.1 Equipment - Annexure 2.

3.2 Glassware, Chemicals, etc - Annexure 3.

4. Permanent Fixtures - Text

5. Training of Personnel in Japan. - Text

PROJECT - Improvements & Developments to the School of Medical Laboratory Technologists, M.R.I.

1. Lecture Hall Accomodation

Lecture Hall Accomodation will be one separate unit, comprising of a main Audio-Visual Auditorium with seating accomodation for 150 - 200 participants. In addition there will be two Lecture Halls attached to this building with seating accomodation for 60 trainees each for the School. The main Auditorium will be used when both batches have to be accomodated, simultaneously.

Equipment for the above.

Raised Rostrum or Dais with a background white Screen and the following accessories. Overhead Projector, Slide Projector, Cinematograph Projectors (16 & 35 mm) Epidiascope, Loudspeaker system with built-in speakers attached to the walls.

Table for demonstration on the Rostrum with a Sink, Gas & Electricity plug outlet. Amovable Magiboard, suitable lighting, ventilation in addition seats. Also facilities for darkening the room when necessary.

2. Laboratory Complex/s

Production Unit for Vaccines, Anti-sera, etc. - Seminar room on each floor and Tutorial Room in each Section.

3. Modifications necessary to the upper wings of the existing M.R.I. buildings to house the School.

The upper wings of the present M.R.I. buildings are to be made available to the School of M.L.T., after the new building complex has been built and the rooms of these wings are vacated. Required modifications are seen in the annexed Schematic diagrams - Annexures A1 and A2

3.1 Equipment;

A detailed list of the Equipment which will be needed for the School at the modified building. - Annexure B.

3.2 Approximate monetary allocations for the Glassware, Chemicals and Books, etc - Annexure C.

...../contd

4. Necessary standard fittings required to carry out a practical simultaneously by 60 trainees. viz; a common sink and tap, gas tap and plug outlet for every two trainees.

Shelves above the working bench for Reagents and chemicals and a cupboard below for storing personal effects during practicals. - Expenditure to be estimated.

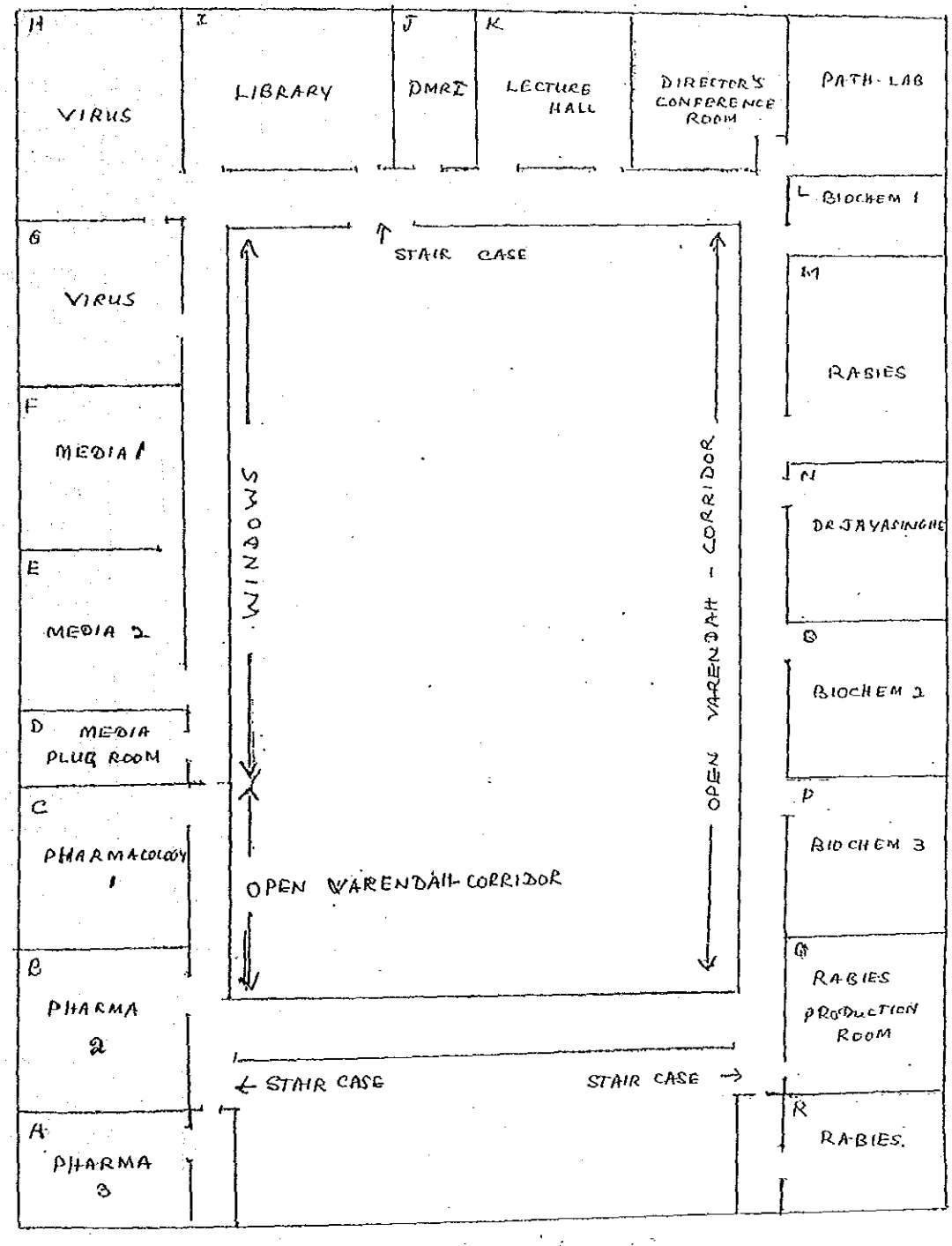
5. Initial short visit by Senior Teaching Personnel - for observation, familiarization at Nigata University, etc.
Subsequent One Year Training Programme/ per Tutor, in Japan as part of the Japanese Technical Collaboration Programme.

PRESENT MRI BUILDING.

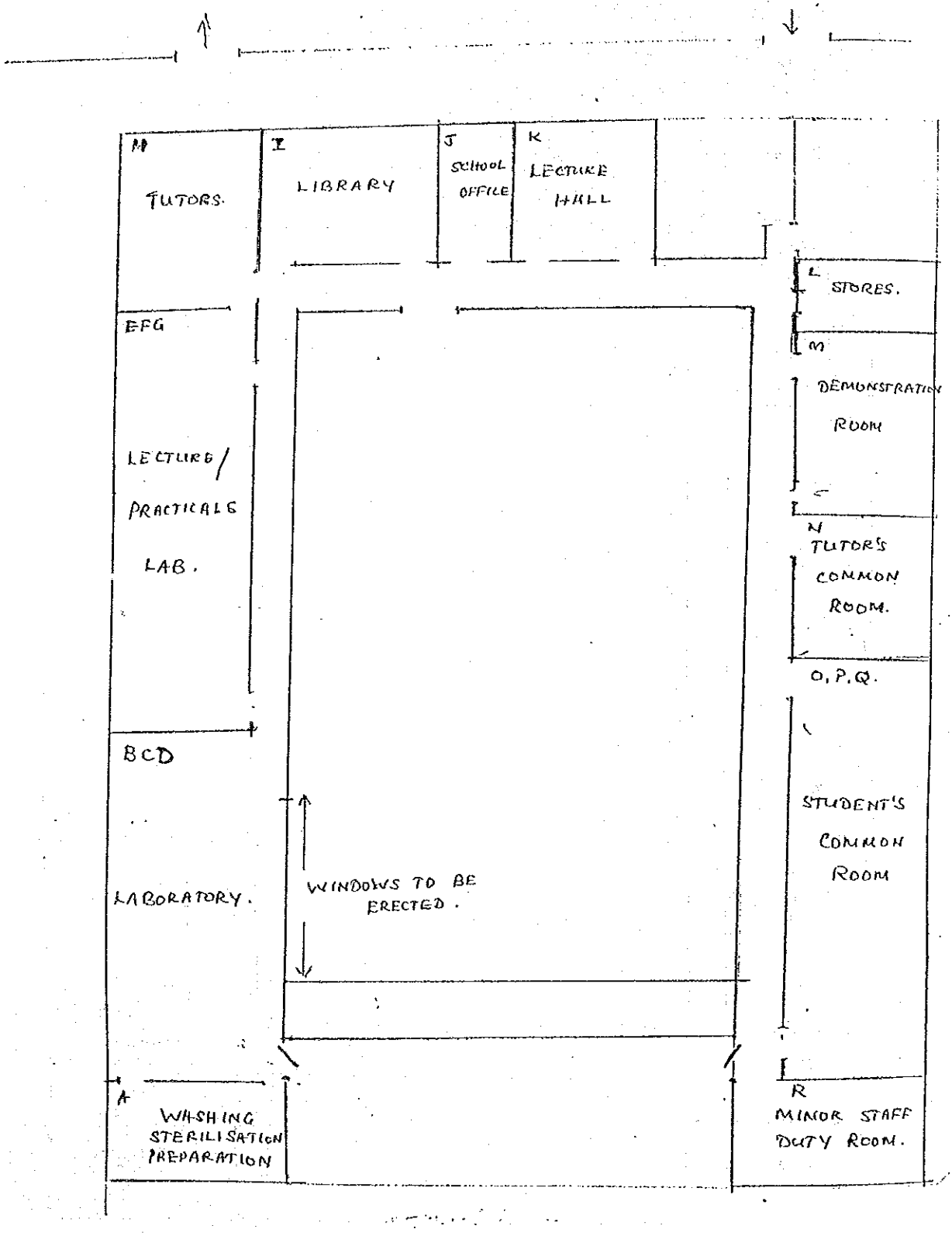
(ANNEXURE – I.D)

1ST JUNE '87

MAIN ROAD.



'REQUIRED TO HOUSE THE MLT SCHOOL IN THE UPSTAIR WINGS OF THE PRESENT M.R.I. BUILDING. (ANNEXURE - I.2)



ANNEXURE — 2

School of Medical Laboratory
Technology,
29.05.87.

Sir,

Web are herewith submitting a list of the requirements that was requested from the School of M.L.T. at the meeting with the Tutors which was summoned by you on 26 th. May 1987.

MBeauchamp

ANNEXURE 2

LIST OF LABORATORY EQUIPMENT - SCHOOL OF MEDICAL LABORATORY TECHNOLOGY

1.	Olympus Microscope Model BHS 312 with multiviewing attachment BB 2 MDO 2 with eyepiece micrometer 20.40 cm/ 100 with OM / 100 with 10 spare bulbs.	One
2.	Microscope Binocular	forty
3.	Deep freezers - 20 ^{o} C	one
4.	Autoclave electric floor model	two
5.	Hot air ovens (large)	four
6.	Window type air conditioners	four
7.	Steel cupboards	six
8.	Filing cabinets	six
9.	Angle poised lamps fluorescent	six
10.	UV lamps	two
11.	Water baths adjustable thermostats or with capsule (with spares)	six
12.	Automatic slide projector and screen	one
13.	Overhead projector	one
14.	Photocopy machine (plain paper)	one
15.	Incubator	four
16.	Ceiling fans	six
17.	Table Fans	Three
18.	Anaerobic Jars (BTL) with Cold catalyst	Three
19.	Hydrogen Cylinder	One
20.	Fluorescent Microscope	One
21.	pH Meter	One
22.	Microwave Oven	One
23.	Centrifuges (Bench Type)	Ten
24.	Magnetic Mixer	One

...../contd

ANNEXURE 2 (D)

...../contd (2)

25. Vortex Mixer	One
26. Colorimeters (Flow through type)	Eight
27. Spectrophotometers	One
28. Flame Photometers	Two
29. Epidiascope	One
30. Apparatus Trolley	Two
31. Balances Analytical (Electronic)	Two
32. Balances Analytical (Two pantype)	Fifteen)
33. Step Ladder	One
34. Shelves (for Storage of chemicals Reagents etc)	-
35. Boxes of weights (for weighing chemicals)	Six
36. Blood Gas Analyser (all parameters)	One
37. Blood Glucose (Stat) Analyser	One
38. Electronic Cell Counting for Haematology (all parameters)	One
39. Microhaematocrit Centrifuges	Two
40. Slide Stainer automatic (for Haematology)	One
41. Floor Polisher with Vacuum cleaner	One
42. Pipette washers	Two
43. Electronic Colony counters (for Bacteriology)	One
44. Microtomes (Rotary)	Two
45. Freezing Microtome	One
46. Automatic Tissue processor	One
47. Wax embedding oven	One
48. Water bath for Histology(Mounting bath)	One
49. Automatic Knife Sharpener	One
50. Deioniser	One
51. Glass Still	One
52. Automatic Stainer for Histological techniques	One
53. Cytospin centrifuge (for Exfoliative Cytology)	One
54. Slide Cabinet (to hold 20,000 slides)	One

...../contd 3

ANNEXURE 2 (7)

...../contd

55. Allocation for Books	Sri Lankan Rs.	800,000/=
56. Vacuum wax embedding bath		One
57. Membrane Filter holders		Six
58. Membranes (nucleopore)	packs	Ten
59. Magboards with accessories		Two
60. Memocorder		One
61. Casette Recorder with Audio casettes		One
62. Loud Hailer/Battery operated Megaphone		One
63. Typewriters (manual)		Two
[illegible]		-
65. Electric blender / liquidiser		one
66. Electric hot plates (covered)		two
67. Swivel chairs on castors		eight
68. Tables for item no. 67 (with drawers)		eight
69. Refrigerators		four
70. Scientific pocket calculators		six

Training programme for Tutors under the Technical collaboroaration offer by Japan; with particular reference to the fields of Teaching Techniques , Methodology, Instrumentation, Organisation, and Management etc. leading to a degree in Medical Laboratory Technology.

ANNEXURE - .3

Allocations for the School of Medical Laboratory Technology

1. BOOKS - Rs. 800,000/-

2. Chemicals - Rs. 500,000/- per annum(approximately)

3. Glassware - Rs. 500,000/- per annum (approximately)

ビタラナ所長によるワークショップ報告

REPORT ON THE STUDY TOUR OF THAILAND AND JAPAN

By

Dr. U.T. Vitarana and Dr. P. Premachandra of the Medical Research Institute, Sri Lanka

(03.05.87 to 16.05.87)

4th May

Visited the National Institute of Health, Thailand and met Mr. Kohei Nakajima, Coordinator/Liasion Officer, NIH, who gave a brief description of NIH, how the project was initiated and implemented and the main activities and objectives. We visited the Entomology, Virology, Scientific equipment and Animal Experiment Centres and the Auditorium, and saw the layout and the activities going on and also had discussions with some scientists about their work and problems. The frank discussions surfaced several problems that have arisen (breakdown of air-conditioning plant and equipment items, delays in repairs and replacement of spare-parts, heavy cost of electricity and maintenance, under-utilization offacilities etc.) and their probable causes (sensitive instruments and excessive voltage fluctuations, shortage of trained personnel etc.). These useful insights should help us with our project.

5th May

Left for Japan.

6th May

We were met at 10.a.m. by the JICA Coordinator Miss. Akiko Okabe at Hotel Sun Route, Shinjuku and taken to JICA Head Quarters where we met some JICA officials, including Mr. M. Togawa, Officer, Second Training Division, Training Affairs Department, JICA. A film on the activities of JICA was shown here. A short orientation was given by Mr. Togawa and after registration we visited the Medical Cooperation Division of JICA and met Mr. Obata, the Director and a few other officials. Discussions regarding aid and technical cooperation procedures continued over lunch which was

organised by Mr. Obata.

That afternoon we visited (1) Mr. S. Higuchi, Senior Assistant of the Technical Cooperation Division of the Ministry of Foreign Affairs; (2) The Ministry of Health and Welfare and met Mr. Ehchi Kato the Director, International Affairs Division, Ministry of Health and Welfare; and (3) The Ministry of Education where we met Mr. K. Asomura, the Deputy Director General, Ministers Secretariat (Scice and International Affairs Bureau). While with the latter we discussed Medical Education in Japan, the others helped to orientate us about the source and manner of execution of Grant Aid and Technical Cooperation.

7th May

We visited the National Institute of Health in Tokyo in the morning and first met the Deputy Director, Dr. Akira Oya of the NIH and discussed the role of NIH in the project. We went to the Virology Department and had discussions with Dr. T. Miyamura, Sectional Chief, Department of Enteroviruses on collaboration in research on Hepatitis B and Non-A Non-B and with Dr. Kobayashi on Japanese Encephalitis (JE). Appointments were made to visit Dr. Kitamura at Muriyama and Dr. Nakamura at Nisken on Saturday 9th May. Dr. Oya's valuable advice was obtained on the course to be followed to control JE in Sri Lanka.

On 7th Afternoon we visited the Tokyo Metropolitan Research Laboratory of Public Health and met Dr. A. Ohashi, Director, Department of Microbiology.

A brief introduction to the functions of the institute was given by the Director, and we then visited the Microbiology Laboratories. This included a visit to the P_3 Laboratory. The techniques used for bacteriological and virological examination of water were explained.

8th May

In the morning we visited the National Institute of Hygienic Sciences and called on Dr. Akio Tanimura, Director General and discussed the activities of the Institute.

The important activities of the Institute includes biological studies

on the safety of chemicals including drugs, food additives, cosmetics, medical devices, dental materials, environmental pollutants, pesticides, household commodities and chemicals used in industries or laboratories. They also train public health officials and inspectors and investigators of domestic as well as foreign institutes.

We went round the Animal House - and studied its arrangement in some detail.

In the afternoon we visited the Institute of Public Health and called on Dr. Yasutaka Osada, Director General of the Institute of Public Health. He gave a brief description of the Institute. The buildings and equipment of the Institute were donated by the Rockefeller Foundation for the purpose of training of public health personnel and performing research on public health.

We met Epidemiologists and Microbiologists and learnt about disease patterns and their investigation in Japan. A Virologist working on Hepatitis B virus gave us detailed information on this health problem.

One of the Virologists was researching into allergic diseases and has developed a method to measure the IgE by chemiluminescence which appears to be much more sensitive. In view of the growing importance of allergic disorders we decided that a similar unit should be established in the Immunology Department at the MRI, Colombo.

9th May

Dr. Vitarana visited the Nippon Institute for Biological Science and collected information on JE vaccine for pigs and immunization procedures from Dr. Nakamura in the morning. In the afternoon he visited the NIH at Muriyama and had discussions on HFRS and AIDS with Dr. Kitamura and also visited the P4 Safety Laboratory.

10th May

Left for Niigata by train and arrived in the afternoon. We were accommodated in Hotel RICH.

11th May

Visited the Niigata University and called on the President of Niigata University. We went round the campus with Professor Yoshihisa Onishi, Dean the School of Medicine. Then we visited the Niigata Prefectural Government and called on the Director, Bureau of Hospitals, Department of Environment and Health. Same morning visited the Department of Pathology, University Hospital and met Professor Watanabe, where he briefly described the activities and organisation of the Department of Pathology.

A busy programme was arranged to visit the University Hospitals, Medical Laboratories and thereafter the School of Medicine where we visited the Animal Experiment Unit, the Department of Virology, the Department of Bacteriology, Department of Medicozoology, the Department of Clinical Chemistry and the Department of Pathology.

We were taken to these departments and briefed on their activities and research projects. We were shown the equipment and the variety of automated machines. The visit to the Pathology Department revealed the importance in Japan of diseases of the gastrointestinal tract, pancreas, bile duct and gall-bladder. Cancer of the gastrointestinal tract, particularly of the stomach, appeared to be common. The important role of the Electron Microscope was stressed and of various teaching aids. At the Department of Virology a useful discussion took place with Professor Hamada who was working on the Genetic Structure of Hepatitis B Virus, and he showed interest in collaborating with Dr. Vitarana in the study of the hepatitis B virus strain found in Sri Lanka.

In the Department of Clinical Biochemistry we found a high level of automation for a number of routine investigations. Professor Mitsuyama of the Department of Bacteriology described the activities that were going on in his department.

In the Department of Immunology and Medicozoology we met Professor Fujiwara, who was working on the immunology of the malarial parasite and schistosomes.

That evening we attended a dinner given by Professor Onishi, Professor Watanabe and Professor Kojima.

May 12th

Professor Kojima, Dean, College of Biomedical Technology, Niigata University briefed us on the facilities and the training available at the College. The same morning we visited the Prefectural Health and Sanitary Centre and met Dr. Mujsu Homma, Deputy Director and Dr. Syozo Asazuma, Managing Director and they briefed us on the activities of the Centre. The centre mainly screened the population for TB, Cervical Cancer and other common diseases and we were impressed with the organization of the laboratory.

In the morning we also visited the Red Cross Blood Centre and met the staff. The Head gave a brief description of the functions, collection and type of donors. The laboratory was automated and it was noted that the blood is screened for biochemical investigations in addition to other parameters that are generally performed. A report on the blood specimen is sent to the donor. If the biochemical investigations are abnormal, specially the SGPT, the blood is not used for transfusion.

After lunch we visited the Prefectural Research Institute of Hygiene and Pollution and the College of Biomedical technology. Professor Kojima, Dean of the College of Biomedical Technology took us round the College visiting the Departments of Nursing, Radiological Technology and Medical Technology. We were able to study how the college provides advanced instructions in nursing, radiological technology and medical technology, using modern and advanced technology. In particular the medical technologists course was seen to offer a wide knowledge and covers many subjects not covered in the course conducted at the MRI in Colombo.

13th May

A visit was arranged to the Museum of Northern Culture and Dr. Premachandra participated in this. A few officials from JICA and the Ministry of Foreign Affairs joined this trip to a very rich farmer's house that was now opened to the public. Dr. Vitarana visited the Production Unit of Denka Seiken Co. at Gosen with Dr. Miyamura to collect information on the preparation of various vaccines including JE and virology diagnostic reagents.

Ministry of Foreign Affairs, Ministry of Education, Ministry of Health and Welfare and the consultant, Professor Hashimoto were present.

13th May

Workshop to discuss future plans of MRI

That afternoon a workshop for future plans of the MRI building project and technical cooperation with Niigata University, School of Medicine and College of Biomedical Technology was held at the Yujin Memorial Hall. Professor Y. Ohnishi was the chairman of the workshop and participants from the School of Medicine and College of Biomedical Technology of Niigata University, the National Institute of Health, Tokyo, JICA, the Ministry of Foreign Affairs, Ministry of Education, Ministry of Health and Welfare and consultant, Professor Hashimoto, were present.

Professor Ohnishi addressing the workshop requested Dr. Vitarana to explain the requirements of the MRI.

Dr. Vitarana mentioned that it is not easy to understand the problems and needs of an institute like the MRI in an underdeveloped country. Due to the lack of competent personnel, the poor infrastructure and the lack of funds, and the shortcomings of the laboratories in the hospitals, the MRI had developed and functioned in a manner quite different from a research institute in a developed country like Japan. At present about 80% of its activities (routine diagnosis, specialized laboratory tests, training, production, reference) are routine functions and about 20% is research. In view of the demands for routine services made on it the MRI cannot give up these functions and concentrate on research. The creation of an altogether separate research institute also would not succeed due to the lack of personnel. It is therefore necessary for the MRI to gradually phase out its routine diagnostic functions and in about 20 years when the hospital laboratories are adequately staffed and equipped, this could be given up altogether. The research activities could be progressively increased to about 30% in 10 years and nearly 50% in 20 years. The MRI will have to continue the other functions - specialized laboratory tests (15 to 20%) and training (10%) remaining the same while reference and production functions increase from 3 to 12% and 8 to 15% respectively. Dr. Vitarana then

requested that the JICA assistance should be directed towards improving all these MRI functions so as to serve Sri Lanka's health needs best. After some discussion the meeting agreed to this request. Dr. Vitarana highlighted some of the problems in Sri Lanka like the frequent power failures and voltage fluctuations that damaged instruments, the lack of maintenance and repair facilities, the difficulties in getting lab supplies locally and the delays in obtaining them from abroad and the lack of funds, transport facilities etc. He however expected the shortage of scientific and technical personnel to be solved in the next 2 to 3 years. The meeting requested the MRI to modify its building plans, to group the sections, give its activities, improve the equipment lists and submit fresh proposals for technical cooperation based on their visit to Niigata and NIH, Tokyo, to reach Japan by 10th June.

At the end of a successful workshop a banquet was held.

14th May

Left for Osaka by plane. On the same day we visited the Research Institute for Microbial Diseases, Osaka University and met Dr. T. Miwatani, Director who gave a brief description of its activities. We were introduced to the research staff of the Institute and discussed the research projects that were going on at both our institutes. We visited the laboratories and the Animal Experimental Unit, the Safety Rooms in particular.

We also met Dr. Fukai, President of the Research Foundation for Microbial Diseases of Osaka University who made a donation of 1000 doses of Japanese encephalitis vaccine. We were able to discuss with him the JE problem in Sri Lanka and get his advice.

The same day we left for Tokyo by plane.

15th May

In the morning we had discussions with JICA officials including Mr. Togawa, Officer, Second Training Division and also met Dr. M. Obata, Director of the Medical Cooperation Division.

15th evening we left Japan to Thailand

20th May

Left Thailand and arrived in Sri Lanka

In conclusion we wish to thank JICA and everyone we met for the very productive visit and for the cordial reception offered to us. In particular we would like to thank Ms. Akiko Okabe for her friendly support that helped to make our visit trouble free.

Thank you.

U.T. Vitarana
Director
Medical Research Institute

長 期 調 査 員 報 告 書

1．実験動物

2．蛇毒抗血清

氏　　名　　佐 藤 徳 光
指導科目　　実験動物学（長期調査）
勤務機関名　　新潟大学医学部動物実験施設

Sri Lanka 国MRIのAnimal houseについて

1．現状分析

あらかじめ用意したQuetionnaireとこれに対するMRI側回答文はAnnex 1～3に示した通りである。Animal houseはMRI敷地内に散在するものと，South Colombo general hospitalの敷地内に間借りするものとに別れる。いずれも，実態は“ひどすぎる”の一言につきる。これは実験動物学レベルの問題というより，建物・設備の貧困に由来するやむを得ない状況と察しられ，MRIスタッフをせめるわけにはいかない。彼らの多くはむしろ実験動物学が最も進んだイギリスでの留学経験を有し近代的なAnimal houseは既に経験済みと思えるからである。面談した多くのMRIスタッフ（コンサルタント）が異口同音にAnimal houseの現状を嘆いているのは特に印象的で，我々Projectに対する一様の強い期待感が伝わってきた。現状の問題点を整理すると次のごとくになる。

Animal house 現状の問題点

① 動物飼育室数が不十分で異種同居が目立つ。また，室の閉鎖性少なく害虫類の侵入多し。

② 動物飼育室の温度，証明コントロールが無い。

③ 飼育ケージ，給水ビンなどの設備が極端に不足，ケージ交換などは行っていない。そして，ケージ内に床敷を用いず，糞尿堆積物の上でマウス，ラットなどを飼い続けている。

④ 洗浄消毒設備が皆無で，ケージ，給水びんなど飼育器材の洗浄滅菌は見られない。

⑤ 検疫，疾病対策その他の微生物学的統御策は全くみられない。

⑥ 病原体接種動物と正常動物を同室内で飼育している。

⑦ 固形飼料の開発が進まず，多くの飼料は農作物に頼っている。現在，小動物（マウス，ラット，ハムスター，モルモット）に与えている市販固形餌も栄養価が低く，週2度は給水びんにビタミンを加えて補給している。

⑧ Sri Lanka 国内に実験動物の民間繁殖場はなく，家畜動物（イヌ，ネコ，ヤギ，ヒツジ，ブタ，ウマ，ガチョウなど）と野生動物（サル）以外はすべて自家繁殖でまかなっている。

⑨ 実験動物用器材，資材関連の民間生産部門がない。

⑩ MRI内に実験動物専門家がいない（現在，飼育従事者としてMRI敷地内に3名，South Colombo側に1名，計4名の作業員が配属されているのみ）。

2．本分野における協力目標

1）近代的 Animal house の建築（初年度）

健康な実験動物を維持し，信頼性（再現性）の高い動物実験を可能にするには，やはり近代的構造を有する建造物が無くてはならない。わが国が蓄積したこれまでの経験は大いに役立つものと思われる。新しい施設が完成し，より好適な条件で動物が維持されるならば，マウス，ラット，ハムスター，モルモット，ウサギなどの繁殖効率は一段と高まりニーズにそう繁殖供給体制が確立でき

る。さらに，好適環境での実験が可能となり実験中動物の事故死は激減するはずである。効率よく，かつ再現性のある有効な実験が初めて可能となる。

2）実験動物専門家の育成（初年度）

現在，ＭＲＩに当分野の専門家は見あたらない。新しい Animal house の管理運営に当てるため専門家を養成しなければならない。

3）Animal house の近代的運営法を定着（初年度～次年度）

近年，ＧＬＰ法による適性動物試験の義務化は国際的な流れであり，Sri Lanka 国も将来的に同法とのかかわりが出てくる。実験施設の環境統御，実験動物の遺伝的・微生物学的統御などは最初からきちんとしたマナーを身に着けておく必要がある。

4）実験動物分野の研究活動をサポート（３年度以降）

Anmal house のサービス面が充実できた時点で，検疫を含む研究活動の芽を作っておく必要がある。これは職員ともども全体のレベルアップに欠かせない。研究活動は長期的な視野でサポートしてやりたい。

3．スリランカ側の実施体制

1）本分野におけるＭＲＩ内部の組織および人員配置計画

Animal house 職員として現在４名（中，高卒程度か？）に１～２名増員を考えているが飼育従事者として足りると思われる。ほかに責任者としての学卒（獣医師ないし動物学専攻生），また，共通洗浄サービスなど従事者として他に２名は必要と思われるが，今のところ具体的構想はできていない。

2）建物・施設及び機器の現状とスリランカ側の考え方

ＭＲＩ側から提案のあった建物配置図と動物実験区および Animal house は Annex ４～９の通りである。また，要求設備は Annex 11～13の通りである。詳細にわたる説明は避けるが以下の点で大枠の合意に達した。

① マウス，ラット，ハムスター，モルモット，ウサギの繁殖室は動物実験区に近接させた一区画とし高精度の空調条件を付して効率的な繁殖体制をとる。マウスＳＰＦ室も一室用意したクリーンな種動物の保存用とする。出来れば同目的でラットＳＰＦ室も一室欲しい。

② 抗血清作成用動物室（中小動物，ヤギ，サル，ガチョウなど）は別区画（Production unit に近接か）とし，空調精度は中等度とする。ヤギ検疫室とヘビ飼育室もここへ含める。

③ 抗血清作成用ウマ飼育室は運動場を併有する馬舎として別棟にする。

④ ケージ，給水ビンその他実験動物器材の洗浄滅菌は中央洗浄室を設け，中央サービス業務にゆだねる（ただし，昆虫飼育区内には小さな洗浄槽をもうけ別途操作とする）。

⑤ 空調エネルギーコスト削減のため可能な限り新規な技術工夫もとり入れられるよう最大限の努力を払う。

⑥ Animal house に関するＭＲＩ側設計図は minimum なものであり縮小は極力避けて欲しい。全体構想としてのバランスで，可能なら Animal house 専用の実験室（２室位）も是非追加したい。当案には検疫室もない。

⑦ Colombo のエネルギー事情に鑑み，いざという時の為，外窓（網付き）は付けておく。

⑧ 早期に獣医師１名を選定，日本での研修を考えたい。

⑨ 栄養価が十分な固形餌を確保（製造も考慮）。

⑩ 新施設稼動時，マウス，ラット，ハムスター，モルモット，ウサギは日本よりクリーンなものを移入種親とする。

4．プロジェクトの実施計画

1）専門家派遣計画

設計図作成時点まで，熱帯地区に最近完成した Animal house を現地調査し構造，機構，エネルギー事情などを分析して長短を知り，これをふまえてより効率の高い施設設計を行う必要がある。Sri Lanka は現在毎日４時間程度の停電を行っており，エネルギー事情が大変悪い。さらに，年の平均気温が30～32℃と高く，湿度70～80％と悪条件が重なる。動物室温を仮に高めの26℃程度に設定するにしても年間に要するエンタルピーは相当なものと予想される。設計段階で独自の空調システムが組み込めれば一応の成功をおさめたと云える。

一方，ＭＲＩの新Animal house 完成時，正常な稼動を促すため当方より専門家を派遣する必要が起こる（６ヶ月～10ヶ月程度)。移入する種親動物の選定も重要であろう。

2）研修員受け入れ計画

新施設完成前にAnimal house の責任者となる人材を育成する必要がある。学卒（獣医師 or 動物学専攻生）の有能な人材を１年は日本に呼び早急に教育しておかねばならない。

3）資機材供与計画

飼育ケージその他は無償によりほぼそろう感じなので，技協としては実験動物関連図書（現在ＭＲＩには一冊も無い)，検疫関連実験器材（解剖用具他検査器具)，中小の種親動物の移入が当初の供与対象と云える。固型餌製造機を無償で供与してもらえると大変有難い。動物の繁殖体制が整った時点（２年度）には検疫のための検査試薬や検査機器（現地の病気を見ながら序々に選定）が必要となるであろう。ケージの床敷（新聞紙スタイルか？，当地ではもみがらは豊富に手に入るそうだが吸湿性に問題あるのでは？）をどうするか。また，給水クリーナーの以後の補充などは供与対象としていずれ問題になるであろう。

5．提　　言

1）人員配置

予定規模の施設運営には，飼育管理従事者５名（現４名)，中央洗浄などサービス要員２名（新

規），責任者１名（新規），計８名の要員は最低限必要である。ＭＲＩ側の責務において早急の実施が望まれる。

２）施設設計

日本側が配慮して対策を立てるべき最も大切なことは施設の設計に当り，現在考えるべき最高の技術工夫をもって，省エネ type の高精度空調システムを組み入れることである。Animal house は最もエネルギー消費の大きい場所であり，Sri Lanka 国の特殊エネルギー事情とのかねあいもあって最も苦慮する点と思われる。Sri Lanka 国（主として Colombo 周辺）のエネルギーコストの調査資料は Annex 14に示した通りである。仮に壁式エアコンを用いたとしてもざっと見積もって年間1 65万円程度のエネルギーコストは見積もられている。繁殖用動物室などのを air－handling type の空調にすれば一段とコストははね上がる。設計段階までに是非，専門家による熱帯地区の Animal house （聞くところによるとタイＮＩＨや他に熱帯医学研究所など最近完成したところがあるそうなので）を現地調査し長短を分析することを提言したい（Animal house に限り設計担当者のみの現地調査は不十分である）。

また，現時点のＭＲＩ側ニーズに対応し，動物室を(1) 実験区＋昆虫飼育区，(2) 動物繁殖区，(3) 抗血清など生産動物区，(4) 抗蛇毒血清作成用馬舎と大きく区別しておくことはおおむね reasonable であるが，将来的には抗血清など生産活動は減少すると予想され，その分研究指向が強くなる。その際，動物実験区と一般実験動物維持区が不足することになるから，設計段階では Production unit は将来的には第２動物実験区，抗血清などの生産動物室は第２動物維持区に転用できる構造：内容としておくことは重要と思われる。

QUESTIONNAIRE ON EXPERIMENTAL ANIMALS

1. The space and the number of rooms of the present animal facilities, and air-conditioning or not.

2. Species, strains and the number of experimental animals currently being maintained and their microbiological status in terms of conventional; barrier-maintained or minimal disease (MD); specified pathogen free (SPF); and germ free (GF or gnotobiotic).

3. The number of research workers utilizing experimental animals and kinds of experiments in which experimental animals are/or will be required.

4. The number and their names of animal technicians with their educational qualifications.
   Future plan to increase the number of technicians, if any.

5. Title and abstract of guidebooks with respected laboratory animal technology in MRI.

6. The actual expenses to maintain the animal house, especially in conjunction with energy supply; electricity (per KWH), gas (per m^3) and water including sewerage charge (per m^3) with references to temperature and relative humidity of outdoor air in Colombo through the year.

7. The existence of animal breeders locally available, and the number, species and strains of experimental animals from which obtainable, if any.

8. Design and policy of MRI for planning a new animal unit (animal reproduction, air-conditioning, microbiological control level, especially designed unit and species, strains and number of experimen-

tal animals).

9. The law and some guidelines currently being enforced for the regulation of experimental animals and the protection of animals in Sri Lanka.

10. Any other relevant informations available.

Answers to questionnaire on Experimental animals - MRI animal house

1. (a) Total space about 4000-5000 sq.ft.

No. of rooms - at present 6 rooms are being used.

The animal house is not airconditioned.

2.

White mice	500
Rats	25-50
guinea pigs	75
Hamsters	15
Sheep	12
Goats	25 per week.

Not being supplied now as antirabits Vaccine production has been temporarily suspended.

Geese	2
Toads	100
Chicken	25

No microbiological status
But animals are generally healthy.

3. Sections using animal are:—

Vaccine A.R.V. and TAB

Salmonella

Mycology

Parasitology

Bacteriology

Pharmacologs and Virology

4. Four animal supervision - 8th Standard required.

L.P. Perera - J.S.C. (English) GCE (OL) - four subjects

P.P. Dias - GCE (OL) - 3 subjects

A.A.H. Gunatillake - J.S.C.

R.T. Sathananden - GCE (OL) 5 subjects

5. No guide books
6. Rs. 20000/- approximately per month
7. No recognised animal breedes
   animal are obtained if necessary through a contractor.
8. Submitted earlier.
9. No laws for protection of animals.

COLOMBO SOUTH ANIMAL HOUSE

(1) 4 Rooms - 10' x 10'
1 Room - 4' x 4' Not air conditioned

(2) White mice - 600
White rats - 250 minimal disease (MD)
Black & White rats - 100
Fowls - 12

(3) Research Workers - Arbovirus Unit
Enterovirus Unit
Influenza Unit
Faculty of Science - University of Colombo
Faculty of Medicine- University of Ruhuna

Kinds of Experiments - Virus Isolation
Virus Neutralization tests
Virus Antigen Production blood for Haemagglutination test

(4) Mr. R. T. Sathanandan - G.C.E. (Ordinary Level)
(Animal Supervisor) - 5 subjects

Future Plans - to recruit 1 or 2 Animal Technicians

(5) No Guide Book

(6) Rs.7,500/= per month

(7) No local animal breeders

(8) Submitted

(9) Nil

(10) -

Annex 12

6. (C) ANIMAL HOUSE - EQUIPMENT LIST

(1) Insectory - See Separate List

I T E M	
Large boilers	- 03
Large baskets	- 08
Autoclaves	- 04
Cages for g.pigs, hamsters, and rabbits	- 300
Breeding boxes (rats & mice)	- 1000
Weaning cags (rats & mice)	- 750
Water bottles	- 1000
Glass/plastic tubing	✓
Operating table	- 01
Anaesthetic machine	- 01
Sucker	- 01
Lighting system for the O.T.	✓
Trolleys	- 12
Vertical laminarflow cabinets (Class 2 biohazard)	- 01
Filing cabinets	- 03
Step ladder (collapsible)	- 01
Weighing machine - Large quantities (kg)	- 01 ✓
Weighing machine - small quantities (gr)	- 01 ✓
" " - animals	- 01
Refrigerator (small)	- 01

equipment list Ctd.

Item	Quantity
Mouth gags - horse	05
- sheep and goats	05
- small animals (dogs)	05
Hoof cutters	05
Trocar and canula (small)	03
Stomach tube	03
Burdizzo castrators (large)	02
-do- (gout)	03
Urethral catheters - equine	05
- ovine and caprine	05
- canine	05
Vaginal speculum - large	03
- small	03
Ophthalmoscope	01
Auriscope	01
Stethoscope (veterinary)	02
Douch cans	03
Nose twitches for horses	15
Thermometers	10
Stocks with removable wooden side boards	02
Post mortem instrument set	03
Surgical instrument set	03
Obstetrical instrument set	02
Refridgerator	01
Gum boots (pairs)	10

INSECTARY (ANIMAL HOUSE)

Annex 13

(C) EQUIPMENT LIST

I T E M	QUANTITY
Refrigerator (upright)	1
Humidifiers	2
Microscopes (Binocular) NIKON	4
Electric Grinder/Blender	1
Electric Oven	1
Hot Plate	1
Demineralizer	1
Washing Machine	1
Table Lamps	6
Step Ladder (collapsible)	1
Head Lanterns	12
Flow-Tanks (Lab-model)	10
Cages (collapsible 6"x6"x6"	24
Cages (collapsible 12"x12"x12"	24
Cages (collapsible 18"x18"x18"	24
Teasing needles (straight tip plastic handle)	24
Slotted angle iron racks for placing larval bowls	16
Larval breeding trays	30
Insect breeders	30
Aspirators (battery-operated)	10
Insect net (collapsible)	10
Sorting trays	12
Folding traps	12
Bait Holding Frames (different sizes to entrap chicks, rats)	12 of each size
Adjustable laboratory stools	12
Mosquito netting	100 meters
Filing cabinet	1
Maggi board	1
Circulator pump	3
Labo cart	1
Air pump (Aerator)	3
Water filter (candle type)	1
Temperature and Humidity recording apparatus	3

Annex 14

ELECTRICITY CHARGES FOR INDUSTRIAL PURPOSE

1 unit - Rs. 1/45

Rs. 100/- per KVA

ELECTRICITY CHARGES FOR DOMESTIC USE

1st 30 units - =/50 cts per unit
next 75 units - =/80 cts
over 75 units - Rs. 1/80
(varies according to the consumption)

L P GAS - 14kgs cylinder - Rs. 145/-

PETROL - 1 Litres - Rs. 13/50 petrol stand

DIESEL - Lanka Auto Diesel - Rs. 8/13 per litre petrol stand.
Lanka Heavy Diesel - Rs. 7/83 per litre

ENGINE OIL - Lanka DS SAE 10, 30, 40 & 50 - Rs. 22/25 per litre

WATER FOR INDUSTRIAL USE

1 unit - Rs. 11/-
(1 unit = 1000 litres)

By Sirisena

業　務　日　誌

1987年 9 月 3 日
氏 名　佐 藤 徳 光

月　日	曜　日	内　　容
8－9	日	12：25：Colombo 到着，Ceylon Inter Continentalホテルに落ち着く。 15：00：日本大使館の平野一等書記官来訪面談，スリランカ滞在中の一般的留意事項，さしあたりの業務日程など説明を受く。8月11～13日にかけ倉成外務大臣スリランカ国歴訪，その為，日本大使館も急がしそう。
8－10	月	10：00～11：00：日本蛇族学研究所（以下ヘビ研と略）の牧野博士，Peradenia大学ヘビ族研究員のAnslem De Silva （以下Silva と呼ぶ）と共にJICA事務所に橋口所長を訪ね，我々調査の目的などを報告。Silva の立場について橋口所長と牧野博士の間で質疑応答あり。Silva は日本のヘビ研所長　沢井先生とは数年前からかかわりを持っているらしい。 11：30～14：00：MRI にDr. Vitaranaを表敬訪問，引き続きAnimal House担当のDr. SathasivanとDr. Withana と面談，当方よりあらかじめ提出しておいた質問書への解答を得る。明日Animal houseを見学させてもらうことにした。 14：00～17：00：市内Dehiwala動物園を訪ね，ヘビ飼育施設，蛇毒採取室などを視察，技術員と面談する。
8－11	火	10：00～11：00：MRI にDr. Sathasivanを訪ね，現有のAnimal houseを視察。建物の老朽化，貧弱な設備，不衛生な環境，劣悪な飼育条件などに驚く。日本の昭昭26年当時の上記用を思い出した。 12：00～15：00：South Colombo general hosptialにDr. Withana を訪ね，South Colombo animal house （MRI の分室）を視察。建物はややしっかりしているが飼育状態はMRI と同じ。空調がなく悪臭がひどいこと，交換用ケージが全く無く洗浄をおこなっていないこと，床敷がなくケージの床に積もっているのは永年の糞と餌の食べかすであったこと，業者につくらせている固形飼料を用いていたが栄養バランスが悪く，週に２度は飲水にビタミンを添加していることなど，特に強い印象を受けて帰った。
8－11	火	15：00～19：00：牧野博士，Silva とヘビ飼育施設，設備などについて意見交換に入る。小生にとって蛇毒は初めてであり，ヘビ用動物施設の計画には具体的情報を得る必要があること。また，熱帯地区のAnimal houseの計画には室温コントロールのためのエネルギー事情をくわしく調査する必要があった。独自面談調査の必要性からホテル内会議室を８月11日～８月17日にわたり借りることとした。
8－12	水	7：00～17：00：JICAの薦めもあり，Kandy にあるPeradeniya general hospi-

		tal とPeradeniya大学を視察。 17：00～19：00：牧野博士と毒ヘビ，抗蛇毒血清作成手順などについて一般的な討論を行い情報を蓄積した。蛇毒採取のため蛇約４種，各50匹で計200 匹を常時飼育すること，またその為に餌用マウスも多数必要なことが分かってきた。
8－13	木	9：00～12：00：小島団長ら一行および久米建築事務所職員ら一行と共にJICA事務所を訪問，引きつづきMinutes の件や今後のスケジュール等につき討論。 12：00～14：00：同メンバー全員にてMRI を訪問，Dr. Vitaranaと総論的討論。現Animal houseのとり壊し，夜勤者用宿舎の代替，各研究室の現在のactivityと将来像などが主たる話題。 14：00～18：30：ホテル会議室にてMRI 側提出設計図の見直し，主として研究棟面積のしぼり込みに入る（JICA職員，久米建築事務所職員と） 19：00～20：00：新聞“The Island”の新聞記者，Sisira Wijesinghe （Silvaの友人，以下Sisiraと呼ぶ）と面談，Colombo におけるエネルギー事情の調査を頼む。
8－14	金	9：00～10：00：メンバー全員にてMRI 訪問，Dr. Vitaranaに，昨夜しぼり込んだ面積案を提示，具体的な討論を行うが，結局のところMRI 側各スタッフ（consultant）との個別面談も必要だということになる。 10：00～12：00：全メンバーにて保健省のS.D.M.Fernando次官を表敬訪問，当Project の総論について面談。２期分け工期の問題，持ち込む建築資材等への関税の問題などが主たる話題。 12：30～13：40：Sisiraが保健省勤務職員G. Nandasena（彼の友人）を紹介してくれる。保健省内部のMRI に対するムード調査を依頼する。 14：00～16：00：MRI にて各スタッフ（consultant）と個別面談，しぼり込んだ研究棟面積案について意見聴取。 16：00～17：00：MRI 主催Tea party 。 17：30～21：00：ホテル会議室にて，Production unit （ワクチン，抗血清など製造部門）とAnimal houseの面積しぼり込み。久米建築事務所職員にAnimal house経験者がおらず，高所的立場での問題討議不可，はなはだ残念なり。
8－15	土	9：00～12：00：MRI にてDr.Sathasivan, Dr.Withana, Dr.Layasinghe，およびDr.Jayasekera と個別に面談。Animal houseの基本設計，グレード分け，動線，空調精度などに関し討論，大枠で合意に達した（詳細は報告書参照）。
8－16	日	休日。夕刻より平野一等書記官宅で夕食会に招待される。

8－17	月	8：00～10：20：ホテル会議室にて建物面積のさらなるしぼり込みに入る。MLT schoolと図書館がはみ出すことになる。 10：00～13：00：MRI にてDr. Vitaranaと面談，上記はみ出しについて討論，MLT はともかく，図書館は新刊部分だけでも新建物へ入れたいとの強い意向を受く。 14：00～16：00：ホテル会議室にてさらに建物面積按分をにつめる。 16：00～20：00：新聞記者Sisiraと保健省勤務職員G.Nandasena と夕食を共に。保健省内部の抗蛇毒血清を含むProduction unit に対する考え，新MRI 運営予算特にAnimal houseへのエネルギー供給等について雑談する。新MRI 運営予算を獲得してゆく際，現状ニーズに答える診断機能・教育機能・ワクチン製造機能の強化は特に重要と。抗蛇毒血清は新農地開拓計画とのかねあいで政治的圧力も強いらしい。エネルギー事情は円借款に基づく発電所が完成すれば将来的には明るい見通しとのこと。また，Sisiraより依頼しておいたエネルギーコストの資料を受け取る。
8－18	火	8：00～9：00：スリランカ医師会長のDr.Lakshmann Ranasinghe 宅を訪問（牧野博士とSilva に同行）。病院側からの抗蛇毒血清についての意見，スリランカの現状などを聞く。現在インドから輸入している抗血清はあまり効かないとの意見。スリランカにはSnake bite committeeという組織があり，当医師会長，Silva ，沢井先生，Dr. Joe Fernando (Director-General of Health Service) を含む10数名からなる組織があることを始めて知る。 9：00～11：00：MRI にDr. Jayasingheを訪ね，縮小したProduction unit の案について説明を行ったが，動線を無視した単純な縮小案に強い不満を示した。特に狭い土地でもあり，４F建位のunitとし，各階をそれぞれ違ったワクチン製造にあててコンタミをさけたいとの強い要望が再度はね返ってきた。小島団長に伝えるといって分かれた。国会議事堂内での爆弾テロのニュース入る。 12：30～14：00：大使館主催の昼食会に招待を受け，ト部参事官とこれまでの経緯について面談。１期工期が短く建物全体のレイアウトが順序よく進まないことを報告，ト部参事官もこの点を強く憂慮。日本の予算制度上止むをえないことなのかも知れないが，後々悔いを残さないようなMRI を建設しておくべきだという感を特に強くした。今回は二期分け工期は避けられないものとの前提で話しが進んだため，よりよい方策を探す論議はできなかった。 19：00～21：00：海外協力隊員　立岡清子氏を囲んでJICA主催の夕食会。協力隊員の将来の身のふり方などの問題，現地受入側の問題などいろいろ聞くことができた。これからの我々のProject 遂行には特に海外協力隊員の協力がなくてはならないことを特に強調しておいたが，現実の動きはこれに逆行し，当初いた６名

		の隊員も今は唯一人となり寂しい限りであった。立岡さんも来年３月までらしい。
8－19	水	９：00～12：00：Sri Jayawardenepura General hospital を訪問。大変立派な病院で職員も活気に満ちた印象を受ける。MRI もこの位の立派なものが出来れば良いのだが……。 午後：帰国を前に整理に入る。 19：00～21：00：MRI 主催夕食会に招待される。一期工事に，もし，Animal house が入ってくるとかなり忙しくなるので，そのときは早めに獣医師を採用，技術研修に入る必要性をMRI 側スタッフ（consultant）にはお願いしておいた。席上，久米建築事務所の第二陣が顔を出し，そのメンバーにAnimal house経験者（中村部長）がおり，土壇場でやっといろいろなことを頼むことができた。
8－20	木	早朝，帰国の途に着く。

氏　　名　　牧　野　正　顕

指導科目　　抗蛇毒血清の製造（長期調査）

1．報告書

2．事前に送付したアンケート

3．業務日誌

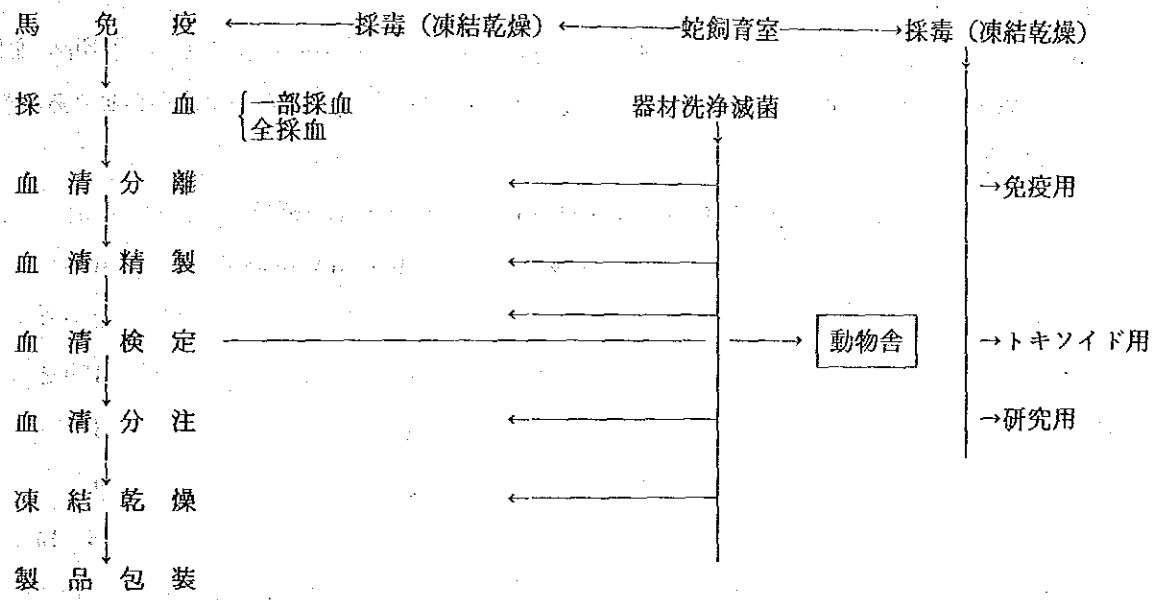
抗蛇毒血清製造部門の現状と将来計画

1．ＭＲＩ側としての本件に関する予備知識はなく，製造施設の立案，設計等は至難のことと考えられる。

しかし，製造室として300平方米，馬６頭，山羊25頭飼育可能な動物室が要求されたことは，どこに視点をおいて要求されたのであろうか。国内外の事情によりやむなくＭＲＩの一端に押し込んだのであろう。

2．製造施設は免疫に使われる動物の大小に左右されるものではなく，採取された血清量と関係なく，γ－グロブリン分画を精製，濃縮，検定，分注，凍結乾燥，包装されるものである。従ってこれらの業務は一貫性のものであり，一棟に収容されることが望ましい。

血清製造過程を下記に示す。



実際に必要とされる部門及び室名

1．血清製造部門

1－1　放牧場（ウマ，ヤギ）
1－2　厩舎または山羊舎
1－3　免疫室（ウマ，ヤギ）
1－4　部分採血室（　〃　）
1－5　全採血室（　〃　）
1－6　血清分離室
1－7　〃　精製室（＋４℃室）
1－8　〃　検定室

2．蛇毒研究部門

2－1　採毒室
2－2　採毒用ヘビ保管室
2－3　生化学研究室
2－4　薬理学　〃
2－5　免疫学　〃
2－6　トキソイド　〃
2－7　病理学　〃
2－8　疫学　〃

1－9　〃　分注室

1－10　〃　凍結乾燥室

1－11　製品包装室

1－12　〃　冷蔵保管室

1－13　洗浄室

1－14　器材滅菌室（乾熱，高圧）

1－15　資材倉庫

1－16　実験用小動物舎

3．以上のことから300平方米をいかに重要な部門から活用するか，8月20日の覚書を確認していないので，相当に苦労するものと思われるが，削減が予想される点を考慮してみるならば大幅の譲歩も止むを得ないものと考えている。

4．採毒及びヘビ飼育について

MRIに現在該当者はおらず，デヒワラ動物園に委託する以外に方法はない。Mr. A. D. Silva を同道，動物園側と討議の結果 Mr. H. Molligoda が適任者であるが，現地省関係の交渉が必要であろう。

5．人員配置計画

staff allocation of antivenin production (16. Aug. 1987)

	animal care to bleeding[1]	snake[2]	laboratory works[3]	sum
consultant	1[4]→0		1[5]→0	2→0
officer	1[6]	1→0	2→1[7]	4→2
MLT			3	3
LO	3	3	3	9
total	5→4	4→3	9→7	18→14

1) horses, goats, rabbits, mice etc

2) care, breeding, collection of venom etc

3) from separation, purification, fractionation of sera to ampuling of globulin, preparation of venoids and research work

4) veterinary doctor

5) can be replaced by division head (research activities including production of improved vaccines and new vaccines and antisera)

6) zoologist

7) biochemist

上記のことについては，小島団長，Dr. Vitaraha との討議において出されたもので，予算的裏付けその他は確認していない。

実施計画

1．採毒用ヘビ

コブラ	50 匹
アマガサヘビ	50
クサリヘビ	50
ヒップナールマムシ	50

必要ケージ数300個（ラックが必要）

＊ 上述のヘビは飼育頭数，従って死亡その他で補充の要がある。

◎ その他 ELISA Kit（鑑別用）の試作

コブラ，アマガサ，クサリヘビ，マムシ（フィップナーレ）4種

2．血清製造用動物

1988 ウサギ（4kg）20羽×4種類（ヘビ） 80羽

血清量 1種 300mℓ（20mℓ×15）

（15人分）

1989 ヤギ（30～40kg）3頭×4頭＋予備3頭 15頭

血清量 1種 750mℓ（250mℓ×13）

（37.5人分）

1990 ポニー 2頭×4種 10頭

1991 馬（400～500kg）2頭×4種＋予備2頭 10頭

血清量 3.75～5.0ℓ

1種 8ℓ（4ℓ×2）

（400人分）

注 上の実頭は年2回繰返す事ができるから動物数は2倍となる。

プロジェクト実施計画

	研修招聘		技術協力	
	生蛇	血清	生蛇	血清
1988	採毒 飼育 2名3ヶ月	製造 検定 2名6ヶ月	採集 同定 採毒 6ヶ月1名	製造（単味） ウサギ 検定 6ヶ月1名
1989	同上	同上	同上	同上 ヤギ Toxoid アマガサヘビ
1990	同上	同上	同上	同上（混合） ポニー

	1名	1名		Toxoid　アマガサヘビ
1991			同　上	同上　　ウマ Toxoid　コブラ クサリヘビ
1992			同　上	同上　　ウマ Toxoid,Hypxnade (マムシ)
1993				同上　　ウマ Toxoid　3種混合

提　言

最小限の施設において最大限の効果を得るためには，相当の現地の努力が必要とされるであろう。

然しながら（財）日本蛇族学術研究所は最大の努力を惜しまないものである。

無から始まる抗蛇毒血清の製造は，遅々として進まなく見えるであろうが，今後の５年間，低開発国への輸出が可能となるまで，スリランカ国の努力を期待したい。

QUESTIONNAIRE ON ANTI-VENOM

I. Anti-venom production

1. The number of the stuff with the following specialities currently available in MRI and the future plan for the placement of these technicians, if any

   1) Special snake keeper
   2) Herpetologist
   3) Technician on milking snake venom
   4) Technician on collecting venomous snakes
   5) Animal keeper preferably veterinary surgeon
   6) Epidemiologist
   7) Biochemist on snake venom
   8) Medical technology technician who can inspect biological products
   9) Expert on emergency treatments

2. The number and the price of the following experimental animals locally procurable in Sri Lanka

   1) Rabbit
   2) Goat
   3) Pony

II. Supplying route of anti-venom

1. The kind, the amount and the price of presently available anti-venom
2. The present situation of emergency hospitals and/or clinics for the appropriate administration of anti-venom
3. The rural system of receiving serum

業　務　日　誌

1987年 8 月 9 日
氏 名　牧 野 正 顕

月　日	曜　日	内　　容
8．7	日	MRI 非公式訪問 外部より研究所本館，動物舎を見学 1．MRIの所在地確認 1．本館の外装，想像したよりは良かった。 1．小動物舎（山羊，緬羊，猿）軒下で飼育しており，ケージ囲は古く雑然としていた。
8．9	日	SRI JAYEWARODENEPURA GENERAL HOSPITAL 休日のため入場を拒否され遠く外観を撮影
8．9	日	デヒワラ動物園 MRIには蛇の専門家がいないと聞いているので，飼育状況を視察，目的の4種の毒蛇を確認した。 飼育管理は行き届いており清潔であった。
8．9	日	午後3時ホテルに平野一等書記官来訪，新潟大，佐藤助教授の紹介を受けた後，今後の日程について説明があった。 午後3時30分，ペラデニア大学シルバ氏（Anslem De Silva ）来訪，両氏に紹介平野氏に蛇関係についてシルバ氏の助言が必要なので当方のメンバーの一員としてMRIとの交渉に加えたいがと質問，明朝までにJICA側，MRI側の可否を受けておく旨発言を得た（翌朝承諾の電話あり）
8．10	月	JICA 橋口所長　表敬訪問 挨拶およびMRIへの連絡を依頼 MRI Dr. Vitarana　訪問 抗蛇毒血清製造部門について次の要請を受けた。 1．新計画案に沿って再設計して欲しい 2．要求面積は300 ㎡で2階が望ましい 3．抗蛇毒血清は初年度3,000 バイアル×10mlを希望している 4．血清製造に要する機器類のリストを作って欲しい 5．この部門におけるMRIの知識は低いものであるので，最低必要室名を提

		示して欲しい 6．蛇に関する経験者は零である デヒワラ動物園 園長　Mr. Fernando　不在 蛇管理人Mr. H. Mollogodaと飼育，採毒について討論，ＭＲＩ側に協力方依頼承諾を得た。
8．11	火	午前 ＭＲＩ，Dr. Vitarana，Dr. Jayasingheと打合せ 午後 ＭＲＩ，ウイルス部門見学 Dr. Vithana の説明を受けた
12	水	ペラデニア大学見学
13	木	小島団長側と合流 ＪＩＣＡ表敬訪問　9：00 午前無償関係討議（ＪＩＣＡ内）　10：00～12：00 午後ＭＲＩ　Dr. Vitaranaと打合せ　14：00～17：00 18：00～21：00 無償関係討議（ヒルトンホテル）
14	金	ＭＲＩ，Dr. Vitarana 無償関係討議　9：15～9：40 保健省　Dr. M. Fernand　表敬訪問　10：00～10：45 Dr. Jayasinghe　ＭＲＩ 蛇関係討議　14：40～16：00 ＭＲＩ招待茶会　16：10～16：50 無償関係製造部門討議（ヒルトンホテル）　18：00～21：40
15	土	ＭＲＩ，Dr. Vitarana 小島団長と蛇毒血清部門人員問題討議　9：10～9：50 ＭＲＩ，Dr. Jayasinghe 製造部門討議　10：00～10：30 動物舎関係討議　10：35～
17	月	無償関係討議 ヒルトンホテル　8：35～10：30

		MRI, Dr. Vitarana 11：10～13：00 ヒルトンホテル 14：15～
18	火	Dr. L. Ranasinghe コロンボ医師会長 表敬訪問 8：30～9：30 MRI, Dr. Jayasinghe 血清部門討議 10：00～12：00
19	水	スリジャエワルデネプラ病院見学 MRI主催パーティー出席 19：00～